



INSTITUTE FOR DEFENSE ANALYSES

**COVID-19 Lessons Identified  
for NATO Bio-Responsiveness  
Capability**

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## Executive Summary

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The work documented in this paper adopts and adapts the North Atlantic Treaty Organization (NATO) Medical Lessons Learned process<sup>1</sup> to assess COVID-19 pandemic response challenges and best practices within the framework of the Smart Defence Project 1.1045 Concept of Operations (CONOPS) for Bio-Response,<sup>2</sup> to which the Institute for Defense Analyses (IDA) provided support from 2016–19. This project is sponsored by the United States (U.S.) Army Office of the Surgeon General (OTSG) in its role as the designated U.S. Head of Delegation to the Chemical, Biological, Radiological, and Nuclear (CBRN) Medical Working Group and its subordinate Panels, and as the custodian of several NATO standards in this subject area.

Within NATO, Lessons Learned is a formal process that begins with the collection of observations from any number of potential sources. These observations are then collated and analyzed by subject matter experts in order to develop Lessons Identified. Within the Medical Lessons Learned process, Lessons Identified are then validated by a Lessons Learned Core Team, comprised of senior-level medical advisors within NATO. The Committee of the Chiefs of Military Medical Services in NATO (COMEDS) then tasks these validated Lessons Identified to appropriate organizations for further work. Only after solutions to observed problems have been developed, implemented, and validated—or best practices adopted and promulgated—are they considered Lessons Learned.

This product is envisioned as the first step of a larger effort, proposed by the NATO CBRN Medical Training Panel (MTP),<sup>3</sup> as a joint initiative between the MTP and the Biological Defence Medical Panel with the participation of other interested NATO bodies. The objectives of this larger initiative are to (1) promote the development of a collaborative, comprehensive program of work to learn the lessons of the COVID-19

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<sup>1</sup> *Field Manual for Medical Lessons Learned* (Budapest, Hungary: NATO Centre of Excellence for Military Medicine), 1st Ed., November 2016.

<sup>2</sup> *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*, January 2020. Available from the NATO Standardization Office Biological Defence Medical Panel forum (access controlled), or at <https://apps.dtic.mil/sti/pdfs/AD1113565.pdf>.

<sup>3</sup> COMEDS has tasked the MTP with performing a CBRN Medical Lessons Learned function to support its parent CBRN Medical Working Group. See Committee of the Chiefs of Military Medical Services in NATO, “Terms of Reference of the Working Groups and Panels of COMEDS,” COMEDS(CHAIR)L(2021)0001, 15 January 2021. OTSG currently supports the membership of an IDA Research Staff Member on the MTP to lead the Lessons Learned function.

pandemic that are relevant to the Alliance; (2) provide collective purpose to the various NATO organizations engaged in post-pandemic bio-responsiveness work; and (3) avoid stove-piping among organizations or between topic areas.

IDA's work in this phase of the project included collecting over two thousand observations on COVID-19 pandemic response from various official NATO and U.S. repositories, processing them into a useable format, and analyzing them to develop an extensive list of proposed Lessons Identified.

To organize and assess these observations, the IDA team used “qualitative content analysis,” described in the literature as the systematic coding of text data to identify themes and patterns. This coding process is simply the assignment of metadata tags to a body-of-text dataset, and subsequent collation or parsing of that data using the metadata tags. IDA's work combined two broad approaches to qualitative content analysis: directed content analysis and conventional content analysis.

- *Directed content analysis* is a deductive approach in which metadata are derived from key concepts or variables contained within an existing theory or prior research; it is “directed” in the sense that the framework used to analyze the data is imposed from outside.
- *Conventional content analysis* is an inductive approach that derives metadata from the substance and meaning of the collected data, considered in isolation. Metadata is derived from the text itself, rather than from an external framework.

The directed content analysis approach was particularly well-suited to the project, as it is based on enhancing capabilities within an existing framework—in this case, the Smart Defence Project 1.1045 CONOPS for Bio-Response. However, the directed content approach proved insufficient on its own for parsing the dataset into discrete groups of observations focused on a single topic; the set of observations was simply too large and too diverse for directed content analysis to be the only method used. As a result, the IDA team used directed content analysis to initially organize observations into general topic areas, and then used conventional content analysis to further parse observations into distinct, coherent groups based on commonalities in substance. The team then summarized these groups of observations into 169 candidate Lessons Identified.

As a final step, the project team recommended a select number of candidate Lessons Identified to serve as the starting point for further work by relevant NATO bodies. These “priority Lessons Identified” reflect the IDA team's consensus views of their relative importance, supported by individual team-member voting and group adjudication and based on criteria such as number of associated observations, perceived significance of the problem addressed, and the extent to which a given Lesson Identified fell within the purview of NATO.

Ultimately, the project team selected sixteen of our 169 Lessons Identified as the highest priority for follow-on work; brief statements summarizing these Lessons Identified are given below. The sixteen priority Lessons Identified in this project include one overarching Lesson Identified and fifteen related to specific elements of the NATO CONOPS for Bio-Response; the overarching Lesson Identified emerged from the analysis of multiple CONOPS topics, leading to a cross-cutting Lesson Identified.

### **One Overarching COVID-19 Lesson Identified**

- NATO must routinely update and exercise pandemic response and supporting plans and must consider such plans in the same way and with the same intensity as other crisis-response contingency plans.

### **Fifteen COVID-19 Lessons Identified for Elements of the CONOPS for Bio-Response**

- Leadership needs guidance on lifting outbreak control measures.
- During periods of uncertainty, adopting pandemic response measures early is preferable as compared to a “wait-and-see” approach.
- Physical distancing and telemedicine can reduce disease spread while caring for patients, but information technology needs must be considered.
- Traditional means of identifying individuals for quarantine, such as contact tracing, may be rapidly overwhelmed; broad approaches become necessary as outbreaks spread.
- There is a need for development and assessment of international standards for travel restrictions and movement between nations.
- Clear, consistent, and consolidated information from leadership may decrease confusion, frustration, and disinformation.
- Pandemic-related supply chain issues can be reduced through stockpiling, other logistical actions, and increased funding.
- Policy development and infrastructure investments may improve transport of NATO medical materiel and personnel.
- The burden on healthcare systems with pandemic-related patients may be reduced by improving infrastructure, medical force structure, and implementing public health measures.
- Augmenting civilian medical systems with military medical personnel was generally beneficial but had significant interoperability challenges.

- Permanent civilian-military liaisons should be established, trained, exercised, and utilized during pandemic situations.
- Developing a pandemic response framework to identify what information needs to be communicated, when, in what format, and to whom is essential.
- Interoperable disease testing guidance for NATO missions needs to be developed as early as possible during a pandemic.
- Working remotely requires solutions for access to both classified and NATO unclassified computing.
- Continuity of operations plans for remote work should be developed and exercised prior to the next outbreak.

These sixteen Lessons Identified are the final outputs of multi-step methodology that generated a set of 169 separate COVID-19 Lessons Identified. The sixteen selected for further discussion in this report represent the combined conclusions of the project team for follow-on work on bio-responsiveness capability development. Other groups with different backgrounds, knowledge, and experience may have different priorities.

Additionally, NATO can enhance its bio-responsiveness capabilities through investment in doctrine development, either at the strategic-level where NATO is well-positioned to do so or in areas that promote interoperability. Doctrine development comes with limited costs compared to other investment types and can be coordinated and synchronized across NATO bodies engaged in this work. While the need for doctrine development was pervasive and substantial across all bio-responsiveness tasks, our assessment determined that such efforts are particularly applicable to: Medical Command, Control, Communication, Computers and Information (Med C4I) and Decision Support; Strategic Communications; Medical Situational Awareness; and Civilian-Military Cooperation.



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# 1. Introduction

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An outbreak of highly contagious infectious disease, whether naturally occurring or intentionally induced, can negatively impact military readiness, generate health risks to military personnel, and/or threaten the accomplishment of military objectives during operations. Both the existence of large numbers of biological casualties and the burden of measures taken to avoid them can create militarily significant challenges for commanders, including:

- Reduced in-theater operational end strength;
- Negative impacts on the ability to project military power;
- Creation of an overwhelming logistics burden; and/or
- Reduced ability of medical forces to provide care for the operational force.<sup>4</sup>

The COVID-19 pandemic and ensuing responses provided an indication of the negative impact of outbreaks on readiness and ongoing operations for military forces. However, the experience gained during the pandemic provides an opportunity to prepare for the next outbreak and ensure that challenges to military readiness and operational capability can be met.

The work documented in this paper generates Lessons Identified from the COVID-19 pandemic for the specific purpose of enhancing the North Atlantic Treaty Organization (NATO)'s capability to effectively respond to an outbreak of disease of military significance ("bio-responsiveness"). This effort is the first part of a larger initiative proposed by the NATO Chemical, Biological, Radiological, and Nuclear (CBRN) Medical Training Panel (MTP)<sup>5</sup> as a joint initiative between the MTP, the Biological Defence Medical Panel, and other interested NATO bodies. The objectives of this larger initiative are to (1) promote the development of a collaborative, comprehensive program of work to learn the lessons of the COVID-19 pandemic for improving bio-responsiveness; (2)

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<sup>4</sup> *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*, January 2020: 8. Available from the NATO Standardization Office Biological Defence Medical Panel forum (access controlled), or at <https://apps.dtic.mil/sti/pdfs/AD1113565.pdf>.

<sup>5</sup> COMEDS has tasked the MTP with performing a CBRN Medical Lessons Learned function to support its parent CBRN Medical Working Group. See Committee of the Chiefs of Military Medical Services in NATO, "Terms of Reference of the Working Groups and Panels of COMEDS," COMEDS(CHAIR)L(2021)0001, 15 January 2021. OTSG currently supports the membership of an IDA Research Staff Member on the MTP to lead the Lessons Learned function.

provide a framework for allocating follow-on efforts among various NATO organizations; and (3) avoid stove-piping among organizations or between different elements of capability development.

The work of the Institute for Defense Analyses (IDA) project team builds on existing NATO processes, programs, and capabilities, including:

- A formal Medical Lessons Learned process<sup>6</sup> that is well-defined and doctrinally supported to provide a pathway for capability improvement;
- A Concept of Operations (CONOPS) for Bio-Response,<sup>7</sup> generated by the U.S.-led Smart Defence Project 1.1045 (SD 1.1045), which can be used as a framework for organizing pandemic experience and targeting capability improvements;
- Relevant subject-matter expertise within the Biological Defence Medical Panel, the Force Health Protection Working Group, the Centre of Excellence for Military Medicine Force Health Protection and Lessons Learned Branches, and other organizations affiliated with the Committee of the Chiefs of Military Medical Services in NATO (COMEDS).

This project is sponsored by the U.S. Army Office of the Surgeon General (OTSG) in its role as the designated U.S. Head of Delegation to the CBRN Medical Working Group, the Biological Defence Medical Panel, and the MTP, and as the custodian of several NATO standards in this subject area.

From the outset of this project, it was apparent that there was an enormous amount of documented COVID-19 experiences on which the IDA team could draw, even when restricted to official sources and topics related to bio-responsiveness capability development. Our OTSG sponsors and colleagues within NATO thus requested that IDA propose a small set of Lessons Identified that could serve as a starting point for further work. While the IDA project team ultimately generated a list of 169 candidate Lessons Identified from our collected data, we selected sixteen priority Lessons Identified, based on the consensus of project team members. Other groups with different backgrounds, knowledge, and experience may have different priorities.

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<sup>6</sup> *The NATO Lessons Learned Handbook* (Lisbon, Portugal: NATO Joint Analysis and Lessons Learned Centre), Fourth Edition, June 2022; *Field Manual for Medical Lessons Learned* (Budapest, Hungary: NATO Centre of Excellence for Military Medicine), 1st Ed., November 2016.

<sup>7</sup> *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*. A note on terminology: both “bio-responsiveness” and “bio-response” are used in the documentation of this Smart Defence Project, often interchangeably. The title of the Smart Defence Project itself uses “bio-responsiveness,” while the resulting CONOPS title uses “bio-response.” In discussions in this paper, the IDA project team endeavored to use “bio-responsiveness” as an adjective, mostly to describe capabilities, and “bio-response” as a noun, mostly to refer to actions taken in response to an outbreak.

The next chapter of this paper provides background information on the NATO Medical Lessons Learned process and the SD 1.1045 CONOPS, both of which are key drivers of our approach and outputs. Chapter 3 describes the sources and characteristics of the data used in this project and the general approach taken to analyze that data. Chapters 4 and 5 contain a detailed discussion of the analysis, including examples and interim findings. Chapter 6 provides the major output of this project: the list of sixteen candidate Lessons Identified we believe should be priorities for follow-on work. Finally, Chapter 7 summarizes the project and provides several insights and recommendations.

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## 2. Background

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### A. The NATO Medical Lessons Learned Process

The term “lessons learned” is colloquially used to describe the direct and immediate knowledge or understanding that organizations and individuals gain from experience.<sup>8</sup> Within NATO, however, such knowledge or understanding is only the start of a formal Lessons Learned process, the purpose of which is “to learn efficiently from experience and to provide validated justifications for amending the existing way of doing things, in order to improve performance, both during the course of an operation and for subsequent operations.”<sup>9</sup> To achieve this purpose, the NATO Lessons Learned process collates, assesses, and validates the experience of multiple individuals or organizations, tasks appropriate organizations with developing solutions to identified problems, and culminates with learning lessons once those solutions are implemented and validated.<sup>10</sup>

The current NATO Lessons Learned process is based on Military Committee policy<sup>11</sup> and Strategic Command-level doctrine.<sup>12</sup> Primary responsibility for Lessons Learned is assigned to the Joint Analysis and Lessons Learned Centre (JALLC), which has developed procedures for the conduct of the NATO Lessons Learned process.<sup>13</sup> Because of the specific subject-matter expertise needed to evaluate medical observations, the NATO Military Committee assigned aspects of this process to the Lessons Learned Branch of the

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<sup>8</sup> *The NATO Lessons Learned Handbook*, 9: “The term Lessons Learned is broadly used to describe people, things, and activities related to the act of learning from experience to achieve improvements.”

<sup>9</sup> “Allied Joint Doctrine for the Conduct of Operations,” NATO, AJP-3(B), March 2011, Paragraph 0454.

<sup>10</sup> The Lessons Learned process is intended to result in changes that provide improvements to capability. The learning of lessons requires not only that changes be made, but that they are also validated. However, validation can be done in numerous ways: “an Observation leads to a change in the system, which then generates more Observations that verify the change or suggest further refinement. This re-evaluation can either be passive such as monitoring of future Observations concerning the same topic, or active where the AB [Action Body] directs an assessment of the topic at some point after implementation.” *Field Manual for Medical Lessons Learned*, 16.

<sup>11</sup> NATO Military Committee, “NATO Lessons Learned Policy,” MCM-0021-2022, 18 May 2011 (NATO Unclassified).

<sup>12</sup> Bi-SC Command Directive 080-006, “Lessons Learned,” 10 July 2013 (NATO Unclassified). Note that within the United States, the military services, individually and jointly, have implemented similar processes to gather and assess outputs from military operations, training, and other experiences for the purpose of improving operations or capabilities. See, for example, Headquarters, Department of the Army, “Guide to the Army Lessons Learned Program,” Department of the Army Pamphlet 11-33 (Washington, DC), 28 July 2022.

<sup>13</sup> Bi-SC Command Directive 080-006, “Lessons Learned,” 11.

NATO Centre of Excellence for Military Medicine (MILMED COE),<sup>14</sup> which has in turn adapted JALLC’s Lessons Learned process for development of military medical-specific Lessons Learned. Aspects of the COVID-19 experience that are medical in nature would fall within the purview of the MILMED COE's Medical Lessons Learned process.

Figure 1, taken from the *Field Manual on Medical Lessons Learned*,<sup>15</sup> depicts the steps of the Medical Lessons Learned process, as adapted by MILMED COE from the JALLC process. These steps are described in the sections below.



Note: MLLCT = Medical Lessons Learned Core Team; COMEDS = Committee of the Chiefs of Military Medical Services in NATO

**Figure 1. NATO Medical Lessons Learned Process**

## 1. Military Medical Observations

The Lessons Learned process begins with the collection of observations. Observations are the basic data inputs to the process and are defined by the JALLC as “a short description of an issue which may be improved or a potential Best Practice.”<sup>16</sup> Observations can be generated by or from any number of different individuals, organizations, or documents. Sources for military medical observations may be particularly diverse:

Due to the wide range of Stakeholders and partners, items that become Observations within Medical Lessons Learned process tend to be more varied than for other Military specialties. Observations can be what is classically thought of as an Observation, a Lesson Identified or Lesson Learned from NATO or other organizations such as military or civilian centers, national and multinational organizations (i.e. United Nations, European Union), and Non-governmental Organizations and International Organizations. Input can also be the classical military documents such as Periodic Mission Reviews, Exercise planning conferences, First Impression Reports, Final Exercise Reports or After Action Reports. But within

<sup>14</sup> *Field Manual for Medical Lessons Learned*, 6.

<sup>15</sup> *Field Manual for Medical Lessons Learned*, 7.

<sup>16</sup> *The NATO Lessons Learned Handbook*, 19.

Medical Support Services it also includes academic or scientific articles and studies, outputs from research organizations, Best Practice and Clinical Guidelines from both military and non-military sources.<sup>17</sup>

In addition to coming from a variety of sources, military medical observations can be collected in a number of different ways. Within NATO, any individual or organization can submit observations to the designated JALLC and MILMED COE repositories. Additionally, NATO commanders and organizational leaders are required to actively promote the submission of observations and create systematic processes within their organizations to do so, including the appointment of Lessons Learned liaisons to the JALLC and other designated Lessons Learned bodies, such as MILMED COE.<sup>18</sup> Finally, designated Lessons Learned personnel can actively engage in observation collection activities through participation in training events and exercises, review of reports and documentation from military operations, and even review of relevant published literature.

The NATO Bilateral-Strategic Command (Bi-SC) Directive on Lessons Learned provides a template for generating observations in a standardized format, termed an “Observation, Discussion, Conclusion, Recommendation (ODCR) form,” that includes five fields:

- A Title that is short and informative;
- An Observation section that briefly describes an issue or problem, or a best practice;
- A Discussion section that provides background and context to the observation;
- A Conclusion section that describes the main reason or root cause of a problem or success, and what can be learned from it;
- A Recommendation section that describes actions that can be taken to avoid or resolve a problem, or promulgate a best practice.<sup>19</sup>

Use of the standard ODCR template makes it easier for NATO Lessons Learned repositories to store, track, and share observations. It also helps to ensure that observations are thoughtfully developed, fully documented and as useful as possible. Nonetheless, use of the ODCR form is restricted to instances where observations are intentionally submitted as part of the Lessons Learned process. Many of the sources for military medical observations listed above (e.g., clinical guidelines) were developed for other purposes, so the observations contained therein do not use this template. Consequently, observations

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<sup>17</sup> *Field Manual for Medical Lessons Learned*, 9.

<sup>18</sup> *The NATO Lessons Learned Handbook*, 15.

<sup>19</sup> *The NATO Lessons Learned Handbook*, 27.

can come in a variety of formats, ranging from short declarative statements in meeting minutes or memoranda to lengthy technical reports.

## **2. Lessons Identified**

Once observations have been collected, they are then processed, collated, analyzed, and validated. The MILMED COE Lessons Learned Branch staff begin processing observations by assigning metadata tags to collected observations, such as nation of origin, date of submission, topic, and possible interested NATO entities.<sup>20</sup> They then review the observations and use the metadata to find patterns within the submissions, allowing them to collate and summarize observations by topic. Subject matter experts from appropriate NATO bodies are then requested to review and assess these collated observations, to clearly define the underlying problem or the prospective value of a best practice, to recommend remedial actions, and to identify organizations—or “Action Bodies”—that can execute those recommended actions.<sup>21</sup> Remedial actions can include any aspect of doctrine or capability development, including material development. An Action Body is any organization that can be tasked by NATO or from which NATO can request support; Action Bodies include strategic and geographic commands, NATO organizations, individual Nations, research organizations, or contractors.

The outputs of this review, collation, and assessment of observations are then provided to the Medical Lessons Learned Core Team (MLLCT), consisting of the Medical Advisors for the International Military Staff, Allied Command Operations, and Allied Command Transformation, plus the Liaison Officer for the Committee of the Chiefs of Medical Services in NATO (COMEDS), the Director of the MILMED COE, and the MILMED COE Lessons Learned Branch Chief. The MLLCT will validate the identified problem, endorse the recommended remedial action, and designate an Action Body.<sup>22</sup> At this point, the collated observations and their associated recommendations become formal Lessons Identified and are provided to COMEDS for Action Body tasking.

## **3. Lessons Learned**

COMEDS is the primary medical tasking authority within NATO and it is therefore responsible for formally assigning Lessons Identified to designated Action Bodies. Action Bodies implement their assigned remedial actions, which should include plans to assess the resulting changes to determine whether or not the remedial actions had the desired effect. Only after solutions to observed problems have been developed, implemented, and

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<sup>20</sup> *Field Manual for Medical Lessons Learned*, 12.

<sup>21</sup> *Field Manual for Medical Lessons Learned*, 12. “Action Body” is defined as “the organization or staff tasked with the implementation of assigned remedial action in association with a lesson identified. The action body develops an action plan to guide the remedial action activities.”

<sup>22</sup> *Field Manual for Medical Lessons Learned*, 13–14.

validated, or after best practices have been officially adopted and promulgated, are they considered Lessons Learned. For the NATO military medical system, the benefits of these solutions and best practices “include but are not limited to: the improved survival and functional outcomes for wounded, injured or ill warriors; time, energy and resource saving adjustments to processes; and optimization and sharing of learning achieved during exercises, workshops and trainings.”<sup>23</sup>

#### **4. Deviations from the Medical Lessons Learned Process**

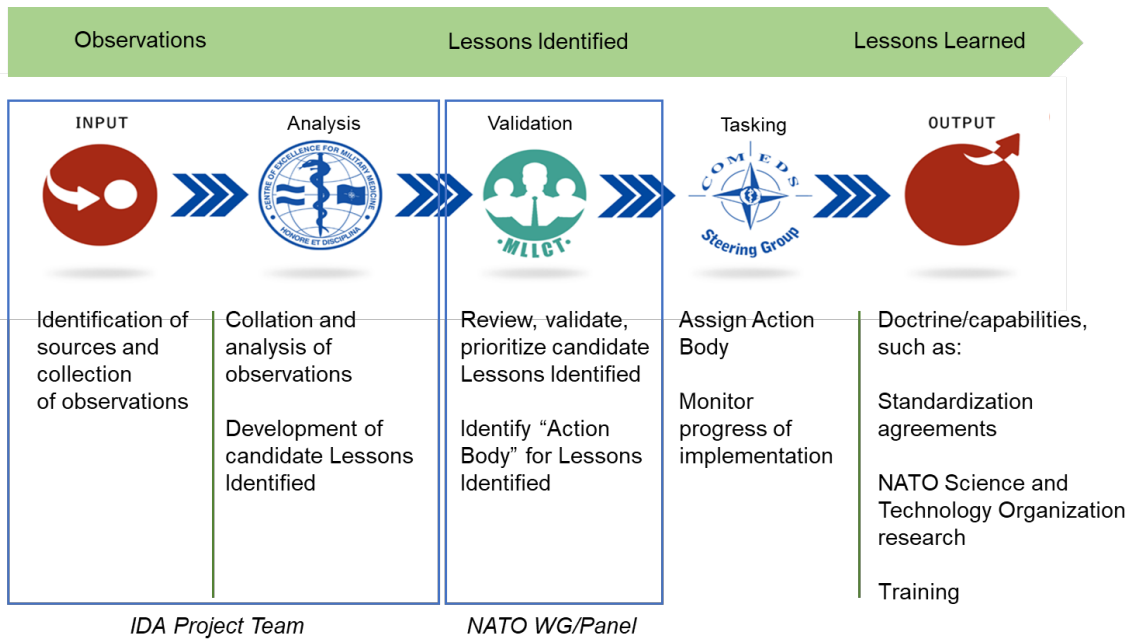
As documented in this paper, the IDA project team generated a set of candidate COVID-19 Lessons Identified to enhance NATO's bio-responsiveness capability, following the NATO Medical Lessons Learned process described above. However, both the IDA project and the larger effort it feeds deviate from the official process in terms of organizational roles and responsibilities:

- The IDA project team collected, processed, collated, and analyzed the observations used to generate candidate Lessons Identified, including recommended remedial actions or adoption of best practices. In doing so, the IDA team performed functions that are described above as the purview of the MILMED COE and NATO subject matter experts.
- Our candidate Lessons Identified will be provided to the CBRN Medical Working Group and the NATO Biodefence Medical Panel for validation and further prioritization, with the participation of other interested NATO bodies. These organizations will create a set of Lessons Identified with recommended Action Bodies and provide them to COMEDS for prospective tasking. In doing so, the Working Group and Panel would perform functions normally assigned to the MLLCT.

Figure 2 below repeats Figure 1 above, with outlined boxes showing the portion of the Medical Lessons Learned process encompassed by the IDA project and the portion of the process envisioned for the CBRN Medical Working Group and Biodefence Medical Panel. Figure 2 also includes added text listing the major activities in each step, which were not included in the original, externally generated figure.

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<sup>23</sup> *Field Manual for Medical Lessons Learned*, 16.



**Figure 2. COVID Lessons Learned Project and the NATO Medical Lessons Learned Process**

Such deviations from official process are allowable and even encouraged in some circumstances. A lack of resources, subject-matter expertise, and analysis capability are identified limitations to the Medical Lessons Learned process:

While the MILMED COE has the expertise to manage the system and to provide some initial review, the in-depth analysis of the data should be accomplished by Subject Matter Experts. The MILMED COE Lessons Learned staff cannot be the sole resource for analysis of the submissions, nor is the MLLCT an analysis body. Therefore, it is critical for the system that other medical bodies (the COMEDS Working Groups and Panels, for example) are involved in the review and analysis of the information. There are also a number of NATO and national resources that can assist with the analysis of information within their expertise.<sup>24</sup>

Engagement of the CBRN Medical Working Group and subordinate Panels and the use of IDA's analytic capabilities allow both resources and relevant subject-matter expertise to be brought to bear on the subjects of lessons learned, COVID-19, and NATO bio-responsiveness capability. The CBRN MTP Terms of Reference already includes tasking from COMEDS to perform a CBRN Medical Lessons Learned function to support its parent CBRN Medical Working Group and its sister Biodefence Medical

<sup>24</sup> *Field Manual for Medical Lessons Learned*, 12.

Panel.<sup>25</sup> In addition, the Biodefense Medical Panel was tasked by COMEDS to provide advice on medical aspects of COVID-19 and pandemic response, and it previously served as the organizational home to the Smart Defence Project on Bio-Responsiveness.

## **B. CONOPS for Bio-Response**

In 2016, the U.S. volunteered to lead a collaborative Smart Defence Project on Bio-Responsiveness (SD 1.1045), initiated by Allied Command Transformation (ACT) in response to the 2014 Ebola outbreak in West Africa, where many NATO nations deployed outbreak response capabilities with no mechanism for coordination within the Alliance. The purpose of SD 1.1045 was to provide such a mechanism and to “increase NATO responsiveness to biological outbreaks (natural or intentional) up to the level of bio safety level (BSL)-4 by pooling existing capabilities in national inventories to increase the capacity, improve effectiveness, and create a structure amongst Allies for response to biological outbreaks.”<sup>26</sup>

Within NATO, technical support to the project was organized by the Biological Defence Medical Panel and ultimately included sixteen participating nations. The OTSG CBRN Medical Staff Officer—the long-standing sponsor of IDA’s work on NATO CBRN casualty estimation and NATO CBRN medical support doctrine—had primary responsibility for the organization and execution of SD 1.1045, with oversight from the Office of the Joint Staff Surgeon. OTSG tasked IDA with leading the analytical component and with organizing concept development and experimentation (CD&E) and lessons learned activities in NATO medical exercises during the project period, to test and validate the concepts and capabilities emerging from the project. SD 1.1045 concluded in the fall of 2019 and produced several deliverables, including the CONOPS for Bio-Response.

The CONOPS for Bio-Response “provides a commander and his/her Medical Advisor with the information needed to generate an effective response to an outbreak of infectious disease of military significance<sup>27</sup> in the Joint Operating Area, and by so doing, protect the

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<sup>25</sup> See Committee of the Chiefs of Military Medical Services in NATO, “Terms of Reference of the Working Groups and Panels of COMEDS,” COMEDS(CHAIR)L(2021)0001, 15 January 2021. OTSG currently funds the membership of an IDA Research Staff Member on the CBRN MTP to lead the Lessons Learned function.

<sup>26</sup> *Report of the Project Team for Smart Defence Project 1.1045, Volume 1: Historical Record*, January 2020. Available from the NATO Standardization Office Biological Defence Medical Panel forum (access controlled), or at <https://apps.dtic.mil/sti/pdfs/AD1113564.pdf>.

<sup>27</sup> As considered in the CONOPS, an outbreak of infectious disease becomes militarily significant when it causes a change in a commander's chosen course of action. *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*, 8.

health of the force and maintain or restore operational effectiveness.”<sup>28</sup> Key elements of the CONOPS are:

- Phases of outbreak response, with detailed descriptions of each phase that include: operational goals, triggers, key decision points and considerations, emphasized essential tasks, and requirements for support or information from higher command levels.<sup>29</sup>
- Tiers of outbreak response, which can be executed in isolation, sequentially, or in combination: deployment of specialized bio-response capabilities to augment tactical level outbreak response; deployment of additional military assets to increase operational level outbreak response capabilities; and strategic level deployment of additional assets from home and Host Nations and/or international organizations.<sup>30</sup>
- A list of bio-response tasks, which includes actions like conducting Infection Prevention and Control, providing situational awareness, and performing patient management.<sup>31</sup>

As described in the chapters that follow, the IDA project team used the tasks, phases, and tiers defined in the CONOPS for Bio-Response as an organizational framework for the development of candidate COVID Lessons Identified for NATO bio-response capability development. Our purpose was not to revisit the overall structure or content of the CONOPS itself, but rather to determine how the experience of the pandemic could be used to determine capability enhancements needed to implement the CONOPS effectively.

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<sup>28</sup> *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*, 3.

<sup>29</sup> *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*, Chapter 2.

<sup>30</sup> *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*, 12.

<sup>31</sup> These 21 tasks are listed and defined in Table 2 of this paper.



### **3. Data Sources and Approach**

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#### **A. Sources of Observations**

The IDA team initially collected 2,030 COVID-related observations from three separate sources, generated during the time period from April 2020 through August 2022.

##### **1. JALLC Observations**

Our primary source for NATO COVID observations was the observation repository maintained by the JALLC. While the MILMED COE maintains its own repository for medical observations, it also provides the observations it collects or generates to the JALLC to ensure the JALLC collection is comprehensive. The JALLC database is searchable by keyword, so identifying those related to COVID-19 was straightforward.

The observations collected from the JALLC repository were of two types: (1) individual observations submitted using the NATO standard ODCR form and (2) observations listed within COVID-19 Lessons Learned national reports. During the pandemic, the JALLC actively solicited observations from personnel working in NATO organizations, especially the Centres of Excellence. Most of the ninety-two observations in ODCR format that we collected from the JALLC were from these sources, of which thirty-one had been submitted by the MILMED COE.

In addition, many NATO nations routinely submit outputs from their national military Lessons Learned processes to the JALLC and continued to do so during the pandemic. In addition, the JALLC itself served as a forum for the collection and dissemination of information on national COVID-19 responses; it published a series of reports that were initially issued on a weekly basis, and then monthly as the pandemic progressed. These reports were of variable length and in various formats, but all included lists of observations. We collected 1,158 observations from the JALLC reports, the most from any of the sources we examined.

##### **2. NATO COVID-19 Video Teleconference (VTC) Minutes**

As noted above, observations can be collected from a wide variety of sources and do not need to be specifically identified as such to be an input to the Lessons Learned process. In our search for NATO COVID observations, we looked for reports from information sharing and pandemic response activities within NATO during the pandemic to serve as sources for observations beyond those submitted to the JALLC.

One major initiative of this type was a series of NATO COVID-19 VTCs among national military infectious disease personnel and other interested individuals on a weekly basis from April through July 2020, and then bi-weekly or monthly thereafter through spring 2022. These VTCs were organized by the Force Health Protection (FHP) Branch of MILMED COE to provide participants with an opportunity to discuss specific issues and solicit advice from their peers, as well as to share emerging knowledge and best practices. The FHP Branch thoroughly documented the discussions and recommendations of the VTC participants in a series of reports that were widely disseminated across NATO.

Because the VTCs took place throughout the pandemic, were focused on urgent pandemic response issues and questions in real time, included national subject matter experts, and were so well documented, the IDA team anticipated that the VTC reports would be an important source of COVID observations. Consequently, the IDA team reviewed these reports for information that could be considered observations, defined in the NATO Lessons Learned process as “a short description of an issue which may be improved or a potential Best Practice.”<sup>32</sup> Ultimately, we culled 213 observations from this source.

### **3. U.S. Lessons Learned Reports**

In addition to U.S. COVID-19 Lessons Learned reports submitted to the JALLC, we reviewed a number of U.S. Department of Defense (DOD) and Service Lessons Learned reports from repositories maintained by the DOD to which we had access and collected 567 observations from them.

We were interested in learning whether or not the U.S. military experience during the pandemic differed from that of our allies or of NATO institutions, for two reasons. First, if we found major differences among the observations, it would suggest that the outputs of this work may not be universally relevant across the Alliance or that U.S. implementation of recommendations from approved Lessons Identified may need to be different than that of NATO more broadly. While such judgments are outside our immediate scope, they are relevant to the larger COVID Lessons Learned initiative, and the outputs of this project can be used to inform them. Second, if the U.S. observations mirrored those found in NATO sources, they could be added to our set of collected observations to bolster our findings. The results of our comparison of the characteristics of the collected sets of U.S. and NATO observations are presented in the next chapter.

## **B. Evaluation of Relevance**

Having identified sources for observations for our project, we initially collected all of the COVID-related observations available from those sources. Upon review, however, we

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<sup>32</sup> *The NATO Lessons Learned Handbook*, 19.

realized that not all COVID-related observations were relevant to our project, which specifically focused on observations that would indicate needed enhancements to NATO bio-response capabilities. For example, one observation submitted to the JALLC by the NATO Stability Policing Centre of Excellence stated that “educating the public about police response during the COVID-19 pandemic is crucial.”<sup>33</sup> Without questioning the merits of this observation, we can say that it does not provide information that is useful for our purpose.

Consequently, the IDA project team reviewed all of the observations and eliminated any that we determined to be irrelevant from our final dataset. We established three rules for this review and eliminated from further consideration any observation that was:

- Unrelated to any aspect of the SD 1.1045 CONOPS for Bio-Response
- Dependent on the specific characteristics or behavior of COVID-19 and not generalizable to other diseases or outbreaks
- A consequence of national laws, organizations, or customs, and which could not be applied to other nations or to NATO

As in many parts of this project, the decision to eliminate any single observation was done by consensus among the project team. In any case where members of the project team disagreed on the relevance of an observation, that observation was retained in the dataset. Ultimately, of the 2,030 collected observations, 1,369 (67%) were found to be relevant and were included in the final dataset of observations used in subsequent analysis.

The outputs of our review of relevancy are provided in Table 1. The observations pulled from the MILMED COE COVID-19 VTC minutes had the highest rate of relevancy, while observations contained within the JALLC collection of national reports and prepared products had the lowest rate. In both cases, the IDA team believes this result was due to the objective of the activity that generated the observations: the COVID-19 VTCs were specifically focused on military medical issues and problems, while the JALLC cast a much wider net to document the pandemic experience across all NATO organizations.

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<sup>33</sup> Lessons Learned Branch, NATO Stability Policing Centre of Excellence, “Police Stratcom Engagement in Countering COVID-19,” document submitted to the JALLC Lessons Learned Portal in response to NATO COVID-19 LL campaign, undated.

**Table 1. Summary of Observation Relevance by Source**

<b>Observation Source</b>	<b>Total Number of Observations</b>	<b>Number (Percent) Deemed Relevant</b>
ODCR Forms Submitted to JALLC	92	68 (74%)
National COVID Reports Submitted to JALLC	1,158	679 (59%)
COVID-19 VTC Minutes	213	176 (83%)
U.S. Lessons Learned Reports	567	446 (79%)
Total	2,030	1,369 (67%)

The portion of observations from a given source that were deemed relevant, however, was not necessarily an indicator of the relative value of those observations in our subsequent analysis. A retrospective assessment by the project team at the conclusion of our analysis revealed that the ODCR forms submitted to the JALLC were much more likely to inform our candidate set of Lessons Identified than observations collected from other sources. Across all relevant observations, some 65% of the observations in ODCR format contributed to our candidate Lessons Identified, compared with 32% of those derived from the COVID-19 VTC minutes, 42% of those from the JALLC collection of national reports and products, and 35% of those from U.S. sources.

### **C. Approach**

All of the collected observations were submitted in text form and ranged from single sentences and bulleted lists to multiple paragraphs of discussion. When combined, our database of 1,369 relevant observations consisted of a large body of diverse textual information generated by a multitude of individuals and organizations for different purposes. To organize and assess these observations, we relied on methods for analyzing text data termed “qualitative content analysis,” specifically on such methods described in a review of approaches to qualitative content analysis published by Hsieh and Shannon.<sup>34</sup>

Hsieh and Shannon define qualitative content analysis as “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns.”<sup>35</sup> The coding process they describe is simply the assignment of metadata tags to a body-of-text dataset, and subsequent collation or parsing of that body of data using those metadata tags. Hsieh and Shannon identify three broad approaches to qualitative content analysis that are differentiated by the source of the metadata tags used in each:

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<sup>34</sup> Hsiu-Fang Hsieh and Sarah E. Shannon, “Three Approaches to Qualitative Content Analysis,” *Qualitative Health Research* 15 (2005): 1277–1288, <https://doi.org/10.1177/1049732305276687>.

<sup>35</sup> Hsieh and Shannon, “Three Approaches to Qualitative Content Analysis,” 1278.

- **Directed content analysis** is a deductive approach in which metadata are derived from key concepts or variables contained within an existing theory or prior research; it is “directed” in the sense that the framework used to analyze the data is imposed from outside. The typical goal of directed content analysis is to “validate or extend” the framework or theory from which the metadata are derived.<sup>36</sup>
- **Conventional content analysis** is an inductive approach that derives metadata from the substance and meaning of the collected data, considered in isolation: “researchers avoid using preconceived categories, instead allowing the categories and names for categories to flow from the data.”<sup>37</sup> By using an internally versus externally generated metadata, the analysis may be more inclusive and capture greater complexity and diversity than it otherwise would.
- **Summative content analysis** “starts with identifying and quantifying certain words or content in text with the purpose of understanding the contextual use of the words or content.”<sup>38</sup> This approach is used for the study of language and to generate an understanding of word usage and meaning in various contexts. Because the purpose of this approach was not relevant to our work, we did not consider it further but note it here for completeness.

Qualitative content analysis is well-suited to the observation assessment component of the NATO Medical Lessons Learned process. The input dataset—in this case, observations—is a collection of highly variable qualitative text statements generated by a multitude of individuals and organizations for different purposes. Qualitative content analysis provides a structure for organizing, collating, and parsing observations to characterize problems and issues, understand their causes and consequences, and determine solutions.

Metadata tagging is already used in the NATO Medical Lessons Learned process as the first step in developing Lessons Identified,<sup>39</sup> and has been used in the past by the CBRN Medical Training Panel Lessons Learned team to summarize observations collected during live training exercises.<sup>40</sup> The COVID-19 Lessons Learned project has provided an opportunity for a more deliberate use of qualitative content analysis and allowed us to establish a more formal process for analyzing observations.

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<sup>36</sup> Hsieh and Shannon, “Three Approaches to Qualitative Content Analysis,” 1281.

<sup>37</sup> Hsieh and Shannon, “Three Approaches to Qualitative Content Analysis,” 1279.

<sup>38</sup> Hsieh and Shannon, “Three Approaches to Qualitative Content Analysis,” 1283.

<sup>39</sup> *Field Manual for Medical Lessons Learned*, 12.

<sup>40</sup> For example, see NATO CBRN Medical Training Panel, *Clean Care 2022 Final Exercise Report*, May 2023, NATO Unclassified, Releasable to PfP, MD, ICI, PatG, and EU. This report is available at (MILMED COE Web Portal) or upon request from the authors.

The directed content analysis approach was particularly well-suited to our work, as it is based on enhancing capabilities within an existing framework—in this case, the NATO CONOPS for bio-response. As discussed in Chapter 4, the directed content approach did reveal several interesting trends and patterns in our set of observations and did allow us to organize our observations into distinct categories. However, the directed content approach could only take us so far in our efforts to identify individual pandemic-related challenges that need to be met or best practices that should be adopted. The set of observations was simply too large and too diverse for directed content analysis to be the only method used.

As a result, after we created groups of observations with the directed content approach, we used a conventional content approach to further parse observations into distinct, coherent groups based on commonalities in substance; this allowed us to more easily generate individual Lessons Identified focusing on a single issue or problem. In this part of our analysis, we derived a set of metadata tags from the observations themselves, based on the issues or problems they addressed. Chapter 5 provides further discussion and examples of our implementation of this conventional content approach.

#### **D. Limitations of the Approach**

Implementation of both directed content analysis and conventional content analysis in this project involved a number of sequential steps executed by IDA project team members, in some cases independently and in other cases collaboratively. Independent activities were intended to limit bias from group dynamics and pressures, while collaborative activities provided checks on individual predispositions and forced consensus. Throughout the analysis, our goal was to be consistent and systematic, to impose structure, and to limit bias in our assessment of a very large body of qualitative textual information.

Nonetheless, because qualitative content analysis is inherently subjective, it contains the potential for bias, which in turn can influence the results. The analysts participating in the project are from the same group of researchers working in the same organization, restricting the diversity of their perspectives; this limited diversity contrasts greatly with the population that submitted the original observations, which represented many countries, professions, and educational backgrounds. As the project progressed, the analysts worked with the collated set of observations extensively and became very familiar with the substance of the observations; for later steps in the methodology, this familiarity may have led to results much different than those that may have resulted from analysts with a fresher perspective. Finally, the prioritization of Lessons Identified for further work was ultimately based on the subject-matter expertise of the participating analysts. Other groups with different backgrounds, knowledge, and experience may have different priorities.

## 4. Directed Content Analysis

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Our directed content analysis began with selecting categories of metadata tags and developing rules for our team to follow when assigning those tags to our collected set of COVID observations. The project team assigned metadata tags to each observation and then used the assigned tags to sort and collate observations in various ways.

### A. Metadata Categories and Tags

As noted in the introduction, the SD 1.1045 CONOPS served as the framework for our directed content analysis, since we wanted our outputs to inform prospective enhancements to elements of the CONOPS. Therefore the primary metadata tags selected for this phase of the analysis were the tasks and phases defined in the CONOPS. In addition, we included several categories of tags to help assign any output Lessons Identified to NATO Action Bodies, including the operational level to which the observation was applicable, overall sentiment of the observation (Went Well, Neutral, Could Be Better), and type of capability development.

#### 1. Bio-Responsiveness Task

The CONOPS for Bio-Response defines twenty-one discrete tasks; a list of these tasks and their associated CONOPS definitions are provided in Table 2.

As our metadata tagging of observations progressed, we discovered that the task definitions were often not sufficient to describe all aspects of a given task, as executed during the pandemic and as reflected in the COVID observations. The definitions provided in Table 2 include IDA team-generated notes on topics that should be added to specific definitions (as shown in italicized text in brackets), and the recommendations provided at the end of this paper include a proposal to expand several bio-responsiveness task definitions to account for these added topics.

We also identified two additional tasks within the observation dataset that we considered important aspects of pandemic planning, despite not being included in the bio-responsiveness tasks: Continuity of Operations and Research and Development Initiatives. These two tasks are not currently captured in the CONOPS, and indeed are outside of its scope. Nonetheless, the associated observations were sufficiently prevalent that we retained them in our observation dataset for completeness and potential future analysis.

**Table 2. Bio-Responsiveness Tasks<sup>41</sup>**

Tag	Definition
Conduct infection prevention and control	<p>Prevent loss or degradation of equipment and supplies from the effects of pathogens, including body fluids of infected casualties. Remove and neutralize infectious materials on equipment. Includes individual equipment, sensitive equipment, aircraft, watercraft, and facilities. Also includes the cleaning and sanitization of multi-use medical equipment. All decontamination operations must involve good personal protection practices.</p> <p><i>[Also includes non-pharmaceutical interventions, personal protective equipment, general public health measures]</i></p>
Conduct isolation, quarantine, and restriction of movement	<p>Establish isolation wards or separate MTFs [Medical Treatment Facilities] for the care of contagious casualties. Quarantine suspected contacts/exposed personnel until they are determined to be free of infection. Consider implementing restriction of movement between exposed and unexposed personnel at either the unit or theatre level. Personnel interacting with isolated individuals must use good infection control and personal protection practices.</p>
Conduct military and civilian cooperation	<p>Liaise with NGOs [Non-Governmental Organizations], IOs [International Organizations], the Host Nation's medical system, other multinational medical forces, and NATO medical personnel.</p> <p><i>[Also includes civilian support for military operations]</i></p>
Employ laboratory assets	<p>Use one or more laboratories to support environmental hazard analysis, clinical diagnosis, medical treatment decisions, operational epidemiology, and forensics investigations. Disseminate laboratory results to appropriate medical and operational units.</p> <p><i>[Also includes diagnostic testing]</i></p>
Employ medical countermeasures	<p>Use available pre- and post-exposure prophylaxis, and immediate and continuing therapy as part of the delivery of first aid, emergency medical care, and advanced medical care. Identify any particularly vulnerable subpopulations to be targeted for priority or exemption. Confirm that units follow standard procedures for recording the use of medical countermeasures.</p>
Manage contaminated clinical waste	<p>Collect, safeguard, and safely dispose of potentially large volumes of waste contaminated with blood and other body fluids, cultures and stocks of infectious agents from laboratory work, or waste from contagious or potentially contagious patients. Use of disease-specific personal protective equipment and incinerators may be required.</p>

<sup>41</sup> The list of bio-responsiveness tasks and their associated definitions are taken directly from *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*, Appendix A. Spelling has been changed for certain words to reflect American English, in accordance with the remainder of the paper, and definitions have been added for acronyms not previously used in the paper.



Tag	Definition
Perform deployment health surveillance	Conduct continuous and systematic collection, analysis, interpretation, and dissemination of health-related data with respect to deployed NATO forces. Rapidly detect public health incidents or outbreaks that could affect NATO operational capacities or objectives, and monitor the progression of those incidents or outbreaks over time.
Perform forensic functions	If attribution is desired, use specialist sample collection units and appropriate reach-back laboratories to apply chain-of-custody procedures in the collection, handling, transport, and analysis of samples. Reach-back and forensics efforts must adhere to differing national and cultural standards for the collection, management, and use of medical information and clinical samples.
Perform medical C4I and decision support	Provide medical advice to the Joint Force Commander and direct medical units in the performance of bio-response tasks. Provide medical staff and Medical Advisor with the tools and information needed to understand the causation, nature, and progression of disease outbreaks and the potential impact of control measures. Support development of bio-response courses of action, to include assessment of operational risk.
Perform medical evacuation	Provide medically supervised en-route care from point of presentation to a medical facility during tactical and strategic medical evacuation utilizing appropriate infection control practices. May include movement by ground, intra-theatre air (fixed-wing or rotary), and strategic air assets. Evacuation assets will require patient isolation capability and/or enhanced personal protection equipment for crew, management of clinical waste, and decontamination after use.
Perform national outreach, reach-back, and fusion	Request support from designated reach-back experts, teams, laboratories (including NATO, partner, and Host Nation assets), or other facilities as needed to augment in-theatre capabilities or knowledge. Establish any necessary support agreements to enable reach-back. Disseminate reach-back analysis results to appropriate medical units and theatre organizations.
Perform operational epidemiology	Investigate disease outbreaks to determine their source, nature, and magnitude. The information provided can be used to improve medical treatment for existing cases and to support the implementation of public health and physical control measures to prevent additional cases. Operational epidemiology may also be an important component of forensic investigation of a biological incident known or suspected of being deliberately caused.  <i>[Also includes contact tracing and digital tracking applications]</i>
Perform patient management	Assess, triage, and treat infectious or contagious patients across all levels of care through acute and convalescent phases of illness. All interactions with infectious or contagious patients will require good infection control practices.

Tag	Definition
Perform sample management	Collect, anonymize (as necessary), transport, track, store, and dispense clinical and environmental samples using chain of custody as necessary. Consider the following sample types: body fluids, tissue samples, powders, and other environmental samples (food, vectors, water, soil, etc.). This would include veterinary and vector sampling. Good infection control practices and use of personal protection will be required.
Perform strategic communications	<p>Coordinate and use NATO communications activities and capabilities, including public diplomacy, public affairs, information operations, and psychological operations as appropriate, at the strategic, operational, and tactical levels to provide NATO forces, Host Nation civilians, international and non-governmental organizations, and National governments and populations with the information needed to support bio-response objectives and operations.</p> <p><i>[Also includes standardization of terminology]</i></p>
Prepare medical risk assessment	Systematically identify, locate, assess, and document occupational and environmental infectious disease hazards to both military and civilian populations, and communicate the health threats and potential operational impact posed by those hazards to the commander.
Provide fatality management	Safely perform initial processing and storage, post mortem radiographic or invasive examination, decontamination, and dignified disposal of potentially contagious human remains in accordance with National regulations and practice. Use of disease-specific personal protective equipment and fatality protective equipment may be required.
Provide medical situational awareness	Generate an overall picture of the health of the force by informing medical staff of relevant results from clinical diagnoses, clinical sampling, laboratory diagnoses, environmental analysis results, and operational epidemiology. This includes contextual information necessary to interpret the results and their potential impact on operations, such as background disease rates; characteristics of the disease and its causative agent; military and civilian vulnerability to infection; current and planned force dispositions and locations; and capabilities for medical diagnosis, force and civilian health surveillance; and medical countermeasures.
Provide psychosocial support	Foster resilience and prevent pathological sequelae in the medical team and patients by helping them and their families to cope with the stress of the illness and resume their normal lives. Use an integrated approach to encourage community acceptance and reintegration of survivors and medical personnel.
Support clinical diagnosis	Assess disease in military personnel and eligible civilians to support medical decisions. Establish presumptive or use existing case definitions. Includes identifying causative agents.

Tag	Definition
Sustain medical support operations	Sustain operation of medical treatment facilities providing isolation and quarantine. Provide security and sustainment for those facilities, and for personnel held therein. Manage the stockpiling, distribution, and resupply of medical countermeasures and other medical and non-medical materiel and consumables required by medical units for treating infectious or contagious patients, with particular focus on low-density, high demand medical equipment (e.g., ventilators) and non-medical items that will be required in increased amounts (e.g., water).

## 2. Bio-Responsiveness Phase

The CONOPS for Bio-Response incorporates five phases of execution, which are listed and defined in Table 3. Note that the third phase, Response, describes three separate tiers of response activities which roughly correspond to the operational level at which those activities would be executed.

**Table 3. Bio-Responsiveness Phases<sup>42</sup>**

<b>Phase</b>	<b>Definition</b>
Prepare and protect	Normal operations. Pre-deployment preparation including training, planning, medical risk assessment, force health protection policy, and vaccination. Conventional patient management, including the use of standard precautions and isolation, case reporting, and health surveillance.
Mitigate	In-theatre outbreak management, following recognition of a potential or confirmed outbreak. The goal of this phase is to understand the initial cause and potential scope of the outbreak and to implement basic control processes to minimize its effects.
Response	<p>Tier 1: Enhanced outbreak management. Enhancement of the in-theatre outbreak management, with an overall emphasis on executing the primary mission. The goal of this phase is to enhance the in-theatre outbreak management capability with outbreak investigation and diagnostic support capabilities while ensuring appropriate medical evacuation. This phase involves the deployment of specialized operational-level bio-response capabilities in support of ongoing tactical level outbreak response efforts.</p> <p>Tier 2: Operational surge. Surge of the Operational Bio-response using national resources to build medical capacity, with an overall emphasis on executing the primary mission. This phase is initiated when the initial bio-response capabilities do not provide the capability or capacity necessary to manage the outbreak, or if operational epidemiology shows a continued increase in new cases following initial management efforts, an increasing geographic distribution, or a greater impact on operational effectiveness of the force.</p> <p>Tier 3: Strategic surge. Surge of Allied and Multinational (MN) Bio-response resources by international coordination and mutual aid to support the operation and/or national resilience; optimize patient management; and control the national, regional, and global spread of the outbreak. In this phase, the overall emphasis shifts from executing the primary mission to implementing outbreak response.</p>
Stabilize	Monitor the effectiveness of outbreak response and control measures, as well as operational effect. The phase begins when outbreak management is successful and the outbreak plateaus. At this point, the outbreak is effectively managed. It will likely continue to have an effect on operations during this phase. This phase continues until the outbreak is clearly over and returned to baseline.
Transition and recover	Stand down or handover of outbreak response to appropriate health authority, restoration of operational tempo, resupply and redeployment, and after-action reporting. The goal of this phase is to return to as much of the original baseline as possible and to resume operations while incorporating appropriate lessons learned into routine operations. The transition to this phase begins when control measures are successful, the outbreak is over, and the patient population is returning to baseline.

<sup>42</sup> The list of bio-responsiveness phases and their associated definitions are taken directly from *Report of the Project Team for Smart Defence Project 1.1045, Volume 2: Concept of Operations (CONOPS) for Bio-Response*, 13. Spelling has been changed for certain words to reflect American English, in accordance with the remainder of the paper.

### 3. Operational Level

This set of tags, listed and defined in Table 4, identifies the level of warfare at which an observation was generated or for which it is relevant.

**Table 4. Operational Levels<sup>43</sup>**

<b>Level</b>	<b>Definition</b>
Tactical	The level at which activities, battles and engagements are planned and executed to accomplish military objectives assigned to tactical formations and units.
Operational	The level at which campaigns and major operations are planned, conducted and sustained to accomplish strategic objectives within theatres or areas of operations.
Strategic	The level at which a nation or group of nations determines national or multinational security objectives and deploys national, including military, resources to achieve them.

### 4. Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Interoperability (DOTMLPF-I) Domain

This set of tags, listed and defined in Table 5, includes elements of capability development.

<sup>43</sup> The definitions provided in this table can be found at NATO Standardization Office, *NATOTerm*: The Official NATO Terminology Database, <https://nso.nato.int/natoterm>.

**Table 5. DOTMLPF-I Domains<sup>44</sup>**

<b>Domain</b>	<b>Definition</b>
Doctrine	Fundamental principles by which the military forces guide their actions in support of objectives. It is authoritative but requires judgement in application.  <i>[This assessment can also include “Policy: Agreed principles, approach and general objectives, set out in a document to guide the achievement of specific outcomes.”]</i>
Organization	The structure through which NATO and the Allies cooperate to accomplish a common mission or agreed task.
Training	Individual training is the development, improvement and preservation of the skills and knowledge necessary to perform specific duties and tasks. Individual training is a learned response to a predictable situation (skills). Collective training includes procedural drills and practical application of doctrine, plans and procedures to acquire and maintain collective tactical, operational and strategic capabilities.
Materiel	The items used to equip, maintain and support military forces in their activities. Notes: Materiel includes software, but excludes real estate, installations and utilities.
Leadership	The professional development of leaders to produce the most competent individuals possible.
Personnel	The military and/or civilian human resources required to accomplish an assigned mission or task.
Facilities	Real estate consisting of one or more of the following: a building, structure, utility system, pavement and/or underlying land.
Interoperability	The ability to act together coherently, effectively and efficiently to achieve Allied tactical, operational and strategic objectives.

## 5. Sentiment

Observations were tagged as “Went Well,” “Neutral,” or “Could Be Better” based on the sentiment expressed therein. The purpose of this category of metadata was to flag observations as potential best practices for future bio-responsiveness capabilities and

<sup>44</sup> The definitions in this table can be found at NATO Standardization Office, *NATOTerm: The Official NATO Terminology Database*, <https://nso.nato.int/natoterm>. The one exception is training, for which there is no agreed NATO definition. The definition in the table was taken from North Atlantic Military Committee, MC 0458/4, *NATO Education, Training, Exercises and Evaluation (ETEE) Policy*, 3 January 2023.

NATO uses the DOTMLPF-I acronym to describe categories of capability development, adopted from the DOTMLPF framework used by the US DOD. NATO's official terminology database links the NATO Agreed use of the acronym DOTMLPF-I to Bi-SC Directive 85-1, *Capability Package Directive*, Edition 4, 15 April 2016. While this specific document was not available to the IDA research team, additional searching revealed that this terminology is widely used in other formal NATO documents and standards, and is prevalent on the Allied Command Transformation website.

operations or to find tasks which proved particularly challenging during the pandemic. When observations described actions taken or provided factual information on events with no judgment as to whether the outcomes were positive or negative, we tagged them as “Neutral.”

## **B. Metadata Tagging Rules**

For the 1,369 observations the project team deemed relevant, each member of the team independently tagged each observation using the metadata tags listed above. Prior to this assessment, the team collectively developed an overall metadata tagging approach including several rules:

- Metadata tagging should be based on the direct language in the observation, and efforts to interpret observations should be avoided.
- Individual observations can be assigned more than one tag from within a given category. Note: the exception to this was the “sentiment” category, from which only a single tag could be assigned.
- The use of metadata tags in the bio-responsiveness task category should be restricted to topics specifically captured within the task definition provided in the CONOPS. Instances where observations fall within the subject area of a task but are excluded in the definition should be tracked separately so the team can recommend specific expansions to definitions where appropriate.
- The JALLC conducted an initial assessment of the individual observations it received, during which it assigned DOTMLPF-I domain tags to each observation. For all of the observations collected from the JALCC, those domain tags are retained, but others could be added.
- Any observation tagged with the “Provide psychosocial support” task should be tagged as occurring within (at minimum) the Transition and Recover bio-responsiveness phase, on the assumption that this care would need to continue even after an outbreak is managed.

Once the individual tagging was complete, we resolved any discrepancies in results through adjudication by a group of at least three analysts, which resulted in an adjudicated, clean, and minimally-biased dataset from which to conduct our analysis.

## **C. Directed Content Outputs**

Directed content analysis of the COVID observations allowed us to observe trends within the data and identify patterns that could be used to organize and inform future work to improve NATO bio-responsiveness capability.<sup>45</sup>

### **1. Observations by Task**

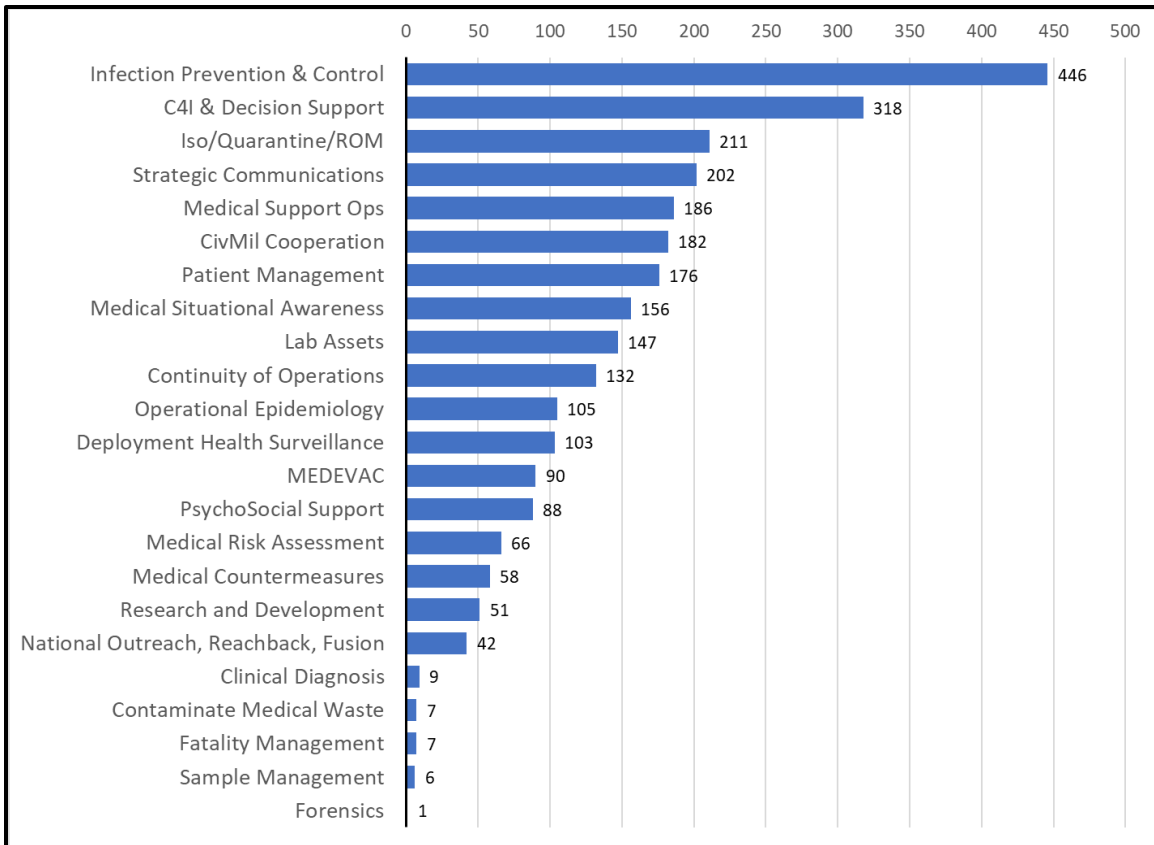
After completing metadata tagging, our first approach to parsing the observation dataset was simply to determine which tasks were associated with the largest number of observations. The number of observations the IDA team tagged with each task are shown in Figure 3. These numbers include the observations associated with the topics noted in Table 2. In addition, as a point of interest, the list of tasks includes continuity of operations planning and research and development initiatives, two tasks which are not included in the CONOPS but which are prevalent among the observations.

The number of observations associated with a given task can be seen as an indicator of that task's relative importance: the fact that individuals or organizations routinely generated observations related to one task more than others meant that it is likely one that needs attention. By this measure, Infection Prevention and Control was clearly a dominant issue during the pandemic, with more than twice as many observations tagged with this task than any other, except the second-most prevalent task, C4I and Decision Support. C4I and Decision Support itself had one and a half times as many observations as the next closest task. Altogether, 682 of 1,369 observations—almost half—were tagged with either or both of these tasks.

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<sup>45</sup> In this study, we focused on identifying trends and patterns in the metadata tags assigned to the collected observations and did not attempt to assess the statistical significance of variability. We felt the qualitative nature of the observations, combined with the large differences in the specificity, comprehensiveness, and depth of information contained within individual observations, was such that more quantitative methods of textual analysis would not be appropriate.





**Figure 3. Number of Observations by Task<sup>46</sup>**

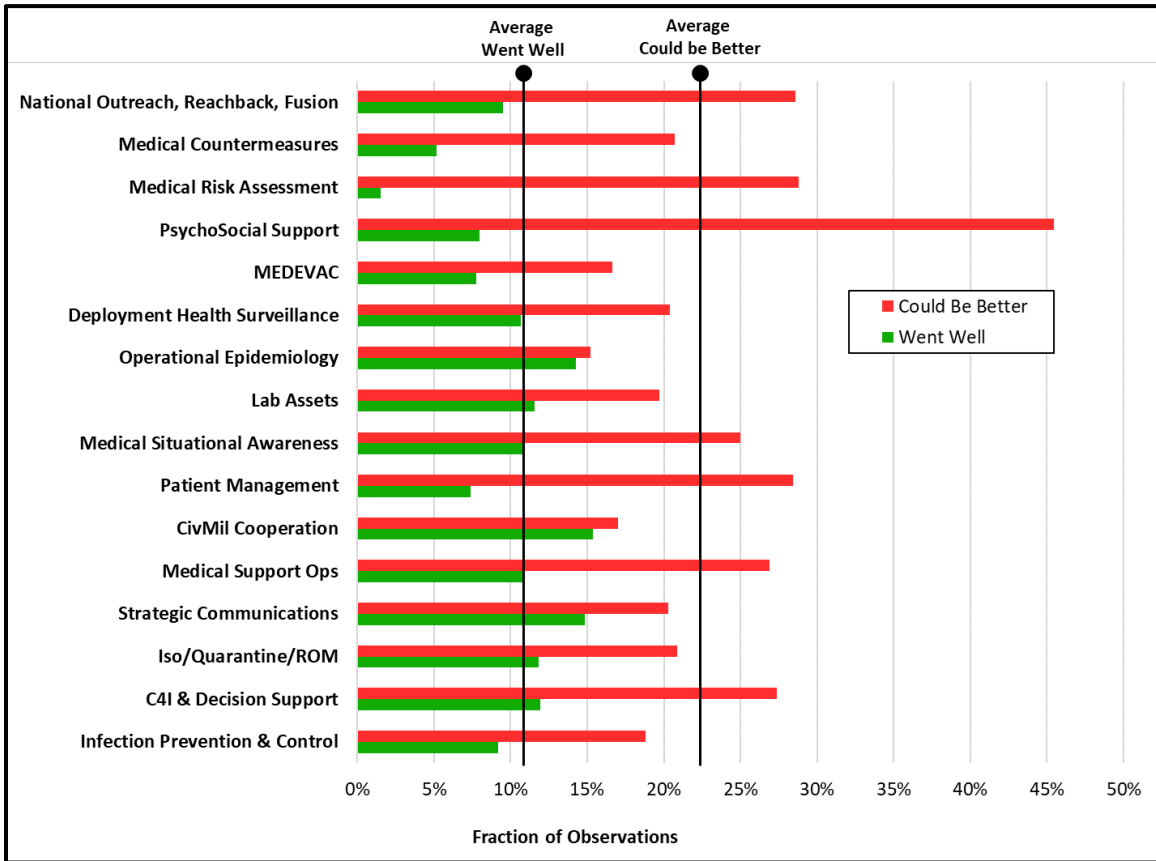
## 2. Sentiment

Figure 4 shows the fraction of observations in each task that the IDA team tagged as “Went Well” and “Could Be Better.” We added lines to the figure, intersecting the horizontal axis at the points equal to the average sentiment across all observations; this allows us to make comparisons between observations associated with specific tasks and the observation dataset as a whole. Since our reason for including sentiment was to identify potential best practices or particular challenges, we did not include the fraction of observations tagged as Neutral. In addition, for clarity of presentation, those tasks with very few observations (see Figure 3) have been omitted.

For those observations that did provide a non-Neutral sentiment, more than twice as many were tagged “Could Be Better” than were tagged “Went Well.” This finding is consistent with the IDA project team’s experience in collecting observations from field

<sup>46</sup> Note: since each observation can be tagged with multiple tasks, the number of observations associated with each task sum to a number far greater than the total number of observations.

exercises, where individuals are often more motivated to flag problems than things that are going well.<sup>47</sup>



**Figure 4. Fraction of Observations in Each Task Tagged as “Went Well” or “Could Be Better”**

From the top-down perspective of our directed content analysis, the fraction of “Went Well” and “Could Be Better” for most tasks does not stray far from the average. However, there were two observable outliers: first, a far greater proportion of observations related to Psychosocial Support were tagged as “Could Be Better” than for any other task; and second, almost no observations related to Medical Risk Assessment were tagged as “Went Well.” These two tasks seem to have been particularly challenging during the COVID pandemic.

<sup>47</sup> For example, in NATO Exercise Clean Care 2022, which met all of its exercise, training, and experimentation objectives, of the 156 observations collected during the exercise, 76% were tagged as “Could Be Better,” while only 16% were tagged as “Went Well.” *NATO Clean Care 2022 Final Exercise Report*, available from the authors or national representatives to the NATO CBRN Medical Training Panel.

Some tasks had higher rates of “Went Well” tags than others, including Strategic Communications and Civilian-Military (Civ-Mil) Cooperation—these tasks were also among those with the greatest number of associated observations, as shown in Figure 3. The combination of observation numbers and “Went Well” sentiment implies that the group of observations tagged with these two tasks could be a starting point for mining best practices.

In subsequent phases of our assessment, when we looked in detail at the text of the collected observations, we found several cases where the individual submitting the observation reported specific best practices they felt should be retained; these identified best practices have been incorporated into the Lessons Identified that we generated during the conventional content analysis portion of the project (see Chapter 5 and Appendix A).

### **3. NATO vs. U.S. Sources**

We collected 446 relevant observations from U.S. sources for this project and sought to identify any differences in trends and patterns between these U.S. observations and the 923 observations from NATO sources. Indeed, our metadata tagging revealed some interesting similarities and differences in these two sets of observations.

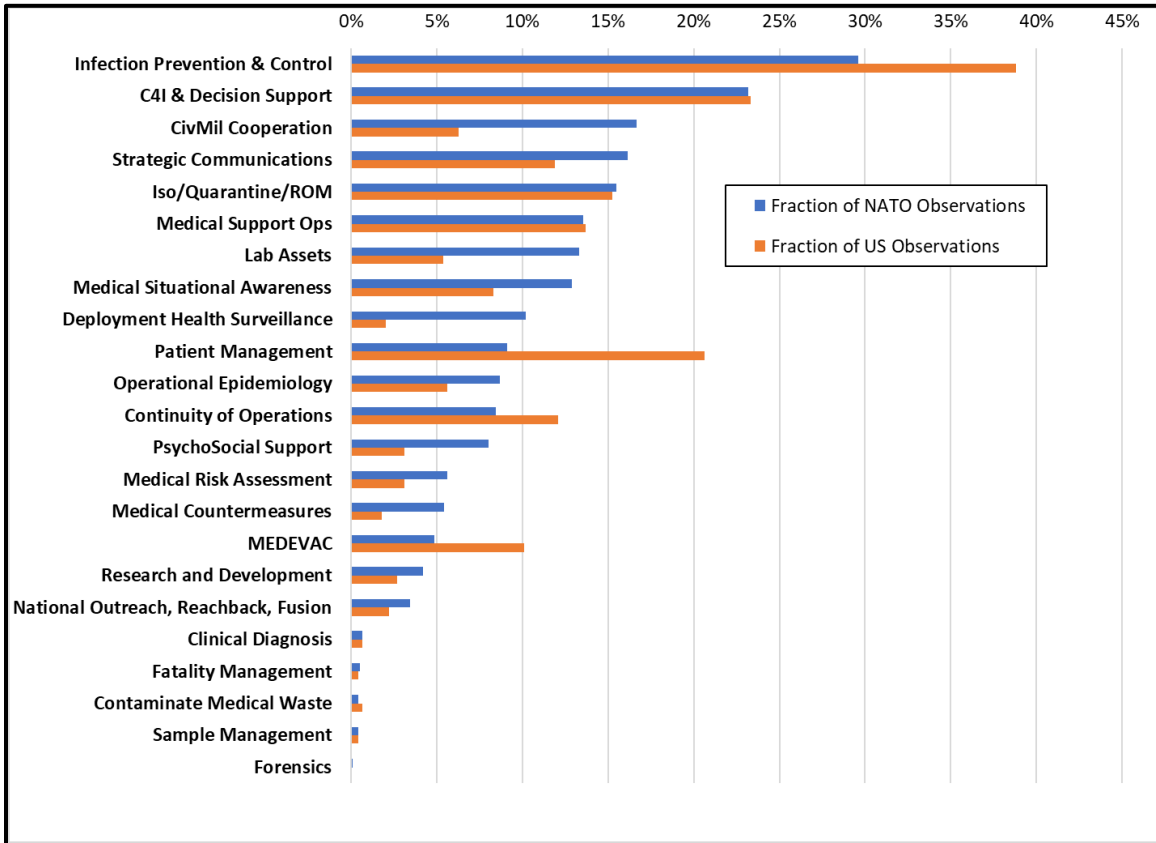
The biggest difference we observed between the two sets of observations was in the distribution of tags by operational levels (tactical, operational, strategic). U.S. observations were nearly twice as likely to be tagged as tactical level than were NATO observations. By contrast, NATO observations were almost three times as likely to be tagged as strategic.

Domain tags for U.S. observations were remarkably consistent with those from NATO. The only domain for which the fraction of tagged observations differed by more than 2% was Interoperability, although here the difference was substantial: 7% of U.S. observations were tagged with Interoperability, compared to 27% for NATO observations.

Finally, while the number of observations from U.S. sources was lower, we found the distribution of metadata tags by task quite similar. These broad similarities—and some specific differences—can be seen in Figure 5, which shows the percentage of observations tagged with a given task. Differences between U.S. and NATO observations noted by the project team were:

- While a higher fraction of U.S. observations were related to Infection Prevention and Control, in both datasets this task had by far the largest number of associated observations.
- The fraction of U.S. observations tagged as Patient Management or MEDEVAC was more than twice that of NATO observations. Since both of these are typically tactical-level tasks, these differences may be related to the greater fraction of U.S. observations tagged as tactical.

- For some tasks, the fraction of U.S. observations is much lower than that of NATO operations, including Civ-Mil Cooperation, Lab Assets, and Deployment Health Surveillance.



**Figure 5. Fraction of Observations Tagged by Task, U.S. vs. NATO Sources**

Based on this comparison, the IDA team concluded that combining the collected set of U.S. observations with those from NATO sources would result in a more comprehensive set of data—in particular, bolstering the tactical-level information—without skewing our results.

At the same time, the prevalence of strategic-level observations within the NATO dataset is important. Any U.S. efforts to support development of Alliance bio-responsiveness capabilities should be cognizant of NATO's greater focus on strategic-level issues, as well as interoperability.

#### 4. DOTMLPF-I Domain

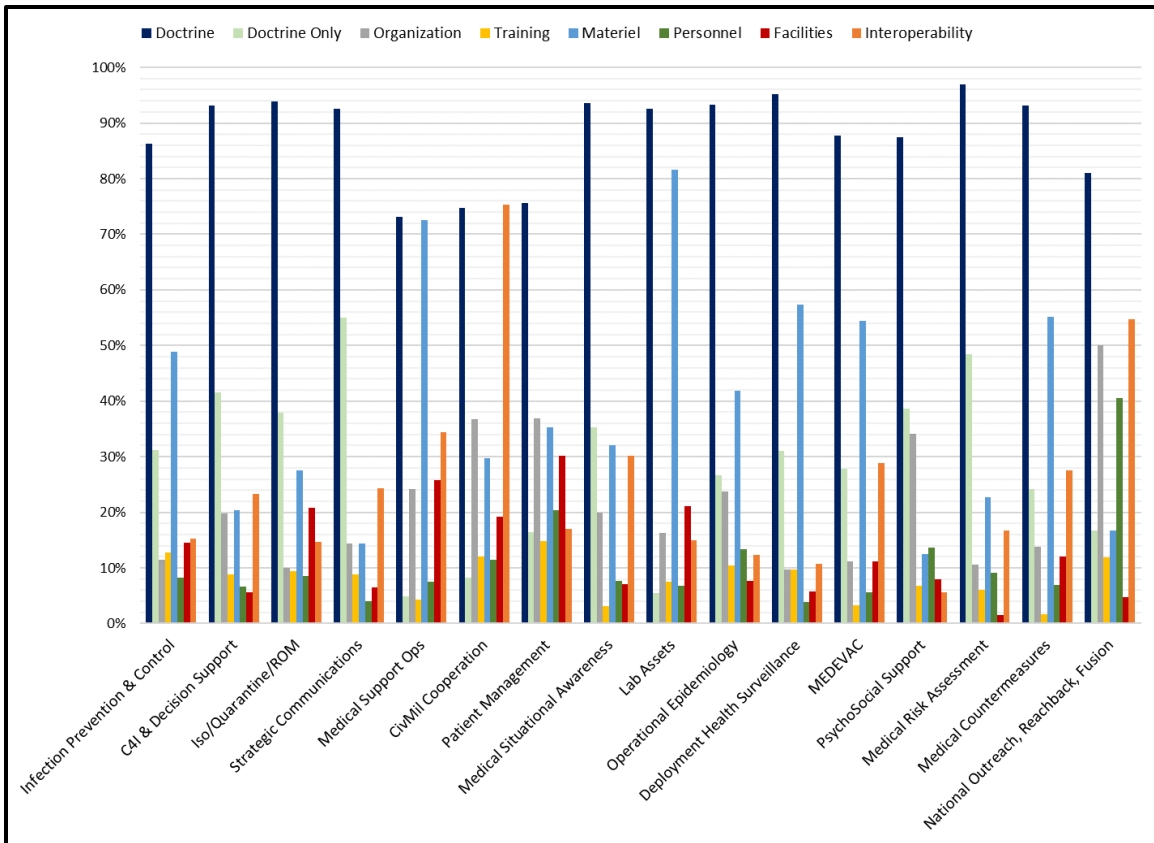
A number of different organizations within NATO have roles and responsibilities for bio-responsiveness capability development across the DOTMLPF-I domains and operational levels. Whether self-initiated or directed, any of these can serve as “Action

Bodies,” in Lessons Learned terminology, to conduct the actions needed to transition a Lesson Identified to a Lesson Learned. In addition to supporting the assignment of Lessons Identified to Action Bodies, directed content analysis can identify some prevailing themes and patterns in the domains and operational levels associated with specific tasks, and in the observation dataset as a whole.

Figure 6 shows the fraction of observations in each bio-responsiveness task that are tagged with various DOTMLPF-I domains, with three caveats.

First, the figure includes two bars for doctrine. The dark blue bar, simply labeled “Doctrine,” shows the fraction of observations for each task tagged as doctrine, in the same way as every other domain is depicted. Note that for every task, the great majority of observations—between 73% and 94%—are tagged as doctrine; within the observation dataset as a whole, over 85% of observations are tagged as doctrine. Since capability development typically includes a doctrinal component, the “Doctrine” tag does not add much information to the results. However, the IDA team was interested in identifying any observations with no domain tags *other* than “Doctrine,” to determine whether advancements in bio-responsiveness capability could be made solely through doctrine development. Therefore we added a light green bar, labeled as “Doctrine Only,” showing the fraction of observations for which “Doctrine” was the only domain tag applied.

Second, the figure excludes Leadership as a domain category. The formal definition of Leadership is both narrow and somewhat counterintuitive (see Table 5); as we rigorously adhered to this definition when assigning metadata tags, only thirty-two observations in the entire dataset were tagged with this domain. Third, the figure also excludes five tasks associated with fewer than ten observations each. In both cases, the intent is to reduce crowding in the figure and improve legibility.



**Figure 6. Fraction of Observations with Specific DOTMLPF-I Tags**

The information presented in Figure 6 can be used by NATO in a number of ways. As an entity, NATO places great emphasis on interoperability between its member Nations and therefore may choose to broadly focus bio-responsiveness capability developments in areas that have been identified as having particular interoperability challenges or in areas where they can build on best practices. Interoperability is the dominant domain in Civ-Mil Cooperation and, as noted earlier, this is a task where observations have been tagged as “Went Well” with relative frequency. Interoperability is also quite prevalent in Medical Support Operations and National Outreach, Reachback, and Fusion.

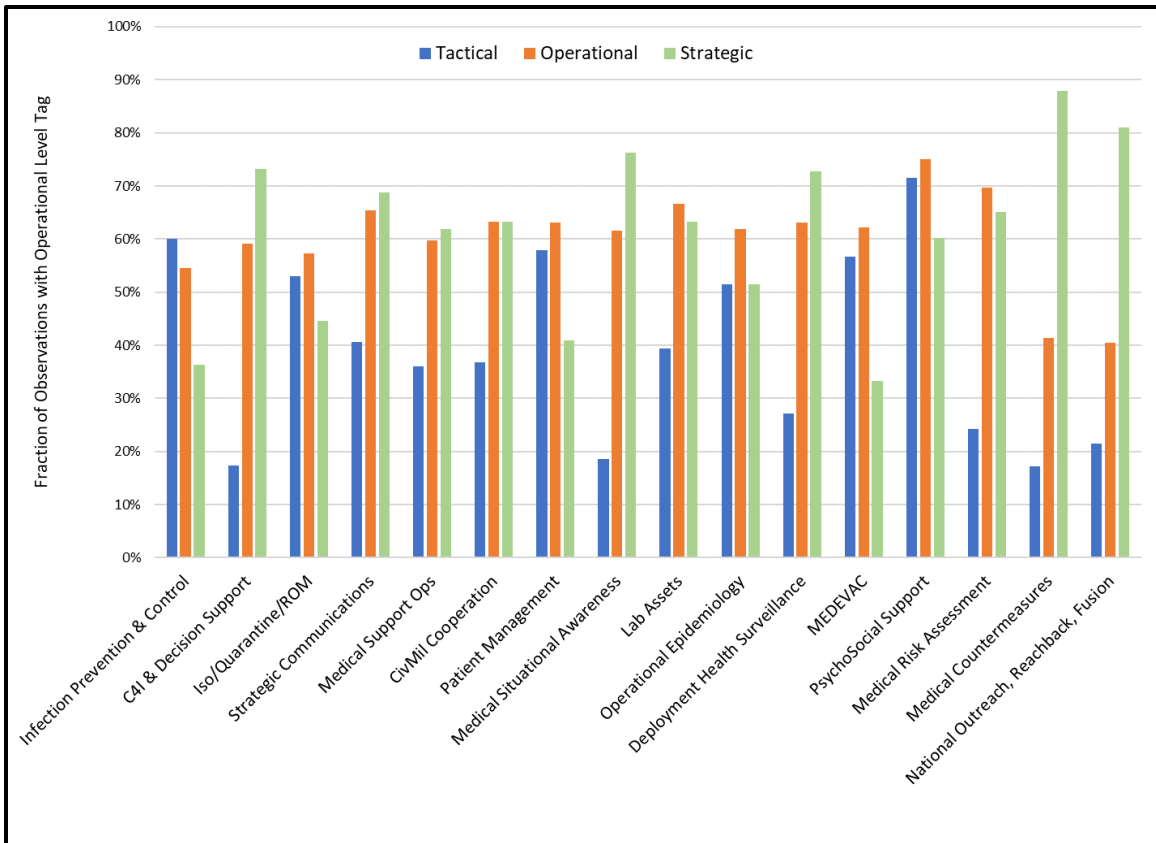
Because “Doctrine” dominates domain tags in the observation database, virtually any program of work to transition a Lesson Identified to a Lesson Learned will require support for doctrine development. However, as the addition of the light green “Doctrine Only” bar shows, NATO can make significant progress in bio-responsiveness capability development by focusing on tasks where observations tagged as doctrine alone comprise a large fraction. This is particularly true for Strategic Communications and C4I and Decision Support, where 55% and 42% of observations are tagged as doctrine alone in the domain category.

One major advantage of focusing on doctrine development is that it is a routine part of NATO business and can be conducted with little marginal cost using existing processes

by adding to the existing programs of work in various organizations. The same cannot be said for materiel development and acquisition programs, which may require NATO to request support from Allied nations to execute or which are largely the purview of individual Nations. It is useful for NATO to know that needed advances in Medical Countermeasures, Sustainment of Medical Support Operations, Laboratory Assets, and Infection Prevention and Control may be outside its immediate control and may require the collaboration and assistance of other entities to accomplish. However, even for tasks requiring investment of National resources, NATO can contribute to capability development through its multinational coordination mechanisms and by developing supporting doctrine for the use of these capabilities in a multinational environment.

## **5. Operational Level**

Finally, NATO is primarily a strategic organization, with operations at a tactical level remaining primarily a National responsibility, albeit one governed to some extent by NATO standards during Allied operations. In pursuing bio-responsiveness capability development, NATO may wish to focus primarily on those tasks with a preponderance of observations tagged as strategic. Figure 7, like Figure 6 above, shows the fraction of observations tagged by given operational level for each task, excluding those with fewer than ten observations.



**Figure 7. Fraction of Observations with Specific Operational Level Tags**

From this figure, the tasks with the most prevalent strategic-level observations are Medical Countermeasures (88%), National Outreach, Reachback, and Fusion (81%), Medical Situational Awareness (76%), and C4I and Decision Support (73%). These may be areas of bio-responsiveness capability for which NATO is strongly positioned to engage. Moreover, NATO efforts in some of these areas, particularly C4I and Decision Support, would be further encouraged by the preponderance of associated doctrine-only observations, as noted above and shown in Figure 6.



## 5. Conventional Content Analysis

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Directed content analysis can be seen as a top-down assessment approach, while conventional content analysis can be seen as a bottom-up approach. When combining them, as we did for this project, the IDA team needed to determine where these two approaches should meet. We ultimately decided to begin our conventional content analysis with observations that had been grouped solely based on their assigned bio-responsiveness task tag.

To conduct the conventional content analysis, each member of our team independently identified new metadata tags from the text of the observations, sorted the observations based on those tags, and collated them into a larger set of pooled observations. Our team then collectively analyzed and combined these pooled observations to generate a set of Lessons Identified.<sup>48</sup> Throughout this portion of the assessment, we ensured that the pooled observations and Lessons Identified could be traced back to the original observations used to develop them.

Finally, the IDA team selected a list of sixteen Lessons Identified that, in the collective judgment of our team, should be the highest priority for future bio-responsiveness work. For each of the Lessons Identified on this list, we have provided a summary of the contributing observations and the recommendations contained therein in Chapter 6. The directed content tags most frequently associated with the input observations are provided with the discussion of each priority Lesson Identified, to inform the next steps of the bio-responsiveness capability development process, including the assignment of the Lessons Identified to Action Bodies. The 153 Lessons Identified not included in the priority list are provided in Appendix A.

### A. Starting Point for Conventional Content Analysis

Our original intent was to use our directed content metadata tags to parse the observation dataset into discrete, complete, and non-overlapping groups. For example, we could sort observations to examine the group tagged with both Medical C4I and Doctrine. The more cohesive these groups of observations, we believed, the more straightforward and less subjective our conventional content analysis would be.

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<sup>48</sup> Note that the outputs of this work should be considered “candidate” Lessons Identified, as they will not become formal Lessons Identified until endorsed by authoritative NATO bodies.

We tested multiple winnowing strategies, in the hope of finding an approach that could be consistently applied to generate our desired outputs. However, in all of our strategies the winnowing process was associated with such a significant loss of information at each step that, by the end, the results seemed almost like observations selected at random, with minimal common content. It appeared to us that the quantity of observations, the diversity of topics, and to some extent the quality of the observations did not allow us to sort the data into discrete groupings of similar content based on multiple metadata categories. The vast majority of observations had multiple tags in each category, so that attempts to group observations based on a single task, phase, domain, operational level, and sentiment meant that we would miss much of the related content needed to generate a comprehensive picture of the problem.

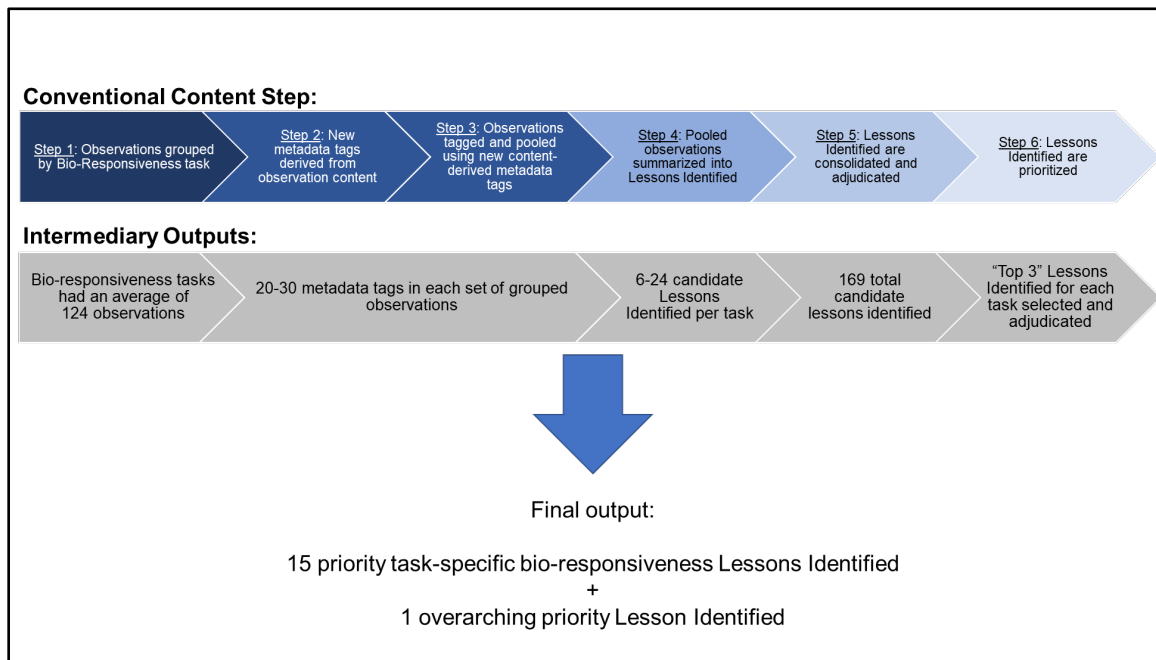
Ultimately, we decided to begin the conventional content analysis with observations grouped by bio-responsiveness task, with no attempt to further parse the observations therein. First, this metadata category had the largest number of tags, and each of these had clear definitions with minimal overlap; when observations were assigned multiple tags, it was typically because that observation contained separate but related topics that could be considered independently. Second, because the task definitions are substantively discrete, the metadata generated through conventional content analysis of observations grouped by task will vary by task, leading to a more diverse set of unique observations with little overlap between tasks.

The number of observations associated with each bio-responsiveness task was often large—the largest had over 400—and often addressed many different issues and problems. This meant that conventional content analysis, which derives metadata tags from the dataset without reference to an external structure, was more critical to the generation of Lessons Identified than it would have been if our attempts to winnow the observations into more discrete groups had been more successful. Yet when grouped by task, all of the observations were related to some extent and we felt that each set would provide a fairly comprehensive picture of the problems and issues related to its parent task.

## **B. Generating Lessons Identified**

Once the inputs to the conventional content analysis were identified, IDA analysts reviewed each task-based grouping of observations and independently identified topics or themes contained within. These topics and themes, derived from the substantive content of the observations, were then subsequently used as task-specific, conventional content metadata tags. Each analyst then applied their own set of conventional content tags to each of the observations and summarized the content of the resulting groups into sets of pooled observations. The project team as a whole then collated these sets of pooled observations into an agreed set of Lessons Identified.

An overview of the steps in and intermediary outputs of the conventional content analysis is shown in Figure 8.



**Figure 8. Conventional Content Analysis Overview**

An example of these steps and outputs is provided below for illustrative purposes. This example shows how the IDA team generated one of several Lessons Identified from the observations associated with the bio-responsiveness task Isolation, Quarantine, and Restriction of Movement (ROM).

**1. Step 1: Observations are grouped by task (Isolation, Quarantine, and ROM), and Step 2: New metadata tags are derived from observation content**

There were 211 observations tagged with the task Isolation, Quarantine, and ROM. Two analysts reviewed these observations and independently derived the following metadata tags based on their content shown in Table 6:

**Table 6. Example List of Metadata Tags Derived for “Isolation, Quarantine, and ROM”**

Analyst 1	Analyst 2
measure-induced stress	enforcement of ROM
population mixing	essential personnel
in-person required	exceptions to ROM
planning and execution	installation ROM
MEDEVAC	isolation practices
easing restrictions	pre-event quarantine
impact on healthcare access	designation of personnel for quarantine
travel restrictions and mitigation	administration of quarantine
isolation	social distancing
quarantine	strategic ROM: lockdowns
ROM	stress caused by ROM
coordination and enforcement	unit ROM

## 2. Step 3: Observations are tagged and pooled using new content-derived metadata tags

Using their content-derived metadata tags, each of these analysts sorted the Isolation, Quarantine, and ROM observations into smaller groups, or pooled observations. One example group of pooled observations from each analyst is provided here, with the text of the observations taken directly from the dataset.

### a. Observations tagged as “isolation” and “quarantine” from Analyst 1

- Best pre-vaccine solution is to have enough testing to catch all cases, isolate them to track contacts.
- For Ship's crews Live Virtual Constructive Training can mitigate the effects of a pandemic on training in preparing for a NATO deployment or maintaining the readiness status.
- Other safety measures could include: self-quarantine for those from red zones, assistance for international NSPCoE [NATO Security Policing Centre of Excellence] members, office disinfection, dedicated COVID banner on webpage.
- “Continued quarantine and uncertainty about the global and personal development of the crisis have a strong mental impact on the population. This fact already has manifesting itself in deviations from the normal behavior of certain individuals.”

- South Korean patients with mild symptoms stay at home and receive financial compensation based on their income as a package of vital products (food, soap, etc.).
- On March 18, 2020, Polish MOD “Territorial Defense Forces started 24/7 special phone line for psychological help for people under quarantine.”
- “Isolation puts people’s mental health at risk, cases of domestic violence are increasing, education and the prospects of millions of young people are being affected.”
- “In spite of the high discipline of society, it seems that there are people who underestimate the danger and violate the introduced quarantine rules.”
- Cases that are treated at home are more difficult to track than those that are hospitalized.
- “There is a social sense of invisible threat in community. The prolonged quarantine and uncertainty about the global and personal development of the crisis have a strong mental impact.”
- In Denmark: “intensified focus on preventing infection chains. Expanding the testing strategy to include people with mild symptoms of COVID-19 as well as people without symptoms but at high risk of infection, clarification of requirements for COVID-19 self-isolation, including assistance to citizens who are unable to isolate themselves in their own homes.”
- In Finland: “no new patients are admitted to the wards where infections have been detected and that everyone exposed to the virus has been placed into quarantine.”
- In Hungary: “plans to concentrate COVID-19 patients in only a few hospitals.”
- To maintain a reduced level of transmission, need a “framework for contact tracing, based on extensive testing, active case finding, early detection of cases, isolation of cases, quarantine and follow-up of contacts, possibly supported by electronic tools and applications.”
- In South Korea: “most of the imported cases are being found during the screening or the quarantine process.”
- “Measures include screening tests, and quarantine measures applied to individuals showing any symptoms or declaring that they have been in contact with potential sources like elderly people and at-risk personnel.”
- “Units identified and trained “trace teams” to work immediately after “presumptive positive” or positive COVID-19 cases. This training ensured familiarity with techniques for asking questions, tracing interactions

within/outside the cohort, and working with medical teams to isolate those most at risk. these teams regularly rehearsed the actions required, allowing them to react rapidly. while trace teams consumed limited human resources and could delay operations, they mitigated risk.”

- “Mobile applications help to monitor home quarantine by avoiding direct contact with potentially infected individuals.”
- “It was also necessary to support local authorities in providing assistance the supply of food and medicine to persons infected with the virus, those in quarantine, as well as the elderly and lonely.”
- Experience in the U.S. “acquired is used to create modular temporary hospitals, in which, apart from ICU [Intensive Care Unit] beds, a social and decontamination area has been prepared.”
- “Units worked with local authorities to pre-screen calls to minimize First Responder exposure to potential COVID-19 infected personnel.”
- “The team identified all the contaminated material and personnel and would coordinate with an established team for decontamination and/or quarantine.”
- “Consolidate quarantine/isolation plan and HPCON [Health Protection Condition] guidance across all USAF [United States Air Force] installations. Distill for common points/best practices and integrate into installation planning.”
- “The 31st Fighter Wing provided a food delivery program in order to ensure that Airmen who did not have transportation or had families that were quarantined and could not leave the house, had a means of obtaining food.”
- “Identified as single Soldiers who lived off post who would have logistical restraints of obtaining essential goods such as food. An alternative location was identified for those Soldiers who... needed additional logistics support.”
- Expand isolation capacity and create quarantine facilities.
- Prior to quarantine, facilities will need to be inspected for any deficiencies (no hot water or functional HVAC) and fixed.
- “While both COVID-19 positive and PUIs [patients under investigation] require isolation, it is important not to mix them to prevent the spread of COVID-19 to a non-infected PUI.”
- “Quarantine is a unit responsibility, though medical experts have much to offer in advisement and assistance for quarantine planning, tracking, and execution.”

- Any healthcare worker who develops fever or symptoms consistent with COVID-19 should immediately self-isolate and contact their established point of contact for testing.
- Consider “firewall quarantine” for certain mission critical healthcare units, personnel, and functions that are incapable of quarantining away from work for 14 days: firewall quarantine is a self-sustaining group of individuals exposed to COVID-19 that must continue to work to sustain mission-critical capabilities.
- Guidance provided on when patients can be discharged following isolation or quarantine.
- “If cohort quarantine is undertaken, it is imperative to test all close contacts regardless of symptoms before group quarantine. A single asymptomatic COVID-19+ individual can spread the virus across an entire cohort. It also establishes the boundary of the COVID-19 spread.”
- “It is crucial to identify a team leader when coordinating contact tracing, testing, placement of individuals in appropriate quarantine or isolation facilities, and meals.”
- “Quarantine tents should ideally be spaced appropriately and contain ten or fewer people per tent.”
- “Procure individual rooms for quarantined close contacts whenever possible.”
- “Train each unit on contact tracing, proper quarantine procedures, and support for personnel in quarantine and isolation.”
- “24/7 communication between COVID-19 isolation berthing and the role of care is mandatory as patients may develop worsening symptoms.”
- “Design ISOFAC [Isolation Facilities] policies and areas to allow maximum autonomy and self-management by the ISOFAC occupants and their units, including cleaning, food delivery, and transport.”
- “A designated “dead drop” area allows unit representatives to deliver food and supplies while avoiding inadvertent interactions with COVID positive patients.”
- “Quarantine is a unit responsibility, though medical has much to offer in advisement and assistance for quarantine planning, tracking, and execution.”
- “Establishing a base quarantine camp required strong partnerships between medical, BOS-I, BDOC, and base leadership.”
- “Designating one or two days per week to start travel quarantine cohorts helps reduce limited quarantine resources and streamlines throughput.”

- “Base camps require daily walkthroughs from a Camp Mayor to mitigate current or future concerns.”
- “Daily vital sign checks for quarantined personnel increases the risk of close contact exposure with little benefit.”
- “Patients with known or suspected COVID-19 symptoms should be kept separate from other patients and medical staff throughout their medical care, to include triage, resuscitation, and inpatient stay.”
- “A standalone five-bed COVID ward/ICU and a separate COVID resuscitation facility allows COVID-19 patients to receive the same level of care as they would in the primary facility while protecting other patients, medical providers, and staff.”
- “Common OTC [over-the-counter] “go-bags” were supplied to patients in ISOFACs, preventing the need for a medical visit whenever an individual requested symptomatic treatment.”
- “Separate COVID-19 facilities from normal daily operations.”
- “Consider keeping operational areas “clean” by swabbing patients outside. If not possible, at least separate from the main facility to decrease exposure in close quarters.”
- “The need for early identification of quarantine and isolation facilities is a reoccurring theme. However, each installation has different available infrastructure, therefore, solutions varied across the force. Fort Jackson designated four relocatable buildings (RLBs) as quarantine and isolation facilities. The RLBs were conveniently located in proximity to a dining facility and medical assets. Other installations, such as Fort Leavenworth, contracted 64 rooms at the local privatized Army lodging. Each solution proved effective, but with a substantially different cost.”
- “The disease presents multiple complex issues to include the ethical challenges of providing healthcare in a resource-limited environment (lack of personal protective equipment, ventilators, and medications) and balancing the control of the disease spread with the economic impact of quarantines.”
- “For those personnel assigned to critical nuclear deterrence capabilities, I would advise the adoption of a deployment schedule similar to that used in combat operations. Missileers, nuclear submarine personnel, strategic bomber crews, and other critical personnel could be quarantined for two weeks and then begin a one month “deployment” to their duty locations with limited to no contact with the outside world. I would advise the use of telecommunication and mental health resources to limit the impact upon the individuals and their families.”



- “As coronavirus testing capabilities become available, I would advise line leadership on the inherent limitations of said testing (limited accuracy) and the need for retesting. I would advocate for the use of triaged testing, with those assigned to the nuclear deterrence being tested first, followed by those preparing to deploy, those returning from deployment, and those arriving at a new permanent duty station. In the event an individual tests positive, I would advise they be immediately quarantined until they are no longer infectious to prevent further spread to other personnel.”

**b. Observations tagged as “designation of personnel for quarantine” by Analyst 2**

- Czechs developed a “smart quarantine” app for contact tracing with high degree of success.
- “Due to the absence of procedures, politics or standards the measures taken to reduce the risk of infection were put into practice way long after the identification of official “RED ZONES.”
- Other safety measures could include: self-quarantine for those from red zones, assistance for international NSPCoE members, office disinfection, dedicated COVID banner on webpage.
- The Japan model includes a cluster-based approach “derived from a hypothesis obtained from an epidemiological study based on Chinese data and conducted on the Diamond Princess cruise ship... it posits that the explosive increase in infected persons is a result of the high transmissibility of certain infected individuals, which forms a cluster. Infected individuals with even higher transmissibility appear from those clusters to form more clusters... based on this hypothesis, each cluster is tracked to the original infection source and persons with high transmissibility are isolated to prevent the spread of infection. For this reason, pinpoint testing is carried out and broad testing of the population is not required, in contrast to the approaches taken in other countries”
- In Finland: “no new patients are admitted to the wards where infections have been detected and that everyone exposed to the virus has been placed into quarantine.”
- “If cohort quarantine is undertaken, it is imperative to test all close contacts regardless of symptoms before group quarantine. A single asymptomatic COVID-19+ individual can spread the virus across an entire cohort. It also establishes the boundary of the COVID-19 spread.”

- “In the event of isolated outbreaks, case contact investigators are useful in identifying those at increased risk of infection and placing them in quarantine in an effort to halt the spread of disease.”
- “No need for quarantine if all PPE measures have been undertaken.”

### 3. **Step 4: Pooled observations are summarized into Lessons Identified**

From the pooled observations listed above, each analyst derived a proposed Lesson Identified from the overall content therein:

- **Analyst 1:** Contact tracing is an important follow-up procedure to a positive test, along with isolation. Rapid identification of contacts can help isolation be more efficient and minimize broader impacts of generalized quarantine, which can have negative mental health effects such as increased depression and domestic violence. Consider implementing support measures such as help lines, food and supply delivery programs.
- **Analyst 2:** Among the biggest challenges of quarantine is determining who has been exposed to disease and therefore should be subject to quarantine. Because quarantine can be onerous, it is desirable to limit quarantine to as few individuals as possible; however, this requires accuracy in identifying those at risk. The traditional approach, implemented early in the pandemic, is based on contact tracing—identification of individuals who have been in contact with a person known to be contagious, since the onset of their contagious period. This approach can be very effective but is also very labor intensive; once outbreaks of COVID-19 spread beyond small populations or locations, contact tracing efforts quickly became overwhelmed. Some nations sought to expand the capacity of their contact tracing capabilities through the widespread use of volunteers or even reserve military personnel, or through electronic means such as “smart quarantine” apps; these efforts were similarly successful as long as the outbreak remained relatively contained. Eventually, however, as the pandemic progressed, nations that implemented quarantine of population ultimately chose more broad-brush approaches, such as identifying “red zones” where disease was prevalent and promoting self-quarantine and isolation of individuals living in those areas.

### 4. **Step 5: Lessons Identified are consolidated and adjudicated**

As with all individually generated Lessons Identified, the IDA team as a group reviewed the two Lessons Identified provided above and combined them into the following consensus Lesson Identified:

- Observation:** Among the biggest challenges of quarantine is determining who has been exposed to disease and therefore should be subject to quarantine. Because quarantine can be onerous, it is desirable to limit quarantine to as few individuals as possible; however, this requires accuracy in identifying those at risk. The traditional approach, implemented early in the pandemic, is based on contact tracing—identification of individuals who have been in contact with a person who has tested positive or is otherwise known to be contagious. Rapid identification of contacts can help make isolation more efficient and minimize broader impacts of generalized quarantine. Contact tracing can be very effective but is also very labor intensive; once outbreaks of COVID-19 spread beyond small populations or locations, contact tracing efforts quickly became overwhelmed. Some nations sought to expand the capacity of their contact tracing capabilities through the widespread use of volunteers, or even reserve military personnel, or through electronic means such as “smart quarantine” apps; these efforts were similarly successful as long as the outbreak remained relatively contained. Eventually, however, as the pandemic progressed, nations that implemented quarantine of population ultimately chose more broad-brush approaches, such as identifying “red zones” where disease was prevalent and promoting self-quarantine and isolation of individuals living in those areas.
- Recommendation:** Using traditional contact tracing methods while outbreaks are limited in scope is an efficient way to optimize resources while reducing disease spread. However, as outbreaks grow and traditional contact tracing is overwhelmed, it should be supplemented with electronic tracing applications. When the size of an outbreak exceeds the effectiveness of using contact tracing to trigger quarantine, it may be necessary to implement quarantine on a grosser scale, such as locking high-risk population areas.

### C. Selection of Priority Lessons Identified

Our conventional content analysis generated in 169 Lessons Identified, a number that might be manageable for further analysis but which did not meet the sponsor and NATO request that IDA propose a small list of Lessons Identified to serve as a starting point for further work. To meet this request, the IDA team assessed our set of Lessons Identified a final time, using group consolidation and adjudication of individual analyst voting to produce a final list of priority Lessons Identified, based on our consensus view of their relative importance. We conducted this prioritization in the following manner:

- Each IDA team member ranked their first, second, and third choices among the Lessons Identified for each bio-responsiveness task.
- Any Lesson Identified unanimously selected by all analysts as either a first or second choice for a given task was automatically included in the final list.

- Lessons Identified that were selected by all analysts as a third choice, and those Lessons Identified that received multiple first and second choice votes, were discussed by the team and included in the final list if group consensus was reached.

We purposely did not constrain the voting done by each analyst by predetermined criteria. Voting is a subjective act, and by this point in the project, each project team member could be considered to have valid expert opinions to support their subjective selection of Lessons Identified. All members of the project team were intimately familiar with the observation database, had extensively considered and discussed it with their colleagues, and were capable of developing their own criteria for judging which Lessons Identified were most critical. Ultimately, however, the criteria by which various analysts prioritized Lessons Identified proved quite consistent, including things like the number of associated observations, the perceived significance of the problem, and the extent to which a given Lesson Identified fell within the purview of NATO.

Our initial goal was to generate ten discrete priority Lessons Identified. However, we quickly realized that our voting rules would not automatically result in such a small number, and there were cases where a given task generated more than one Lesson Identified that ranked quite high in our voting. To accommodate this result, we did not limit ourselves to ten Lessons Identified only, and following the previously described adjudication rules ultimately resulted in a final list of sixteen priority Lessons Identified.

We also discovered that the need to improve pandemic planning and preparation appeared as a Lesson Identified, different in detail but common in concept, across multiple tasks where it was typically ranked as a priority Lesson Identified by members of the analysis team. We therefore decided to consider this an overarching priority Lesson Identified.

These fifteen task-specific Lessons Identified and one overarching Lesson Identified are presented in greater detail in Chapter 6. The remaining 153 Lessons Identified generated through the combination of directed and conventional content analysis are provided in Appendix A.

At the outset of this paper, we noted that, despite our efforts to limit bias in our results by assessing these observations through a combination of individual and collective activities, there is an inherent risk of bias in this sort of subjective analysis. This risk was compounded in this case because of the common background shared by the researchers, and by the deep familiarity with the substance of the observations they gained over the course of the project. We also noted that other groups with different backgrounds, knowledge, and experience may reach different conclusions. In particular, individuals outside of the project team—and therefore without any substantial knowledge of the underlying dataset of observations—who endeavor to select a set of priority Lessons

Identified would likely benefit from a more formal approach to prioritization that did not rely on consensus-building among the project team.<sup>49</sup>

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<sup>49</sup> For example, the NATO Biodefence Medical Panel, the primary organization participating in SD 1.1045 and an intended audience for this project, has undertaken an independent effort at prioritizing our Lessons Identified to supplement that conducted by the IDA team. The Biodefence Medical Panel is using a prioritization matrix, comparing the achievability of transitioning a Lesson Identified to a Lesson Learned with the impact of doing so on NATO bio-responsiveness capability.

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## **6. Priority Lessons Identified**

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The project team generated a total of 169 Lessons Identified from our collection of 2,030 observations. From these, we chose one overarching candidate Lesson Identified and selected an additional fifteen task-specific candidate Lessons Identified for inclusion in the set of Lessons Identified we recommend NATO initially focus on when developing a bio-responsiveness program of work. Beyond including them in our prioritized set of Lessons Identified, we did not rank them further. As presented in this chapter, these Lessons Identified include a summary of contributing observations and a consolidated list of recommendations contained therein, as restated by the IDA team. In addition, each candidate Lesson Identified discussion concludes with a table of associated metadata collated from the group of observations from which it is derived.

### **A. Overarching Lesson Identified: Pandemic Response Planning Needs Improvement**

#### **1. Observation**

NATO and its member Nations broadly found that their existing pandemic and infectious disease plans were outdated and insufficient for managing COVID-19 response and operating in a COVID-19 environment. Pandemic plans only work when they are established, implemented, and regularly trained to reduce and mitigate risky behaviors that may spread disease. There was broad consensus that commanders and staffs at all levels were not trained to respond to the COVID-19 pandemic and units were not trained to sustain operations in a pandemic environment.

There are discrepancies in, or a lack of, pandemic plans and force health protection policy and guidance between countries. Without clear and agreed-upon guidance, it can be harder to enforce mitigation measures or interact globally, which can impact readiness. A plan should be put in place and clearly communicated so personnel understand potentially complicated procedures, like when to isolate or what to do if you test positive. These policies may impact things like shift work, training of augmentees, ROM before/after deployment, and whether deployed patients should remain in theatre or be flown home.

#### **2. Recommendation**

Pandemic response plans must be routinely updated and exercised and considered in the same way as other crisis response contingency plans. These plans should therefore

include a continuity-of-operations plan and an emergency-communications plan, as well as plans for establishing organizational structures—such as a dedicated task force—to serve as the focal point for information management and collaboration. They should also identify which personnel, events, functions, and training are critical and must be prioritized during a pandemic. In specific instances, Commands were able to plan and successfully conduct operations or exercises with few if any disease cases; best practices from these efforts can inform revised pandemic plans.

The scope and frequency of pandemic exercises at all levels should be increased to build familiarization and operational competence; among other things, these exercises should focus on integration of medical considerations, capabilities, communications, and reporting, particularly those aspects that were critical during the pandemic but not typically standard. NATO Joint Force Command-level exercises should also include Civ-Mil cross-training, to make future cooperation more effective, facilitate sharing of information, and establish rapport between leaders. Units must rehearse pandemic response plans and train in realistic pandemic environments to minimize impacts on training and operations. Such training should also incorporate medical and CBRN elements, as well as training of communications and non-standard reporting. Since pandemic response plans should include guidance on the conduct of training during a crisis, units should prioritize their training objectives and determine which events must be conducted in-person. Creative solutions to training during a pandemic, such as virtual training events and virtual reality (VR), may be helpful to consider when in-person events are not possible.

These plans should include decontamination protocols/cleaning schedules, review and maintenance of stockpiled personal protective equipment (PPE)/medicine/equipment, contact tracing protocols, quarantine and isolation protocols, access restrictions, when and how to use PPE, contaminated waste disposal procedures, mortuary affairs, mental health support, increased ventilation, and instructional signage. Plans should also account for various types of infectious diseases; identify the number of hospital beds, PPE equipment, and cleaning materiel required; address and pre-plan for any regulatory documentation or exceptions that may be required; and include restriction-easing thresholds based on scientific evidence (e.g., case number, health care capacity, and similar.)

**Table 7. Metadata Associated with the Overarching LI**

<b>Number of Observations</b>	<b>Top 3 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
72	Doctrine	10% Went Well	26% tactical
	Training	35% Could Be Better	64% operational
	Interoperability		61% strategic



## B. Lesson Identified #1: Leadership Needs Guidance on Lifting Outbreak Control Measures

### 1. Observation

Throughout the pandemic, leaders struggled to establish criteria for the lifting of outbreak control measures, particularly as the economic, political, and psycho-social consequences of more restrictive measures began to manifest. Proper timing is necessary, as restrictions were typically lifted too early and frequent cycles of tightening and loosening restrictions are ineffective. The widespread availability of testing was critically important to successful lifting of controls as it enabled the response to focus on those who tested positive versus the population at large. Ultimately, the development of prevention/treatment for the most severe cases reduced the costs of the outbreak and the risks associated with lifting restrictions.

### 2. Recommendation

Criteria for relaxation of controls should be based on epidemiological data, such as sustained reductions in new cases and hospitalizations, sufficient health system capacity, including equipment and pharmaceuticals, and the existence of appropriate monitoring capacity to detect local surges of cases. Plans for easing restrictions should be clearly supported and communicated to the population; decisions to ease restrictions can be complete or partial and include phased re-opening of specific categories, such as schools, commercial activities, social activities, and mass gatherings.

**Table 8. Metadata Associated with LI #1**

Bio-Responsiveness Task	Number of Observations	Top 2 DOTMLPF-I Domains	Sentiment	Operational Level
Medical C4I & Decision Support	30	Doctrine Materiel	3% Went Well 17% Could Be Better	10% tactical 63% operational 90% strategic

## C. Lesson Identified #2: During Periods of Uncertainty, Adopting Pandemic Response Measures Early is Recommended as Compared to a “Wait-and-See” Approach

### 1. Observation

Military leaders needed to make organizational and operational decisions in the pandemic environment—before much was known about COVID-19—without a clear

strategy or message from political leaders and in the face of limited, incomplete, or unreliable information. While much can be done to improve outbreak-related data collection in preparation for the next pandemic, there will always be uncertainty during the early phases. In these circumstances, the lessons of COVID-19 and earlier pandemics suggest that erring on the side of caution and adopting response measures early will lead to better outcomes than a wait-and-see approach. In addition, information gleaned during previous pandemics may be useful, but it must be kept in mind that each disease will likely behave differently, and information on disease specifics may not be available immediately.

## 2. Recommendation

The lessons of COVID-19 and prior pandemics suggest that erring on the side of caution and adopting response measures early will lead to better outcomes than a wait-and-see approach. Creating plans for different disease characteristics (e.g., fast vs. slow-moving) ahead of time could also be helpful for decision making. At the same time, leaders should deliberately consider and communicate their tolerance for risk when evaluating control measures and courses of action. Decision-makers should consider and communicate their risk tolerance when evaluating control measures and courses of action.

**Table 9. Metadata Associated with LI #2**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 3 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Medical C4I & Decision Support	8	Doctrine Leadership	13% Went Well 37% Could Be Better	25% tactical 63% operational 88% strategic

## D. Lesson Identified #3: Physical Distancing and Telemedicine can Reduce Disease Spread While Caring for Patients, but Information Technology (IT) Needs Must Be Considered

### 1. Observation

Medical care should be continuous but allow for protections for the healthcare providers and patients. Physical distancing, such as minimizing the number of staff the patient comes into contact with and swabbing patients in a separate/easily cleanable area, is a key tool at reducing spread and avoiding hospital burden. Increasing telemedicine capability can help minimize healthcare worker exposures, reduce the use of PPE, allow for continued care of non-urgent or uninfected patients, and conserve medical treatment facility (MTF) capability and capacity. However, network and IT infrastructure burdens of telemedicine must be considered.

## 2. Recommendation

Increasing or maintaining telemedicine capability before future outbreak events would be beneficial for both patients and healthcare workers; however, IT and network resources must be sufficient to handle a surge in use due to telemedicine. Medical facilities should clearly outline the appropriate Infection Prevention and Control measures, such as physical distancing, that must be taken to reduce disease spread in healthcare settings during future pandemics.

**Table 10. Metadata Associated with LI #3**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Infection Prevention and Control	25	Doctrine Materiel	4% Went Well 8% Could Be Better	52% tactical 60% operational 12% strategic

## E. Lesson Identified #4: Traditional Means of Identifying Individuals for Quarantine Can Be Rapidly Overwhelmed; Broader Approaches Become Necessary as Outbreaks Spread

### 1. Observation

Among the biggest challenges of quarantine is determining who has been exposed to disease and therefore should be subject to quarantine. Because quarantine can be onerous, it is desirable to limit quarantine to as few individuals as possible; however, this requires accuracy in identifying those at risk. The traditional approach, implemented early in the pandemic, is based on contact tracing—identification of individuals who have been in contact with a person who has tested positive or is otherwise known to be contagious. Rapid identification of contacts can help make isolation more efficient and minimize broader impacts of generalized quarantine. Contact tracing can be very effective but is also very labor intensive; once outbreaks of COVID-19 spread beyond small populations or locations, contact tracing efforts quickly became overwhelmed. Some nations sought to expand the capacity of their contact tracing capabilities through the widespread use of volunteers, or even reserve military personnel, or through electronic means such as “smart quarantine” apps; these efforts were similarly successful as long as the outbreak remained contained. Eventually, however, as the pandemic progressed, nations that implemented quarantine of population ultimately chose more broad-brush approaches, such as identifying “red zones” where disease was prevalent and promoting self-quarantine and isolation of individuals living in those areas.

## 2. Recommendation

Using traditional contact tracing methods while outbreaks are limited in scope is an efficient way to optimize resources while reducing disease spread; traditional contact tracing methods could be supplemented with electronic tracing applications. When the size of an outbreak exceeds the ability to conduct contact tracing, identifying high-risk population areas for self-quarantine and isolation becomes valuable.

**Table 11. Metadata Associated with LI #4**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Isolation, Quarantine, and ROM	8	Doctrine Materiel	25% Went Well 12% Could Be Better	63% tactical 50% operational 38% strategic

## F. Lesson Identified #5: There is a Need for Development and Assessment of International Standards for Travel Restrictions and Movement Between Nations

### 1. Observation

Nearly all nations imposed restrictions on the entry of personnel from other nations, initially requiring that such personnel be placed in quarantine and ultimately requiring a varying combination of vaccination, testing, and quarantine. The lack of consistent entry requirements among nations proved confusing and difficult. Nations that closed their borders may have also hampered the flow of medical materiel between countries. For military forces, the movement of COVID-positive individuals out of theater to their home nation was complicated by national restrictions on overflight and requirements for the use of biosafety measures for planes landing and disembarking. No assessment has been conducted to determine which, if any, of these measures was effective in limiting the spread of disease. Travel restrictions were considered helpful in reducing disease spread, but some more than others: temperature checks and “immunity passports” are not reliable screening methods, but quarantining and testing before travel has been successful in preventing spread and identifying cases before they travel.

### 2. Recommendation

Establishing international standards for travel would clarify and streamline the process of international travel during a pandemic situation. Conducting a retrospective assessment could help determine which public health restrictions were the most valuable

during the COVID-19 pandemic, and planning to conduct similar assessments during future pandemics would be wise.

**Table 12. Metadata Associated with LI #5**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Isolation, Quarantine, and ROM	13	Doctrine Interoperability	0% Went Well 38% Could Be Better	33% tactical 83% operational 92% strategic

**G. Lesson Identified #6: Clear, Consistent, and Consolidated Information from Leadership may Decrease Confusion, Frustration, and Disinformation**

**1. Observation**

Too much information can lead to confusion, frustration, and the proliferation of disinformation. Amid the “infodemic” of pandemic-related communications, NATO, its member nations, and their military forces sought to promulgate clear, consistent, consolidated information from authoritative sources throughout their organizations and to their populations.

**2. Recommendation**

These strategic communications efforts were many and varied, but the best practices can be generally coalesced into a common strategy involving:

- Collaboration among subject matter experts in medical and technical fields, and the provision of consensus advice to leaders;
- Regular leadership consultation with subject matter experts;
- Routine use of public affairs expertise in planning, organizing, and executing public communications strategy; and
- Regular leadership presence in strategic communications, to include acting as the focal point for engaging with personnel and sharing information.

**Table 13. Metadata Associated with LI #6**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Strategic Communications	34	Doctrine Interoperability	18% Went Well 24% Could Be Better	32% tactical 65% operational 62% strategic

**H. Lesson Identified #7: Pandemic-Related Supply Chain Issues may be Reduced through Stockpiling, Other Logistical Actions, and Increased Funding**

**1. Observation**

During the pandemic, supplies of critical medical materiel were often insufficient to match patient care requirements. These materiel shortages were further exacerbated during the pandemic, as the supply chain was disrupted.

**2. Recommendation**

To reduce supply chain issues, logistics planners could (1) evaluate the balance between just-in-time logistics and stockpiling medical supplies (e.g., disinfectant and hand sanitizer, PPE and other consumables, over-the-counter medications, prescription medications, vaccines, ventilators); (2) diversify production facilities to increase resilience; (3) budget for surge pricing during an event; (4) develop plans/policies related to establishing, maintaining, inventorying, distributing, and resupplying medical stockpiles for everyday surge events; and/or (5) ensure that equipment is modern enough to interface with military health systems and civilian health systems (e.g., internet connectivity capable).

**Table 14. Metadata Associated with LI #7**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Medical Support Operations	57	Materiel Doctrine	5% Went Well 36% Could Be Better	45% tactical 46% operational 59% strategic

**I. Lesson Identified #8: Policy Development and Infrastructure Investments May Improve Transport of NATO Medical Materiel and Personnel**

**1. Observation**

Transportation of materiel (and sometimes medical personnel) during the pandemic was challenging for a variety of reasons. International border closings frustrated transport of medical equipment and supplies and storage requirements during transportation (e.g., cold chain storage) were difficult to maintain.

**2. Recommendation**

NATO should develop policy to allow flexibility of airlift capabilities, consolidate/coordinate national medical supply requirements across NATO, and/or provide military transport and logistics assets to civilian authorities. Additionally, NATO could invest in transportation infrastructure (e.g., cold chain transportation) or contactless delivery (e.g., drones) for medical supply delivery.

**Table 15. Metadata Associated with LI #8**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Medical Support Operations	39	Materiel Interoperability	16% Went Well 24% Could Be Better	26% tactical 66% operational 63% strategic

**J. Lesson Identified #9: Burden on Healthcare Systems with Pandemic-Related Patients May be Reduced by Improving and Increasing Medical Force Structure and Implementing Public Health Measures**

**1. Observation**

Overwhelming healthcare systems during a pandemic is a major issue; medical facilities need to have sufficient resources to handle a surge in patients while maintaining the ability to treat “normal” patient loads.

**2. Recommendation**

Potential improvements include building capacity for intensive care units prior to pandemics, repurposing/supplementing civilian hospitals with military hospitals and/or

personnel, providing advice to potential patients on when to seek care and when to manage symptoms at home, imposing restrictive public health measures quickly to reduce cases, constructing temporary hospitals, and changing military force structures to increase the ability to care for non-combat injuries or disease.

**Table 16. Metadata Associated with LI #9**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Patient Management	30	Doctrine Organization	10% Went Well 47% Could Be Better	37% tactical 50% operational 20% strategic

## **K. Lesson Identified #10: Augmenting Civilian Medical Systems with Military Medical Personnel was Generally Beneficial, but with Significant Civ-Mil Interoperability Challenges**

### **1. Observation**

The use of military medical personnel to augment civilian medical providers within the civilian health system was among the most beneficial aspects of military support to civilian authorities during the pandemic. However, among NATO member nations there is significant variation in the existing integration of military medical personnel within the civilian health structure. In some nations they are completely separate, in some there is complete integration, and in some it is somewhere in between. These differences have implications for both the opportunity to augment civilian health systems with personnel and in the availability of personnel for deployment during a pandemic.

### **2. Recommendation**

Administrative, ethical, and legal barriers, such as credentialing requirements, must be addressed in nations where they exist, to support short- or no-notice domestic support operations.

**Table 17. Metadata Associated with LI #10**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Military and Civilian Cooperation	8	Doctrine Personnel	0% Went Well 75% Could Be Better	25% tactical 25% operational 50% strategic



## **L. Lesson Identified #11: Permanent Civ-Mil Liaisons Should be Established, Exercised, and Utilized During Pandemic Situations**

### **1. Observation**

Military forces in all NATO member nations were engaged in COVID-19 response. This response was often hampered and delayed in the early phases of the pandemic by the lack of identified points of contact and liaison points between military and civilian authorities. Additionally, many aspects of military pandemic response were governed by national laws, regulations, and international agreements, including international flight regulations, collaborative trade agreements, oversight/regulation of military procurement, and development of medical equipment, testing, and countermeasures.

### **2. Recommendation**

Permanent Civ-Mil liaisons should be established to form lines of communication and appropriate standard operating procedures (SOPs) and directives, to avoid slow and inefficient responses, to ensure that efforts are synchronized, and to manage expectations regarding military support capability and capacity. Contact lists with subject matter experts, regulatory agencies, public health officials, Host Nation contacts, industry, medical facilities, and local communities should also be established pre-crisis. These experts should be included in pandemic planning and exercises to improve interoperability and determine shortcomings before a crisis. Military and civilian authorities should work together to resolve any potential administrative or legal issues in advance and to enable rapid contracting/procurement and regulatory relief when necessary in crises.

These liaison relationships and practices could be guided by a review of mechanisms put in place as the pandemic evolved and identification of best practices; for example, some nations found great benefit in having military liaison officers among the leaders of their COVID response organizations. Once established, liaison relationships and joint planning and execution of pandemic response should be regularly trained and exercised to establish rapport among civilian and military authorities and to make future cooperation more effective. Military leadership courses should also include training on support to civil authorities and civilian crisis response.

**Table 18. Metadata Associated with LI #11**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Military and Civilian Cooperation	30	Doctrine Interoperability	10% Went Well 40% Could Be Better	17% tactical 47% operational 90% strategic

**M. Lesson Identified #12: Developing a Pandemic Response Framework to Identify What Information Needs to be Communicated, When, in What Format, and to Whom is Essential**

**1. Observation**

There were often delays in leaders obtaining necessary pandemic-related information to develop situational awareness and make informed decisions. Sometimes these delays were due to difficulties in communication between or within organizations responsible for generating the required information.

**2. Recommendation**

Developing a framework for pandemic information flow and knowledge management will allow for a more rapid, coordinated, and effective response. This could include disease surveillance, case reporting, identifying personnel for response teams, multi-disciplinary training, patient treatment, contact tracing, maintenance of societal services, and risk thresholds for mitigative measure reduction (based on case numbers, hospital capacity, positivity rate, and mortality). Communicating the correct information, in the correct manner (e.g., red/yellow/green risk levels), to the correct people, at the correct time is essential. Decision-support tools should also be developed to help decision-makers understand the information they receive, as well as to project the outcomes, costs, and benefits of implementing various responses.

**Table 19. Metadata Associated with LI #12**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Medical Situational Awareness	55	Doctrine Interoperability	20% Went Well 20% Could Be Better	24% tactical 56% operational 76% strategic

## **N. Lesson Identified #13: Interoperable Disease Testing Guidance for NATO Missions Needs to be Developed as Early as Possible During a Pandemic**

### **1. Observation**

Countries that are able to implement mass testing early on, and maintain it, often have better results as they are able to identify symptomatic and asymptomatic cases. Decentralizing testing can be effective while minimizing burden on healthcare workers.

### **2. Recommendation**

Interoperable guidance, standards, and policies on testing should be continuously updated to enable early detection; these policies should also address follow-on contact tracing and testing supply considerations. Testing guidance for NATO missions and operations should be developed, as many countries have different testing protocols that may impact their reported case numbers. Supply chains should be identified and reinforced if mass testing is desired to ensure there is enough supply to implement this strategy. To avoid interoperability issues, NATO Member and Partner nations should establish agreed-upon guidance on screening, testing, quarantine duration, pre-deployment restriction of movement, and alternative work strategies (e.g., working in unit bubbles, modifying training objectives). Interoperable guidance is particularly important to establish prior to training events. If having one solution across all of NATO is impossible, testing strategies and outcomes in different countries should be communicated; for testing to be useful, test results must be shared and synchronized across medical providers, the government, the military, and other relevant parties such as NATO.

Guidance and/or information on national plans should also address the following:

- When people should be tested (e.g., routine, mass testing; targeted testing; when symptomatic; all close contacts of individuals within a quarantine cohort prior to quarantine);
- Triage/prioritization protocols (e.g., symptomatic first, then close contacts; symptomatic, close contacts, and at-risk populations first; police officers and first responders; established risk groups);
- The need for retesting;
- Centralized vs. decentralized testing (benefits of latter include reduced time for results);
- Which test is best for which context;
- Lab safety protocols and best practices;

- Pooled and environmental sampling;
- How specimens will be collected/transported, and
- Documentation.

**Table 20. Metadata Associated with LI #13**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Laboratory Assets	47	Doctrine Materiel	0% Went Well 32% Could Be Better	41% tactical 59% operational 54% strategic

## **O. Lesson Identified #14: Working Remotely Requires Solutions for Classified and NATO Unclassified Computing**

### **1. Observation**

Information sharing, particularly for NATO Unclassified, NATO Restricted, and NATO Secret across NATO bodies and member nations was challenging while working remotely for several reasons:

- There is no NATO Unclassified portal for sharing information and not all personnel had access to NATO Unclassified addresses/accounts;
- There are limited or no solutions for accessing NATO Restricted or NATO Secret information while working remotely;
- There is no global email registry or working-from-home contact list for NATO;
- Over-classification of documents and limited availability of unclassified versions of documents; and
- Contractors did not have remote work capabilities or authorizations.

### **2. Recommendation**

Proposed solutions included: (1) develop a NATO Unclassified portal that can be used by all NATO entities; (2) have NATO Restricted mobility laptops and tokens available to all personnel (including contractors) or creating isolation zones with IT and VTC capabilities; (3) develop contact lists that include email addresses that can be used up to the NATO Restricted level; and (4) maintain unclassified versions of classified portals/documents when possible. These solutions must comply with all relevant national and NATO regulations, including security, privacy, and medical regulations.

**Table 21. Metadata Associated with LI #14**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Continuity of Operations	11	Doctrine Organization	0% Went Well 45% Could Be Better	18% tactical 73% operational 45% strategic

**P. Lesson Identified #15: Continuity of Operations Plans Must Explicitly Address Remote Work and Must Be Exercised and Updated Regularly**

**1. Observation**

During the initial stage of the pandemic—when personnel were transitioning to remote work—appropriate computer systems, software, policies, and procedures for teleworking were not already in place. This resulted in delays and challenges in communication and in ensuring continuity of operations in a dispersed work setting.

**2. Recommendation**

Developing plans to ensure continuity of operations during a crisis while reducing the spread of disease and exercising these plans regularly could help make a smoother transition to remote work or other contingency measures in the future. Plans should include: information management, remote work requirements, contingency plans for training schedules, prioritization of actions and tasks, communication/collaboration tools, and staffing strategies. Plans should be exercised as part of a multi-faceted pandemic response plan, and any noted gaps addressed prior to future crisis situations.

**Table 22. Metadata Associated with LI #15**

<b>Bio-Responsiveness Task</b>	<b>Number of Observations</b>	<b>Top 2 DOTMLPF-I Domains</b>	<b>Sentiment</b>	<b>Operational Level</b>
Continuity of Operations	17	Doctrine Materiel	18% Went Well 24% Could Be Better	71% tactical 82% operational 29% strategic

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## **7. Summary and Recommendations**

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This paper describes the collection of observations on COVID-19 from various sources, processing them into a useable format and analyzing them to develop a list of Lessons Identified to inform improvements to NATO bio-response capabilities. As supplementary material, Appendix A lists all of our Lessons Identified; Appendix B provides all 2,030 collected observations, with metadata tags assigned by the IDA project team. This additional material can be used to inform additional COVID-19 Lessons Learned studies with different scopes or purposes.

### **A. Future Work**

Within NATO, the primary audiences for this paper are the Biological Defence Medical Panel and the CBRN Medical Working Group. These two subject matter expert bodies can use the outputs of our work described herein to develop programs of work to enhance NATO bio-responsiveness capability in ways that learn the lessons of the pandemic. However, these Lessons Identified are applicable to other NATO and non-NATO organizations that may apply them to their relevant issues.

Our objective in this project was to derive a small set of COVID-19 Lessons Identified which, if fully realized as Lessons Learned, will improve NATO's capability to respond to operationally significant outbreaks of contagious disease. The IDA team believes that a program of work to implement changes based on our list of priority Lessons Identified will address many of the bio-responsiveness challenges identified in the NATO COVID-19 observations. However, we recognize that our project team's prioritization of Lessons Identified may have some inherent biases, and we would encourage the Biological Defence Medical Panel and other NATO Action Bodies to review our prioritization or engage in their own Lessons Identified study as the basis for future work.

At the same time, our assessment has identified a need to routinely update and exercise pandemic response plans and to consider such plans in the same way and with the same intensity as other crisis-response contingency plans. The scope and frequency of pandemic exercises at the headquarters-level should be increased to build familiarization and operational competence, and units must rehearse pandemic response plans and train in realistic pandemic environments. Unless this overarching Lesson Identified can be learned, other efforts to learn the lessons of the COVID-19 pandemic may fall short.

Additionally, the project team found that NATO could make significant progress through doctrine development, especially at the strategic level where NATO is well-

positioned to do so and in areas that promote interoperability, where NATO has a primary interest. Doctrine development comes with limited costs in comparison with other types of investment and can be coordinated and synchronized across NATO bodies engaged in this work. While the need for doctrine development was pervasive and substantial across all bio-responsiveness tasks, our analysis indicates that such efforts are particularly applicable to Medical C4I and Decision Support, Strategic Communications, Medical Situational Awareness, and Civ-Mil Cooperation.

## B. Methodology

A secondary goal of this project was to develop a methodology for analysis of observations that could be readily and consistently applied across multiple projects and venues where the NATO Lessons Learned process may be useful. This COVID-19 Lessons Learned project provided the project team with an opportunity to expand and formalize the metadata tagging approach that has been used by the CBRN Medical Training Panel for nearly a decade to collate observations collected during live collective training exercises.

The IDA team successfully demonstrated an approach that combined directed and conventional content analysis to distill a disparate dataset of over 2,000 COVID-19 observations into a priority set of Lessons Identified. As described in Chapters 4 and 5 and summarized in Figure 9, our approach is straightforward and unconstrained in its potential application. While simple to implement, it is, however, rather labor intensive and requires subject-matter expertise to understand background and context when not overtly provided in the observations themselves.

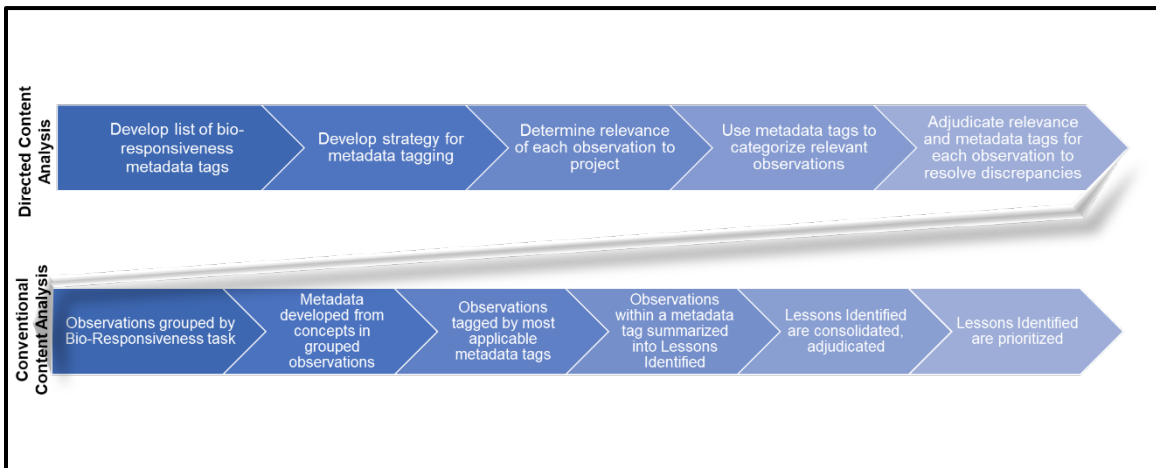


Figure 9. Overall Content Analysis Approach



## C. Observation Quality

Our team collected over 2,000 COVID-19 observations from many sources, ranging from meeting minutes to national reports to fully-formed observations submitted using the NATO standard Lessons Learned template.<sup>50</sup> These observations were widely varied: some were simple fragments of sentences or bulleted lists, while others provided multiple paragraphs and addressed multiple topics.

The NATO standard observation submission form is termed an ODCR form for its data fields of Observation, Discussion, Conclusion, and Recommendations; this format was used in all the individual observations submitted to the JALLC. Our project team consistently found these observations to be more mature, informative, and consistently tagged among analysts than observations of other types.

Our retrospective assessment of the contribution of observations from various sources strongly supports the use of the ODCR format for the submission of observations for any purpose. Some 65% of the relevant observations in ODCR format contributed to candidate Lessons Identified, far exceeding the next closest rate of contribution: 42% from the JALLC collection of national reports and Lessons Learned products. Lessons Learned tutorials and other outreach efforts from the JALLC and MILMED COE should socialize and encourage the use of this format as a critically important tool for success in the Lessons Learned process.

The difference in the contribution of observations from various sources suggests that observation collection is most efficient when the sources are closely related to the purpose for which they will be used. On the other hand, the use of more broadly-based information sources reduces the risk that important observations will be overlooked. In this context, it is interesting that a sizable majority of observations from the JALLC collection of national reports, which include any aspect of pandemic impact and response, were relevant to the subject of bio-responsiveness.

## D. Bio-Responsiveness CONOPS Task Definitions

Throughout the metadata tagging process used at the outset of this project, our team adhered closely to the definitions of each bio-responsiveness task. In so doing, we found large numbers of observations that were consistent with the subject and scope of a task, but were excluded based on the language of the definition. We recommend that the task definitions in the CONOPS for Bio-Response should be expanded as follows:

- Infection Prevention and Control should specifically encompass non-pharmaceutical interventions, such as social distancing and masking, use of

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<sup>50</sup> *The NATO Lessons Learned Handbook*, 55–57.

personal protective equipment in a medical setting, and public health measures recommended for use by both medical personnel and the general population;

- Civ-Mil Cooperation should specifically include the potential need for civilian support to military forces, in addition to the current focus on collaboration with and military support to civilian authorities;
- Laboratory Assets should be expanded to include point-of-care or individual/at-home antigen testing;
- Operational Epidemiology should be expanded to include electronic tracking or other passive means of monitoring exposure to disease; and
- Strategic Communications should incorporate the critical need for consistent use of terms and definitions in clear public messaging.

## **Appendix A. Additional Lessons Identified**

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### **Perform Medical Command, Control, Communication, Computers and Information (Med C4I) Analysis and Decision Support**

#### **Information packaging and presentation**

Many organizations developed COVID-19 Dashboards to provide commanders and staffs with accurate, timely, and comprehensive information to support decision-making. Such tools were crucial for the collection, presentation, and sharing of information, but their developers faced several challenges, including the need for the following: timely access to essential data, an understanding of information requirements, and concepts to convey complex information in an accessible way. NATO strategic and joint force commands should invest in the establishment and maintenance of a common dashboard to support pandemic decision-making and response operations.

#### **Outbreak modeling**

Mathematical modeling of disease outbreaks proved useful in certain circumstances, specifically for short-term predictions and retrospective analysis. More broadly, however, their use as a decision-support tool was hampered by a lack of available data, inaccuracies or lack of standards in data collection and reporting, insufficient understanding of disease parameters, and a limited number of qualified analysts.

#### **Pathogen and disease characterization**

During the COVID-19 pandemic, there were no mechanisms in place to rapidly fill identified gaps in knowledge about the disease to support command decision-making. For example, a lack of understanding of pathogen clearance during and after recovery made it difficult to establish rules regarding the use of testing to allow release of personnel from isolation. Successfully containing the spread of disease while minimizing the impact of response requires information on population physical and behavioral risk factors (to include sex and minority group disaggregated data), the behavior of the pathogen in the environment and in the body, and the potential of various response measures to reduce transmission at the population level. Scientific and technical capabilities need to be identified or established that can provide such needed information on novel or emerging diseases as quickly as possible.

## **Testing and vaccine prioritization**

For novel and emerging pathogens, testing and vaccination may take time to develop, and will initially be in short supply. Policies and procedures need to be established to prioritize who should have access to those resources while they remain limited; these policies must be informed by ethics committees. COVID-19 testing became a critical tool for managing risks associated with activities and travel, but only once antigen tests were widely available; until that time, testing was used primarily as a tool to support isolation and quarantine policies. Thus, strategies need to be developed for the use of testing when it is limited and when it is plentiful. Similar strategies need to be developed for the allocation of vaccines based on the size of populations at risk, the end point of the vaccine, and the extent to which the end point can be met by lower doses, fewer shots, or other methods. During the COVID-19 pandemic, most countries allocated the first doses of vaccines for the elderly, other particularly vulnerable populations, and medical personnel. Some countries, however, sought to broaden the scope of protection by offering initial COVID-19 vaccines to a larger group of people, while postponing the second dose as long as possible.

## **Strategic indicators and warning**

There is general consensus that early recognition and prompt response to the COVID-19 pandemic would have resulted in better outbreak controls and outcomes worldwide; early warning systems increase the amount of time leaders are able to make decisions regarding future pandemics, including developing preventative measures and data collection mechanisms. At the strategic level, NATO (and frequently national) crisis response systems and the activities they trigger were not activated early enough in the pandemic, delaying assessment and development of response options. A set of pandemic triggers must be established to identify a non-military infectious disease crisis requiring NATO and/or national response. This is particularly true for emerging pathogens, where—as experienced during the COVID-19 pandemic—the initial planning and alert phases of pandemic plans can otherwise occur simultaneously with response and recovery phases, resulting in contradictory and less than effective responses. The private sector may be able to help NATO members with developing technology for early warning systems and by providing data to enhance these systems.

## **Triggers for response**

Numerous observations identified a need to tie the imposition of outbreak control measures to specific indicators of outbreak progression in the population. Broad indicators most frequently identified included overall case numbers, numbers of new infections, rate of positive tests, and hospital and ICU capacity/availability. At the same time, there was a strong sentiment that prompt detection and response to local outbreaks of disease could

have great value in containing the progression of the outbreak, and if successful could avoid the need for the broad imposition of outbreak controls on the population.

Regardless of the trigger, it is important that command of outbreak control measures is established prior to an event and has the authority to initiate and enforce these measures.

### **Command and control**

While whole-of-government and international efforts are required to successfully respond to pandemic threats, military departments and organizations were quickly recognized as key contributors to that effort because of their robust and effective command and control systems, supported by leadership, organization, and communications skills. Best practices at the NATO and national level for managing pandemic response included: (1) establishment of COVID-19 task forces or the equivalent, to serve as a focal point for information sharing, communications, and efficient integration/coordination of response activities; (2) the engagement of and continuous communications with stakeholders from medical, operational, and training communities at all levels; (3) regular meetings and synchronization of activities among senior leaders, including medical advisors and consultants; (4) virtual synchronization meetings between NATO agencies, governments, NGOs, and subject matter experts for the purpose of sharing information and establishing a common operating picture; and (5) establishment of clearly defined roles and responsibilities among task force personnel. There's a cautionary observation that's frequently mentioned about how these task force efforts need to be adequately manned and funded, as the tasks have generally been much larger than initially believed and the number of assigned personnel often insufficient.

### **Reach-back and subject-matter expertise**

During the pandemic, NATO strategic commands and organizations frequently sought the advice of the scientific community throughout the Alliance to understand COVID-19 characteristics and the dynamics of the pandemic. However, these efforts were frequently ad hoc, informal, or delayed. When planning future pandemic response, NATO should formally establish a subject matter expert network and exchange platform that can be leveraged early to provide reach-back and operational planning support. Relevant Centres of Excellence and the Science and Technology Organization should be included in this effort. Civilian and NATO subject matter experts should be identified prior to crisis events and should be included in training events and crisis plan development, especially early on during crisis events, when there is less certainty about a pandemic. Permanent civil-military liaisons were suggested as a possible way to incorporate civilian expertise in NATO planning and operations and facilitate information exchange.

Additionally, specialists in infectious disease, epidemiology, force health protection, and medical intelligence are not sufficiently available at the Strategic and Joint Force Command levels in NATO; increasing the number of posts for these personnel would strengthen evidence-based decision-making and improve medical advice and coordination across the Alliance.

### **Information portal**

Staff were overwhelmed by people asking for information on the pandemic. One solution could be developing and circulating a pandemic information and collaboration portal that is kept up-to-date with the most recent data/recommendations. The STO Science Connect Portal is an example of a helpful tool for sharing disease surveillance and research data, as seen with information that emerged from the pandemic. The portal proposed here should include common terminology to ensure interoperability, which requires available funding and surge personnel to support these solutions continually throughout the pandemic. Effort should be made to ensure all NATO countries are able to access this portal, even if unable to work on a NATO premise. The portal should include risk assessment data (e.g., point prevalence/acceleration maps).

### **Medical intelligence**

NATO should have a dedicated medical intelligence platform that consolidates information from member countries. The number of medical intelligence officers (particularly with medical backgrounds) needs to be increased. Open-source intelligence collection plans need to be developed and issued prior to crises. Individuals need to be trained on how to access and use medical intelligence sources.

## **Conduct Infection Prevention and Control**

As mentioned in Chapter 4, we expanded the definition of the Infection Prevention and Control task to include non-pharmaceutical interventions designed to reduce infection and PPE. Six lessons were specifically focused on PPE, eleven were focused on non-pharmaceutical interventions, and seven arose from the standard task definition for Infection Prevention and Control.

### **Impact on healthcare access**

Loss of in-person doctor's visits impacted the ability of people to keep up with "maintenance" or preventative care, indicating a need to mitigate the risk or expand the capabilities of virtual care. There's a need to address challenges that make it difficult to get in-person or virtual care, such as IT issues, digital health records that are easily shareable, ease of prescribing medication, and staffing.

## **Masking strategy**

Masking is a simple and effective infection control measure, especially in conjunction with other measures and when implemented early. N-95 masks are most effective at preventing respiratory disease transmission, with reducing benefits from surgical masks, to cloth masks, to gaiters. There is a need to establish and communicate clear and common/interoperable guidance instructions on when masks are appropriate to include with other infection control measures (e.g., who needs to wear them, conditions in which to wear them, how to wear them correctly). Framework considerations should include how masks may impact other mission components and how to prioritize distribution when masks are in limited supply.

## **Public health risk mitigation**

Different agencies and countries tended to follow similar, but distinct, public health policies. Measures such as stringent social distancing, restricting gatherings, using technology such as unmanned aerial vehicles (UAVs) and closed-circuit televisions (CCTVs) to detect unauthorized gatherings, masking, contact/digital tracing, and border restrictions had varying success, though were often successful when implemented early; citizen burnout and compliance must be considered. Measures must be clearly communicated.

## **Social distancing**

Physical distancing is a proven measure to address respiratory disease spread; safe social distance is based on pathogen, location (i.e., indoors or outdoors), and type of activity (e.g., standing/sitting, walking, running, cycling). Avoiding high-risk activities (e.g., constant close contact with other people at work, shift exchanges, social events, travel and other mobile activities) may limit or reduce disease spread, as will working in shifts/bubbles, masking, and good disinfection practices. Standard operating procedures (SOPs) for limiting exposure could include pre-training ROM/quarantine procedures, inclusion of social distancing or PODs in training plans, creating satellite medical sites for in-person non-urgent/preventative care, closing office doors to reduce cross-contamination, and dead-drops for delivery of food and supplies. Changes to building design would allow for reduced occupancy limits to account for safe social distancing, and changes in air-flow and designating maximum occupancy or room size could aid in reducing disease spread.

## **Risk mitigation for mission essential personnel**

Certain staff positions are mission-essential but may pose a higher public health risk by acting as vectors. Staff should take additional measures and have a plan to flex to split-based operations. Doctrine and guidance should be prepared and updated to address

protective measures and restrictions, including in-person work criteria and limited non-essential events (e.g., off-post activities, VIP events/ceremonies).

### **Public health risk mitigation**

Countries that could easily shift and implement remote work, promote social distancing, enact digital contact tracing, and provide testing material and personnel were able to better adapt.

### **Planning for remote work and training**

When in-person attendance is not possible or safe, there needs to be a plan for maintaining training, readiness, and resilience in scenarios that may limit in-person attendance. When shifting military education functions online (such as teaching, examinations, and synchronous and asynchronous components), mobile and desktop platforms that offer flexible and efficient means of learning/training should be considered. Online training, conferences, exercises, and meetings allowed for more people to be involved while eliminating the need for travel expenses and risk to health. Organizations must identify training needs early and prioritize which training must be maintained and what can be deferred or shifted to another platform.

### **Communication and training for remote work**

Standards, policies, and procedures are necessary to account for measures such as social distancing, remote/hybrid work, testing/screening, air handling, and infection control measures. Policies, procedures, and business contracts should address who can/should work remotely and when (e.g., identifying mission-essential staff vs. remote staff to be on-call and ready for recall, triggers for recall from remote work, listing primary and alternative communication methods) and how to adapt to a remote/hybrid environment (e.g., shift work, forming the smallest possible operational unit), and this information should be continuously monitored and adjusted. Optimizing staffing will require establishing and maintaining standards for the clear communication of task delegation and coordination (e.g., ensuring common situational awareness, maintaining idea-sharing and battle rhythm). Remote/hybrid work should be regularly exercised to “train as we fight,” such as distant participation in exercises and planning and operations from remote locations.

### **Screening methods**

Screening protocols helped identify respiratory illness and prevent cross-contamination. There is a need to determine and train on guidance for most appropriate use cases, technologies, and enforcement of screening; protocols could include body temperature, symptoms, and recent exposure or travel, and flagged indicators could be sent



to medical professionals for follow-up screening. However, some methods are more effective or appropriate than others. Screening at base/facility entrances, at the start of a workday, border crossings, and airports seemed successful in catching cases early and enabling contact tracing, but must be balanced with ethics and citizen privacy.

### **Handwashing and sanitizer**

Internal measures to prevent the spread of infectious diseases included hand-washing and readily accessible hand sanitizer dispensed in touchless machines; protocols for when hand-washing/sanitizing should be employed (e.g., when entering and exiting aircraft or facilities, every time there is a location change, when donning/doffing gloves and other PPE, between washing and drying laundry) need to be developed.

### **Reducing disease spread during high risk activities**

There are many changes that can be made to prevent the spread of disease, including using disposable materials, using modular isolation wards for infectious patients, using PPE, making hand sanitizer readily available, and properly disposing of contaminated material. This is especially important in risky activities such as patient transport, where screening, minimal crew size, decontamination, and specially designed transport vehicles can protect the patient and first responders. Encouraging these good sanitation/epidemiological habits should be maintained throughout and beyond the current pandemic to reduce the risk of future pandemics.

### **Disinfection guidance**

Establishing detailed guidance and protocols on disinfection and infection prevention can help make pandemic response easier and more effective by understanding the capacity to sanitize common vectors. Protocols could include identifying a decontamination team to disinfect and dispose of contaminated material, disinfecting isolation and working areas, and disinfecting medical equipment or equipment used to transport or treat a contagious patient. Proper disinfectant materials/solutions and contact times should be identified, as well as what material/equipment can or cannot be disinfected in general or with certain methods. Screening, PPE, and decontamination procedures should be reviewed at shift changes, decontamination procedures should be regularly drilled, and shift work/smart-working protocols should be outlined with the appropriate IT support.

### **Disinfection during MEDEVAC**

Sanitizing patient transport vehicles should be the responsibility of the pilot or transport team. The vehicle, uniforms, and PPE should be disinfected or decontaminated as soon as possible downwind of other people and left to ventilate/dry, and patient

belongings should be sealed. PPE protocols should limit time in use to maintain comfort and operational efficacy.

### **Identifying high risk activities**

High risk activities and situations that increase the risk of cross-contamination should be identified and mitigated; these include crew shift change, certain medical procedures, high-contact touch areas in hospitals (e.g., doors, walls) during patient transfer, shared responsibilities during patient care (e.g., pilots assisting with patient transport), passenger loading, and patient-to-doctor-to-patient infection. Other considerations include cleaning capability, unit/organization size, training, ventilation, availability of PPE, and capability for social distancing.

### **Infection Prevention and Control training and education**

Training and educating personnel (including but not limited to medical personnel) on proper infection control procedures can help reduce spread. Increasing signage at exit/entry points and in highly trafficked areas (e.g., bathrooms) can help people ensure proper sanitation through access to hand sanitizer, touchless features, masking, and social distancing.

### **Hospital and/or facility design**

Adjust hospital (or facility) design to (1) open up wards and create flexible capacity; (2) shift to touch-free controls (e.g., lighting, temperature, doors, other building functions); (3) use materials less hospitable to microbes (e.g., replace plastic with copper, replace window curtains with privacy glass, replace fabric with material that can be sanitized); (4) help patients stay connect with family/friends (e.g., video chat and VR headsets); and (5) increase space allocated to break rooms and staff sleeping quarters.

### **PPE interoperability**

PPE guidelines often differed between NATO nations and even between the military and civilian systems of a single country.

### **PPE training**

Individuals need to be trained on proper use of PPE; training should be exercised regularly (e.g., at shift change) and scientifically-backed. PPE used in training should be fitted to particular users and that same type of PPE (size and model) used in training should be provided to the users during emergency situations. Guidance and training should be developed on which portions of PPE can be safely reused (and after what cleaning protocols). PPE training should include: donning/doffing procedures, who should wear PPE, when to wear PPE, what type(s) of PPE to wear, whether there are acceptable

alternative forms of PPE (e.g., cloth masks, surgical masks, or N95 masks), storage of PPE (e.g., stored out of sunlight and in dry, temperature-controlled environments). Trainers or officers should be assigned to train and monitor PPE procedures.

### **PPE in crisis packages and equipment lists**

Consider including PPE in crisis packages and on equipment lists prior to deployment or field exercises.

### **Inadequately designed PPE**

Standard or civilian PPE was often ill-suited for particular mission types, particularly for flight or onboard ships. Issues included fogging glasses, difficulty breathing, reduced field of vision, and increased fatigue. Prior to a crisis situation, ensure PPE intended for use is effective for the missions that will be performed.

### **PPE stockpiling**

Stockpiling PPE in the future may mitigate the types of materiel shortages observed during the COVID-19 pandemic. Assessment of PPE stockpile levels and consumption rates should be monitored (as often as daily during a crisis event) and reported into logistical software. Resupply plans should be established and should be evidence-based. Storage facilities may need to be built or re-designated to accommodate PPE stockpiles. Adding a tasked activity code for having adequate stocks of PPE could help ensure accountability. Finally, consideration should be given toward purchasing/maintaining a stock for staffs' families in addition to the staff themselves.

### **Force health protection guidance**

Detailed Force Health Protection guidance needs to be developed early during disease outbreaks and revisited frequently as the outbreak progresses. This guidance needs to be promulgated as widely as possible and strongly supported by an information campaign and clear leadership prioritization. It is important that FHP guidance be clear, detailed, and consistent across organizations and, to the extent, realistic across nations.

### **Communication of best hygiene and public health practices**

Small tactical changes in unit hygiene can sometimes be beneficial in reducing disease spread. These tactical changes include providing improved instructions (e.g., on hand washing, no-touch exits, and cough etiquette) posted on signs throughout an installation in public places, such as restrooms and dining facilities; providing necessary materiel for hygiene (e.g., hand sanitizer in common locations, paper towels, waste bins near bathroom doors to encourage no-touch exits); and making changes in SOPs (e.g., instituting quotas in dining facilities, use of disposable utensils and plates, or prohibition

of personal hygiene activities except hand washing at public access points). Pre-briefing new hygiene guidance prior to missions can help ensure all personnel have a common understanding of the new practices.

## **Conduct Isolation, Quarantine, and Restriction of Movement (ROM)**

### **Enforcement of isolation, quarantine, and/or ROM**

National efforts to contain the spread of COVID-19 through various forms of ROM were often hampered by the failure of the public to comply with such measures due to complacency, fatigue, backlash, and more. In response, many countries used military, law enforcement, or drones to enforce lockdown restrictions and ensure protective measures (e.g., gathering restrictions) were followed. Some nations relied on more passive measures to promote compliance—such as the use of cell phone tracking apps—while others used more active measures, including fines, police surveillance, use of checkpoints, and even imprisonment for violators. While no best practices emerged for addressing compliance with ROM, some observations suggested that “securitizing” response efforts with law enforcement or military units was likely counterproductive.

### **Easing ROM**

Developing a coordinated, flexible, science-based plan to reopen/ease restrictions is key in balancing the need for and stress of restrictive measures. As an example, to both encourage compliance with testing and vaccination programs, many nations lifted restrictions of movement for individuals who had been vaccinated against COVID-19, who had tested negative, or who were recovering from infection. However, for COVID-19 in particular, lifting restrictions may have been risky because the established criteria did not guarantee an individual was not contagious. Testing is an important component, but it is complicated by the persistence of positive tests during and after recovery. Future pandemic response planning should account for the risks, ethics, and practicalities of lifting restrictions for individuals presumed incapable of spreading disease, when such restrictions would otherwise be warranted.

### **Reducing disease transmission at in-person events through quarantining**

Some functions cannot be performed socially distanced, such as military training exercises. To minimize the risk of transmission during new-entry training, exercises, and troop deployments, it became common to quarantine and routinely test personnel for a period of time—typically the maximum incubation period for the disease—prior to the start of the event. During quarantine, administrators sought to make best use of the time by providing small-group training and classroom instruction, while simultaneously monitoring the health of personnel and preventing them from contact with others outside

their designated cohort. Once released from quarantine, personnel continued to be monitored and frequently tested for the duration of the event and rapidly isolated in the event they tested positive or exhibited symptoms of disease.

### **Isolation practices**

Isolating COVID-positive individuals was a common practice among NATO nations and a critical part of efforts to contain the spread of disease. Individuals who tested positive but were not symptomatic or only mildly ill were typically expected to self-isolate at home. Some nations created a program of support for individuals for whom self-isolation at home was difficult or unduly onerous, providing food, medicine, and even financial remuneration to enable or encourage the practice. More seriously-ill patients were isolated and segregated from other patients within hospitals, clinics, and care facilities. However, any time COVID and non-COVID patients were cared for in the same facilities, staff could be a potential source of transmission; thus, separate COVID-positive wards or temporary hospitals should be established to prevent disease spread between patients and healthcare workers. Maintaining infection control measures in COVID and non-COVID wards and among staff, including screening potential patients outside, may also help. When existing medical facilities became overwhelmed and/or struggled with the difficulty of effectively segregating patient populations within those facilities, many nations chose to establish dedicated facilities for isolation of COVID patients. Frequently, and in some cases exclusively, nations relied on their military forces to establish field hospitals for use as isolation facilities. These facilities proved particularly useful for individuals who were too sick to care for themselves at home without placing families at risk, but not so sick as to require intensive hospital care. However, the establishment of dedicated isolation facilities requires sustainment, including the provision of security, maintenance, emergency response, and transportation of patients if needed. The allocation and use of medical staff for these facilities could prove challenging during peak phases of the pandemic, and concepts need to be developed for maximizing the efficiency of staff time while minimizing the risk to staff.

### **Testing and isolation at home**

In the absence of vaccines or other specific mitigation measures, testing and isolation (and retesting) are some of the most effective measures to reduce disease spread. However, these “at-home” measures can also cloud the situational picture, as it can be harder to track cases that are tested and treated at home.

### **Isolation, quarantine, and ROM-induced stress**

Widespread lockdowns, stay-at-home orders, self-isolation, and quarantine for extended periods of time reduce disease spread in a pandemic but can negatively impact

the mental health of many populations. Substantial evidence of these impacts exists; civilians may become socially isolated, may become unemployed, may reduce their routine medical check-ups, and may face greater stress, depression, or domestic violence. Healthcare workers may become burnt out and stressed from long shifts, risky environments, lack of protective equipment, traumatic caseloads, and lack of rest and resiliency. Yet beyond increased availability of mental health resources, such as psychological help lines, there were few solutions to this problem offered, other than the lifting of restrictions.

### **Early lockdown**

In the early months of the pandemic, most NATO nations implemented strict outbreak control measures (“lockdown”) including curfews, stay-at-home orders, and widespread closings of schools and businesses. This approach initially seemed effective, as countries that were more reluctant to impose such restrictions experienced relatively high rates of infection. As an example of the extreme, Italy imposed quarantine for the entirety of the nation. However, the social and economic impacts were significant, and they were ultimately not sustainable. Moreover, once nations abandoned strict lockdowns the spread of disease resumed, so their effectiveness proved transitory.

### **Planning for situations in which isolation, quarantine, and ROM are challenging or infeasible**

Testing, restricting facility access, and having personnel work in a “bubble” can help reduce disease spread. The mission or scenario may make these measures more difficult, such as an installation using Host Nation contractors, a ship going into port, or rescue missions.

### **MEDEVAC**

There must be a plan in place to evacuate contagious patients, accounting for eligibility, international regulations, airlift capability, and safety measures.

### **Essential personnel**

Military organizations should seek to restrict the spread of disease to personnel who perform critical national security functions—such as missileers, nuclear submarine personnel, and strategic bomber crews—and to those who cannot be replaced in a timely manner due to extended training requirements (e.g., pilots and special forces personnel). Strategies for accomplishing this include quarantine supported by extensive testing, followed by extended duty rotations with limited to no contact with others. Individuals off of rotation could be subject to isolation, limited leave, and minimized change of station

orders. Mental health resources and telecommunications should be used to limit the impact upon these individuals and their families.

### **Installation ROM**

Military installations located within civilian communities often rely heavily on the local population, businesses, and infrastructure for support. During the pandemic, these installations needed to ensure they could continue operations and missions without being unduly impacted by the spread of disease among the local community. Of primary concern was the movement of both military personnel and civilian workers onto and off of base; installations therefore were especially focused on implementing facility-access controls and using whatever techniques were available to screen populations at access points. Actions taken included: limiting the overall number of personnel on an installation; restricting access to personnel deemed essential; and establishing camps on installations where groups of personnel could live and work within a quarantine bubble and isolate in a separate facility should they become infected. At some installations, personnel in such quarantine bubbles would be rotated on regular intervals, based on the generation time of the disease, to reduce the psycho-social impact on them and their families. In all cases, the advent of rapid and reliable testing capability critically enhanced the ability of installations to implement and eventually relax access controls.

The need to establish isolation and quarantine facilities on installations during the pandemic was well-recognized, but because installation mission, infrastructure, and reliance on local support vary widely, so too will solutions for the establishment and sustainment of these facilities. Examples during the COVID-19 pandemic included conversion of existing buildings, establishment of temporary housing, and contracting of local hotel space. The costs, support requirements, and quality of life for affected personnel varied; an assessment of common experience and best practices should be conducted and the results integrated into general guidelines for installation planning.

### **Administration of quarantine**

Military units and installations often set up tents or temporary structures to serve as quarantine facilities for personnel potentially exposed to disease. Overall, these facilities were found to work best when they were individually small and spaced appropriately, with individuals assigned their own room whenever possible. Sustainment of quarantine—delivery of food and other supplies, maintenance, and communications—should typically be performed by non-medical personnel to ensure medical personnel focus on care for the sick. Testing and health monitoring similarly should be conducted and reported by quarantined individuals themselves to limit the risk to others. In cases where personnel self-quarantined off post or with their families, units and installations must ensure that those personnel have food deliveries and other support.

## **Unit ROM**

Some military forces were able to continue training and operations by forming isolated groups, or “bubbles,” comprised of the smallest possible operational or administrative units. Within bubbles, personnel generally followed social distancing, personal hygiene, health monitoring, and access control procedures; however, anyone who left a bubble was designated a high-risk vector and required to maximize the use of PPE, limit contact with others, and (once possible) provide proof of negative testing.

Both quarantine and isolation facilities could be established within the boundaries of deployed units, with medical personnel providing oversight, advice, and care of sick individuals. In such cases, unit personnel required training on contact tracing, testing, designating individuals for quarantine or isolation, and the provision of meals and other support. However, because forward-deployed units often berth individuals in group berthing, isolation could be difficult to achieve, with the establishment of cohort isolation the only option available.

## **Differences between military and civilian isolation, quarantine, and ROM**

Militaries are more likely to be able to enforce strict measures, such as limiting base access, canceling activities, regularly disinfecting, and limiting gatherings; access to PPE and enforcing and supporting quarantine may also be more feasible in the military, though it may be difficult for certain mission-essential positions.

## **Logistical challenges due to ROM**

Early implementation of limiting movement of people between countries proved beneficial in reducing disease spread, but it had secondary impacts on medical supplies and other necessary materials in transit to their destinations. Guidance and international agreements are needed to balance public health benefits while maintaining the delivery of necessary medical supplies and personnel to places that need it.

## **Perform Strategic Communications**

As mentioned previously, we considered an expanded definition of the Perform Strategic Communications task to include establishing a common set of terminology. One Lesson Identified resulted from this expanded definition; the remaining fifteen emerged from the original definition.

## **Conflicting guidance within and between organizations**

During the pandemic, Allied headquarters, staffs, organizations, and installations adapted or issued organization- or echelon-specific pandemic-related guidance and implemented their own pandemic response policies and procedures. This guidance and its



implementation were frequently in conflict, and having multiple sources for it created confusion. Needed coordination among components often did not occur, and it was particularly hampered by infrastructure barriers to communications among remote employees. Eventually, regular synchronization meetings across NATO bodies were helpful in establishing a common operating picture. Other implemented solutions to these horizontal communication challenges included identifying primary and secondary teleworking contact information, using mobile phone applications, and developing SharePoint sites. In addition, the Headquarters Supreme Allied Command Transformation (HQ SACT) has identified a need for a secure, resilient, and remote information technology (IT) infrastructure to enable consultation and collaboration among NATO bodies during a crisis.

### **Use of liaisons**

The installation of liaison personnel between civilian-military organizations, across nations, or within bureaucracies proved a very effective mechanisms for facilitating communications and information sharing, synchronizing activities, flattening communications structures, and improving communications across organizations. Liaison officers are a key asset that can assist by providing advice and information, lexicon translation between organizational cultures, and reach back to a home agency or organization. As such, they should be selected based on their experience and ability to work with a group.

### **Mission area stakeholder coordination**

Stakeholders across military services and organizations with shared pandemic-related mission areas and functions can be organized to share information and coordinate implementation of responses. Meetings between stakeholders should be routinely conducted, and lines of communication should be available 24/7. Such mechanisms were very valuable during the pandemic in coordinating and deconflicting policy guidance, synchronizing activities, anticipating and proactively addressing problems, disseminating information across the mission space and to the field, and representing the stakeholder community at higher levels.

### **Leadership synchronization meetings**

The pandemic demonstrated the need for continuous, command-initiated communications within and across organizations in the early phases of a crisis, when uncertainty is pervasive. During the pandemic, daily leadership synchronization meetings proved extremely valuable for developing shared understanding of risks and operational requirements and promoting a shared understanding among organizations.

## **Disinformation**

Fake news, disinformation, and misinformation proliferated during the pandemic, sometimes organically reflecting the uncertainty and fear among the population, sometimes propagated by science deniers, conspiracy theorists, political opponents, and extremists, and sometimes as part of deliberate, adversary information operations. Regardless of cause, disinformation was dangerous, encouraging people to ignore guidance, not comply with response measures, use ineffective treatments, and reject available medical countermeasures. Nations and international organizations sought to counter disinformation in many ways, but often too late, as the lack of clear and consistent messaging during the early months of the pandemic gave disinformation a foothold through social media and alternative news outlets. Work needs to be done to ensure that media communications strategies are well-planned, prioritized, and rapidly implemented.

## **Local public education efforts**

At the tactical level, units and installations needed to regularly communicate a large amount of pandemic-related information to military personnel, civilians, and family members. This included information such as the availability of family support resources, changes to facility procedures, information on when and how to access testing and medical treatment, pandemic response guidance, local outbreak statistics, and more. To accommodate the breadth of information and ensure maximum dissemination, installations and units used existing mechanisms—such as base websites, broadcast announcements, and signage—and broader platforms, such as daily emails, local media organizations, and social media.

## **Public fear and uncertainty**

One critical function of strategic communications is to assuage public fear and uncertainty and help alleviate some of the psychosocial stresses among the population. Provision of clear and consistent, well-crafted, and authoritative information is a key component of this function, as it encourages trust and confidence in leaders. Additionally, information campaigns should provide guidelines on how to cope with pandemic-induced anxiety and stress, communicate practical information—such as childcare options—that alleviate sources of anxiety and stress, and identify accessible mental health resources. Several observers noted that strategic communications regarding behavioral health concerns should be continued after the crisis has passed, as the impact of the crisis on mental health of the population will persist.

## **Strategic communication within local communities**

Social media was a critically important tool for transmitting pandemic-related guidance and information to personnel and local communities, and was especially effective

at the unit/installation level. All available public platforms should be used to maximize the reach of command information products; this process is greatly facilitated by the involvement of public affairs personnel. In particular, Facebook live streams, YouTube video spots, and phone messenger applications like WhatsApp were cited as effective tools for sharing information in a timely manner with appropriate command emphasis.

### **NATO communications infrastructure**

There were noted issues with teleworking within organizations and across NATO bodies, particularly with regard to access to NATO Unclassified, Restricted, and Secret documents/accounts and the lack of a common video/teleconferencing system across NATO.

### **Civ-Mil communications**

Civilian and military sectors should coordinate during pandemic-related communication to maintain awareness on each other's concerns and capabilities. Subject matter expert networks, liaisons, and community networks were some of the suggestions on how to approach these types of interactions.

### **Communications 101**

Analogies, catchphrases, color coding (for epidemiological information), and appealing to core values were useful when communicating information about COVID to leadership and personnel.

### **Confidence in the military and government**

Confidence in government and military can greatly improve the public's willingness to follow recommended or required restrictive public health measures. It was noted that leadership transparency, clarity, and frequent communication with regard to the pandemic had improved public confidence.

### **National prevention measures and interoperability**

NATO should track and publish pandemic prevention measures in force at the national and regional levels across NATO; maintaining this information in easily-accessible dashboard format would be useful for military personnel transiting across national borders. Providing this information in multiple languages was also noted as a helpful practice.

## **Topics to include in bio-responsiveness strategic communications strategies**

Strategic communications strategies should incorporate guidance and information on public health measures, non-pharmaceutical interventions, vaccines, testing, isolation, and quarantine.

## **Terminology**

Situational awareness and effective communication are essential to effective pandemic response. However, during the COVID-19 pandemic, these two activities were frequently hampered by inconsistent or imprecise use of terminology, lack of agreed definitions, and resulting confusion and misunderstanding. Establishment and promulgation of agreed definitions for disease and pandemic response terminology, across all organizations and levels, is needed to ensure common situational awareness, accurate reporting, effective synchronization, coordination, and integration, and unity of effort.

## **Perform Patient Management**

### **Military support to civilian patient management**

The military can provide support to civilians by providing makeshift hospitals, equipment and supplies, medical personnel, and transportation assets. They can also aid in screening, testing, and disinfection. This cooperation can help maintain both civilian and military resiliency and readiness and ease the burden on civilian hospitals.

### **Communication during patient management**

Clear communication and information sharing are key, both between patient and doctor and between health care facilities before medical evacuation or patient transfer (e.g. patient status, pathogen identification). This allows for better understanding of the situation and ensuring there are enough resources to meet the need.

### **Healthcare worker support**

Healthcare providers are likely to be overwhelmed by case numbers during a pandemic due to a variety of factors. Healthcare workers need clear guidance on work/rest cycles and removing themselves from duty when sick. Providing resources to help healthcare workers manage the stress of working in a pandemic environment (e.g., time off for isolation, childcare) is vital for maintaining morale and readiness.

### **Insufficient number of medical providers with infectious disease specialties**

There are insufficient medical providers trained in infectious disease, microbiology, and epidemiology specialties within the military, which may impact the ability of MTFs to

handle a surge of infectious disease (ID) patients. It is important to have the right number of the right medical professionals. Potential solutions include developing and maintaining skills (prior to a pandemic) by placing military physicians to support civilian hospitals. In an emergency situation such as a pandemic, developing policies and systems for emergency credentialing and licensing beforehand should be considered.

### **Impact of medical logistics on patient management**

The ability to manage and treat patients was impacted by a lack of supplies, such as respirators, oxygen, disinfectant, PPE, and medications. Facilities should be prepared to find alternative sources, stockpile resources, and modify equipment to last longer.

### **Telehealth**

Telehealth can bridge the gap between lack of care and overwhelmed hospitals, as well as reduce infection rates in healthcare workers. This requires staff training and support infrastructure, such as IT services, bandwidth issues, online connectivity (e.g., X-rays), and integration with civilian health systems.

### **Treatment guidance**

Healthcare workers must be prepared to triage patients and adjust as the situation changes, although mild cases should not be immediately dismissed as not requiring care. Treatment and isolation guidance may change as more knowledge is gained (e.g. which treatments are best, when to intubate, differences between symptom severity levels), and this guidance should be communicated as soon as possible. Medics and first responders should train and frequently rehearse emergency procedures such as deproning, CPR, intubation, and ventilation. Guidance must be in place to limit exposure of healthcare workers to contagious patients (e.g., limiting the number of staffs interacting with a patient) while maintaining quality care; there must also be clear discharge/release guidance.

### **Bio-responsiveness training and surge capacity**

All personnel must be trained in bio-responsiveness: medical personnel must be prepared to treat a surge of patients, and non-medical personnel must be prepared to assist them in a variety of tasks (e.g., contact tracing, disinfection, use of PPE, patient intake, documentation). Both medical and non-medical populations should conduct operational exercises which include medical considerations together to enhance preparedness, awareness, and interoperability.

### **Convalescence, return to duty, and rehabilitation**

It is important to consider the long-term health effects of diseases when establishing when individuals may be able to return to work. There was a lack of clarity, particularly at

the beginning of the pandemic, on when recovered individuals could return to work based on test results, as some individuals continued to test positive for an extended period of time after symptoms had abated. It may be necessary to rehabilitate some patients long after their acute symptoms have resolved.

### **Reduced routine healthcare access**

Patients needing treatment for conditions other than COVID experienced delays and interruptions in their routine health services as healthcare resources shifted to manage COVID patients. Some non-COVID patients also experienced difficulties in obtaining necessary medications. For military populations, this reorientation has a direct impact on readiness.

## **Sustain Medical Support Operations**

### **Multilateral logistics and supply councils**

During the COVID-19 crisis, Nations and regions were often competing with one another to obtain a variety of consumables. To address supply chain issues related to an array of consumables (e.g., PPE, masks, gloves, sanitizer, medical countermeasures [MCMs], medicine, tests, and ventilators) at all levels (e.g., stocks on hand through procurement), “supply councils,” “supply chain task forces,” and “COVID task forces” were established—these bodies coordinated materiel acquisition between agencies and countries (i.e., ensured there was sufficient quantities to go around). In anticipation of future pandemics, NATO and its member Nations should consider establishing organizations and partnerships to ensure the availability of needed consumables, such as: (1) a “crisis response org” to surge during an event; (2) medical support partnerships; and (3) a storage/issue/distribution capability for medical consumables.

### **Expediting procurement**

Procurement could be improved by (1) establishing medical supply agreements to guarantee availability of medical supplies; (2) planning, streamlining, and communicating MTF and/or agency medical logistics requirements; (3) reevaluating and expediting existing procurement procedures to incorporate flexibility, speed, and resilience; and/or (4) maintaining expertise within NATO military to set standards and evaluate products before procurement.

### **Supply chain improvements**

Supply chain could be improved by (1) incorporating flexibility and redundancy into approved sources of supply and/or (2) investing in supply chain infrastructure (e.g.,

medical manufacturing capability for items such as PPE; cold chain storage; or stockpiles of medical material or pharmaceuticals).

### **Facility sustainment**

Support to medical treatment facilities needs to be considered as part of pandemic planning. This can include augmentation of medical treatment facilities by establishing additional facilities (e.g., field hospitals and temporary hospitals), reinforcing medical and non-medical personnel with additional staff, changing hospital design, and providing critical infrastructure and ancillary support services (e.g., food, water, power, security, mortuary affairs, and more).

### **Military support to civilian medical logistics**

The military often has existing networks, infrastructure, and expertise in managing medical logistics during crisis or limited-resource settings. The military can assist civilian authorities by providing logistics planning, personnel, and support (e.g., supplying and/or distributing military stockpiles; coordinating materiel acquisition and distribution; vaccine distribution; medical transport of patients; deploy testing sites; use of storage facilities). If this is something NATO wants to do, it needs to consider capacity and how support to military operations will be impacted. NATO needs to assess how well / useful military assistance was to civilian authorities.

### **Balancing patient needs with resources**

There are many challenges in balancing the logistical needs of an MTF. Managing potential shortages of personnel, resources, and strained MTF capacity is necessary but should not interfere with need to treat patients. Efforts to quickly and easily address minor medical needs may help ease the burden on MTFs without negatively affecting patient outcome; for example, stocking “go-bags” with over-the-counter medicines may help treat ambulatory patients.

### **Relaxing public health measures based on medical logistics**

When making decisions to relax mandated public health measures, officials should consider factors related to the capacity of the medical system and the ability of medical logistics to sustain that system over time.

### **Medical regulating guidelines**

Public health measures impact demand for medical supplies and PPE, which impact medical support operations. Medical regulating guidelines for when supplies or personnel are limited should be developed, communicated, and trained. These guidelines can contain information such as re-use of equipment or PPE and ways to avoid aerosol generation when

treating patients. Well-defined medical regulating guidelines would provide a more complete picture of the current medical situation, including the status of medical support operations.

## **Conduct Military and Civilian Cooperation**

### **NATO Civil-Military Cooperation (CIMIC) and resilience**

NATO Civil-Military Cooperation (CIMIC) concepts and doctrine focus on establishing and maintaining cooperation with non-military actors within an area of operations, for the purpose of supporting mission objectives. Much of NATO's formal CIMIC activities are defined by its Baseline Requirements for Resilience through Civil Preparedness. In anticipation of future pandemics, the Baseline Requirements and associated training requirements need to be updated to reflect relevant factors for social stability within nations and the capability to support military operations during pandemic disease outbreaks.

### **Humanitarian missions**

Humanitarian crises in unstable/vulnerable states will be exacerbated by pandemics. Humanitarian organizations and NGOs may request NATO assistance, particularly in providing logistics and transportation support, helping refugees, and responding to large-scale migration. Such operations can, however, be particularly risky for military personnel and will require training to execute safely.

### **Medical evacuation**

Military forces are capable of providing large-scale air medical evacuation, and often can transport infected personnel within bio containment when needed. While such assets are unique and valuable during a pandemic, civilian medical evacuation—even contracted medical evacuation for military personnel—can be faster and much more cost-effective for small numbers of patients. MEDEVAC plans and training exercises should include civilian counterparts and coordinating with local medical facilities and hospitals.

### **NATO organizations**

NATO organizations provided significant, valuable, and wide-ranging pandemic response to member nations and around the world. NATO established a COVID Task Force to integrate the efforts of standing organizations: the Euro-Atlantic Disaster Response Coordination Center (EADRCC) was the primary mechanism for receiving and coordinating requests for assistance, supported by the NATO Procurement and Supply Agency (NSPA), the Science and Technical Organization (STO), the Strategic Airlift International Solution (SALIS), and the Rapid Air Mobility (RAM) initiative. The



Supreme Allied Commander Europe (SACEUR) coordinates NATO's operational response, providing strategic airlift capability and long-route airlift to supply hundreds of tons of aid, deploy field hospitals, transport personnel, and evacuate patients. While very successful, analysis should be done to determine the relative value added for NATO's efforts over those coordinated by other international organizations or directly between nations. Strategic planning for those aspects of pandemic response in which NATO engages should include triggers for earlier pandemic recognition and initiation of response systems.

### **Local engagement**

At the local level, military installations and units need to work closely with community leaders to synchronize pandemic response efforts, including restrictions on access to military facilities, use of civilian contract support, personnel screening, contact tracing, and more. In addition, medical support for military installations is often supplied by the local civilian healthcare; the installations will need to coordinate with local medical facilities and hospitals to discuss capabilities and requirements for continued support for military personnel and dependents in the area. Civilian community guidance and military guidance should be aligned and synchronized to the extent possible.

Military installations rely heavily on local contracted support to sustain base operations. Pandemics will affect this support in many ways: the cost of contracts may increase, and continued interactions between military personnel and local contractor personnel could perpetuate the risk of disease transmission. Base support contracts should include provisions and funding for outbreak response and mitigation measures, even if these provisions increase overall cost. Similarly, installations should evaluate the potential need for increased contract support during crises and ensure that contract personnel are considered when allocating PPE and other supplies.

### **Types of military support**

National militaries provided support to civil authorities in numerous areas of pandemic response. Overall, military logistics capability and capacity proved uniquely valuable in the transport of materiel, equipment, and contagious patients; in distributing military stockpiles of PPE, equipment, and medical supplies; and in supporting vaccine distribution—as one observer stated, “no other component of government or commercial services is likely to have been able to fulfill this role.” Military support broadly was highly valued for its leadership skills, its flexibility, and its readiness: large numbers of personnel could be brought to bear on short notice. For this reason, military units were often called upon to support population screening, testing, and vaccination; to conduct epidemiological investigations and contact tracing; and to deliver food, medical supplies, and transportation

to remote or vulnerable populations. Military medical personnel were frequently assigned to relieve or augment civilian medical personnel at hospitals and elder care facilities.

In some instances, military support had mixed results. Many nations deployed field hospitals or tasked military forces with adapting existing public facilities for medical use, including as isolation or quarantine facilities; in some cases, these facilities were underutilized or late to need. Further assessment needs to be done to determine the circumstances in which these capabilities can be most effectively used. Similarly, CBRN defense units in several nations were tasked with disinfecting critical infrastructure, public spaces of various types, and elder care facilities; research needs to be done to determine the effectiveness of these activities in reducing the incidence of disease.

Finally, caution should be used in planning for military support to civil authorities, and senior leaders should understand the limitations of military capability and capacity and be able to communicate the risks to other core military missions when responding to future pandemics. For example, when assigning military medical personnel to civilian facilities, the first assigned should be those whose specialties are infrequently deployed, such as pediatrics and obstetrics; trauma surgeons, emergency physicians, and anesthesiologists should be reserved for support of combat operations to the extent possible.

### **Information sharing**

During the pandemic, nations collected patient data and disease information from a wide variety of public and private sources. Systems collection and management of patient data should be interoperable so data can be shared between the two sectors, within the constraints posed by privacy laws; digital handoff of electronic health records and imaging results from military to civilian systems and vice versa could be helpful in improving surge capacity and promoting mutual assistance in times of crisis. In addition, military commander situational awareness and decision-making would be enhanced by sharing information within and between nations on the distribution of risk, infection, and disease in military and civilian populations.

### **Civilian support for live training events**

Foreign military personnel, contractors, and vendors can be vectors for disease among local, Host Nation populations during field exercises and operations. Military leadership must collaborate with Host Nation and local leaders early and often to ensure that operations and training events can be conducted with minimal risk.

### **Types of civilian support to the military**

Civilian authorities and the private sector can support military personnel and operations in numerous ways. In particular, civilian government and private laboratories can conduct disease research and development of diagnostics and medical countermeasures

and can be used to expand testing and diagnostic capacity. The civilian community will also be a source for subject-matter expertise, disease characterization, and disease surveillance of both animals and humans.

### **Testing**

Identify and coordinate testing capabilities across NATO and in Host Nations to ensure epidemiological efforts are maintained and data is transmitted back to NATO.

## **Provide Medical Situational Awareness**

### **Basic science uncertainties with novel diseases**

A novel disease will often have many unknowns as far as epidemiology, clinical presentation, long-term effects, testing, MCM efficacy, and effect of public health measures. Responding to a new disease as we learn about it can hamper the speed at which countermeasures or guidelines can be developed with great certainty. It is important to fill gaps as soon as possible and prepare to communicate clearly, early, and often, even when definitive data is not yet known. Developing a common terminology when communicating information between organizations and to a population, and designating one source of information within an organization, can reduce confusion and burden.

### **National and international partnerships for situational awareness**

National and international partnerships are key to understanding the situation, recommending evidence-based guidance, and developing tests, treatments, and vaccines. Sharing data in a compatible format (on an agreed-upon IT platform) with the appropriate institutions at different administrative levels facilitates collaboration, problem-solving, and understanding disease dynamics in various environments.

### **Case monitoring, early warning, and reporting**

A variety of tools could provide early situational awareness in a pandemic, including wastewater monitoring, case heat maps, and integrated databases. A surveillance framework that is consistent across organizations and nations should be in place to expedite the process, provide guidance to streamline reporting, and minimize the burden of tracking and reporting. Especially in the beginning, testing and reporting may be lower than reality, which can skew the operational picture; establishing adaptable reporting requirements can enable a faster, more accurate flow of information. Reporting guidelines should also address the protection of patient health data (e.g., personal information, specimen data, test results), especially if/when doctors and laboratories are required to report data to their government and/or other international groups.

### **Medical intelligence platform for early warning**

Early detection and characterization of emerging pathogens can allow for preventative and mitigation measures to be put in place quickly, though there may be challenges with predicting follow-on waves and developing specific countermeasures in a timely fashion. A global medical intelligence platform should be established and could use the expertise of additional medical intelligence professionals and open-source analysis tools to identify triggers to initiate bio-responsiveness tasks and determine resource distribution.

### **Early warning systems for detecting emerging pathogens**

It can be difficult to characterize true disease spread when so much about the disease is still unknown. Early warning systems should be developed and utilized to detect emerging pathogens before they become outbreaks, epidemics, or pandemics. Systems could utilize wastewater monitoring, zoonotic surveillance, syndromic surveillance, antibody testing, contact tracing, genomic surveillance, and variant tracking to provide an earlier and better picture.

### **Inter-organization coordination**

Early and frequent coordination within and among hospitals, public health organizations, and government liaisons aids in communicating needs and status. This can help develop a response framework, determine resource allocation needs, and ensure consistent reporting requirements.

### **Resource monitoring/allocation**

Developing and maintaining a robust medical and public health infrastructure—such as hospital surge capacity, vaccine production pipeline, medical information databases and communication tools—as well as pandemic response plans will support rapid response. Maintaining materiel stockpiles and monitoring hospital capacity and capability will be key indicators on the status of a population and the ability to ease restrictions.

### **Risk assessment**

Accurate disease dynamic data is required for risk assessment before deploying in a given operational environment; both leadership and soldiers should have a good understanding of the environment and its risks.

### **Testing strategy for improved situational awareness**

Rapid implementation of widespread testing is a good way to identify cases—sometimes before symptoms—and determine the risk of spread in a population; it is also useful for ruling out a given infection and provides a more accurate picture of the situation

to decision-makers. However, there may sometimes be a shortage of tests available compared to the objective, which can make it difficult to understand the true situation. Discrepancies in test administration (e.g., false positives, only testing symptomatic patients) or results reporting can negatively impact what measures are taken or prevent accurate assessment of an operational environment.

## **Employ Lab Assets**

As mentioned previously, we considered an expanded definition of Employ Lab Assets to include at-home testing kits in addition to more traditional microbiological tests that would be conducted at a laboratory facility (e.g., polymerase chain reaction). Five candidate Lessons Identified resulted from this expanded definition; the remaining eight were from the standard task definition.

## **Test research and development and approval**

Developing diagnostic tests and understanding how they are best used is critical in accurately identifying cases, and limitations/benefits should be communicated to leadership. Antigen tests are rapid and easy to use, but not as accurate as polymerase chain reaction (PCR); however, PCR results can take longer to reach a doctor, are more resource-intensive, and may give false negatives if not administered at the correct time in the course of disease. Understanding and utilizing the context and sensitivity of a diagnostic test helps its usefulness. Encouraging and supporting the development and approval of a variety of tests, especially early on during a pandemic event, will increase the response capability. Research should be connected with regulatory agencies in order to expedite the approval process. Possible solutions listed to improve the rate of test development include approving less reliable solutions (e.g., 70% accuracy) to increase the number of approved tests, approving multiple diagnostics at once, developing technology incubators focused on developing diagnostics, and working with regulatory agencies during development to streamline approval processes.

## **Testing strategy and training**

Testing helps maintain the safety and health of a population by identifying cases who require treatment and pinpointing who may require quarantine. Testing should prioritize symptomatic patients and close contacts, but also prioritize higher risk groups. Testing procedures should be established, communicated, and trained extensively to achieve accurate results, including scenarios in which testing supplies are limited. Personnel should be trained to administer tests, and results and follow-up procedures need to be communicated to individuals, laboratory staff, medical providers, and leadership.

## **Testing capacity and mass testing campaigns**

Having a robust testing strategy is necessary to obtain accurate disease prevalence data and maintain situational awareness. High levels of testing can be an effective method for identifying as many cases as possible for treatment, contact tracing, and isolation, especially if a vaccine is not yet available. Getting ahead of the wave requires sufficient testing (e.g., early mass testing). However, increased demand can strain supply chains and make it difficult to achieve the desired level of testing to reduce transmission (e.g., testing symptomatic cases, asymptomatic cases, and close contacts). A mass testing strategy requires sufficient capacity for testing, in terms of materiel, personnel, and infrastructure. For example, Germany maintained a network of independent laboratories that could process twelve thousand tests per day and China developed mobile, inflatable biosafety laboratories.

## **Easing restrictive public health measures**

Multiple criteria should be considered when easing restrictions, but availability and sustainment of widespread testing will be a key factor. Other criteria include hospital capacity, case numbers, and sufficient medical/PPE equipment supply.

## **Perform Deployment Health Surveillance**

### **Disease characterization**

Understanding key characteristics of a disease is important in being able to mitigate its effects. Understanding things like susceptibility, reinfection risk, vaccine protection rate, carrier status, and antibody prevalence can help inform decisions on protection measures and provide triggers to look for in a population to identify an outbreak.

### **Testing in the context of population dynamics**

Health surveillance (especially testing of asymptomatic individuals) can lead to improved situational awareness. Testing is a critical decision-making factor, but understanding how it reflects actual disease spread is also critical. If the level of testing/testing strategy in two populations is different, it can be difficult to compare them to each other and know the true infection or mortality rates. Increased testing may lead to both artificial or realistic higher case numbers, and taking that information in stride with how it may be used to make decisions on protective measures or easing restrictions may improve outcomes. Additionally, case definitions need to be interoperable for a shared understanding. Finally, it can be difficult to track cases of specific diseases when they share many characteristics with other diseases (e.g., COVID-19 with influenza and other respiratory infections).

### **Early warning and near real-time surveillance**

Gathering case and contact tracing data and sharing it at various levels (e.g., doctors, laboratories, public health departments, national health agencies) can help provide a wholistic picture of a pandemic. A need for a near real-time surveillance system or other early warning system capable of collecting, reporting, and sharing health data, providing a current disease picture, and detecting increases in disease transmission was noted as a requirement. Robust testing, environmental monitoring, and wastewater monitoring are examples of early warning methods that can provide genomic surveillance of pathogens, which could help identify emerging pathogens early, identify areas with high degrees of infection, inform decisions on implementing protective measures, prioritizing treatment capability, and easing restrictions. The military can contribute to the development of this early warning system. The disease case reporting system for NATO should be robust and interoperable, with examples from the Netherlands (where data was collected collaboratively from doctors, laboratories, and government organizations) and the UK (with the Track and Trace system) serving as best practices. Member nations should gather and share data collected at both the National and sub-national levels. Interoperability between nations and civilian and military health data should be considered while complying with national and international data privacy and security regulations regarding digital health records.

### **Military population health monitoring**

It is important for commanders to be aware of the health of their soldiers, both for the individual's well-being and for mission readiness. Screening methods and wearable sensors can be useful in monitoring disease prevalence. Similarly, monitoring for mental health effects should be considered a long-term effect. Screening methods varied and included increased general health check-ups, periodic random testing among cohorts, and thermal screening. Wearable sensors could monitor vital signs during infection (e.g., heart rate, respiratory rate, and temperature) as well as monitor for long-term effects in recovering patients, such as fatigue or respiratory problems; big data and artificial intelligence could be incorporated in interpreting data from wearables. However, these approaches should be interoperable, particularly within a NATO environment, communicated among NATO members, and take into consideration data protection laws and regulations.

### **Routine testing guidance and framework**

Routine testing for COVID-19 was identified as the best solution for reducing disease spread while vaccines were still unavailable and a key component of easing public health restrictions. Routine testing should include testing asymptomatic cases, contact tracing for positive cases, and higher levels of testing in at-risk populations. Generally, mass testing is the best approach to obtaining an accurate picture of disease spread and prevalence; this

combines testing used for screening, contact tracing, and symptomatic testing. This approach allows for early detection of symptomatic and asymptomatic cases, as well as notification of close contacts who may be at risk. In addition, a robust information analysis and dissemination framework must be in place to make the testing data actionable. In situations where lack of supplies or sufficiently accurate tests may make the desired/intended testing plan impossible to achieve, having a prioritization plan to most efficiently and effectively use limited supplies will make the most impact. This may include prioritizing high-risk patients, mission-essential personnel, symptomatic personnel, or moving from mass testing to batch testing.

### **Limitations of testing**

While testing is a critical part of situational awareness and disease mitigation, it cannot do everything and is only useful when implemented correctly. Antigen testing is rapid and accurate for routine testing or deployed environments, but may not be adequate to take the place of quarantine. Antibody testing can help characterize the prevalence of circulating disease (and therefore inform mitigation decisions), but cannot be used to create immunity maps.

## **Perform Operational Epidemiology**

### **Epidemiological data**

A critical component of pandemic response is gaining an understanding of the causative agent and disease. There were several uncertainties related to the epidemiological characteristics of COVID-19. Understanding transmission, infectivity, immunity, symptom severity, and disease mutation can help inform decisions on protective measures and drive research and development of tests and treatments. Gathering as much good-quality data from a variety of sources (e.g., genomic data, environmental data) can help provide context to an outbreak. Epidemiological data can have some limitations, including challenges tracking cases treated at home vs. those treated in hospitals. This can lead to an increase in the apparent mortality rate. Additionally, increased testing can make it appear as though infections are increasing, when the increase is due to more cases being reported.

### **Multi-level communication and contact tracing coordination**

Contact tracing and case follow-up is vital to maintaining accurate situational awareness on disease prevalence, which can help implement measures to reduce transmission. Local, national, and cross-national tracking and communication is important because disease does not respect borders. Developing an epidemiological understanding of COVID-19 across borders was a challenge for many nations, as was conducting contract tracing across echelons or organizations (e.g., between unit and garrison representatives).



Differences in testing protocols and a lack of mechanism for tracking cases across borders resulted in inconsistent, incomplete, or inaccurate medical reporting data. Contact tracing strategies can be tailored based on capacity balanced with disease prevalence (including neighboring countries), and should consider reporting requirements (such as format and frequency), testing capacity, and available treatment strategies. A wide variety of contact tracing approaches include describing who to test (e.g., close contacts, those with contact with at-risk populations, those entering a population, individuals prior to group quarantine), how to conduct contact tracing (e.g., a cluster approach, physically investigating sites, interview questions, tracking variants), and how to provide alerts (e.g., an automated and standardized warning message vs. requiring individuals to track and alert their contacts).

### **Epidemiological planning and resourcing**

Epidemiological resources available to conduct contact tracing can become overwhelmed during an outbreak. NATO should develop tactical and strategic pandemic plans and capabilities, such as the Medical Deployable Outbreak Incident Investigation Team (MED-DOIIT), to develop a common capability for medical information and intelligence, force health protection, and medical outbreak investigation. Developing detailed procedures and training and exercising units to conduct contact tracing and outbreak identification (through online and in-person courses) can help implement tailored control measures to minimize the effects on mission readiness; military personnel can then train civilians on contact tracing procedures. If there is a shortage of infectious disease, medical microbiology, and epidemiology specialists, NATO should coordinate with the private sector and smaller nations to share resources, tools, and knowledge, such as diagnostic and tracking tools and using military personnel to help with contact tracing.

### **Outbreak-tailored disease surveillance**

Population disease monitoring, through methods like wastewater monitoring or contact tracing, are key in identifying, containing, and mitigating disease spread. Wastewater surveillance and other early surveillance strategies can notify public health authorities of outbreaks earlier, potentially increasing the time available to develop preventative measures. However, when an outbreak reaches a critical size, there are many challenges to efficiently tracing disease and communicating the results. In order to manage contact tracing and enforce quarantine, many nations developed web or cell phone applications. These apps used a variety of sources, including geolocation data, credit card data, unmanned aerial vehicles, CCTV footage, and biometrics to identify individuals who may have been exposed to a person who subsequently tested positive for COVID-19. Some nations used this data to improve outbreak control measures (e.g., restricting activities at particular locations) or enforce quarantine (e.g., sending data to law enforcement agencies on individuals breaking quarantine). For all of these applications, frameworks should be developed for contact tracing and warning (i.e., notifying potentially exposed individuals

that they may have been exposed and encouraging them to stay home) that ensures data privacy regulations are followed.

## **Employ Medical Countermeasures**

### **Mass-produced and flexible medical countermeasures**

Developing and mass-producing therapeutics and vaccines in a pandemic can be challenging. Drugs granted emergency use will require additional/long-term study, and therapeutics and vaccines must be a part of a larger health protection/mitigation strategy. Additionally, drugs under emergency use authorization or currently undergoing regulatory approval are likely not approved in all countries simultaneously, creating potential interoperability issues between nations. Military and private civilian organizations can support each other in a pandemic, such as assisting with vaccine development, distribution, and clinical research. Various governments and organizations should cooperate on data sharing and fast-tracking MCM development and production. There should be guidance and frameworks in place to support and speed up the research and development process. Methods used to speed up MCM development include technology incubators, such as the HERA incubator in Europe, and developing plans to improve pharmaceutical production capacities in Allied nations.

### **Military-specific needs for medical countermeasure guidance**

Force health protection policies often mirror government policies, but a deployed environment requires additional considerations. Certain drugs may not be feasible for use in a field setting, while other therapeutics may be in higher demand or find “off-label” use. Potentially austere settings may require additional PPE and health equipment, and plans for MEDEVAC and pre-deployment vaccination should be in place. Medical personnel (including pharmacists) may require additional training to address care needs in pandemic deployment.

### **Policy framework and guidance**

Without prior experience or an existing framework, adequately implementing protection and mitigation measures will be difficult. Framework and criteria can guide decisions such as vaccination policy, easing restrictions, testing policy, and equipment and MCM stock level requirements. A policy framework can guide international cooperative efforts as well as communication/data sharing guidelines.

### **Vaccination guidance and resourcing**

Vaccination is a key component to an effective pandemic response, and it works most effectively when vulnerable (e.g., people in nursing homes, people over age 65, tribal

communities, homeless communities, prison populations, racial and ethnic minorities, rural communities, people who are under- or uninsured) or mission-essential (essential workers, educators, soldiers, medical professionals, deploying personnel) populations are prioritized, especially when vaccine stocks or vaccination timelines are limited. However, implementing vaccine policies requires sufficient infrastructure (if cold chain is required, varied handling requirements for different vaccine options), transportation, and administration personnel and facilities; while recipient willingness is impossible to plan for, framing vaccination as an alternative to more restrictive public health measures may incentivize better uptake. Vaccination guidelines should be clear and consistent, consider the needs of pre-deployment military personnel and other mission-essential personnel, and address the continuing presence of other background diseases such as influenza.

## **Provide Psychosocial Support**

### **Mental health support policy**

Pandemics can cause increased stress for many reasons: restrictive measures (such as lockdowns, quarantine, and restrictions on social activity) can disrupt routines, cause a sense of lack of control, and increase loneliness, strained familial relationships, loss of jobs, and health concerns (risk of getting sick, lack of access to care, and more). This stress can cause or exacerbate mental health issues; during the pandemic, incidence of domestic violence, drug and alcohol use, unhealthy coping mechanisms, and self-harm increased. Individuals and healthcare workers should be aware of signs of stress and mental health distress, and work to develop healthy coping mechanisms. Changing policy to support mental health programs and frameworks, especially for higher-risk or more vulnerable populations, may help mitigate these effects.

### **Stress and support in the military**

Military leaders should anticipate psychosocial stress as a result of outbreak response measures, and they should develop campaigns to provide information to military populations on how to cope with anxiety and stress, focused on mental health promotion, prevention, and early intervention. At the operational and tactical level, leaders need to be trained to monitor the mental health of their personnel, maintain open communications channels, and ensure psychological assistance can be provided to service members showing signs of psychological stress or trauma. Military units should support buddy-aid by providing mental health training and looking out for each other's mental health, as well as reporting mental health issues and seeking professional help without fear of career impacts. Regular communication and normalization of mental health resources could help alleviate stress; these support programs must be sufficiently funded and staffed and communicated by leaders. Appropriate psychological and family support needs to be available for military

personnel and their families prior to, during, and after deployments. Tools such as telehealth capabilities may also be helpful.

### **Stress and support for healthcare workers**

Healthcare workers are at high risk for stress, burnout, trauma, and mental health issues in a pandemic situation; many developed short- and long-term health problems, including PTSD-related conditions. Across Nations, healthcare workers reported feeling overwhelmed, disheartened, and exhausted. They are at higher risk of infection and may be understaffed, under-equipped, and overworked. This puts their mental health at risk, but may also impact their ability to adequately care for patients. Improving work-rest cycles, improving psychological support and resiliency, and improving hospital policies and capacities to reduce overburdening healthcare workers would improve healthcare worker mental health issues. In addition, leaders must ensure that medical personnel have access to protective equipment and sufficient levels of staffing. Increased and effective use of telehealth tools can also reduce the burden on and risk to healthcare workers.

### **Military support for overwhelmed civilian systems**

Military personnel may be useful in assisting with overburdened tasks or tasks in which they have unique prior experience, such as establishing and manning psychosocial assistance hotlines to support civilian populations.

## **Prepare Medical Risk Assessment**

### **Data sharing and situational awareness**

Regular communication and data sharing is key to implementing a pandemic response. NATO (and individual governments) should develop and implement a method of regularly communicating consolidated efforts with the COEs. This will require continued sources of intelligence and situational awareness to share (which must be sufficiently staffed and supported), while maintaining appropriate levels of security; tools such as epidemiological updates and medical risk assessments are helpful. Decision-makers should communicate with medical providers, military personnel, and other government agencies to ensure a common understanding and shared risk tolerance for the mission at hand.

### **Health risk in an operational environment**

Health risk assessment and the information on which it is based are critically important inputs to decision-making. Criteria/categories for epidemiological population risk and the understanding of how a disease moves through and affects a population will help people make decisions regarding the imposition and when to ease restrictions at the

appropriate time. In an operational environment, commanders need to develop an understanding of health risks to the force and to make operational decisions that balance mission objectives with those risks. Identification of risk factors for infection, monitoring of disease transmission within communities of interest, and the availability of medical countermeasures to mitigate the most severe cases are examples of information needed to make decisions to impose or lift outbreak control measures, in whole or in part. However, assessing risk early in a pandemic is made difficult by a lack of understanding a new disease or a new presentation of an existing disease. Similarly, disease dynamics and predictions can be difficult, and predicting future waves is both useful and difficult.

### **Understanding high risk and unanticipated risk**

During the COVID pandemic, health risk assessments considered a large number of factors, many of which changed over time as more became known about the disease. These included risks of infection and clinical outcomes associated with age, gender, and underlying health conditions; psychosocial risks from control measures; and risk factors for long-term effects of disease. Certain personnel (such as healthcare workers, maintenance personnel, and leaders) may be at higher risk of exposure to disease; certain situations, like port visits or healthcare facilities, may also be an increased risk of exposure. Higher risk personnel and/or situations should be identified, and implementing pre-deployment screening and risk assessments could help mitigate some risk, as well as determine the specific need for measures like PPE or quarantine. Many consequences of the COVID pandemic and the risks of experiencing them were unanticipated but should be considered when developing future health risk assessments.

### **Health risk mitigation guidance**

Guidance on measures to mitigate health risks is needed at all operational levels. Priority should be given to preventing infection, as it is often more manageable than treating infection. Protecting a population is typically the primary goal, and this may be achieved through rigorous targeted/triaged testing, screening, strategies to protect high-value or high-risk personnel, and specific Infection Prevention and Control guidance for medical units. For example, determining infection risk prior to deployment can guide decisions on vaccination plans. Coordinating and communicating operational risks to a deployed population could increase or decrease the priority of vaccination of military personnel.

### **Benefits and risks of mitigation measures**

Mitigation measures, such as PPE and quarantine, can be both a benefit and a risk. PPE may increase fatigue or increase risk if there is an insufficient supply, and quarantine may put undue stress on vulnerable populations. Balancing risk tolerance with the current

threat level and available mitigation measures can guide decisions on when to apply which mitigation measures. Communicating this risk tolerance and updating it with the situation can provide a flexible framework.

### **Medical intelligence and data sharing**

The collection, integration, analysis, and sharing of medical intelligence and medical information is essential to ensure civilian and military decision-makers are aware of biological security threats and understand risks to national security during a pandemic. Communication of such information between and within military and other governmental agencies and among allies is critical. Medical intelligence and analysis tools can be developed to better exploit open-source medical intelligence during mission planning between nations, though care must be taken to avoid inadvertent dissemination of national vulnerabilities.

### **Perform Medical Evacuation**

#### **Military and civilian interoperability in medical transport**

Nations relied on both civilian and military MEDEVAC assets to transport COVID patients. Early in the pandemic, the use of civilian aircraft for STRATEVAC was preferred because of cost and less stringent international flight regulations. The capacity of civilian strategic evacuation (STRATEVAC) was often limited, and as the numbers of patients requiring repatriation to home nations increased, however, the use of military assets became more cost effective and more frequent. Developing guidance on which situations are best suited for which type of transport could be helpful. Additionally, coordinating and developing agreements between civilian and military sectors before crises could help speed up response efforts.

As the pandemic progressed, many Nations routinely turned to military capabilities to support civilian MEDEVAC needs, both air and ground. Military vehicles were used to transport civilian patients to and from COVID test centers and to medical clinics, and to redistribute patients among hospitals as needed; the contribution of these assets was frequently cited as a best practice. In some cases, military vehicles other than ambulances were used for this purpose and typically adapted to isolate passengers—including drivers, crew members, and other personnel—through the installation of protective barriers within the vehicle.

#### **Challenges in transporting contagious patients**

During the pandemic, NATO and National military commanders wanted COVID patients moved out of their area of operations. However, there are two major challenges to STRATEVAC of contagious disease patients, particularly when they are severely ill or are

present in large numbers: (1) regulatory, political, and administrative issues, and (2) capacity. Within the area of operations, the Alliance can promote simplification of airspace use rules for pandemic flights and improve the timely provision of air corridors. NATO and its member Nations can also work within the international community to streamline the administrative burdens of international flight regulations and requirements for personnel and airframe decontamination on landing/disembarkation. Commanders and medical planners must also understand the capacity limits of available STRATEVAC and consider options for in-theater holding and care of infectious disease patients when those limits are reached. Potential options for managing patients in theater include in-unit isolation for the mildly ill, establishment of dedicated isolation facilities, or placement in infectious disease wards of existing military medical facilities.

### **Best practices and framework for transporting contagious patients**

Aeromedical evacuation of contagious disease patients presents numerous challenges. Isolation transport containers may be in short supply and/or not certified for use in certain airframes. Cockpits may not be sealed, requiring pilots to wear protective equipment that physically constrain their ability to operate airframes and reduce operational duty time due to issues including limited fields of vision, reduced mobility and reaction time, rapid dehydration, and physical discomfort. Patient loading and in-flight care generates health risks to medical and non-medical crew members, on the ground and in the air.

During the pandemic, aeromedical evacuation crews and units in NATO nations, particularly the US, developed numerous infection control procedures and integrated a wide range of materiel solutions to overcome these challenges at a tactical level. This community of interest could collate and review its practical innovations and develop a set of best practices for future use in managing aeromedical evacuation of contagious patients. Some best practices listed for conducting Infection Prevention and Control during MEDEVAC included using the smallest crews possible, requiring certified biohazard protective equipment for flight and ground operators, transporting patients inside of negative pressure isolation chambers with air filtering, transporting potentially hazardous material in biohazard bags, decontaminating crew members and aircraft after flights, and grouping multiple infected patients in one aircraft to minimize crew exposure.

### **Training for medical evacuation**

Training for medical evacuation prior to a crisis is important. Medical evacuation crews executed rehearsals of transporting infectious disease patients, coordinating with local medical facilities and hospitals to discuss capabilities. Medical evacuation personnel should prepare for and exercise medical evacuation plans, and after-action reviews should be conducted after trainings and missions to improve the safety and efficiency of evacuation processes.

### **Prolonged care of infectious disease patients**

There are multiple reasons why medical evacuation may not be possible, including medical facilities refusing infectious disease patients, mass casualty events, or large-scale combat operations preventing patient movement to higher roles of care. In these cases, patients may be held for longer periods of time than typically established in doctrine. In these cases, the force structure may not be sufficient to treat infectious disease patients requiring critical care.

### **Other – Conduct Research and Development**

#### **Flexibility of scientific research needs**

The scientific research community must be organized and prepared to conduct immediate, priority research investigations at the outset of any outbreak of emerging infectious disease with pandemic potential. It is critically important to develop an understanding of the behavior of the pathogen within the body, within the population, and in the environment as quickly as possible to inform the development of case definitions, diagnostic tests, infection control practices, and guidelines for isolation and quarantine of sick and exposed individuals. Some approaches for decreasing the knowledge gap include: (1) consider and test whether the pathogen characteristics are similar to other known disease; (2) invest in large-scale epidemiological research studies; and (3) invest in targeted studies investigating the epidemiology within military populations. Prompt research must be also be conducted to evaluate the effectiveness of existing medical countermeasures in preventing or treating cases of the new disease.

#### **Testing efficacy of potential medical countermeasures**

Prompt research must be conducted early in an outbreak to evaluate the effectiveness of non-pharmaceutical interventions. During the pandemic, it was not always clear which non-pharmaceutical interventions (e.g., mask wearing and social distancing) or disinfection practices were best for reducing the spread of disease. Testing the efficacy of these approaches should be conducted as early as possible during a pandemic scenario and guidance updated as more data is learned.

#### **Collaboration in scientific research and pharmaceutical development**

The unprecedented speed and success of COVID-19 vaccine and therapeutic development was enabled by similarly unprecedented effort and collaboration among public and private organizations across nations. Going forward, national and international institutions can partner with medical research organizations, industry, and experts from various sectors in technology incubators to leverage the pandemic experience to streamline the process and reduce barriers to research, development, testing, and production for



medical countermeasures and diagnostic testing. Companion efforts need to be made to rapidly detect and characterize new and variant pathogens, in order to inform basic research at the earliest possible time.

## **Other – Conduct Continuity of Operations Planning**

Continuity of operations planning was not established as a defined task in the NATO Bio-Responsiveness CONOPS. However, many observations concerned this topic. Nine lessons identified were related to continuity of operations planning. Two of these observations were highlighted as priority Lessons Identified. The remaining seven are described below.

### **NATO organization or group for pandemic continuity of operations**

NATO forces should pre-establish an organization/group to oversee pandemic planning and response, including developing and issuing guidance (e.g., response tasks and personnel, business continuity, training objectives, reporting guidelines), unifying information, authorizing emergency procedures/plans, and acquiring necessary materiel to continue the mission in a future pandemic. Establishing one entity to provide a common operating picture to decision-makers may help streamline response actions.

### **Changes to in-person manning**

To reduce the spread of COVID-19, organizations instituted various changes in in-person manning. These changes included establishing shift work, flexible work schedules, working in “bubbles,” operating with limited staff but keeping others “on call” in case of emergencies, and altering services to align with reduced manning (e.g., changing cafeteria to offer take out). Mission-essential personnel that need to work in-person should be identified rapidly and communicated clearly; guidelines should be in place to address staffing challenges (including contract support) due to critical defense contracts. In-person workers should be provided with sufficient PPE to avoid infection. Additionally, there is a need to ensure there are sufficient workers to account for essential personnel becoming sick, needing to quarantine, or burning out. Militaries must establish procedures and guidelines to ensure they can maintain proper staffing at medical facilities, as these personnel require lengthy training and can be difficult to rapidly replace or reinforce. Retired/reserve recall processes may be helpful, but require additional planning to address competency and licensure. For some cases, reduction in in-person manning had significant drawbacks, such as for intelligence organizations. Identifying which types of positions are most conducive to remote work should be conducted prior to or early on during a pandemic.

## **Flexible procurement**

Establishing guidance and pipelines to allow for rapid and flexible procurement will help avoid supply chain issues and allow for more equitable distribution of necessary supplies. Lack of adequate supplies and personnel can greatly impact the ability to continue the mission, especially in medical units. The establishment of a revolving fund could allow for additional flexibility during these situations.

## **Teleworking IT challenges and solutions**

To limit the spread of COVID-19, many organizations in NATO switched to remote work. A dispersed and distributed force can be successful with appropriate planning and enactment of policy; personnel who can telework should be able to, but policies must allow for and support it. Several challenges regarding the transition between in-person and remote work were noted, including: (1) the lack of a common remote teleconferencing solution across NATO; (2) limited availability of laptops with teleworking capabilities (e.g., working microphones, cameras, collaborative software, and VPN networks) at the start of the pandemic; (3) concerns regarding data protection, cyber security, and medical confidentiality when working remotely; and (4) insufficient network resources for conducting teleconferences/virtual health meetings at the start of the pandemic. As teleworking is an important aspect of ensuring continuity of operations, it was suggested that telework working groups should be established to set requirements, principles, procedures, and gaps in current teleworking practices. Implementing occasional in-person check-ins with remote workers could aid in ensuring collaboration and situational awareness.

## **Remote training, exercise, and education**

Many training and exercise events were cancelled in response to the COVID-19 pandemic, negatively impacting readiness. Education and training can be shifted online if planned correctly; this can allow for a wider community engagement by not requiring travel, and can help maintain resilience if personnel are otherwise unable to perform their normal duties. E-learning is proposed as an alternative to in-person learning and investment into e-learning approaches was identified as important. However, e-learning has several limitations, including: (1) individuals can often have trouble accessing e-learning resources, (2) there is often a decrease in the quality of learning when switching to e-learning, and (3) not all types of training are well-suited to e-learning. Possible solutions to these drawbacks include: (1) make e-learning accessible on mobile phones, in remote locations (e.g., onboard ships), and ensure individuals have the technology to access the training (e.g., secure systems or Common Access Card (CAC)-enabled computers); (2) develop micro-learning modules that consist of short, interactive segments that limit the amount of information individuals are responsible for remembering at once; and

(3) consider short-term credentialing extensions for when attending necessary training is impossible. When in-person training must occur, determine which individuals should be prioritized for attending these sessions and utilize appropriate public health restrictions to ensure the health of the training population (e.g., quarantine, social distancing).

### **Virtual healthcare**

Medical personnel benefitted from commercial-of-the-shelf virtual health platforms that allowed for flexible scheduling and medical support to care for patients while balancing their workload in a pandemic environment. IT infrastructure should be bolstered to allow for the continuation of virtual health care during telework.

### **Psychosocial challenges of teleworking**

Telework can enhance challenges in balancing work and family life, especially for personnel with young children who can't go to school or daycare or elderly relatives who require additional care. Allowing for flexibility in scheduling and time off can help balance the burden and burnout in a pandemic.

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## Appendix B. Metadata Tagging

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The following tables include the metadata tags for the observations pulled from the four sources: (1) NATO Centre of Excellence for Military Medicine (MILMED COE) Force Health Protection (FHP) Branch video teleconferences (VTCs); (2) NATO Joint Analysis Lessons Learned Centre (JALLC) Observation, Discussion, Conclusion, Recommendation (ODCR) forms; (3) NATO JALLC national reports; and (4) U.S. Lessons Learned repositories. It is important to note that these tables only include observations that were deemed “relevant” to this effort, which may be noted in the identifier numbering. It is also important to note that these tables list the observations in their original form as they were submitted; any spelling or grammatical errors were present in the original observation.

**Table 23. Metadata Tags for Observations from MILMED COE Force Health Protection Branch COVID-19 Video Teleconferences**

Identifier	Observation	Task	Phase//Tier	Operational Level	DOTMLPF-I	Sentiment
A-1	NATO might want to help unstable/vulnerable states, refugees, and NGOs as they are in extra danger in the current situation	CivMil Cooperation	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine/Policy	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-3	delayed rotations impose extra stress on deployed personnel	Iso/Quarantine/ROM Psychosocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Personnel	Could Be Better
A-4	shortages in PPE for milmed personnel	Inf. Prevention & Control Lab Assets Deploy. Health Surv. Forensic F(x)s MEDEVAC Op. Epi. Patient Manage. Sample Manage. Clinical Diagnosis Other – PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical	Materiel	Could Be Better
A-5	civilian workers going on and off base may pose a threat to mil personnel	Iso/Quarantine/ROM CivMil Cooperation	Mitigate Enh. Outbreak Manage.	Tactical	Doctrine / Policy Organization Personnel	Could Be Better
A-6	training missions run in Mali, Somalia, etc are close contact tasks that are not easily performed via teleconference	Iso/Quarantine/ROM	Prepare & Protect	Operational Strategic	Training Personnel	Could Be Better
A-7	commanders have pandemic plans, but it is never easy to implement [Force Health Protection] FHP on a tactical level	Inf. Prevention & Control Iso/Quarantine/ROM Deploy. Health Surv. Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational	Leadership Personnel	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-8	African mission trying to avoid using local supplies to avoid the negative view of locals (white soldiers buying up supplies)	Med. Risk Assess. Med. Support Ops	Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Materiel	Neutral
A-9	locals see COVID as something that foreigners brought into their country (delicate CIVMIL balance in host nations)	CivMil Cooperation Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Leadership	Could Be Better
A-10	Cockpits cannot be sealed off bio-safely so pilots wear PPE	MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Materiel Personnel	Neutral
A-11	Commanders want all COVID positive cases out of theatre which raises questions of eligibility, nationality, security clearance, etc	Iso/Quarantine/ROM MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Personnel Interoperability	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-12	fly patients out with civ International SOS instead of mil aircraft bc faster and cheaper (e.g. 150,000 instead of 400,000)	CivMil Cooperation MEDEVAC	Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy	Went Well
A-13	only uses MIL assets for MEDEVAC which are more cost effective	MEDEVAC	Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy	Went Well
A-14	European Air Transport Command (EATC) used to get planes from Italy, but they cannot provide planes during crises	Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better
A-15	LUX Air Rescue may be able to help out of Kabul, but often not able to land if COVID patient on board, can only take 1 patient	Iso/Quarantine/ROM MEDEVAC	Prepare & Protect Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy Interoperability	Could Be Better
A-16	each nation has individual plan on force evacuation if test positive in Afghanistan	Lab Assets MEDEVAC Clinical Diagnosis	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical	Doctrine / Policy Interoperability	Could Be Better
A-17	Military air transportation can be difficult bc of political restrictions	Iso/Quarantine/ROM CivMil Cooperation MEDEVAC	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Could Be Better



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A-18	CIV transportation can be considered for MEDEVAC	CivMil Cooperation MEDEVAC	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
A-19	Hiring civilian medical evacuation can be cost effective for small number of patients	CivMil Cooperation MEDEVAC	Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy	Went Well
A-20	Lack of clear NATO regulations regarding COVID-19 AE (aeromedical evacuation)	MEDEVAC	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Interoperability	Could Be Better
A-21	Differences in CIV-MIL policies cross-alliance	CivMil Cooperation MEDEVAC	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Interoperability	Could Be Better

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A-22	numerous issues with MEDEVAC: small plane capacity, small # of planes, national/biosafety requirements for planes landing and disembarking	Iso/Quarantine/ROM MEDEVAC	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better
A-23	lack of tests for returning force members in Afghanistan, need to establish priority of whom to test when limited testing capability is available	Lab Assets Deploy. Health Surv. Medical SA Clinical Diagnosis Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy Materiel	Could Be Better
A-24	need to develop schedule of vaccination priority	Med Countermeasures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Could Be Better
A-26	Gradual lifting of work restrictions and controls at SHAPE (unaware of second wave)	Med. C4I & Dec. Support Med. Risk Assess. Other – NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral

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A-27	should be very careful when lifting restrictions	Med. C4I & Dec. Support Med. Risk Assess. Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
A-28	do masks create a false sense of security?	Strat. Comms. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
A-29	no masks, social distancing is enough (differences in cross-alliance mask policies)	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Interoperability	Could Be Better
A-33	De-escalation procedures for deployed NATO forces should be adjusted to mission conditions	Iso/Quarantine/ROM Med. C4I & Dec. Support Med. Risk Assess. Other - unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral

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A-34	WHO guidelines serve as reference for most countries	Other - unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Neutral
A-35	rest of MIL wears cloth masks (as opposed to medical forces/what responsibility is there for disclosure of info when prioritizing resources?)	Strat. Comms. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
A-36	military logistics capabilities are used to help CIV efforts (no other entities have same logistic capacity as armed forces)	CivMil Cooperation	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral
A-37	train non-medical people to aid epidemiologic efforts (e.g. public disinfection, repurposing units)	Inf. Prevention & Control Patient Manage. Med. Support Ops	Enh. Outbreak Manage.	Tactical Operational	Doctrine / Policy Training Personnel	Neutral
A-39	differences in mask adoption across alliance	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral

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A-40	Need to avoid overwhelming health care systems with 2nd wave	Patient Manage. Med. Support Ops	Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Materiel	Neutral
A-41	Telemedicine needs to be trained to the doctors	Nat. Outreach, Reachback, Fusion Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization Training Personnel	Could Be Better
A-42	Need to prove interoperability and a big exercise would be helpful (particularly RE pandemic response)	CivMil Cooperation Med. C4I & Dec. Support Other - civ support	Prepare & Protect	Strategic	Training Interoperability	Could Be Better
A-43	Mental health is an important [Force Health Protection] FHP consideration (1/3 of US Middle East MEDEVACs were due to mental health per military.com)	PsychoSocial Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization Personnel	Could Be Better

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A-44	Medical collateral damage: limited access to providers, capacity limits, limited resources	Patient Manage. Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization Training Materiel Personnel Facilities	Could Be Better
A-45	Effects on milmed: some nations have all MIL medical forces vs. others with CIV integration (e.g. UK)	CivMil Cooperation Patient Manage. Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Interoperability	Neutral
A-46	Telemedicine: can it be used to provide care in missions? (how effective is it?)	Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Training Facilities	Neutral
A-47	Toll on unit morale: bored, irritable, relational problem, excessive gaming, guilt, feeling of uselessness, covert PTSD	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic		Could Be Better

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A-48	COVID-19 served as a critical event for some service-members and triggered mental health issues	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic		Could Be Better
A-49	Very low reporting of mental health issues to commanders and medical staff	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic		Could Be Better
A-50	Units should be organized to promote buddy-aid [i.e., mental health]	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Organization Training	Could Be Better
A-51	Need to provide mental health training to medics	PsychoSocial Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Training	Could Be Better
A-52	Operational facilities (roles 1, 2, 3) in need of mental health specialists	PsychoSocial Support	Prepare & Protect Mitigate	Tactical Operational	Organization Personnel	Could Be Better

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			Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover			
A-53	Huge drop in routine hospital visits due to COVID	Inf. Prevention & Control Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Could Be Better
A-54	need to improve IT services for telehealth	Patient Manage. Other - NPI	Prepare & Protect	Tactical Operational	Doctrine / Policy Materiel Facilities	Could Be Better
A-55	telehealth can improve longitudinal care for mobile forces (e.g. over course of lifetime as they move through rotations and bases)	Patient Manage.	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy	Neutral
A-56	family and relational strains, increased alcohol use, domestic violence - all due to COVID	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
A-57	looking into wearable sensors to monitor troop health	Deploy. Health Surv.	Prepare & Protect	Strategic	Doctrine / Policy Materiel	Neutral



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A-58	immunity can't be used as a passport, perhaps doesn't offer COVID-19 protection	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
A-59	virus is not well known even if similarities with SARS CoV 1 and MERS	Med. C4I & Dec. Support Medical SA Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
A-60	temperature detection in airports not recommended, very unreliable	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Could Be Better
A-61	Antibody test cannot be used to create immunity maps	Lab Assets Deploy. Health Surv. Op. Epi. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
A-62	Deployed medical personnel want more reliable methods to support COVID-19 patients on mission	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational	Doctrine / Policy Materiel	Could Be Better

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A-63	Further investigation of the virus is needed to develop reliable test	Other - R&D	Strat. Surge Stabilize Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Could Be Better
A-64	if effective, antigen testing is easier and faster to use in the field or a deployed scenario	Lab Assets Deploy. Health Surv. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training Materiel	Neutral
A-65	uncertainty over whether a test can substitute for quarantine for deployed forces	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Could Be Better
A-66	people turning to unhealthy means to cope, liquor sales increased by 600%, increasing rates of suicide	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
A-67	emotional stress of division of labor between essential and non-essential workers	PsychoSocial Support Other - BCP	Mitigate Enh. Outbreak Manage.	Tactical Operational Strategic	Doctrine / Policy Personnel	Could Be Better

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A-68	Colleagues should watch out for any person who may need help	PsychoSocial Support	Op. Surge Strat. Surge Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Neutral
A-69	Leaders should anticipate mental health becoming a major problem	PsychoSocial Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Leadership	Neutral
A-70	Necessary campaign on how to cope with anxiety and stress posed by COVID	Strat. Comms. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
A-71	trauma and re-traumatization of frontline workers is a major problem	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational Strategic	Doctrine / Policy Organization	Could Be Better

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A-72	mental health should not affect career opportunities (e.g. fear of going to commander when struggling)	PsychoSocial Support	Stabilize Trans. & Recover Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Leadership Personnel	Could Be Better
A-73	operational level folks need to be intentional about communicating and checking in with people, willing to connect to professional health	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Neutral
A-74	the rate of suicide among MIL has increased at a faster rate than that among CIV	PsychoSocial Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Training	Could Be Better
A-75	medical professionals under stress from workload and quarantine requirements	Iso/Quarantine/ROM PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational Strategic	Doctrine / Policy	Could Be Better

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A-76	military activities during pandemic now include 1) law enforcement 2) emergency construction 3) helping in CIV area	CivMil Cooperation	Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral
A-77	need investment in basic coping techniques (e.g. nutrition, exercise, sleep, checking in, de-stressing techniques, spirituality) **this feels pretty superficial	PsychoSocial Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Could Be Better
A-78	difficult to release bc requirement was 2 negative tests, but some individuals continued to test positive for 40 days after recovery	Iso/Quarantine/ROM Lab Assets Med. C4I & Dec. Support Patient Manage. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Materiel	Could Be Better
A-79	did daily expert meetings in their hospital and on a weekly basis with hospitals around to increase situational awareness, was helpful	Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Went Well

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A-81	even mild cases were STRATEVAC-ed home	MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
A-82	Mild cases group largely represented in armed forces, symptomatic care is recommended	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
A-84	All drugs are emergency use approved, more studies are needed for reliable treatment	Med Countermeasures Patient Manage. Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Could Be Better
A-85	after several weeks, medical personnel only took care of ill patients, not simply all positive cases	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
A-86	medical staff overwhelmed by people asking for info/case data and stopping by clinic, this could have been provided at the HQ level	Med. C4I & Dec. Support Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization	Could Be Better

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A-87	at first, all positive patients were admitted, but then discharged to be cared for at home	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
A-88	“infodemic was misleading and very hazardous”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
A-89	transferring non-COVID cases to smaller facilities was difficult bc other facilities kept refusing the patients due to fear of infection	MEDEVAC Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Could Be Better
A-90	for mild deployed cases, use symptomatic care, check for new symptoms	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
A-91	[Anti-retrovirals] ARVs and experimental drugs not advised to use in deployed scenario, have quick access to [intensive care units] ICU for oxygen	Med Countermeasures Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Could Be Better

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A-92	Use face mask only if social distance is not feasible **evolution over time	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
A-93	Risk of outbreak clusters because of people working in the same building	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
A-95	port visits are especially risky, NATO operations to rescue migrants	Iso/Quarantine/ROM CivMil Cooperation Med. Risk Assess. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Could Be Better
A-96	high risk activities: pilots coming on board, change of crew, technicians coming on board	Inf. Prevention & Control Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Could Be Better
A-97	need to develop second wave indicators, run an early warning system	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational	Doctrine / Policy Materiel	Could Be Better



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A-98	Mathematical models for biological agents or populations are still more retrospective than predictive	Med. C4I & Dec. Support Med. Risk Assess.	Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Could Be Better
A-99	Non-pharmaceutical countermeasures need to be in place for as long as possible	Iso/Quarantine/ROM Other - NPI, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
A-100	all tools are dependent on the data they are fed with, there is a lot of fake/wrong data circulating (difficulties in modeling)	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Could Be Better
A-101	best pre-vaccine solution is to have enough testing to catch all cases, isolate them to track contacts	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Op. Epi. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Neutral

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A-102	hard to predict second wave because assumptions and actions of large groups of people are hard to gauge	Med. C4I & Dec. Support Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Could Be Better
A-103	should not bet on a vaccine, invest in non-pharmaceutical countermeasures	Iso/Quarantine/ROM Other - NPI, PHM	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
A-104	AI is only useful in predicting trends if there is a large enough amount of data	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
A-105	epidemiology complicated by multiple nations in UK (e.g. Wales, Scotland)	Op. Epi.	Prepare & Protect Mitigate Enh. Outbreak Manage Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Could Be Better

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A-107	important to follow the 3 t's (testing, tracking, and treating)	Lab Assets Op. Epi. Patient Manage. Other - testing	Mitigate Enh. Outbreak Manage Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
A-108	lots of confusion about reopening and election timelines as a result of COVID was debilitating and damaging	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
A-109	[Force Health Protection] FHP in DoD mirrored CDC policies, never less but sometimes more	Iso/Quarantine/ROM Med Countermeasures Other - NPI, PPE, PHM	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Could Be Better
A-113	public health institutions in UK routinely requested mil support, not just bc of public health expertise but also bc of leadership skills (armed forces are useful in crisis response)	CivMil Cooperation Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Went Well
A-114	important for commanders to have very detailed [Force Health Protection] FHP instructions (step by step guides are helpful)	Med. C4I & Dec. Support Other - PHM	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational	Doctrine / Policy	Neutral

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase/Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
A-115	difficulty matching testing and quarantine requirements as deployed troops travel to theater (interoperability issues)	Iso/Quarantine/ROM Lab Assets	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Interoperability	Could Be Better
A-116	anti-mask population closely linked to political movement like yellow vest and those who believed in conspiracy theories	Strat. Comms. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
A-117	important to track ICU beds and ICU units per capita (12.5/100,000)	Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy Organization	Neutral
A-118	changing reports from daily to 7 day helped with tracking	Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Went Well

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-119	building massive hospital in NYC wasn't helpful, putting uniformed health care providers into hospitals was helpful	CivMil Cooperation Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Interoperability	Neutral
A-120	It is a very new disease, do not yet know long-term effects	Deploy. Health Surv. Med. C4I & Dec. Support Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Could Be Better
A-122	Chain of command is responsible for screening post-COVID soldiers for problems	Deploy. Health Surv.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
A-123	Fatigue and mental health are common long-term effects	Deploy. Health Surv. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Neutral
A-124	even patients with mild symptoms can experience long term effects	Deploy. Health Surv. Med. C4I & Dec. Support Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational Strategic	Doctrine / Policy	Neutral

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase//Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
A-125	had to set up rehabilitation center for patients experiencing long COVID	Patient Manage.	Strat. Surge Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Facilities	Neutral
A-128	clinical staff monitor mental health through questionnaires that monitor depression, wellbeing scores, and scores for PTSD	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Organization	Neutral
A-129	expresses concern that those who are no longer able to keep up in PT due to lingering COVID symptoms may experience mental health concerns	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Could Be Better
A-130	Most infections discovered during routine testing	Lab Assets Deploy. Health Surv. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-131	Unclear why in the same cluster of people, some get infected and others do not	Deploy. Health Surv. Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
A-132	PCR diagnostic procedures should be improved to avoid false positive results	Lab Assets Other - R&D	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Could Be Better
A-133	When using antigen testing, procedures must be followed closely and test type should be examined	Lab Assets Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
A-134	biggest problem is enforcement of new [restriction of movement] ROM behavior	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Could Be Better
A-135	Belgium established a national military tracing center with access to reference laboratories, traced all contacts within defense	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy Organization Personnel Facilities	Neutral

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase//Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
A-137	false positives are rare in PCR so most occasions were blamed on sample contamination	Lab Assets Sample Manage.	Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
A-138	most tracking in Germany was “behind the wave: through contact tracing, but want to get “ahead of the wave” by monitoring positive test results	Lab Assets Deploy. Health Surv. Op. Epi. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Could Be Better
A-139	the military established field hospitals, did disinfection of critical infrastructure (airport, stations, facilities, nursing homes), transported health care materials and patients	Inf. Prevention & Control Iso/Quarantine/ROM CivMil Cooperation MEDEVAC Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Neutral
A-140	extremely high levels of Civmil collab including veterinary facilities adapted for PCR, producing face masks, military psychologists support families, dentists aided in disinfection	Inf. Prevention & Control CivMil Cooperation Lab Assets PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel Personnel Facilities Interoperability	Neutral
A-141	military aided through ICU transportations, medical logistics	CivMil Cooperation MEDEVAC Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational	Doctrine / Policy Materiel Interoperability	Neutral



<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase/Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
A-142	military personnel supplemented health care in senior houses, refugee/IDP camps, originally assisted in triage of patients as well	CivMil Cooperation Patient Manage.	Strat. Surge Stabilize Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral
A-143	Nations militaries were all involved in COVID-19 response	CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral
A-144	Case tracking and field hospitals were requested by civilians	Iso/Quarantine/ROM CivMil Cooperation Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Facilities	Neutral
A-145	Coordination and mgmt are key abilities the mil can provide	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral
A-146	Air lifting and MEDEVAC are valuable assets that the military can provide	CivMil Cooperation MEDEVAC	Mitigate Enh. Outbreak Manage.	Tactical Operational	Doctrine / Policy	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
			Op. Surge Strat. Surge Stabilize		Materiel Interoperability	
A-149	adapt military medical infrastructures for diagnostic techniques	Lab Assets	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Facilities	Neutral
A-150	reinforce military hospitals with personnel	Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization	Neutral
A-152	improve medical education to medical personnel and troops	Med. C4I & Dec. Support Patient Manage.	Prepare & Protect	Operational Strategic	Doctrine / Policy Training	Could Be Better
A-153	Czechs developed a “smart quarantine” app for contact tracing with high degree of success	Iso/Quarantine/ROM Op. Epi. Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Materiel	Went Well
A-155	Reinfections have been observed and we can expect more cases of reinfection in the future	Deploy. Health Surv. Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational Strategic	Doctrine / Policy	Neutral

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase//Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
A-159	immunity passports are not a good idea as we have not determined the antibody response	Iso/Quarantine/ROM	Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Could Be Better
A-160	briefings to non-medical commanders need to be done with caution to avoid misinformation about antibodies	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
A-165	Facts, honest and constant information campaign is necessary to address vaccine hesitancy	Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
A-166	communication is essential otherwise people will think that the vaccine is dangerous	Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy	Neutral

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase//Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
A-167	“the actual endpoint will take place not only when we have a vaccine, but when we have an adequate vaccination policy to get the vaccine out”	Med Countermeasures Strat. Comms.	Stabilize Trans. & Recover Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
A-168	should create a framework for the prioritization of vaccination, target groups 1) reduce deaths 2) protect essential services 3) protect those who bear risks for others (e.g. essential workers, nursing homes, 65+, tribal communities, homelessness, educational settings, prison populations, racial and ethnic minorities, rural communities, people who are under or uninsured)	Med Countermeasures	Prepare & Protect	Operational Strategic	Doctrine / Policy	Neutral
A-169	need to invest in pre-vaccination services, infrastructure, storage and transportation needs, immunization information systems or other vaccine registries, public communication	Med Countermeasures Strat. Comms. Medical SA Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel Facilities	Neutral
A-170	the accelerated pace of vaccine development has further amplified	Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak	Operational Strategic	Doctrine / Policy	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
	public anxieties and could compromise acceptance		Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover			
A-171	ensure cold chain development for delivery of vaccines (storage, park and transport to sites, keep cold during immunization sessions)	Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Materiel Facilities	Neutral
A-172	private sector can help NATO members by 1) deploying participatory surveillance 2) complimenting [emergency warning system] EWS 3) developing hazard awareness	Med. C4I & Dec. Support Medical SA Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Neutral
A-173	private sector can help NATO members by 1) creating tools for signs and symptoms diagnosis 2) finding info about infectious diseases 3) finding references/information about outbreaks 4) tracking animal as well as human diseases	Med. C4I & Dec. Support Op. Epi. Medical SA Other - civ support, R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel Interoperability	Neutral
A-174	Private sector can support military by moving patients, helping with diagnosis, and arranging vaccine campaigns	Lab Assets Med Countermeasures MEDEVAC Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational Strategic	Doctrine / Policy Organization Interoperability	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
		Other - civ support, NPI, PPE, PHM, R&D, testing, tracking, unspecified measures	Strat. Surge Stabilize Trans. & Recover			
A-176	Huge benefits to detecting emerging pathogens early to ensure proper preventative measures	Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi. Medical SA	Prepare & Protect Mitigate	Operational Strategic	Doctrine / Policy	Neutral
A-180	People should be convinced by scientific campaigns rather than fines	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
A-181	Vaccination certificates may make travel easier	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
A-182	Production capacities and scientific institutes need to be encouraged to produce drugs and PPE in Europe	Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Materiel	Neutral

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase//Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
A-183	Soldiers posted outside their own country need to make sure the vaccine is in line with their national regulations	Med Countermeasures	Stabilize Trans. & Recover Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Interoperability	Neutral
A-185	military heavily involved in UK vaccine rollout by aiding in planning and logistics, clinical delivery, media profile	CivMil Cooperation Med Countermeasures Strat. Comms. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization Interoperability	Neutral
A-187	had to STRATEVAC soldiers out of sub-Saharan Africa, provided emotional argument for vaccination of deployed troops	Med Countermeasures MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
A-188	unclear if you are allowed to accept vaccines that aren't approved in your own country/if they will be recognized if you do **interoperability issue here	Med Countermeasures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Interoperability	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-189	applauded Belgium for vaccinating deployed soldiers early as it is a “matter of recurrence and psychological support to our deployed soldiers”	Med Countermeasures PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Went Well
A-190	some medical professionals are allowed to delay vaccine dose if they already have Abs but will eventually have to get it because unsure how long immunity lasts	Med Countermeasures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy	Neutral
A-191	drug development is taking a lot longer than vaccine development	Other - R&D	Prepare & Protect Mitigate	Strategic	Doctrine / Policy	Neutral
A-193	Vaccination is mandatory in most nations to go on a deployment	Med Countermeasures	Prepare & Protect	Operational Strategic	Doctrine / Policy	Neutral
A-194	for foreign service members either 1) got vaccinated locally in host nation 2) were repatriated in rare cases, service members were not deployed if not vaccinated	Iso/Quarantine/ROM Med Countermeasures Med. Risk Assess.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Interoperability	Neutral
A-195	it is helpful to track variants across country	Lab Assets Op. Epi. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy Organization Materiel Facilities	Neutral



<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-196	Netherlands decided to give second dose of AZ vaccine after 4 weeks for deploying soldiers even though they knew it doesn't work as well, but couldn't wait 12 weeks.	Med Countermeasures Med. C4I & Dec. Support Med. Risk Assess.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
A-197	Lack of information on whether vaccinated personnel can introduce disease into non-vaccinated population	Deploy. Health Surv. Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Could Be Better
A-199	In most nations, military personnel are not a priority group for vaccination and need to abide by rules of civilian population	Med Countermeasures Med. Risk Assess.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
A-200	Multinational interoperability challenges: duration of quarantine, testing, method of testing, vaccination status	Iso/Quarantine/ROM Lab Assets Med Countermeasures Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-201	Italian military singularly responsible for distribution so had to establish new cold chain logistics	CivMil Cooperation Med. Support Ops	Prepare & Protect	Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Could Be Better
A-202	pitches for use of drones to deliver medical supplies	Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Materiel	Neutral
A-203	Significant challenges in handling different vaccines, largely related to maintaining cold chain	Med Countermeasures Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel Facilities	Could Be Better
A-204	Drones offer a way of delivering medical equipment and consumables to remote communities safely and quickly	Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Materiel	Neutral
A-205	challenges getting vaccine shipped to US Service Personnel through Defense Logistics Agency because of customs in various European countries	Med Countermeasures Med. Support Ops	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
A-207	early surveillance of SARS-CoV-2 would be possible through wastewater monitoring, could also help identify areas as highly infected	Lab Assets Deploy. Health Surv. Op. Epi. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
A-208	biosensors like finger rings can track heart rate, respiratory rate, temperature for 14 days and potentially contribute to early diagnosis	Deploy. Health Surv.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Materiel	Neutral
A-209	development of a situational awareness map (including point prevalence maps) is helpful	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
A-210	innovative project to blend HR and medical databases to create a COVID-19 dashboard that describes a range of indicators to commanders	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Went Well
A-211	models are only as good as parameters and analyst, very difficult to trace longer term epidemiological	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage.	Operational	Doctrine / Policy Personnel	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
	events, 8 weeks is the longest time for prognosing		Op. Surge Strat. Surge Stabilize Trans. & Recover			
A-212	smaller NATO nations may not have SMEs with a specific background in epidemiological monitoring, could be helpful to have a common NATO capability to address interoperability of MI2 and FHP in the future	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Op. Epi. Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Personnel Interoperability	Could Be Better
A-213	it is hard to assess on the spot risk for deployed troops, especially since data on disease dynamics in mission countries are often limited, incomplete, or unreliable	Med. C4I & Dec. Support Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Interoperability	Could Be Better

Source: VTC Minutes

**Table 24. Metadata Tags for Observations from NATO Joint Analysis and Lessons Learned Centre ODCR Forms**

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-1	The use of the appropriate face masks, as advised by WHO, cause the goggles of MIO team members to fog up and become difficult to see through. [For more details, see the Discussion, Conclusion, and Recommendation	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Training Materiel Personnel Interoperability	Could Be Better

Identifier	Observation	Task	Phase/Tier	Operational Level	DOTMLPF-I	Sentiment
B-3	<p>sections of this ODCR form in Appendix C.]</p> <p>In order to respond to the SARS-CoV-2 pandemic, many NATO countries followed a previous national pandemic influenza preparedness plan. Most of those are based on 4 principal phases: the interpandemic phase, the alert phase, the pandemic phase and the transition phase. Unfortunately, due to lack of information about the first cases of new virus in humans as well as the absence of relevant medical/scientific literature and relevant countermeasures, current plans switched from the interpandemic phase directly to the pandemic phase, overriding the alert phase. As that results, risk assessments as well as the related impact (risk groups, healthcare capacities and essential public services) and effectiveness of countermeasures, both medical (e.g. influenza-specific antivirals, antibiotics and pandemic vaccines) and non-pharmaceutical public health measures (e.g. social distancing, individual protective equipment, (IPE) hygiene measures), needed to be developed during a pandemic phase rather than an alert one, resulting in contradictory and less than effective responses. Those challenges as well as no</p>	<p>CivMil Cooperation Lab Assets Med. C4I &amp; Dec. Support Nat. Outreach, Reachback, Fusion Medical SA Other - R&amp;D</p>	<p>Prepare &amp; Protect Mitigate</p>	<p>Strategic</p>	<p>Doctrine / Policy Organization Interoperability</p>	<p>Could Be Better</p>

Identifier	Observation	Task	Phase/Tier	Operational Level	DOTMLPF-I	Sentiment
	<p>developed/implemented civil-military cooperation guidelines in case of pandemics (currently non-binding medical guidelines refer to respond effectively to CBRN mass casualty incidents) revealed additional difficulties at the intersection of civil-military interaction for civil preparedness and more traditional military capacities and capabilities. Moreover, uncertainty on pandemics mitigation measures challenged both the military operations planning as well as definition of military capabilities to respond effectively to the pandemic. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>					

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-4	In the context of COVID-19, sex-disaggregated data has been essential for understanding the distribution of risk, infection, and disease in populations and the extent to which sex and gender affect clinical outcomes. It is also been essential to understanding who is involved in responses in order to inform any actions taken to support them. Access to this kind of data is applicable in crises and contexts well beyond pandemics. While the experience during COVID-19 demonstrated the usefulness of sex-disaggregated data, it also highlighted that such data is often not reported or made available to NATO. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. C4I & Dec. Support Med. Risk Assess. Other - civ support	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Could Be Better
B-5	Source: MEDSCAPE, Hospitals Muzzle Doctors and Nurses on PPE, COVID-19 Cases (Alicia Gallegos) March 25, 2020 [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Patient Manage. Strat. Comms. Medical SA Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-6	The use of the appropriate face masks, as advised by WHO, cause the goggles of MIO team members to fog up and become difficult to see through. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Training Materiel Personnel Interoperability	Could Be Better
B-7	Information Campaigne [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med Countermeasures Strat. Comms. Other - NPI, PHM	Prepare & Protect Mitigate	Strategic	Doctrine / Policy	Neutral
B-8	SARS-CoV-2 Subject Matter Expert (SME) network and exchange platform requirement. Source: MilMed CoE COVID-19 Response and MilMed CoE on Pandemic Lessons VTCs. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Personnel Interoperability	Could Be Better
B-9	Need for Establishing a Near Real-time Surveillance System for NATO Theatres [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Organization Materiel Interoperability	Could Be Better



<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-10	Inside the EU OHQ OPLAN SOPHIA and SOP covered Management of Medical Support in OHQ, only the general medical support are designated. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. C4I & Dec. Support Med. Support Ops	Prepare & Protect	Strategic	Doctrine / Policy	Could Be Better
B-11	Worst-case Scenario Outlined for COVID-19 This Winter [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Inf. Prevention & Control Iso/Quarantine/ROM Lab Assets Med Countermeasures Op. Epi. Strat. Comms. Medical SA Other - NPI, PPE, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Materiel Facilities	Neutral
B-14	Public health and infectious disease experts warn that it would be vital to increase the influenza vaccination rate substantially this fall to mitigate a potentially deadly confluence of seasonal influenza with an anticipated second wave of COVID-19. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med Countermeasures Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-15	There was not enough PPE (masks, FFP2/FFP3, disinfection gel, other disinfectants, latex gloves) for OHQ EUNAVFOR MED SOPHIA members in the event of an epidemic. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. Support Ops Other - NPI, PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better
B-17	Antibody Testing [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Lab Assets Deploy. Health Surv. Medical SA Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
B-20	Reopen the society now? Iceland Cohort Study 3. Randomly selected testing. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Neutral
B-22	Quick and Timely Lockdown Proved Critical [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Iso/Quarantine/ROM Medical SA Other - NPI	Mitigate	Strategic	Doctrine / Policy	Went Well
B-24	[For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion	Mitigate Enh. Outbreak Manage. Op. Surge	Operational	Organization Interoperability	Went Well

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase/Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
B-25	The MILMED COE conducted a weekly VTC using MS Teams through the peak of the European COVID-19 pandemic. The VTC forum enabled experts from across the Medical COE (located in Hungary and Germany), JMED and CBRN communities (to include the JCBRN Defence COE) to share information and coordinate projects. In addition, to provide coordinated support, reduced duplication and enhanced synergies, the JCBRN Defence COE CBRN Reachback coordinated their support to NATO and its partners in conjunction with the MILMED COE. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Nat. Outreach, Reachback, Fusion Strat. Comms. Medical SA	Strat. Surge Stabilize Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Organization Materiel Interoperability	Went Well

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-26	Under the COVID-19 circumstances, the information flow between the COEs and HQ SACT has been complemented with regular VTC with the COE Directors. The chair of the VTC clearly has focused on the COVID-19 topic, and every COE has got an opportunity to present its contribution to the campaign. As the crisis continued, the VTC also began to discuss non-COVID-19 topics in order to increase information sharing and cooperation. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. C4I & Dec. Support Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Went Well
B-27	There is currently only limited NATO solution to access NR and no NATO solution to access NS information while working remotely. During crisis that require remote working such as COVID-19, the ability for NATO organizations to conduct work on and with NR and NS information is severely limited, which affect their ability to continue critical NATO business. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Materiel Facilities Interoperability	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-28	The COVID-19 crisis forced NATO organizations to conduct remote work using MOS. However, since NATO does not have a shared NU portal that each organisation has access to such as SharePoint, there was no effective method of sharing data and information other than email. While email can share data and information, it is ineffective and inefficient at knowledge management of that data/information resulting in a lack of share understanding. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Organization Materiel Facilities Interoperability	Could Be Better
B-29	During the COVID-19 crisis, there was insufficient consolidated and regular information sharing with the COEs of NATO's COVID-19 crisis response activities and mitigation measures. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. C4I & Dec. Support Strat. Comms. Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Could Be Better
B-30	The Resilience through Civil Preparedness Pilot course content does not reflect the latest revision of the seven Baseline requirements for Resilience. [For more details, see the Discussion, Conclusion, and	CivMil Cooperation Other - civ support	Prepare & Protect	Strategic	Training	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-31	Recommendation sections of this ODCR form in Appendix C.] The defined Training requirements for NATO CIMIC do not reflect on pandemics. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	CivMil Cooperation Other - civ support	Prepare & Protect	Strategic	Training	Neutral
B-32	During Covid 19 many training solutions were canceled/ postponed. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - BCP, NPI	Prepare & Protect	Tactical Operational Strategic	Training	Neutral
B-33	The immediate unavailability of face masks or veils has been observed at the beginning of COVID19 pandemic. The veils have been ordered and purchased several days later. Several sanitary measures were introduced into practice during the COVID-19 crisis. Some of them should be in place also under normal circumstances. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. Support Ops Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Materiel	Could Be Better
B-35	A capable CIMIC capability supports a comprehensive approach in the fight against pandemics. [For more details, see the Discussion, Conclusion, and	CivMil Cooperation Med. C4I & Dec. Support Strat. Comms.	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-36	<p>Recommendation sections of this ODCR form in Appendix C.]</p> <p>The Baseline Requirements for Resilience through Civil Preparedness require a socio-stability factor to reflect the relevant factors for society stability and their capability to support military operations in pandemics [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	<p>Medical SA Other - civ support</p> <p>CivMil Cooperation Strat. Comms. Other - civ support</p>	Prepare & Protect	Strategic	Doctrine / Policy	Could Be Better
B-37	<p>NATO Crisis Response System faces a delay in reaction time in pandemics. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	Med. C4I & Dec. Support	Prepare & Protect	Strategic	Doctrine / Policy	Could Be Better
B-38	<p>Prior to the crisis the Agency was steadily developing its medical expertise and logistic capabilities. It had a small team that were expanding the portfolio of offerings and potential suppliers. This small team became the hub and primary responders to all the requests for medical supply during the crisis, and they coped magnificently. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	Med. Support Ops	<p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	Operational Strategic	Materiel	Went Well

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-39	At the outset of this crisis the very small medical team were overwhelmed with the level of demand and the confusion caused by the multitude of different actors engaged in the process. The Agency had to rapidly generate a team to coordinate the demands and requests placed on it. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. Support Ops	Prepare & Protect	Operational Strategic	Doctrine / Policy Organization Materiel Personnel	Could Be Better
B-40	In a crisis there is no authorization within the Agencies to respond to extraordinary circumstances allowing management to take extraordinary actions, e.g. increasing working hours (with appropriate compensation), short-cutting or bypassing bureaucratic procedures (Finance, Recruitment, Procurement). Establishment of a revolving fund would also allow for flexibility in these cases. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - BCP	Prepare & Protect	Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better
B-41	The consultation process between NATO Bodies during the COVID-19 crisis was impaired by the lack of a common audio/video collaboration solution across the NATO Enterprise. [For more details, see the Discussion, Conclusion, and Recommendation	Strat. Comms. Other - BCP	Prepare & Protect	Strategic	Materiel Facilities Interoperability	Could Be Better



<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-42	<p>sections of this ODCR form in Appendix C.]</p> <p>Many CMRE staff have become accustomed to remote teleworking from home. During the COVID-19 crisis such work has become more efficient and effective as staff have adapted to the new situation. However, the tools provided by NCIA for teleconferencing have been largely inadequate. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	Other - BCP	Prepare & Protect	Operational Strategic	Training Materiel Leadership Facilities Interoperability	Could Be Better
B-43	<p>CMRE's response to the COVID-19 pandemic were largely reactive and resulted in a direct cost to the CMRE of more than 260,000 EUR. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	Other - BCP	Prepare & Protect	Operational	Organization Training Personnel Facilities	Could Be Better
B-44	<p>The STO and OCS were engaged (CMTF, NAC discussions) late in the process of the NATO HQ COVID-19 response, mostly through ad hoc and informal channels. The consequences were that S&amp;T advice, activities and options are not integrated in the OPLAN nor are they fully supportive of future pandemic plans. [For more details, see the Discussion, Conclusion,</p>	Nat. Outreach, Reachback, Fusion	Prepare & Protect	Strategic	Organization Training Leadership Personnel Interoperability	Could Be Better

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase/Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
	and Recommendation sections of this ODCR form in Appendix C.]					
B-45	In April the STO created the S&T COVID-19 Oversight Group (COG) bringing together key national S&T Directors to support quick information sharing and collaboration. While this was successful in ensuring best practices, sharing of national strategies and oversight such activities were ultimately limited by the ad hoc nature of this support and coordination. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Interoperability	Neutral
B-46	In mid-April the STO created the COVID-19 Science Connect portal for quick information sharing, collaboration exploration and the chief scientist challenge. While these were successful, many opportunities for collaboration or rapid application of S&T solutions were missed or deemed impractical as no funding or surge personnel were available to provide support or coordination. This ultimately limited the STO's ability to support nations, employ CMRE as a surge capability (as it is customer funded) and bring together nations to support NATO. [For more details, see the	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Organization Personnel	Could Be Better

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase/Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
B-47	Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]  The STO and OCS were engaged (CMTF, NAC discussions) late in the process of the NATO HQ COVID-19 response, mostly through ad hoc and informal channels. The consequences were that S&T advice, activities and options were never fully integrated in the NATO response to COVID-19 and the subsequent ACO developed opplan. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Personnel Interoperability	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-48	<p>Teleworking was maximised by the rapid procurement of an additional 1200 portable devices and their configuration, with appropriate security during the first month of the crisis. In addition, the Agency's video conferencing capability and bandwidth were upgraded to accommodate the dramatic growth in remote working. Nearly all Agency personnel who could homework were teleworking after approximately a month and overall the business output remained largely stable meeting normal customer demands, as well as those driven by the crisis simultaneously. This change in ways of working has triggered further technical innovation that will support a new post-COVID-19 way of doing business. The time to rollout of some capabilities has been determined by the speed of the CIS security accreditation, a step outside the Agency's control. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization Materiel Leadership Personnel Facilities	Went Well

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-49	For transportation of medical materiel from manufacturers in the Far East, nations consolidated their requirements and utilised the SALIS capability to move over 850 tonnes of supplies over strategic distances, without concerns on diplomatic clearances for military aircraft. Non-member nations generated significant enquiries about using SALIS hours. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. Support Ops Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Materiel Interoperability	Went Well
B-50	The problems of border crossings in turn forced further competition for limited air transportation, which was used to overcome the delays imposed by crossing multiple borders using road haulage across Europe [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. Support Ops Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better
B-51	Nations closed their borders to contain the virus and stop its spread. This hampered the rapid surface movement of commercially provided medical materiel, or the deployable infrastructure used to augment medical facilities together with the associated supporting personnel. [For more details, see the Discussion, Conclusion,	Iso/Quarantine/ROM Med. Support Ops Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-52	<p>and Recommendation sections of this ODCR form in Appendix C.]</p> <p>During the COVID crisis, Nations were competing amongst themselves in a very limited market place seeking the same medical supplies, equipment and consumables. It was also detected that different national agencies were also competing with one another. As there were insufficient supplies and demand was extremely high, this forced up prices and resulted in contractual fratricide between nations. This occurred not only for supplies and equipment but also for transportation to move the materiel. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	Med. Support Ops Other - BCP	Prepare & Protect	Operational Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better
B-53	<p>NATO was caught relatively unprepared for the COVID pandemic and its repercussions around the globe. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	Med. Support Ops	Prepare & Protect	Operational Strategic	Doctrine / Policy Materiel	Could Be Better
B-54	<p>NATO Bodies and Nations have been unable to collaborate, exchange and access information effectively when not physically in a NATO premise due to the heterogeneous nature of the internet-connected networks used by</p>	Med. C4I & Dec. Support Other - BCP	Prepare & Protect	Strategic	Materiel Facilities Interoperability	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-55	<p>NATO bodies and Allies. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p> <p>The Defence Forces (DF) has been involved in the transportation of suspected COVID-19 positive civilians to and from COVID-19 Test Centres. The vehicles used, while military owned and operated, are civilian specification and civilian design, passenger type vans. A COVID-19 Protective Barrier (PB) has been developed and installed in military vehicles. This has proved to be an effective means of isolating passengers from military drivers, and other passengers. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	<p>Inf. Prevention &amp; Control</p> <p>Iso/Quarantine/ROM</p> <p>MEDEVAC</p> <p>Other - NPI</p>	<p>Mitigate</p> <p>Enh. Outbreak Manage.</p> <p>Op. Surge</p> <p>Strat. Surge</p> <p>Stabilize</p>	Tactical	Materiel	Went Well
B-57	<p>For Ship's crews Live Virtual Constructive Training can mitigate the effects of a pandemic on training in preparing for a NATO deployment or maintaining the readiness status. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	<p>Iso/Quarantine/ROM</p> <p>Other - BCP, NPI, R&amp;D</p>	<p>Prepare &amp; Protect</p> <p>Mitigate</p> <p>Enh. Outbreak Manage.</p> <p>Op. Surge</p> <p>Strat. Surge</p> <p>Stabilize</p>	<p>Tactical</p> <p>Strategic</p>	<p>Doctrine / Policy</p> <p>Organization</p> <p>Training</p> <p>Materiel</p> <p>Interoperability</p>	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-59	The Framework Nation foresaw the working programme in shifts as one of the possibilities to mitigate COVID19 outbreak. The COE adopted this option in coordination with the smart working IOT reduce the presence of NSPCOE personnel within their offices. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization Leadership Personnel	Went Well
B-60	It was observed a general supply shortage of personal protective equipment (face masks, medical gloves and bactericide gel) during the initial phase of COVID19 outbreak. Even not one-cent from welfare budget has been spent to supply PPE, distributed to the NSPCoE personnel for duty reasons. Masks procured through welfare budget, upon Senior National Representatives requests, were intended for private use and in benefit of the personnel and their families. Moreover the actions taken to face the current pandemic were managed by using also some of the items used in the training process by the Training Branch. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Organization Materiel Leadership Personnel	Could Be Better



<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-63	The safety measures for containing the COVID19 Outbreak imposed to ban in person attendance of meetings and conferences. This implied that some videoconferencing platforms such as Skype, Cisco Webex have been adopted by the COE for the following reasons: businesses adapting to remote working environments and relying on video conferencing platforms to conduct both internal and external meetings; and single COE members seeking to stay connected to their colleagues, relatives and friends following governmental restrictions on physical social interactions. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization Leadership Personnel Interoperability	Neutral
B-64	The FN Ministry of Defence foresaw the smart working programme as one of the possibilities to mitigate COVID19. This programme was adopted by the NATO SP COE for reducing the number of the staff in the offices to prevent the spreading of the virus. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - BCP, NPI	Prepare & Protect Mitigate	Tactical	Doctrine / Policy Organization Training Leadership Personnel	Went Well

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-66	The use of military personnel for contact tracing has proved very effective. A number of these personnel who have become qualified “Superusers” could be offered to the Health Service Executive (HSE) to conduct a national training programme for civilians in order to facilitate the level of contact tracing required to ensure public health safety and allow the Defence Forces(DF) to stand down at an appropriate time [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	CivMil Cooperation Op. Epi.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy Organization Training Leadership Personnel Interoperability	Went Well
B-67	Online Education allows for a higher number of participants without the risk of getting infected with COVID 19, and avoid expenses such as travel, course and accommodation fees. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Training	Neutral
B-68	The exercise was planned to start on 23rd of March 2020 but due to COVID-19, external participation (Evaluation Team-SHAPE J7) was cancelled. To our best knowledge, the exercise was played with minimum internal personnel. [For more details, see the Discussion, Conclusion, and	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - NPI	Prepare & Protect	Operational Strategic	Doctrine / Policy Organization Training Materiel Leadership Personnel Facilities Interoperability	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-70	<p>Recommendation sections of this ODCR form in Appendix C.]</p> <p>Reopen the society now? Iceland Cohort Study 1. Targeted Testing Strategy [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	<p>Lab Assets</p> <p>Deploy. Health Surv.</p> <p>Op. Epi.</p> <p>Medical SA</p> <p>Other - NPI, testing</p>	<p>Mitigate</p> <p>Enh. Outbreak</p> <p>Manage.</p> <p>Op. Surge</p> <p>Strat. Surge</p> <p>Stabilize</p> <p>Trans. &amp; Recover</p>	<p>Tactical</p> <p>Operational</p>	<p>Doctrine /</p> <p>Policy</p> <p>Materiel</p>	<p>Neutral</p>
B-71	<p>Testing Is Key to reopen the economy [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	<p>Iso/Quarantine/ROM</p> <p>Lab Assets</p> <p>Med</p> <p>Countermeasures</p> <p>Deploy. Health Surv.</p> <p>Med. C4I &amp; Dec.</p> <p>Support</p> <p>Med. Support Ops</p> <p>Other - NPI, testing</p>	<p>Mitigate</p> <p>Enh. Outbreak</p> <p>Manage.</p> <p>Op. Surge</p> <p>Strat. Surge</p> <p>Stabilize</p> <p>Trans. &amp; Recover</p>	<p>Operational</p> <p>Strategic</p>	<p>Doctrine /</p> <p>Policy</p> <p>Materiel</p>	<p>Neutral</p>
B-72	<p>Reduction in manning during crisis as COVID-19 is affecting INTEL picture &amp; updates [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	<p>Med. Risk Assess.</p> <p>Other - BCP</p>	<p>Prepare &amp;</p> <p>Protect</p>	<p>Operational</p> <p>Strategic</p>	<p>Doctrine /</p> <p>Policy</p> <p>Organization</p> <p>Interoperability</p>	<p>Could Be Better</p>

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-77	<p>The common countermeasures to prevent respiratory viral transmission is to use face masks. An earlier study reported that surgical masks and N95 masks were equally effective in preventing the dissemination of influenza virus (Lee SA, Grinshpun SA, Reponen T. Respiratory performance offered by N95 respirators and surgical masks: human subject evaluation with NaCl aerosol representing bacterial and viral particle size range. Ann Occup Hyg. 2008; 52:177-185. [PMID: 18326870] doi:10.1093/annhyg/men0054), so surgical masks might help prevent transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). However, the SARS-CoV-2 pandemic has contributed to shortages of both N95 and surgical masks, and cotton made masks have gained attention as a substitute. Therefore it is important to know whether face masks worn by patients with COVID-19 prevent contamination of the environment? [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]</p>	Other - NPI, R&D	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Materiel	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-78	Digital thermometers usually don't work properly! Lot of article in the news about Covid-19 show thermometers displays extreme low (lethal!) body temperature. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Materiel	Could Be Better
B-79	Distancing as mandatory precautions to prevent SARS-CoV-2 during outdoor activities. Aerodynamic social distance [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - NPI, R&D	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Strategic	Doctrine / Policy	Neutral
B-80	Doctor's Burnout due to COVID 19 pandemic [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	PsychoSocial Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Strategic	Doctrine / Policy Organization Training	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-81	How the COVID-19 Pandemic May Reshape US Hospital Design [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Inf. Prevention & Control Iso/Quarantine/ROM Patient Manage. PsychoSocial Support Med. Support Ops Other - BCP, NPI	Prepare & Protect	Operational Strategic	Facilities	Could Be Better
B-82	How to get in and out PPE properly? [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - PPE	Prepare & Protect	Tactical	Training	Could Be Better
B-84	The COVID-19 crisis forced NATO organizations to conduct remote work using MOS. However, since NATO does not have an approved and resourced NU MOS, each organization found their own solution. This lack of coordinated MOS resulted in ineffective and inefficient work on NATO business. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - BCP, NPI	Prepare & Protect	Strategic	Doctrine / Policy Materiel Facilities Interoperability	Could Be Better
B-87	Recovered COVID-19 Patients Testing Positive Again [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Lab Assets Medical SA Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Materiel	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
B-88	Shortages on PPE in many countries [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Materiel	Could Be Better
B-90	Source: MEDSCAPE, 'Stealth Transmission' of COVID-19 Demands Widespread Mask Usage (Eldad Einav, MD) March 29, 2020 [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Materiel	Neutral
B-91	To support the patrols of the Vicenza Provincial Carabinieri Command in the surveillance of the area of responsibility by the use of the Remotely Piloted Aircraft System (RPAS). The RPAS was controlled by two members of the NATO SP CoE. [For more details, see the Discussion, Conclusion, and Recommendation sections of this ODCR form in Appendix C.]	Iso/Quarantine/ROM CivMil Cooperation Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization Training Leadership Personnel Facilities Interoperability	Went Well

Source: JALLC Observations

**Table 25. Metadata Tags for Observations from NATO Joint Analysis and Lessons Learned Centre National Reports and Products**

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase//Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-1	<p>“the measures taken by NSPCoE were not covered by any official established procedures, policies or standards governing the “crisis management””“The steps taken by the NSPCoE during this emergency to ensure the continuity of the business activities and the protection of the personnel were as follows:</p> <ul style="list-style-type: none"> <li>- C2 continuity;</li> <li>- Working in shifts;</li> <li>- Medical check “serological test” on voluntary bases;</li> <li>- Smart working;</li> <li>- VPN distribution;</li> <li>- Videoconferencing;</li> <li>- Adoption of Protective Equipment (mask and gloves);</li> <li>- Procurement programme;</li> <li>- Electronic platform to run webinars, ws's or conferences and e-learning courses;</li> <li>- Protective safety measures within the offices (plastic panels);</li> <li>- Banners about the rules to be followed within the centre;</li> <li>- Quota for the canteen;</li> <li>- Re-scheduled trips for missions and internal courses or training activities;</li> <li>- Advertisement on NATO SP COE</li> </ul>	<p>Inf. Prevention &amp; Control Lab Assets Other - BCP, NPI, PPE</p>	<p>Prepare &amp; Protect</p>	<p>Tactical</p>	<p>Doctrine / Policy Materiel Facilities</p>	<p>Neutral</p>



<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase/Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
C-3	<p>website and through social media - Combat uniform was adopted IOT easily keep it clean and sanitized;</p> <p>NSPCoE created a Crisis Response Task Force (CTF ) during COVID CTF will be the NSPCoE chain of command’s focal point for information and management responding to the impact of the “crisis” on assigned staff and enabling continuity of “missions” in support of the Alliance. The CTF is an entity formed to meet the requirements imposed by countering the “crisis”. The life of the CTF is expected to follow normal organizational phases: preparation – establishment – operations – conclusion/closure.</p>	<p>Med. C4I &amp; Dec. Support Strat. Comms. Other - BCP</p>	<p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	Operational	Organization	Neutral
C-6	<p>steps taken included: C2 continuity, working in shifts, medical checks, smart working, VPN distribution, VTCs, PPE, procurement programme, electronic platforms, COLPRO, banners about rules, quotas for canteen, re-scheduled trips, advertisement on the website, combat uniform changes</p>	<p>Inf. Prevention &amp; Control Iso/Quarantine/ROM CivMil Cooperation Strat. Comms. Other - BCP, NPI, PPE, PHM</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	Tactical Strategic	<p>Doctrine / Policy Facilities Interoperability</p>	Neutral
C-7	<p>“due to the absence of procedures, politics or standards the measures taken to reduce the risk of infection were put into practice way long after the identification of official “RED ZONES”“</p>	<p>Iso/Quarantine/ROM</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage.</p>	Strategic	<p>Doctrine / Policy</p>	Could Be Better

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase//Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
C-9	<p>“explaining why departments are emphasizing online reporting of specific crimes or outlining the PPE measures officers may take when on patrol will help maintain the public’s trust and quell fears”</p> <p>This can include explaining:</p> <ul style="list-style-type: none"> <li>- The meaning of social distancing</li> <li>-The safety measures taken to protect officers</li> <li>-Explaining acceptable social behavior in a time of national emergency</li> <li>-Proactive measures taken to protect officers and community members</li> <li>-Guidance from public health officials to minimize and reduce transmission</li> <li>-Delivering a clear message that police departments are still open for business</li> </ul>	<p>Strat. Comms. Other - NPI, PHM, unspecified measures</p>	<p>Op. Surge Strat. Surge</p> <p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	<p>Tactical Operational</p>	<p>Doctrine / Policy</p>	<p>Neutral</p>
C-17	<p>other safety measures could include: self-quarantine for those from red zones, assistance for international NSPCoE members, office disinfection, dedicated covid banner on webpage</p>	<p>Inf. Prevention &amp; Control Iso/Quarantine/ROM Nat. Outreach, Reachback, Fusion Strat. Comms.</p>	<p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	<p>Tactical Operational Strategic</p>	<p>Doctrine / Policy</p>	<p>Neutral</p>

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-18	“Educating the public about police response during the COVID-19 pandemic is crucial. Law enforcement agency is using social media to keep citizens informed about modifications to calls for service and coronavirus safety precautions.”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-19	NSPCoE should develop procedures, policies or standards governing/countering the “crisis management” through the development of a Contingency Plan (CP), in accordance with the HN regulations. The CP should be based on best practices and on lessons learned from previous crisis and, in the same time to be flexible and practical. The contingency plan should enable and operationalize a dedicated task force as the chain of command focal point for information and management responding to the impact of the “crisis”	CivMil Cooperation Med. C4I & Dec. Support	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Could Be Better
C-22	adopted a “dispersed force posture” and “remote working protocol” to protect personnel	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-23	ITA Army worked side by side with civilian Authorities thanks to its “versatility and high readiness”	CivMil Cooperation Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Training Interoperability	Went Well
C-25	ITA Army provided medical support to the National Health Service (milmed personnel, 2 field hospitals, beds)	Iso/Quarantine/ROM CivMil Cooperation Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Organization Materiel Facilities Interoperability	Neutral
C-27	changes included: dispersing forces, employing additional forces, assisting policy forces	CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization Interoperability	Neutral
C-28	ITA Army aided police forces by deploying micro unmanned aerial vehicles to monitor crowds	CivMil Cooperation Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel	Neutral
C-29	ITA Army stationed liaison teams in Provincial Police Forces HQ “to facilitate the overall inter-agency communication and sychronization”	CivMil Cooperation Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Interoperability	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-30	adopted public health measures including: increased health check-ups, PPE distribution, working and living space distancing, sanitization of living and working space	Inf. Prevention & Control Deploy. Health Surv. Med. Support Ops Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
C-31	Military General Hospital designated as a COVID-19 specialized medical hub as a “part of a long-established collaboration between the Ministry of Defense, the Ministry of Health and the Lazio Region”	Iso/Quarantine/ROM CivMil Cooperation Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Facilities Interoperability	Neutral
C-32	ITA Army took advantage of operational experience in sanitization of infrastructure, vehicles, and materials to execute a Terrestrial Sanitation Plan	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
C-33	ITA Army assisted in logistics (e.g. transporting 870 coffins to a region)	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Materiel Interoperability	Neutral
C-34	military facilities used for storage	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Facilities	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-35	all military educational functions shifted online including teaching, examinations, and included synchronous and asynchronous components	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Training	Neutral
C-39	Units should adopt two priorities 1) [force health protection] FHP 2) maintain readiness through training	Deploy. Health Surv. Other - PHM, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Training	Neutral
C-40	Training may require leaders and formations to work in close proximity	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training	Neutral
C-41	Isolated groups (bubbles) were formed in smallest possible operational units that allowed training and processes to continue	Iso/Quarantine/ROM Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training	Went Well
C-42	"Fire breaks are physical distancing measures... [that] delineate prohibited areas"	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-43	Personnel that had to leave their bubbles or cross fire breaks were designated as high risk “vectors”	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-44	Common vector personnel included leaders, range workers, armorers, logistics, and maintenance personnel - they were required to take measures such as screening, sanitation and PPE	Inf. Prevention & Control Med. Risk Assess. Medical SA Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
C-45	When departing a bubble, ensure that proper measures are taken: wash hands and face, check temperature, wear gloves and mask, depart through a controlled access point, maximize PPE measures	Iso/Quarantine/ROM Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training Materiel	Neutral
C-46	When in a bubble: wear PPE at all times, sanitize vehicles, receive prioritized testing, maintain physical distance, check temperature	Inf. Prevention & Control Iso/Quarantine/ROM Lab Assets Other - NPI, PPE, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training Materiel	Neutral
C-47	Practices for identifying positive cases should include: screening, testing, treatment, isolation, re-testing, and rehearsing	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Patient Manage. Other - NPI, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training Materiel	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-48	Safeguards should include: PPE, hand washing, physical distancing, time management, attention to bubbles, fire breaks and vectors	Iso/Quarantine/ROM Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
C-49	risk management considerations: element size, essential personnel, scope of training, cleaning and testing capacity	Inf. Prevention & Control Lab Assets Other - NPI, testing	Prepare & Protect	Tactical Operational	Doctrine / Policy Organization Training Materiel Personnel	Neutral
C-50	Transportation capacity should be reduced to 50% capacity and should be loaded in waves to avoid crowding; loading and unloading areas should be staged	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
C-51	Fill seats on transportation from the back forwards, alternate eating by rows, and the environment should be sanitized	Inf. Prevention & Control Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
C-52	Separate showers/latrines should be used for positive soldiers	Inf. Prevention & Control Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Facilities	Neutral



<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-53	no hygiene activities (hair washing, teeth brushing, shaving) should be permitted at field water equipment points	Other - PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
C-54	ensure that PPE is on the packing list for field activities	Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
C-56	personnel who are not mission essential or whose duties can be performed remotely should telework	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-57	course materials and curriculum for training should be shifted online	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training	Neutral
C-58	classroom locations and size should be changed to accommodate distancing requirements	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training Facilities	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-59	windows should be opened for ventilation	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-60	it may be harder for mask wearing to be enforced between individuals who are familiar with one another	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Training	Neutral
C-61	testing priority should be given to 1) symptomatic individuals 2) close contacts	Lab Assets Med. C4I & Dec. Support Op. Epi. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
C-62	“quarantine facility waste should be handled as normal solid waste and not as regulated medical waste”	Inf. Prevention & Control Cont. Med. Waste	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Facilities	Neutral
C-63	consider the use of disposable plates and utensils	Inf. Prevention & Control Other - PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-65	law enforcement agencies have to protect officers and citizens from infection, steps may include: online reporting, PPE measures on patrol, regular communication with citizens	Strat. Comms. Other - PPE, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
C-66	communications may include: social distancing measures, safety measures, explaining acceptable social behavior in times of emergencies, limiting face-to-face contact, guidance from public health officials, emphasizing that law enforcement measures are continuing	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-67	social media is an effective tool for keeping the public informed	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-72	police leaders should have a pandemic response plan	Med. C4I & Dec. Support		Operational Strategic	Doctrine / Policy	Neutral
C-76	local agencies should hold exercises to ensure that they are prepared for response, mitigation and recovery capacities	CivMil Cooperation Med. C4I & Dec. Support Other - unspecified measures	Prepare & Protect	Tactical Operational	Doctrine / Policy Training Interoperability	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-78	Allied armed forces are supporting civilian responses: logistics and planning, field hospitals, patient transportation, public disinfection, border crossing support	Inf. Prevention & Control CivMil Cooperation MEDEVAC Patient Manage. Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Neutral
C-81	“In support of Pacific Pathways 2020, 25th Infantry Division... employed over 1400 Soldiers amidst the COVID-19 pandemic in a geographically high-risk environment. Through rigorous planning, cooperation and risk management, the division completed its mission and redeployment with zero cases of COVID-19.”	Med. C4I & Dec. Support Med. Risk Assess. Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Went Well
C-83	perfect isolation is unattainable: forces cannot completely isolate and still perform their mission	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-84	“Shared understanding of risk tolerance aids in the development of control measures, tempers training objectives, and facilitates the development of multiple COAs”	Med. C4I & Dec. Support Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Training	Neutral

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C-86	"Foreign partners may perceive US forces as a threat to the health of their force" so the US should be clear about the measures that they are taking and build trust with their partners during planning stages	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Interoperability	Neutral
C-87	US and foreign partners should agree on: pre-training ROM, testing, bubbles, screening, bi-lateral quarantine and isolation procedures, modified training objectives	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Other - NPI, testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Training Interoperability	Neutral
C-88	training objectives could be defined on a scale from optimal to minimal acceptable to adapt to changing public health conditions	CivMil Cooperation Med. C4I & Dec. Support Other - unspecified measures	Prepare & Protect	Tactical Operational	Doctrine / Policy Training Interoperability	Neutral
C-89	isolation can "detract from a unit's ability to build relationships" so other methods should be considered as well	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Could Be Better

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C-90	the force should be educated on the fundamentals of how the virus spreads and how they might avoid it, they should be encouraged to seek testing or treatment if they have any symptoms	Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Training	Neutral
C-91	life support: "planning should anticipate a greater cost for this contracted support, as the inclusion of risk mitigation measures invariably costs more"	Med. Support Ops Other - civ support	Prepare & Protect	Operational	Doctrine / Policy	Neutral
C-92	"media communication is vitally important" and disinformation can spread quickly so communications should be routine, supported by the host nations, and prepared in advance	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-93	commanders should understand who controls information and develop relationships with the [Public Affairs Officer] PAO	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral

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C-94	communications strategies should also include family members	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral
C-95	events more likely to result in cross-contamination of groups: opening and closing ceremonies, socials, VIP events, leader engagements	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
C-97	personnel who fall into higher risk categories for contracting COVID should be identified pre-deployment	Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-98	at minimum, personnel should have ROM 5-7 days before arrival	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral

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C-99	prepare for personnel being delayed or unable to deploy due to positive tests, presentation of symptoms, or contact tracing	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi. Clinical Diagnosis Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Personnel	Neutral
C-100	“executing initial actions to standard will communicate clearly to the Host Nation that you take COVID exposure seriously” which will aid in building trust	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-101	“build social distancing into the training plan”	Other - NPI	Prepare & Protect	Tactical Operational	Doctrine / Policy Training	Neutral
C-102	“Medical experts recommended against the establishment of a quarantine camp due to the increased psychological stress it would place on SMs and Families”	Iso/Quarantine/ROM PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Facilities	Could Be Better
C-104	CTF served as a “focal point for information and management”	Med. C4I & Dec. Support Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization	Neutral



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C-105	overwhelming disagreement with the statement “participants were identified and trained to function as a CTF prior to the requirement”	Med. C4I & Dec. Support Strat. Comms.	Prepare & Protect	Strategic	Doctrine / Policy Training Personnel	Could Be Better
C-106	“Given the overwhelmingly positive assessment of effectiveness, it would be prudent to capture as much information as to the initiation and operation of the CTF as possible as the basis for future crisis support planning and operations”	Med. C4I & Dec. Support	Prepare & Protect	Strategic	Doctrine / Policy Organization	Went Well
C-110	“public awareness and media messaging are important to avoid propagating panic”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-111	the public perception of deployed forces, particularly when working in pandemic-related activities, is very important	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-112	if military presence is not properly received, it can lead to fear and unrest (in the context of Ebola)	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral

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C-113	civmil connections should be established pre-crisis to avoid slow and inefficient responses	CivMil Cooperation Other - civ support	Prepare & Protect	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-115	military should be trained to deal with migration that occurs as the consequence as outbreaks	CivMil Cooperation Other - unspecified measures	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy Training	Neutral
C-116	military capabilities can contribute to a common health picture and early warning systems	CivMil Cooperation Deploy. Health Surv. Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-117	military support may be requested when humanitarian organizations and NGOs need support	CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-118	strong discipline of personnel is needed for effective [force health protection] FHP	Other - NPI, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Training Leadership	Neutral
C-119	regular seasonal vaccinations (e.g. flu) should not be neglected	Med Countermeasures	Prepare & Protect	Operational Strategic	Doctrine / Policy Materiel	Neutral

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C-121	"public awareness and media messaging are important"	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-122	Appropriate psychological and family support should be in place to apply for the military personnel prior and during the deployment; and especially after the re-deployment taking into account:	PsychoSocial Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Organization	Neutral
C-125	SHAPE, JFTC, JFCNP, and HUMINT COE all documented issues related to C2 and technology support for telework	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel Personnel Facilities	Could Be Better
C-126	pay attention to the availability and responsiveness of security communication means and the adotion of commercial technologies	Other - BCP	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral

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C-128	early business continuity measures for LANDCOM included battle rhythm measures	Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
C-129	[Allied Joint Forces Command Naples] JFCNP notes the difficulties of procurement in urgent situations	Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Could Be Better
C-131	“limited teleworking capability and access to NS WAN as well as the subsequent impact on C2, routine tasks and shared Situational Awareness appear to be a common issue”	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel Facilities	Could Be Better
C-132	new technologies like big data and AI can improve contact tracing and aid management of priority population groups	Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi. Patient Manage. Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Training Materiel Facilities Interoperability	Neutral

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C-133	“use of morning and afternoons shifts to keep all personnel aware and directly involved in the HQ activities rather than rotate periodically which may risk the staff being disconnected”	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Neutral
C-134	“improvement of the rooms labeling by displaying their square meters would help to determine the occupancy level”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Could Be Better
C-138	ITA aided civilian authorities by supporting enforcement of lockdown	CivMil Cooperation Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Interoperability	Neutral
C-139	Army liaison teams have worked with the Provincial Police Forces HQ to improve communication, surveillance, enforcement, reinforcement of checkpoints, and use of UAVs to detect large gatherings or unauthorized movements	Iso/Quarantine/ROM CivMil Cooperation Strat. Comms. Other - NPI, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Interoperability	Went Well
C-140	ITA aided civilian authorities by providing facilities with 3247 beds for people with COVID19 symptoms to self-isolate	Iso/Quarantine/ROM CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Facilities Interoperability	Neutral

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C-141	ITA aided national health system by providing 135 milmed personnel to civilian hospitals, as well as 2 military field hospitals, aircraft for medlog, a 60-strong CBRN task force, enrolling 320 nurses in covid19 education program, and the army chemical-pharmaceutical research insitute	CivMil Cooperation Nat. Outreach, Reachback, Fusion Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Training Materiel Personnel Facilities Interoperability	Went Well
C-142	ITA aided civilian authorities in transportation by constructing logistics contingency plans, providing 230 trucks and a 60-strong engineering unit to support the national railway system	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Materiel Interoperability	Neutral
C-143	“Limited teleworking capability, access to NU email only for some personnel, no access to NS emails and resources, tasking tools and collaborative working as well as the subsequent impact on C2”	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Could Be Better
C-144	“The constraints imposed by the COVID crisis trigger the need to consider conducting exercises based on an outbreak scenario”	Med. C4I & Dec. Support	Prepare & Protect	Strategic	Doctrine / Policy Training	Neutral

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C-145	telework challenges at HQs include: limited NU connectivity, few solutions for collaborative working, no access to classified, difficulty accessing tasker tracker, use of personal devices	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Could Be Better
C-148	Stocks of PPE should be reviewed to “ensure adequate implementation of Host Nation crisis measures”	Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-149	Fake news on the origin of the virus (e.g., 5G) and other misinformation (e.g. malicious lockdown intentions, Russian and Chinese provision of aid to EU countries) has proliferated on social media	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-150	“Some HQs (LANDCOM, JFCNP) find planning of some NATO exercises on crisis scenario, with limited communication and interaction abilities, as an area to be considered for near future”	Med. C4I & Dec. Support Strat. Comms.	Prepare & Protect	Strategic	Doctrine / Policy Training Interoperability	Could Be Better
C-151	“an OPLAN for outbreak situations is considered mandatory”	Med. C4I & Dec. Support	Prepare & Protect	Strategic	Doctrine / Policy	Neutral

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C-152	"a lack of appropriate framework to know and employ relevant NATO-wide available expertise was also identified"	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Could Be Better
C-154	NATO standards for office, facility, and hospital layouts should be reconsidered to accomate social distancing measures	Iso/Quarantine/ROM Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Doctrine / Policy Facilities Interoperability	Neutral
C-155	"the concept of Dispersed workforce and Distributed HQ appears relevant to be further monitored and investigated"	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-156	"it is reasonable to adopt a cautious posture about drawing early decisive conclusions and taking the risk to learn wrong lessons"	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral



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C-157	telework challenges beyond material considerations include: lack of common situational awareness, impact of online meetings on idea sharing and teamwork as a force multiplier, ability of leadership to track tasks (including quality) and objectives, sharing common understanding, right mechanism to understand which information is replicated from NS to NU	Med. C4I & Dec. Support Strat. Comms. Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Interoperability	Could Be Better
C-158	teleworking solutions could include: periodic internal communication from leadership to all staff, emails/tasks submitted on NS accompanied by email on NU, prepare Close of Operation Plans in case of pandemics to ensure right decision is made to continue, freeze, or cancel an activity	Strat. Comms. Other - BCP	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational	Doctrine / Policy	Could Be Better
C-160	“two HQs observed the need to reinvigorate the idea of Distribute and Dispersed HQ and properly reflect the doctrine, allowing dispersed workforce to operate in crisis situations (e.g. pandemics, missile attacks)”	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational	Doctrine / Policy	Could Be Better
C-162	best practice: training military personnel to conduct contact tracing and potentially aid in a second or subsequent covid wave	CivMil Cooperation Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training Personnel Interoperability	Went Well

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C-163	“Appropriate Pandemic Indication and Warning Measures may require further consideration for the development of separate measures or the extension of the existing ones”	Med. C4I & Dec. Support Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-164	“The need of a NATO Capability for Real Time Syndromic Surveillance of Diseases was observed”	Deploy. Health Surv. Medical SA Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel Interoperability	Could Be Better
C-165	NATO needs to develop its own [medical deployable outbreak incident investigation team] MED-DOITs since national priorities prevail for existing national MED-DOITs capabilities	Lab Assets Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Op. Epi. Medical SA	Prepare & Protect	Strategic	Doctrine / Policy Organization Interoperability	Could Be Better
C-166	“Clear guidance on the eligibility for common funding of crisis packages as well as medical evacuation and patient treatment is required”	MEDEVAC Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Could Be Better
C-167	telework challenges: delays in addressing IT requests, need for a teleworking practice	Other - BCP, NPI	Prepare & Protect	Tactical Operational	Doctrine / Policy Interoperability	Could Be Better

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C-169	teleworking challenges: concerns related to medical confidentiality and healthcare capability manning and tasks	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Personnel Facilities	Could Be Better
C-170	[Public Affairs Officer] PAO should consistently handle internal communication/messaging within the HQ	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Personnel	Neutral
C-172	“ROU MoD shared a best practice for BC referring to working in shifts/14 days tours followed by 14 days self-isolation... so that no risk for infection between the tours exists”	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Went Well
C-174	“delays were observed with regard to identification and coordination with HN POCs relating to synchronized implementation of HQ and HN measures in all their legal, medical, operational, and timing dimensions”	CivMil Cooperation Other - civ support, unspecified measures	Prepare & Protect	Operational Strategic	Doctrine / Policy Interoperability	Could Be Better

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C-175	lack of PPE, testing kits and basic supplies requires building own crisis packages independent of suppliers availability and revising FHP measures	Lab Assets Med. Support Ops Other - PPE, testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Could Be Better
C-176	Military contingency is required for areas relying only on locally recruited civilian support (e.g. Base Support) which may be easily overwhelmed in pandemic situation or having a different working regime under national regulations. Including this workforce into the HO PE and retaining it under common funding may be considered	Med. Support Ops Other - BCP, civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization	Neutral
C-177	“comprehensive understanding of civilian environment and critical liaison points with external stakeholders and NATO HQ were challenged by late involvement of civil-military expertise. Review of appropriate SOPs and directives should ensure right and timely involvement in operations and plans of such expertise”	CivMil Cooperation Nat. Outreach, Reachback, Fusion Other - civ support	Prepare & Protect Mitigate	Strategic	Doctrine / Policy Personnel Interoperability	Could Be Better

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C-179	increase in cyber threats during the pandemic, some potentially associated with teleworking	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Materiel Personnel Interoperability	Could Be Better
C-180	ITA Army shared 5D principles: dispersion, digitalization, social distancing, protective devices/equipment, diagnosis/testing	Lab Assets Other - NPI, PPE, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
C-181	ROU MoD best practice: armed forces supporting military civilian authorities through 1) inter-agency effort: organizing C2 and coordinating with health and emergency authorities 2) supporting resilience: transportation, medical support and research, law enforcement, CBRN decontamination, airlift, etc	Inf. Prevention & Control CivMil Cooperation Med. C4I & Dec. Support MEDEVAC Med. Support Ops Other - R&D, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Interoperability	Went Well
C-182	Working in shifts can mitigate challenges of telework	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral

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C-184	communication can benefit staff and families: emails, updates via phone conversations, creation of organization/functional mailboxes (everyone is cc in everything and can access to ensure mailbox so that understand the ongoing tasking)	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Neutral
C-186	exercising various scenarios (pandemic, IT failure, hacking, information leak) and including non-NATO actors may be considered	Med. C4I & Dec. Support	Prepare & Protect	Strategic	Doctrine / Policy Training Interoperability	Neutral
C-187	“it was also observed the benefit of using social media and engaging with influencers to: properly communicate and understand local concerns; prioritize talking points and negotiating with local communities to understand their priorities, especially in particular situations”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Went Well
C-188	telework challenges: availability of IT capabilities for HQ staff partners, availability of unclassified versions of national repositories, interaction between NATO and national entities working in different networks, availability of a collaborative working platform to support collaborative writing teams	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Could Be Better

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C-189	“availability and use of appropriate/secure information channels are needed to support accurate Situational Awareness during teleworking and consider personal data protection”	Strat. Comms. Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Materiel Facilities Interoperability	Could Be Better
C-190	“best practices on adapting military vehicles (IRL MoD) in support of transportation of civilians suspected of COVID-19 infection to testing centers as well as several practical solutions, protective measures and considerations for improvement of ongoing efforts to avoid workplace contamination and virus spread”	Inf. Prevention & Control CivMil Cooperation MEDEVAC Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel Interoperability	Went Well
C-191	Polish Armed Forces involved in fight against COVID-19: sanitary control points, disinfection, support to police, military facilities for quarantine and evacuation, transport of supplies	Inf. Prevention & Control Iso/Quarantine/ROM CivMil Cooperation MEDEVAC Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Neutral
C-192	“challenges with regard to the use of COVID-19 terminology and the need for a set of definitions to ensure common Situational Awareness and accurate reporting”	Strat. Comms. Other - lexicon	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Could Be Better

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C-193	teleworking challenges: over-classification of documents, internal communication, keeping records of changes in conducting business, battle-rhythm on staff presence	Strat. Comms. Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Interoperability	Could Be Better
C-194	best practices: operating with low manning while keeping personnel on call for emerging priorities, effective task management and synchronized communication through early establishment of an action group/task force on COVID, updates and coordination with Framework Nation on preventive measures	Strat. Comms. Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization Interoperability	Went Well
C-197	personnel safety: testing is required to avoid uncertainty and inadequate approach to self-isolation	Iso/Quarantine/ROM Lab Assets Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
C-198	need for stockpile reviews, cleaning standards and cleaning approach to ensure contact-less items and improved cleaning baseline	Inf. Prevention & Control Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Could Be Better



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C-203	teleworking challenges: lack of VTC common solutions across NATO bodies, need an external distribution list of contacts to contact staff working from home (e.g. mobile devices) that can be used up to the RESTRICTED level	Med. C4I & Dec. Support Strat. Comms. Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Could Be Better
C-205	working and preventing the spread of the virus are not mutually exclusive pursuits: some office environments have succeeded by using PPE and social distancing	Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Went Well
C-206	relaxing measures should be commensurate with changes in the progression of infection, assessment of resource allocation and stockpiles, and the capacity of health systems and social security networks to support the private sector, financial stability and economic confidence	Med. C4I & Dec. Support Med. Risk Assess. Med. Support Ops Other - unspecified measures	Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-207	"medical support partnership and multinational solutions for commercial support through NSPO Support Partnership contingency planning would allow medical supply agreements to be in place" which could: reduce inter-nation competition, improve responsiveness achieve cost savings through economies of scale, guarantee availability of PPE	Med. Support Ops Other - civ support, PPE	Prepare & Protect	Strategic	Doctrine / Policy Materiel Interoperability	Neutral

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C-208	“better funding, more flexible procurement, such as the proposed Revolving Fund, and a NATO Crisis Response Measure would introduce a procedure to authorize exemptions and waivers against current regulations, which would allow rapid acquisitions, decreased risk of cost escalation, timely replacement of supplies, better management of stocks... improvement of the emergency response capability”	Med. Support Ops Other - BCP, civ support	Prepare & Protect	Strategic	Doctrine / Policy Materiel Interoperability	Neutral
C-209	working remotely will likely trigger technical innovation that will outlast the pandemic	Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-211	anticipated challenges: NATO's ability to detect and monitor a 2nd wave, deter and provid rapid bioengineering counter measures for future pandemics by increasing funding	Deploy. Health Surv. Op. Epi. Medical SA Other - R&D	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better

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C-212	“deficiencies in surge capacity and resource flexibility may compromise NATO’s resilience”	Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel Interoperability	Could Be Better
C-214	areas for improvement: better integration of gendered perspectives in infection and risk assessment	Med. C4I & Dec. Support Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-215	business continuity challenges include: level of access to information, equipment availability, software solutions for communication, constraints on the flow information, battle-rhythm on reporting staff presence	Strat. Comms. Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel Interoperability	Could Be Better
C-216	business continuity challenges: over-classification of documents, delays in the scheduling of meetings caused by over-reliance on personal mailboxes, simulation tools that require hands-on time in training centers, continuity of functions at HQ (e.g. monitoring personnel and manning health and safety procedures)	Strat. Comms. Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training Materiel Facilities	Could Be Better

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C-217	adaptations include: individual protection, educational and training solutions, changes in digital data management, adaptation of program of work	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training Materiel	Neutral
C-218	possibility of a second wave or future pandemics should prompt an investment into e-learning	Other - BCP, R&D	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy Training Materiel	Neutral
C-219	establish a network of points of contact in key roles in HNs to ensure timely reaction to emergency measures and an easy flow of information	CivMil Cooperation Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Other - civ support	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Neutral
C-221	“there is a potential need to adjust the current Baseline Requirements for Civilian Preparedness”	CivMil Cooperation	Prepare & Protect	Strategic	Doctrine / Policy	Neutral
C-222	“lack of coordination with Host Nations hampers the ability to identify and evaluate different options available to prepare suitable solutions/procedures whenever military personnel and their families need to travel across EU-countries with different COVID-19 restrictions”	CivMil Cooperation Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Could Be Better
C-224	need to develop triggers to identify non-military crises earlier and initiate the NATO Crisis Response Systems	CivMil Cooperation Med. C4I & Dec. Support Medical SA	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Could Be Better

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C-226	possible telework improvements include: "having PAN or NR mobility laptops and Vasco or OWA tokens available to all personnel", "updating VTC systems", "creating isolation zones with IT and VTC capability to facilitate screened work", creating more online CIS training courses	Other - BCP, NPI	Prepare & Protect	Tactical Operational	Training Materiel Facilities	Neutral
C-227	business continuity plans should be developed for a second wave of COVID-19	Other - BCP	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-228	should be an implementation of a policy and SOP to establish requirements, principles, and procedures related to telework including: creation of roster for critical positions and reporting mechanisms	Med. C4I & Dec. Support Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-230	need to ensure "simpler systems for personnel status reporting when staff are teleworking"	Other - BCP, NPI	Prepare & Protect	Tactical Operational	Doctrine / Policy Materiel	Could Be Better
C-232	stockpiles of protective equipment and material should be available for day-to-day business and future emergency situations	Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral

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C-233	establish permanent Civil-Military liaison and support to non-military actors to improve interactions and adaptations during crisis as well as inform the post-COVID transformation	CivMil Cooperation Med. C4I & Dec. Support	Prepare & Protect	Strategic	Doctrine / Policy Organization Interoperability	Neutral
C-235	set up a specialized task group to facilitate internal communication and leadership advice	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Organization	Neutral
C-236	contain the virus by implementing a cautious approach with regards to self-isolation of returning personnel, especially when there are different interpretations of geographic risk areas between the HN and other nations	Iso/Quarantine/ROM Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-237	"measures to mitigate the spread of the virus include 1) controlling access to facilities to maintain social distancing and minimise interaction among personnel 2) providing testing equipment and training key personnel to use it"	Iso/Quarantine/ROM Lab Assets Other - NPI, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training Materiel	Neutral

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C-238	extending teleworking capabilities to the future should involve: revising teleworking SOP, creating an IT working group, using document collaboration tools, adjusting the number of annual security briefing events	Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Training Materiel	Neutral
C-241	HQ SACT area 2: coherent business continuity planning: need for a NATO BC Advisory Group to develop strategic guidance for BC across NATO entities, including plans to exercise the implementation of all BCPs simultaneously	Strat. Comms. Other - BCP	Prepare & Protect	Strategic	Doctrine / Policy Organization Training Interoperability	Neutral
C-242	HQ SACT area 3: "secure, resilience and remote CIS/IT infrastructure - the drivers of future CIS/IT requirements should be the access of all NATO entities to remote NATO Restricted (NR) access, together with a better understanding of what is essentially NS information"	Strat. Comms. Other - BCP	Prepare & Protect	Strategic	Doctrine / Policy Materiel Facilities Interoperability	Neutral
C-243	HQ SACT area 4: understanding STRACOM responsibilities: revisiting STRACOM guidance and structures to ensure common understanding of delegation and coordination of local, internal messaging	Strat. Comms.	Prepare & Protect	Strategic	Doctrine / Policy Organization Interoperability	Neutral

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C-245	HQ SACT area 6: readiness: review of remote IT requirements to improve force resilience and investigate impact of modifications, cancellations and postponements of training, exercise, and outreach on readiness	Other - BCP, NPI	Prepare & Protect Trans. & Recover	Operational Strategic	Doctrine / Policy Training Materiel	Neutral
C-247	[Joint Warfighter Centre] JWC recommendations 1) broaden scope of [business continuity planning] BCP from focus on specific exercises to whole-of-HQ business 2) improve contingency plans with clearer guide for prioritization of actions and tasks 3) review [computer information systems] CIS tools and support to ensure seamless communication and collaborative work, allowing smart work principles to be incorporated during business as usual stages	Other - BCP	Prepare & Protect	Tactical	Doctrine / Policy Materiel Facilities	Neutral
C-248	report gender-disaggregated data and undertake gender analysis for identification of impact of response measures	Op. Epi. Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral



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C-249	“NATO's Science for Peace and Security Programme” seeking innovative solutions “including the use... of the Next-Generation Incident Command System - a tool that helps to enhance response coordination among state institutions and organizations like the Red Cross - to improve cooperation and information-sharing among first responders during disasters”	CivMil Cooperation Med. C4I & Dec. Support Other - civ support	Prepare & Protect	Strategic	Doctrine / Policy Materiel Interoperability	Neutral
C-250	identify and train personnel tasked to support the Crisis Response Task Force	Med. C4I & Dec. Support	Prepare & Protect	Strategic	Training Personnel	Neutral
C-251	relieve personnel from day-to-day duties to focus on CTF work	Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization	Neutral
C-252	embed the BC and emergency plans within the HQ culture through exercise and training to ensure more resilience during similar events and in future disease outbreaks	Other - BCP	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy Training	Neutral
C-253	establishment of a NATO Medical Intelligence platform could support commander and health authority decision-making and aid in situational awareness	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Materiel	Neutral

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C-255	“there should be only one source of information for consolidation, analysis and distribution in order to provide the Command Group with the most accurate information”	Med. C4I & Dec. Support Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Organization Interoperability	Neutral
C-256	best practice: facilitate access to communication platforms in conference rooms to improve information management should be continued post-pandemic	Other - BCP	Prepare & Protect	Tactical	Doctrine / Policy Materiel Facilities	Went Well
C-257	best practice: Crisis Action Teams should be pre-defined and have communication support even if they are non-NATO in order for information to be passed on easily	Med. C4I & Dec. Support Strat. Comms. Medical SA	Prepare & Protect	Operational	Doctrine / Policy Interoperability	Neutral
C-258	run information campaigns to reinforce preventative measures and their timely implementation	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-259	early implementation of a COVID-19 crisis response working group that quickly triggered a phased action plan was successful in preventing the spread of the virus	Med. C4I & Dec. Support Other - unspecified measures	Mitigate	Operational Strategic	Doctrine / Policy Organization	Went Well
C-260	contactless building access features can be prohibitively costly	Other - NPI	Prepare & Protect	Tactical Operational	Materiel Facilities	Could Be Better

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C-262	strengthen medical structures by increasing the # of posts for medical professionals on missions and in NATO HQ, particularly in [medical intelligence] MI, FHP, and surveillance	Med. C4I & Dec. Support Medical SA	Prepare & Protect	Operational Strategic	Doctrine / Policy Organization Personnel	Neutral
C-263	evaluate available lab capacities, keep stocks of PPE, develop a resupply plan, update SOP on preventative medicine and epidemiology to account for new disease threats	Lab Assets Medical SA Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-264	develop a network for SARS-COV-2 SMEs	Lab Assets Nat. Outreach, Reachback, Fusion Other - civ support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Trans. & Recover	Operational Strategic	Organization Personnel	Neutral
C-265	create an exchange platform to increase NATO's readiness to respond to future waves of the pandemic, establish a near real-time surveillance system to enable a functional Medical Intelligence and Bio-Security capability	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA	Prepare & Protect	Strategic	Doctrine / Policy Materiel Interoperability	Neutral
C-266	establish regular CIVMIL CBRN cross training opportunities to make future cooperation more effective, facilitate sharing of knowledge, establish rapport between leadership to maintain civmil cooperation and decision-making	CivMil Cooperation Med. C4I & Dec. Support Medical SA Other - civ support	Prepare & Protect	Strategic	Training Interoperability	Neutral

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C-267	Asian countries have adopted very different responses than Central and Western European countries by adopting more stringent prevention measures, massive virus testing, and using technology to mobilize societies. These countries have more previous experience with epidemics. Europe and US lost much time in inactivity, only took action when curves showed very serious spread	Lab Assets Med. C4I & Dec. Support Other - PHM, testing, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Materiel	Neutral
C-268	Some individuals see positive behavior changes associated with personal and family resilience	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical		Went Well
C-269	Some experience less pro-social reactions ranging “from passive and depressive states to aggressive and destructive ones”	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical		Could Be Better
C-277	The result of delaying public health measures is visible in the public health crisis in the United States	Med. C4I & Dec. Support Other - NPI, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Could Be Better

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C-278	Italy broke its pattern of exponential spread with new restrictive measures	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well
C-279	Developing an instrument for the treatment of the most severe cases would allow a loosening of restrictive measures; criteria should be developed for if and how it happens	Med Countermeasures Med. C4I & Dec. Support Patient Manage. Med. Risk Assess. Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-281	Belgian health authorities authorized a 70% effective antigen test that a number of hospitals are planning on using for mass screening, this could allow measures to be removed by isolating only those who are actually ill and quarantining close contacts	Iso/Quarantine/ROM Lab Assets	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-283	Regarding the Netherlands: "the country has undertaken a strategy to scale up testing for both symptomatic patients and contact and at-risk populations"	Lab Assets Deploy. Health Surv. Op. Epi. Med. Risk Assess. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral

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C-284	Regarding the Netherlands: "Information is collected on individuals with a positive COVID-19 test through collaboration between doctors, laboratories, and government organizations"	Lab Assets Deploy. Health Surv. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
C-285	Germany has high case rates, but one of the lowest mortality rates in the world which is credited to 1) the number of ICU beds (25,000 compared with UK's 4000) 2) a network of independent laboratories with capacity for up to 12,000 cases a day 3) follows stringent social distancing measures similar to those in other European countries	Lab Assets Patient Manage. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Materiel Personnel Facilities	Went Well
C-286	"Greece has taken stringent but necessary measures, including the complete blocking of cities and villages susceptible to contamination"	Iso/Quarantine/ROM Other - NPI, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-290	Japan reliant on preventative measures and is currently restricting tests to areas with high infection rates	Lab Assets Other - testing, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral

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C-291	In Japan, “wearing a safety mask became a duty for every citizen” and people quickly complied with public health measures including hand washing and PPE	Other - NPI, PPE, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Went Well
C-292	South Korea has previous experience with epidemics and passed a law to allow new measures to control infectious diseases	Other - unspecified measures	Prepare & Protect	Operational Strategic	Doctrine / Policy	Neutral
C-293	South Korea has the ability to “require data from mobile operators for the location of confirmed infected people, which is compared with data from public video surveillance systems and credit card statements” in order to track people across public spaces	Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Materiel Personnel	Neutral
C-294	South Korea has required all travelers to quarantine for two weeks and faces relatively low case burdens in comparison to European countries	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well
C-296	“On April 1st, the premiere Mishustin announced the establishment of a quarantine breach tracking system based on data from mobile operators. Violators will receive a text message and if they systematically violate it, the information will be sent to law enforcement services”	Iso/Quarantine/ROM Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral

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C-297	Allegedly, spread in Bulgaria spurred on by the number of returnees from abroad	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-301	Turkey sent an A-400 M military cargo plane with medical supplies (e.g. PPE, disinfectant) to Italy and Spain	CivMil Cooperation Med. Support Ops Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Materiel Interoperability	Neutral
C-305	“Continued quarantine and uncertainty about the global and personal development of the crisis have a strong mental impact on the population. This fact already has manifesting itself in deviations from the normal behavior of certain individuals.”	Iso/Quarantine/ROM PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Personnel	Could Be Better
C-306	Stressors include: material reasons (e.g. job loss, waste of money), high risk situations, loss of a loved one, anxiety causes by negative turn of events	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Personnel	Could Be Better



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C-308	“the assumption was that if the restrictions are introduced too early, people would burn out of isolation and begin to break it at the pandemic's peak”	Iso/Quarantine/ROM Other - NPI, PHM, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-309	social distancing requirements may be difficult to maintain while warmer weather approaches	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
C-310	“currently there is no unique developed page for summarizing all statistics, data along with news regarding COVID-19”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
C-311	starting mass testing is critical to limiting the spread of the infection	Lab Assets Deploy. Health Surv. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-312	individuals should be required to wear masks in all public spaces because it is not possible to know who is infected, so we should assume that everyone is infected	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral

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C-313	private laboratories should be required to share test results with national governments to give a more complete picture of the virus spread	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Medical SA Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Interoperability	Neutral
C-314	should develop a country-wide web page that summarizes all statistics, data, and news about COVID-19 (e.g. maps of high risk areas and cases)	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-315	“strengthen the measure for testing risk groups by paying special attention to minority groups (particular attention of the Roma ghettos)”	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Med. Risk Assess. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Could Be Better
C-316	the army could be used to: provide psychological assistance, provide food and medicine, form mobile medical teams, deploy additional testing points, use research capabilities	CivMil Cooperation Lab Assets Patient Manage. PsychoSocial Support Med. Support Ops Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Organization Materiel Facilities Interoperability	Neutral
C-317	thanks to the facilitation procedure for approving new diagnostic tests, South Korea quickly developed seven types of approved coronavirus tests	Lab Assets Other - R&D, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Went Well

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C-318	South Korea's strategy involved as many tests as possible to allow for early detection and identification of asymptomatic cases	Lab Assets Deploy. Health Surv. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-319	South Korean patients with mild symptoms stay at home and receive financial compensation based on their income as a package of vital products (food, soap, etc)	Iso/Quarantine/ROM	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral
C-322	"The South Korean government has won public participation in anti-virus measures and activities through transparency and timely and accurate information"	Strat. Comms. Other - PHM, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well
C-323	in South Korea: "the main measures in the country are aimed at raising public awareness of the ways in which the infection is transmitted"	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral

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C-324	South Korea has leveraged digital tracking to alert people when they enter an area where an infected person has previously been as well as offers reminders to stay home and respect social distance	Other - NPI, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral
C-326	on Greece; “what makes the difference is the rapid implementation of extreme measures, such as a lockdown”	Iso/Quarantine/ROM Other - NPI, PHM, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Went Well
C-327	Poland has allowed the fining and imprisonment of those who break quarantine	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-328	Ministry of Defense took an active role in: supporting police forces, disinfecting public spaces and hospitals, conducting tests, offering military facilities like hospitals, delivering food, mobilizing laboratory capabilities, running a psychosocial assistance hotline	Inf. Prevention & Control CivMil Cooperation Lab Assets PsychoSocial Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel Facilities Interoperability	Neutral
C-335	disinformation has lead to health risks from improper use of medication or other “solutions”: e.g. overdosing on chloroquine in Nigeria, excessive use of garlic in China, eating yogurt soap in Turkey	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Could Be Better

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C-336	on Austria: “the process of restoration to normal life will be monitored and analyzed continuously to prevent a second wave of coronavirus infection”	Med. C4I & Dec. Support Medical SA	Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-337	on Belgium: even past the peak of cases, “citizens are advised to continue strict compliance with the measures for a few more weeks”	Med. C4I & Dec. Support Other - unspecified measures	Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-338	on Brazil: restrictive measures are being taken to prevent the collapse of the health system	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-341	German measures taken include: masks in public spaces, limited public activities, fast tracking of infections, regional restrictions on school openings, border checks being relaxed over time	Op. Epi. Other - NPI, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral

Identifier	Observation	Task	Phase/Tier	Operational Level	DOTMLPF-I	Sentiment
C-342	“Germany should stop spreading the virus and reduce the infection rate to below 1 around Easter. The lockdown should then be lifted and the new cases should be prevented by mass testing and movement tracking through mobile phones. However, to accomplish this, mechanisms will have to be used to track more than 80% of people who have had contact with a coronavirus infection within 24 hours of diagnosis.”	Lab Assets Med. C4I & Dec. Support Other - NPI, testing, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-345	In Bulgaria, recommendation to “reinforce[e] the role of the army”, including “psychological assistance to the population” **is the army best positioned for this?	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization	Neutral
C-346	On March 18, 2020, Polish MOD “Territorial Defense Forces started 24/7 special phone line for psychological help for people under quarantine.”	Iso/Quarantine/ROM PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Organization	Neutral
C-348	In Italy “part of the doctors are exposed to psychological stress, seeing their colleagues become infected and some even die. In addition, the equipment at their disposal is extremely inadequate”	PsychoSocial Support Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel	Could Be Better

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C-349	“there are increasing incidents of domestic violence as well as psychological trauma for people who are more sensitive to isolation and lack of freedom of movement” **which populations are more “sensitive”?	Iso/Quarantine/ROM PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
C-351	On Taiwan “the country’s high-tech profile contributes to the relatively smooth transition to a physically distant daily routine, mitigating the negative effects on society”	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well
C-352	“isolation puts people’s mental health at risk, cases of domestic violence are increasing, education and the prospects of millions of young people are being affected”	Iso/Quarantine/ROM PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Could Be Better
C-353	key problems in Italy include: constantly over-capacity hospitals, medics unprepared and lack PPE, medics cannot effectively use telehealth bc of nature of cases treated, poor organization of assistance to the most deprived, lack of preparation for an epidemic, doctors exposed to psychological stress, lack of PPE for doctors	Patient Manage. PsychoSocial Support Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization Materiel Facilities	Could Be Better

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C-354	most countries have been loosening and tightening restrictions in accordance with case numbers	Med. C4I & Dec. Support Other - NPI, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-355	“The Netherlands National Institute for Public Health and Environment has launched a large-scale study on how many people have antibodies to the new coronavirus” through blood sampling of 6000 people to determine extent of virus spread and progress towards herd immunity	Lab Assets Deploy. Health Surv. Medical SA Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-356	Norway has imposed strict border closure measures, nationals returning home are placed under a 14-day quarantine, all public institutions remain closed	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-357	Poland banned the gathering of more than two people outdoors, only allowed to leave homes for imperative reasons, vote by mail system encouraged	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral



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C-358	on Russia: “the government has introduced stringent measures, but their effect will largely depend on the personal motivation to comply with them”	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-361	Sweden took a different approach without strict restrictions, but the number of cases continues to rise, government is considering a new crisis law for more stringent measures	Med. C4I & Dec. Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-362	Taiwan took early measures to prevent the spread of the disease which has resulted in relatively low infection and mortality rates, they had previous experience with pandemic response, population has high confidence in institutions, effectively employed AI and big data processing to identify and track cases	Op. Epi. Other - NPI, tracking, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Went Well
C-364	US saw a rapid increase in availability of testing, but had no system to prioritize who could be tested	Lab Assets Med. C4I & Dec. Support Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Could Be Better

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C-365	“SACEUR was designated to coordinate NATO's efforts to combat the pandemic and use of the Rapid Corridor for Military Air Supplies to transport assistance to those in need of COVID-19 combat”	CivMil Cooperation Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel Interoperability	Neutral
C-370	NATO Enhanced Forward Presence Battlegroup Lithuania (NATO eFP) provided medical staff from Germany, the Netherlands and Croatia to assist Lithuania's healthcare system	CivMil Cooperation Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Organization Interoperability	Neutral
C-371	EU response to covid focuses on 4 priorities: limiting the spread of the virus, ensuring the delivery of medical equipment, promoting research into treatments and vaccines, supporting jobs, business and the economy	Nat. Outreach, Reachback, Fusion Med. Support Ops Other - BCP, NPI, R&D, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Materiel Personnel Interoperability	Neutral
C-373	the European Center for Disease Control issues rapid risk assessments and epidemiological updates	Strat. Comms. Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Interoperability	Neutral

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C-374	EU Union Civil Protection Measures include: coordinating deployment of medical teams in affected areas, facilitating search for additional PPE, activating emergency coordination center, setting up European emergency medical equipment reserve	Med. C4I & Dec. Support Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Materiel Interoperability	Neutral
C-376	acceleration spread charts are very informative about what to expect in the upcoming days	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Went Well
C-378	“significant variations are observed in the ways cases are classified and data submitted to WHO bc: different approaches to diagnosis, different assessment of critical cases, differences in the cause of death of deceased infected person”	Fatality Manage. Medical SA Clinical Diagnosis	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Could Be Better
C-381	“In spite of the high discipline of society, it seems that there are people who underestimate the danger and violate the introduced quarantine rules”	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Could Be Better

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C-382	recommendation: form permanent hygiene habits among the population and businesses by conducting an information campaign that the population will have to observe for a long time (e.g. wearing masks in public, disinfection of public buildings, observing physical proximity)	Inf. Prevention & Control Strat. Comms. Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-383	explore options for tracing contacts of infected people (e.g. smartphone apps) in line with PII protection requirements	Op. Epi. Other - R&D, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-384	“the population should be encouraged during the summer months to seek self-isolation in a family environment by using villas and country houses or remote urban areas”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-386	Germany's national pandemic plan targets 1) reducing morbidity and mortality 2) ensuring treatment of infected persons 3) upkeeping essential public services 4) accurate information for decision-makers, media, public	Med. C4I & Dec. Support Patient Manage. Strat. Comms. Medical SA Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral

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C-388	UK focused on using the NHS only in necessary circumstances to reduce the burden on HCWs (e.g. providing advice on NHS website)	Patient Manage. Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-390	“mass testing is the key to transition out of the lockdown and the capacity for daily testing in BGR should be drastically increased to the level of the other European states”	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-391	France is working on developing a Stop Covid contact-tracing app but is facing pushback against privacy concerns	Other - R&D, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral
C-392	to combat a large outbreak, Italy “announced an extraordinary measure for a Western democracy - one that has not been tried in modern times... the entire peninsula was put under quarantine orders”	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-393	In Italy: overcrowding of ICU beds has forced delay or cancellation of elective surgeries	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Facilities	Could Be Better

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C-394	“most health systems are pretty streamlined and so an excessive increase in patients rapidly strains resources”	Patient Manage. Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Facilities	Could Be Better
C-395	in Italy, the spread of the virus in the hospital systems before doctors realized the problem may be amplified the outbreak (e.g. 10% of medical workers in Lombardy were infected)	Inf. Prevention & Control Iso/Quarantine/ROM Patient Manage. Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Could Be Better
C-396	hospital capacity limitations will affect care for patients in need of surgery, cancer treatment, vaccinations for other diseases and HIV treatment	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Organization Facilities	Could Be Better
C-397	flattening the curve of the epidemic outbreak through social distancing can prevent a crippling of health systems	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral

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C-399	“mak[e] sure patients know when to show up in clinics, when to get tested, and when to stay home”	Iso/Quarantine/ROM Lab Assets Strat. Comms. Other - NPI, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-401	“strict discipline should be applied in coordination in combating the epidemic, and scientific approach and information sharing should be open and transparent”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-402	deficiencies in PPE should be addressed and those in high-risk jobs should be tested regularly	Lab Assets Med. Risk Assess. Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel Personnel	Neutral
C-404	ROM that are imposed when cases start to rise will be less effective than those imposed when the first cases are detected	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-405	success of South Korean approach due to: early mass testing, highly transparent institutions, early information campaigns, efficient use of new technology, supporting businesses	Lab Assets Strat. Comms. Other - testing	Mitigate	Strategic	Doctrine / Policy Materiel	Went Well

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C-407	“post-outbreak analysis should focus on sex-disaggregated data (age, sex, gender, economic occupation, ethnicity, religion, etc) to create a comprehensive and inclusive understanding of the development path of the virus”	Op. Epi. Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-409	China constructed a mobile inflatable biosafety lab in Shenzhen to test samples.. It has a modular layout and air supported structure, which makes it suitable for unfolding at almost any location (can be transported by aircraft). It serves 5 functions: sample collection, sample reception, reagent preparation, sample preparation, sample amplification area	Lab Assets Sample Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Materiel Facilities	Neutral
C-412	in Taiwan: de-centralizing testing to different parts of the country can minimize time for results and reduce the burden on medical personnel	Lab Assets Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-418	some countries have been reluctant to adopt ROM in fear of restricting personal freedoms and damaging the economy but have experienced relatively high rates of infection	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better



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C-423	UN, WHO, UNESCO, NATO, and EU have added “myth buster” sections to their websites to tackle pandemic-related disinformation	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-424	amidst uncertainty about the progression of infections, citizens in locked down countries have expressed dissatisfaction with ROM	Iso/Quarantine/ROM Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-425	countries should adopt stepwise approaches to restrictions where changes in ROM are commensurate with changes in case numbers	Iso/Quarantine/ROM Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-427	cases that are treated at home are more difficult to track than those that are hospitalized	Iso/Quarantine/ROM Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Could Be Better
C-428	countries with limited hospital and ICU capacity should act quickly when cases are identified to avoid an overwhelming of the system	Med. C4I & Dec. Support Patient Manage. Clinical Diagnosis	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral

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C-432	compared to other countries, Portugal adopted early restrictive measures - strict measures were put into place when there were no deaths in the country because of limited ICU and hospital capacity	Med. Support Ops Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Doctrine / Policy Organization Facilities	Neutral
C-433	despite Germany remaining the fifth largest country in the world for confirmed cases, death tolls are relatively low thanks to early and massive testing	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Went Well
C-435	peaks of cases are observed during the holidays due to movement and contact	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-439	Sweden initially took a different approach and did not impose strict restrictions but resorted to banning large gatherings and closing public institutions as case numbers rose	Med. C4I & Dec. Support Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral

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C-440	because of early restrictive measures, "it can be assumed that Norway is on the right track to overcome the crisis with minimal negative social, financial and political consequences"	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well
C-443	it appears that UK case reporting and data are misreported due to substantially lower critical case numbers than in Spain despite higher case numbers	Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Could Be Better
C-450	"the dissatisfaction of the health care providers with the ill-treatment (purely managerial) to which they are exposed, the poor provision with protective equipment, the overload and, above all, the psychological stress imposed by the danger of infection and the distance from the family environment is increasing. All these contribute to the withdrawal of a small number of health care providers."	PsychoSocial Support Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Strategic	Doctrine / Policy Organization Materiel	Could Be Better
C-452	On business "there is a social sense of invisible threat in community. The prolonged quarantine and uncertainty about the global and personal development of the crisis have a strong mental impact" (pg. 69)	Iso/Quarantine/ROM PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral

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C-453	"it is important to prepare people mentally to face the difficulties ahead and the time needed to overcome them, to form hygienic habits..." (pg. 75)	PsychoSocial Support Other - unspecified measures	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-454	On the EU "finally, it should be noted that in a prolonged stress environment... it is essential to pay attention and make systematic efforts to ensure the public's confidence and transparency of communication and information structures." (pg. 58)	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-457	"Due to its restrictive measures, Albania is one of the countries with a relatively low morbidity and mortality rate"	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Went Well
C-458	Originally, the pandemic officially did not exist in Russia per state-issued data, but has rapidly turned into 15,000 infected per day. "The opaque methods of presenting the scale of the epidemic make the situation even worse"	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-460	"Like most Western European countries, the United States has waited for the infection process to start at a sufficient rate to implement certain measures."	Med. C4I & Dec. Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral

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C-461	In the US: “there are around 150,000 tests a day in the country, while experts recommend that at least 500,000 tests should be done before social distance measures are discontinued”	Lab Assets Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Could Be Better
C-463	In Brazil “the initial underestimation of the situation and the delayed and reactive measures have led to the uncontrolled spread of COVID 19”	Med. C4I & Dec. Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-470	EU: three sets of criteria should be considered when rolling back measures 1) epidemiological criteria (a sustained reduction in hospitalizations and new cases) 2) sufficient health system capacity (beds, pharmaceutical products, equipment stocks) 3) appropriate monitoring capacity (large-scale testing, tracking capacity)	Lab Assets Med Countermeasures Med. C4I & Dec. Support Op. Epi. Med. Support Ops Other - PPE, testing, tracking, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-471	EU; “gather data and develop a robust system of reporting. Harmonized gathering and sharing of data at national and subnational level by public health authorities is essential to better manage the lifting of measures”	Deploy. Health Surv. Med. C4I & Dec. Support Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Interoperability	Neutral

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C-472	EU: "create a framework for contact tracing and warning with the use of mobile apps, which respect data privacy"	Deploy. Health Surv. Op. Epi. Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-473	EU: "testing capacities must be expanded and harmonised. Fast and reliable testing is key to swift diagnoses and to measure population's acquired immunity."	Lab Assets Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-474	EU: "the capacity and resilience of health care systems should be increased. Particularly, to address the predicted rise in infections after rolling back the containment measures"	Patient Manage. Other - BCP	Prepare & Protect Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Personnel Facilities	Neutral
C-475	EU: "the availability of medical and personal protective equipment should be increased"	Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Materiel	Neutral
C-476	EU: "develop and fast-track the introduction of vaccines, treatments and medicines"	Med Countermeasures Other - R&D	Prepare & Protect	Strategic	Doctrine / Policy Materiel	Neutral

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C-477	EU: travel restrictions should be reduced in phases and areas with lower-risk should be opened first	Iso/Quarantine/ROM Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-478	EU: "gatherings of people should progressively be permitted... should focus on the specificities of different categories of activity such as: schools, commercial activity, social activities, mass gatherings"	Iso/Quarantine/ROM Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-479	"An EU COVID-19 Data Platform has been established by the European Commission and partners to rapidly collect and share comprehensive coronavirus research data, such as DNA sequences, protein structures, data from pre-clinical research and clinical trials, as well as epidemiological data"	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral

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C-480	“with the increase in the number of infected, those with mild symptoms start to be skipped or overlooks. This later leads to an increase in the reported mortality rate”	Deploy. Health Surv. Op. Epi. Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Training	Could Be Better
C-484	the only proven measures to address the pandemic remain physical distancing and social isolation	Iso/Quarantine/ROM Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well
C-487	[Healthcare workers] HCWs are being infected at high rates which greatly hinders treatment and care for patients	Inf. Prevention & Control Patient Manage. Med. Risk Assess.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Training Materiel Personnel	Could Be Better
C-492	“increasing the number of daily tests allows the early detection of infected people, even those who are asymptomatic but are carriers of the infection.”	Lab Assets Deploy. Health Surv. Medical SA Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Materiel	Neutral



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C-498	<p>“Denmark has become one of the countries with the “gold standard” for national coronavirus response. Denmark has acted swiftly, successfully implementing a holistic approach to the Coronavirus and projections to achieve a consistent strategic response. Danish mass testing, tracking and low mortality rates mean they are perfectly prepared to handle a future peak of the virus.”</p>	<p>Lab Assets Deploy. Health Surv. Med. C4I &amp; Dec. Support Op. Epi. Other - testing, tracking, unspecified measures</p>	<p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	Strategic	Doctrine / Policy Materiel	Went Well
C-499	<p>on China: “preparedness and capacity and capability-building before the occurrence of a crisis. Swift (Centralized) decision-making leveraging a strong national public health system and a highly developed technology sector”</p>	<p>Med. C4I &amp; Dec. Support Other - R&amp;D, unspecified measures</p>	<p>Prepare &amp; Protect</p>	Strategic	Doctrine / Policy	Neutral

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C-501	the Japan model includes a cluster based approach “derived from a hypothesis obtained from an epidemiological study based on Chinese data and conducted on the Diamond Princess cruise ship... it posits that the explosive increase in infected persons is a result of the high transmissibility of certain infected individuals, which forms a cluster. Infected individuals with even higher transmissibility appear from those clusters to form more clusters... based on this hypothesis, each cluster is tracked to the original infection source and persons with high transmissibility are isolated to prevent the spread of infection. For this reason, pinpoint testing is carried out and broad testing of the population is not required, in contrast to the approaches taken in other countries”	Iso/Quarantine/ROM Lab Assets Op. Epi. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Went Well
C-502	this cluster approach is only useful in an environment where there are few infected people and clusters can be detected at early stages, necessary to impose protective measures at airports and ports	Op. Epi. Other - NPI, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral

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C-503	“the absence of reported COVID-19 cases from Comoros and Lesotho calls for a reinforcement of the alert management system in these countries, including the intensification of active case search and testing of suspected cases”	Lab Assets Med. C4I & Dec. Support Op. Epi. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Could Be Better
C-505	should adopt step-by-step crisis response plans where each step should be tailored to specific conditions and results of the previous one	Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-506	“decisions to move to each subsequent phase of measure relief should be taken after fulfilling the necessary conditions: analysis of the trend of new cases, health care efficiency and the level of compliance with sanitary instructions by the public”	Inf. Prevention & Control Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi. Medical SA Other - NPI, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-507	“continue... already established habits in the public for social and physical distancing and good personal hygiene, which will have a positive impact in the medium and long term on the delay in the spread of the infection”	Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral

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C-509	“creating reliable capacity for increased testing and monitoring is critical to restoring the economy and returning back to normal”	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
C-511	“pay attention to the mental health of the population. To this end, a comprehensive approach to dealing with the crisis is to be implemented and therefore the expertise of specialists in many different fields should be used”	Deploy. Health Surv. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Personnel	Neutral
C-512	“communication is instantaneous, which allows effective measures to be implemented almost simultaneously in different parts of the world”	Med. C4I & Dec. Support Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Interoperability	Neutral
C-513	“thanks to communication, the authorities, medical staff and people are in constant contact, which eliminates the influence of fake news and calms the panic”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Interoperability	Neutral

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C-514	“each easing lockdown will be monitored and analyzed to assess its effectiveness with the aim of preventing a new wave of infection”	Med. C4I & Dec. Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-515	in Belgium: “the chain of infection must be broken... the government focus will be on the testing strategy and tracing of people who have been in close contact with infected people”	Lab Assets Op. Epi. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
C-516	in Belgium: “it is crucial that the testing and monitoring strategies are synchronized”	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
C-519	in Canada: “the prime minister also said Ottawa will establish a COVID-19 supply council...[to] ensure the country has a consistent supply of personal protective equipment as demand for masks, gloves and hand sanitizer increases from the private sector.”	Med. Support Ops Other - NPI, PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral

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C-522	in Denmark: “intensified focus on preventing infection chains. Expanding the testing strategy to include people with mild symptoms of COVID-19 as well as people without symptoms but at high risk of infection, clarification of requirements for COVID-19 self-isolation, including assistance to citizens who are unable to isolate themselves in their own homes”	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Strat. Comms. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-523	On Korea “KCDC stressed that the new... policy should not be interpreted as signaling a return to life before the pandemic, but rather as entering a “new normal” in which infection prevention practices become a part of everyday life including social and economic activities for everyone”	Strat. Comms. Other - NPI	Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-524	in Denmark: focus on “targeted communication to the population to ensure knowledge as well as continued support and commitment in the controlled reopening”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral

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C-525	in Denmark: focus on “targeted protection of vulnerable risk groups against infection”	Med. Risk Assess. Other - unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-527	in Finland: “the key going forward will be to devise a feasible exit strategy and communicating it to promote predictability... about the second wave of the virus, immunity and timetable for the vaccine”	Med. C4I & Dec. Support Strat. Comms. Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-530	in Germany: “the main goal is to continue testing hundreds of thousands of people for covid-19 per week. The country having a widespread testing system and a huge capacity in treating patients spares no efforts in increasing the number of intensive care beds”	Lab Assets Deploy. Health Surv. Patient Manage. Medical SA Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Organization Materiel Personnel Facilities	Neutral
C-533	in Hungary: “the government is consulting regularly with epidemiologists and will revisit all protection measures every two weeks”	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral

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C-540	Polish Armed Forces have assisted in drive-thru testing	CivMil Cooperation Lab Assets Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Materiel Facilities	Neutral
C-543	“The Swedish government has announced that testing will be ramped up to reach 50,000-100,000 tests per week, with a focus on people in key roles such as police officers and emergency responders”	Lab Assets Med. Risk Assess. Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Leadership	Neutral
C-544	“Taiwan is exhibiting a steady path towards full (local) suppression of COVID-19 and is therefore, directing targeted and tailored efforts towards minimising the risk of imported cases and identifying and tracing asymptomatic cases”	Op. Epi. Other - NPI, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-545	“The government has said making sure the NHS can cope with a second peak of the virus is one of the five conditions that must be met before lockdown is eased”	Iso/Quarantine/ROM Med. C4I & Dec. Support	Trans. & Recover	Strategic	Doctrine / Policy	Neutral



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C-547	in Russia: "due to the dramatic increase in the number of infected authorities in Moscow, temporary hospitals are being built"	Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Facilities	Neutral
C-549	"the World Health Organization has taken on the role of coordinator of the overall effort to combat the spread of the virus, but one thing has made a strong impression - at the regional level, multilateral alliances have remained ineffective, even in the shadow of individual states' efforts"	Med. C4I & Dec. Support Strat. Comms. Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Could Be Better
C-550	"NATO... performed mainly logistical tasks which... was not enough to demonstrate the real politico-military force is possessed." Allied leaders held a coordination meeting to establish a military operational plan for a future response	Med. C4I & Dec. Support Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Could Be Better

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C-551	“one of the ideas of the NATO Secretary General is the common procurement of personal protective equipment and medicines via NATO's own support and procurement agency (NSPA), as well as the simplification of airspace use rules for pandemic flights”	Med Countermeasures MEDEVAC Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel Interoperability	Neutral
C-552	“it was clear from the first day of the pandemic that existing policies and doctrines are not adapted to crises of this nature. Ever since the first report prepared by the CMDR COE, we have emphasized the urgent need to develop “rules” within regional alliances (NATO, EU) in order to achieve coordinated action”	Med. C4I & Dec. Support Other - unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Interoperability	Could Be Better
C-553	“there is a also a need to consider, not only the transportation of materials (medical equipment, masks and medicines, equipment, etc) but also how the Alliance's aircraft could transport infected patients without endangering the health of crew members”	MEDEVAC Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel	Neutral
C-554	NATO: “another aspect of higher efficiency is the timely provision of air corridors to Allies in operations related to dealing with the consequences of the contagion. Facilitated procedures are needed to avoid wasting time, which is critical for patients”	MEDEVAC	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Neutral

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C-556	"in developing the operational plan, serious attention must also be paid to information operation... which had repeatedly tried to damage the image and integrity of the Alliance"	Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-557	specialists in infectious diseases, virologists and medics are not adequately available at NATO's strategic command level, which is likely to lead to a lack of serious coordination among the Allies	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion	Prepare & Protect	Strategic	Doctrine / Policy Personnel Interoperability	Could Be Better
C-559	"the analyzes made so far emphasize that climatic conditions and high temperatures do not have a serious impact on the development of the pandemic. This determines that physical distancing and the restriction of social contacts should be considered key to effectively counteracting the infection in the next phase of the crisis"	Med. C4I & Dec. Support Medical SA Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-561	"the success in the countries with best results in the fight against the virus is due to the large number of daily tests, which allow early detection of infected people, even of those, who are asymptomatic but are carriers of the infection"	Lab Assets Deploy. Health Surv. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Went Well

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C-565	“social distancing measures, combined with appropriate case-based interventions, are the key tools to keep the reproduction rate below 1”	Iso/Quarantine/ROM Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well
C-566	in Brazil: “according to experts, the real number may be far higher due to insufficient testing in the country. In Brazil, tests are performed only on those who are admitted to hospital”	Lab Assets Deploy. Health Surv. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Could Be Better
C-568	in Finland: “Prime Minister Sana Marin (PSD) reiterated that the government did not believe it was possible to eradicate the virus completely and reaffirmed its support for a hybrid strategy to phase out restrictions, while allocating additional resources for testing and tracking infections”	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Other - testing, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-571	in Hungary: “Monitoring the rate of spread of the virus and the number of patients in serious condition remain the main factors in determining any relief restrictions”	Med. C4I & Dec. Support Medical SA Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral

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C-572	in Japan: alleviation of measures will depend on “the general condition of the outbreak, availability of medical resources, and the availability of coronavirus tests”	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Medical SA Med. Support Ops Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-573	in Japan: an expert working group “is working to determine the conditions for declaring a second state of emergency in the event of a new wave of infections”	Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-577	2nd wave preparation should include “preparing a set of response measures to be activated based on the already acquired experience and performed analyzes”	Med. C4I & Dec. Support Other - unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Went Well

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C-578	2nd wave preparation should include "strengthening the health system and manning the medical institutions with the necessary medical staff"	Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Organization Personnel Facilities	Went Well
C-579	2nd wave preparation should include "creating stocks of protective equipment and medicines to successfully meet the next crisis"	Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Materiel	Went Well
C-581	2nd wave preparation should include "planning educational activities and exercises at local, regional and national level to train decision-making and action against the spread of the disease"	Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Training Leadership	Went Well

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C-584	in Brazil “studies based on cell phone location data indicate brazilians are observing stay-at-home measures less and less. Some experts pin the blame for that on disjointed government policy.”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Leadership	Could Be Better
C-587	in Canada: “nearly 1,700 members of the Canadian Armed Forces are working in long-term care homes overwhelmed by COVID-19”	CivMil Cooperation Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-591	in Denmark: “the easing of restrictions has been implemented alongside a widespread testing campaign that aims to obtain a “representative sample” that will provide a clearer picture of the rate of infection in Denmark”	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Medical SA Other - testing, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-592	in Finland: “no new patients are admitted to the wards where infections have been detected and that everyone exposed to the virus has been placed into quarantine”	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Facilities	Neutral

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C-593	in Hungary: "plans to concentrate COVID-19 patients in only a few hospitals"	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Facilities	Neutral
C-596	in Poland: "Ministry of Health informed that next easing of restrictions could be done differently for respective districts, pending current sanitary situation"	Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-599	2nd wave preparations should include "posted visual reminders in the residential areas or in the media that instruct residents and workers to report symptoms of a respiratory infection... visual alerts to encourage the practice of respiratory hygiene and cough etiquette"	Med. C4I & Dec. Support Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well
C-600	2nd wave preparations should include "screening for respiratory illness among workers upon arriving at work. In case the workers do not have symptoms of respiratory illness upon arriving at work, tell them to report any new respiratory symptoms to staff when they first occur"	Deploy. Health Surv. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Went Well



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C-604	“projections about how COVID-19 will play out are speculative, but the end game will most likely involve a mix of everything that checked past pandemics: continued social-control measures to buy time, new antiviral medications to ease symptoms, and a vaccine.”	Med Countermeasures Other - NPI, unspecified measures	Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-605	“containment measures that worked for COVID-19 in places such as Hong Kong and South Korea came far too late in Europe and the US”	Med. C4I & Dec. Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-614	in Africa: “despite the rising trends being observed, many countries in the region have started easing measures restricting social and economic activities”	Med. C4I & Dec. Support Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-629	in India: “the growth of infections is outpacing growth in testing - tests have double since April but cases have leapt fourfold. Epidemiologists say the increase in reported infections is possible because of increased testing.”	Lab Assets Med. C4I & Dec. Support Op. Epi. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel Facilities	Went Well
C-630	in India: “when the infection peaks... a spike in infections could easily lead to many avoidable deaths as hospitals run out of beds for, or delay treatment to, infected patients who need timely	Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage.	Strategic	Organization Materiel Facilities	Could Be Better

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	oxygen support and clinical care to recover”		Op. Surge Strat. Surge Stabilize			
C-631	in Mexico: “the reopening comes amid persistent fears that its public health response - which has depended on a disease modeling rather than widespread testing - has failed to capture the scope of the crisis”	Lab Assets Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Could Be Better
C-634	the UK: “the government has said that the R number is one of the most important factors in deciding when lockdown measures can be eased”	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-635	“unprecedented global demand for personal protective equipment (PPE), diagnostic tests and biomedical equipment required for the COVID-19 response has created acute market shortages of these essential supplies”	Lab Assets Med. Support Ops Other - PPE, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Could Be Better
C-636	“NATO's response to the coronavirus pandemic has shown that the Alliance can play a positive supporting role in helping member states respond to health emergencies”	Other - unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Doctrine / Policy Interoperability	Went Well

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			Stabilize Trans. & Recover			
C-638	“WHO in close collaboration with UN specialized agencies such as the International Civil Aviation Organization (ICAO) and other agencies... developed recommendations for safe transport of dangerous goods, in particular infectious substances”	Cont. Med. Waste Nat. Outreach, Reachback, Fusion Sample Manage. Fatality Manage. Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-639	armed forces were put to use: assisting local law enforcement in maintaining security	CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Strategic	Doctrine / Policy Organization Personnel Interoperability	Neutral
C-640	armed forces were put to use: assisting national healthcare systems through provision of military hospitals, personnel, and materiel	CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Neutral
C-641	armed forces were put to use: enacting preventative measures and lockdowns and enforcing checkpoints in vital areas	CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Strategic	Doctrine / Policy Organization Personnel Interoperability	Neutral
C-642	armed forces were put to use: providing transportation services to stranded	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage.	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral

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	nationals and delivering medical supplies		Op. Surge Strat. Surge Stabilize			
C-643	armed forces were put to use: providing laboratory capabilities and research teams to collaborate on the development of treatments and vaccines	CivMil Cooperation Lab Assets Med Countermeasures Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization Materiel Facilities Interoperability	Neutral
C-644	“the current crisis showed the importance of CIMIC and investing resources in boosting the capabilities of armed forces such as their mobility, rapid deployment and implementing protective measures against biological threats”	CivMil Cooperation Other - civ support, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-645	“the UK Armed forces performed a wide array of activities... converting existing facilities into field hospitals, airlifting COVID-19 patients, distribution of protective equipment, assisting the institutions in testing the population and providing medical and emergency-related training to individuals”	Iso/Quarantine/ROM CivMil Cooperation Lab Assets MEDEVAC Med. Support Ops Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Training Materiel Facilities Interoperability	Neutral
C-646	“IAF aircraft were utilized in transporting masks into regions under quarantine”	Iso/Quarantine/ROM CivMil Cooperation Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral

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C-647	in France: “the General Directorate for Armaments took a leading role in testing contemporary personal protection equipment as an alternative to the existing masks”	Other - PPE, R&D	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel	Neutral
C-650	“PLA units participated in humanitarian relief efforts aimed at the local population like delivery food and medical supplies to the clinics and hospitals in the local realm and disinfecting urban areas”	Inf. Prevention & Control CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel Interoperability	Neutral
C-651	“the infrastructure, services and resources granted to civilian authorities by the armed forces gave relief to the strained capabilities of healthcare, security and social institutions battling COVID-19”	CivMil Cooperation Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Interoperability	Went Well
C-652	“it should be noted that personnel deployed in combating the virus are susceptible to higher risk of infection... and increased levels of psychological and physical stress”	Med. Risk Assess. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral
C-653	“it is of utmost importance for the Armed Forces to take precautions and active measures in ensuring the safety	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge	Strategic	Doctrine / Policy Organization	Neutral

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	and mental health of individuals under arms”		Strat. Surge Stabilize Trans. & Recover			
C-654	psychological assistance should be provided to service members showing signs of PTSD or related psychological trauma due to prolonged isolation, deployments and serving under hazardous COVID-19 conditions	Deploy. Health Surv. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Neutral
C-657	in Africa through WHO “laboratory testing in many countries has now been decentralized from the capital cities”	Lab Assets Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Facilities	Neutral
C-659	“personnel deployed in combating the virus are susceptible to higher risk of infection by SARS-CoV-2 and an increased levels of psychological and physical stress. Working hazards, heightened tensions in society and the duress instilled by work/rest disharmony can lead to short and long-term health problems, development of PTSD – related conditions. It is of upmost importance for the Armed Forces to take precautions and active measures.” (pg. 10)	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization	Neutral

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C-660	“Ethiopia has repurposed testing capacity at the national animal health laboratory for COVID-19 diagnosis”	Lab Assets	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-661	in Africa “health authorities also need to ensure continuity of essential and routine health services.. This challenge will be compounded by ongoing global supply bottlenecks, shortages, and the necessity of repurposing staff”	Patient Manage. Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Organization Materiel Personnel Facilities	Could Be Better
C-663	India formed the Indian Scientists Response to COVID-19 collective (ISRC) which brings together 600 scientists, artists, science communicators and doctors to ensure that accurate, evidence-based information reaches the public	Nat. Outreach, Reachback, Fusion Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-665	“the European Commission has published a roadmap on the Pharmaceutircal Strategy for Europe... which will address risks, secure pharmaceutical production capacities in europe, support the European phamraceutical industry to remain and innovator and world leader, and ensure Europe's supply of safe and affordable medicines”	Med Countermeasures	Prepare & Protect	Strategic	Doctrine / Policy Materiel Interoperability	Neutral

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C-667	“the graph also shows the ratio between the number of dead and newly infected. It turns out that, like acceleration, it is useful for determining the critical levels of decision-making in crisis management”	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-676	the US began tracking incidence of influenza-like illness and COVID-19-like illness	Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi. Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-677	NATO: “so far the Alliance's forces have completed nearly 350 flights to supply hundreds of tons of aids to combat the new disease around the world, deployed hundreds of field hospitals ad provided transportation for sick people”	CivMil Cooperation MEDEVAC Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel Facilities Interoperability	Neutral
C-678	“NATO wasn't enough prepared for this pandemic and under the light of a second wave of COVID 19 infection, actions are already taken IOT provide in both Political and Military domains, realistic and flexible operations plans and directives (for example better organization and coordination of the available airlift capabilities of the Alliance throughout member states)”	Med. Support Ops	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Could Be Better



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C-682	“this research...highlights the risks of using Covid-19 'immunity passports' and supports the prolonged use of public health interventions such as social distancing”	Iso/Quarantine/ROM Other - NPI, PHM, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-683	“health authorities in some countries such as Germany are debating the ethics and practicalities of allowing people who test positive for antibodies to move more freely than others who don't”	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-687	“Canada's lockdown measures minimized community spread of the virus and kept hospitalization numbers manageable”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Went Well
C-688	“the Chilean armed forces are present at ports of entry to ensure compliance with these restrictions”	Iso/Quarantine/ROM CivMil Cooperation Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Interoperability	Neutral
C-691	“WHO News announced on the risks of an infodemic (too much information, some of which can be misleading, harmful or fake)”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral

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C-694	“the increase in the number of cases may reflect changes in case ascertainment (e.g. increasing testing, changes in the case definition) that does not necessarily indicate increased rates of transmission, or may reflect genuine increases in transmission”	Lab Assets Deploy. Health Surv. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-696	“present situation worldwide calls for a flexible balance and coordination where all administrative capacities should be involved into overcoming the newsfeed blunders and fill the info flow gaps”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-697	“growing disinformation activity related to the COVID-19 outbreak,	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
C-699	“NATO is currently preparing for a possible second wave of the COVID-19, through a new operation plan, a new stockpile of medical equipment and a new fund to quickly acquire supplies and services”	Med. C4I & Dec. Support Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral
C-700	to maintain a reduced level of transmission, need a “robust monitoring framework to closely monitor the epidemiological situation, rapidly detect increased transmission, assess the	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral

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	impact of the interventions in place and avoid a resurgence”					
C-701	to maintain a reduced level of transmission, need a “an expanded testing strategy aimed at comprehensive testing of all individuals displaying symptoms compatible with COVID-19”	Lab Assets Deploy. Health Surv. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-702	to maintain a reduced level of transmission, need a “framework for contact tracing, based on extensive testing, active case finding, early detection of cases, isolation of cases, quarantine and follow-up of contacts, possibly supported by electronic tools and applications”	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Op. Epi. Medical SA Other - testing, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-703	to maintain a reduced level of transmission, need “prompt identification and investigation of clusters/outbreaks associated with specific settings”	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization	Neutral
C-708	“emergency rooms and intensive-care units across the USA exhibit signs of strain and some states have embarked on reintroducing stricter control and prevention measures”	Med. C4I & Dec. Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Facilities	Neutral
C-710	Mexico has been using a “traffic light” system for re-opening, “there have been, however, inconsistencies	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage.	Operational Strategic	Doctrine / Policy Interoperability	Could Be Better

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	identified in data reported by certain states”		Op. Surge Strat. Surge Stabilize			
C-712	in Germany: “increased testing capacity and the use of web applications detecting and contacting people at risk of coronavirus infection have proven effective in identifying and controlling (also breaking) infection chains”	Lab Assets Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization Materiel Facilities	Went Well
C-716	“Taiwan's example generates a key message, which highlights the importance of phasing out measures against a stable suppression of the virus transmission rate”	Med. C4I & Dec. Support Medical SA Other - unspecified measures	Trans. & Recover	Strategic	Doctrine / Policy	Went Well
C-717	in South Korea: “most of the imported cases are being found during the screening or the quarantine process”	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Other - NPI, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
C-718	“Over 40 scientists across Allied and Partner Nations, have responded to the call by the NATO Chief Scientist in April to identify solutions to some of the most pressing scientific challenges posed by COVID-19. The challenges was set to the Alliance network 6,000 scientists and to NATO's own laboratory in La Spezia. The challenge focused on solutions for virus detection, improve	Lab Assets Nat. Outreach, Reachback, Fusion Medical SA Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Personnel Interoperability	Neutral

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	situational awareness, resilience and the post-COVID-19 future”					
C-721	NATO ideas include: “applying NATO scientists’ analytical tools to planning for future pandemics”	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion	Prepare & Protect	Operational Strategic	Doctrine / Policy	Neutral
C-722	NATO ideas includes: “improved use of technology to train military leaders in pandemic relief operations”	Med. C4I & Dec. Support	Prepare & Protect	Operational Strategic	Training Materiel Leadership	Neutral
C-728	in NATO “a robust monitoring framework of the epidemiological situation informing the elaboration of (targeted) prevention and control measures” is needed	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-729	in NATO “prompt identification and investigation of clusters/outbreaks associated with specific settings, with implementation of tailored control and prevention measures to minimize onward spread to others in the setting and to the wider community”	Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi. Med. Risk Assess. Medical SA Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-731	in NATO “an expanded testing strategy aimed at a blanket coverage of the population - both symptomatic and asymptomatic cases within established risk groups”	Lab Assets Deploy. Health Surv. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Materiel Facilities	Neutral

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C-732	in NATO “improved awareness raising of the existence and dangers of disinformation and promoting the use of authoritative sources”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-734	“the opportunities and challenges of developing vaccines against COVID-19 are discussed widely taking important lessons from SARS-CoV-1 vaccine development as a guidance for SARS-CoV-2 vaccine design, testing, and implementation”	Med Countermeasures Other - R&D	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral
C-738	“counts of confirmed cases depend on how much a country actually tests and how well handles statistics information flow. Without mass testing there is no real pictures and the data accumulates only conjectural digits”	Lab Assets Deploy. Health Surv. Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Could Be Better
C-746	in the EU “the biggest problem is a lack of adequate contact tracing; patients are often told to track and alert anyone with whom they might have come into contact on their own”	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization	Could Be Better
C-747	in Italy “an appeal in particular was aimed at young people to continue	Strat. Comms. Other - NPI	Trans. & Recover	Strategic	Doctrine / Policy	Neutral

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	observing interpersonal distancing, to use masks, to avoid gatherings, to comply with safety measures in the workplace, to follow all the provisions indicated by the current provisions in the event of travel, movement and return to the resident territory”					
C-751	“after the establishment of the Track and Trace system the UK government is able to better identify outbreaks at an early stage and take steps to ensure appropriate local intervention. Local outbreaks are identified and managed through continuous monitoring of the available data and different approaches are required. if the virus continues to spread, either a local authority or the government can restrict activities at particular locations”	Iso/Quarantine/ROM Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi. Medical SA Other - NPI, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Strategic	Doctrine / Policy	Went Well
C-754	WHO: “the deployment of a laboratory scientist to Lesotho was supported and there are ongoing arrangements for deployment of a laboratory expert to Guinea and biomedical engineers to Chad”	Lab Assets Nat. Outreach, Reachback, Fusion	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Personnel	Neutral
C-757	in Canada: “new outbreaks of COVID-19 among young adults across the country are sparking concern about the impact these clusters of new cases could have on the ongoing easing of pandemic restrictions”	Med. C4I & Dec. Support Med. Risk Assess.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge	Strategic	Doctrine / Policy	Could Be Better

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C-759	“NATO took under serious consideration the Alliance scientific community (a network of more than 6000 experts and scientists), in the decision making process, regarding the proper understanding of virus/pandemic dynamics and the resilience building for the armed forces and local societies”	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Medical SA	Strat. Surge Stabilize Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-764	“CMDR COE emphasizes that the real distribution of the virus and the number of people having contact with it, is much higher than the reported. One of the problems is the already noticed difference in the standards of reporting between different countries. the possible workaround is to use the death toll as indicator for the real spread of the virus”	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Could Be Better
C-776	in Japan “the government team on combating the novel coronavirus has proposed hospital bed occupancy as a key indicator that should be monitored to judge the need for issuing another state of emergency”	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Neutral
C-777	in Japan “the six indicators are scarcity of hospital beds, number of patients and other virus carriers, rate of positive results in (PCR) tests, number of newly confirmed infections, comparisons	Lab Assets Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational Strategic	Doctrine / Policy Materiel	Neutral



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	between the current and previous weeks and the proportion of coronavirus cases for which infection routes are unknown”	Medical SA Med. Support Ops	Stabilize Trans. & Recover			
C-778	in Austria “the colors green, yellow, orange and red will be used to indicate epidemiological situations down to the district level. The colors will pivot on indicators such as the seven-day case numbers, hospital occupancy, traceability of infection chains and the number of test in the region”	Med. C4I & Dec. Support Op. Epi. Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-780	“we still cannot predict who will develop severe symptoms that lead to fatality, so even children, who were considered safe earlier this year, have now presented at random with rare but severe disease”	Op. Epi. Med. Risk Assess.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Personnel	Could Be Better
C-790	“tracing has been a key policy component of all countries that have successfully managed to control the expansion of the virus”	Op. Epi. Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Went Well
C-795	“why has the pandemic worsened in Spain? Experts say a backlash against the strict lockdown... is partly to blame”	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge	Strategic	Doctrine / Policy	Could Be Better

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C-798	“Google and Apple have come out with a new system, Expositure Notifications Express, which makes it possible for health officials to use smartphones for contact tracing without needing an app”	Other - tracking	Strat. Surge Stabilize Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral
C-800	differences between cases across countries may be due to: differences in testing, improved medical protocols, mutation of the virus	Med. C4I & Dec. Support Op. Epi. Medical SA Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Neutral
C-804	in Poland: “the appearance of additional illnesses caused by infection with influenza and parainfluenza viruses will result in a sharp increase in the frequency of hospitalization and isolation”	Deploy. Health Surv. Patient Manage. Medical SA Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-805	in Poland: need to pay attention to the number of medical staff, availability of ICU places, number of respirators, oxygen, air and vacuum access points	Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Organization Materiel Facilities	Neutral

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C-806	in Poland: getting vaccinated against the flu will help manage Covid-19	Med Countermeasures	Prepare & Protect	Strategic	Doctrine / Policy	Neutral
C-808	in South Africa: “a mechanism for tracking of cases in neighboring countries in order to report confirmed cases during cross-border screening is being established to avoid missing cases from the country of origin or duplication of notifications in two countries”	Op. Epi. Medical SA Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Interoperability	Neutral
C-809	European Commission suggests streamlining of measures across Member States including: ommon criteria for travel restrictions, an agreed upon color codes, common framework for measures applied to travelers from high-risk areas, and information to public about restrictions	Iso/Quarantine/ROM Strat. Comms. Other - NPI, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Interoperability	Neutral
C-810	European Commission recommends adjusting measures in alignment with 1) # of new COVID-19 cases per 100,000 people over 14 days 2) % of positive tests per 100,000 over 7 days 3) # of tests per 100,000 people over 7 days	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA Other - unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-811	“Member States should provide this data on a weekly basis to the European Centre for Disease Prevention and Control. Member States should also	Deploy. Health Surv. Medical SA	Prepare & Protect Mitigate Enh. Outbreak	Strategic	Doctrine / Policy Organization Interoperability	Neutral

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	provide this data at the regional level to ensure that any measures can be targeted to those regions where they are strictly necessary”		Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover			
C-812	Color code recommendations from the European Commission: Green (total # of new cases is less than 25 over 14 days AND % of positive tests is less than 3%); orange (total # of new cases is less than 50 over 14 days BUT the % of positive tests is 3% or more OR total # of new cases is between 25-150 over 14 days BUT the % of positive tests is less than 3%); red (total # of new cases is more than 50 over 14 days AND the % of positive tests is more than 150/100,000 over 14 days); grey (if insufficient info or # of tests is less than 250/100,000 people)	Med. C4I & Dec. Support Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-814	WHO and European Commission teamed up to create a Facilitation Council to “speed up the development and deployment of vaccines, test, and treatments”	Med Countermeasures Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Materiel Interoperability	Neutral
C-815	“NATO pays significant attention to counter any disinformation and fake news from any state or non-state actor... it is obvious that the common strategy should be updated accordingly in order to be able to coordinate	CivMil Cooperation Strat. Comms. Other - civ support	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Could Be Better

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C-817	efficiently all the key players in the information domain (international organizations, national and local governments, private companies, civil society and indeendent medi” in Poland “we have over 1000 ventilators prepared, but the problem is their location and the appropriate number of staff that can handle them”	Patient Manage. Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Training Materiel Personnel	Could Be Better
C-829	“new measures are being taken across Europe in stopping COVID-19 from overwhelming its hospitals”	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-830	“most countries around the world rely on the so-called antigenic tests, which show results within minutes, but are not as accurate as standard polymerase chain reaction (PCR) molecular tests which are lacking in some places”	Lab Assets Other - testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral
C-843	“there is evidence the coronavirus pandemic has prompted some people to say they trust experts more, but it has also triggered a wave of	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational Strategic	Doctrine / Policy	Neutral

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	disinformation and fake news propogated by science deiers and conspiracy theorists that has spread virally on social networks”		Strat. Surge Stabilize			
C-844	conspiracy theories are particularly dangerous in a pandemic “if they lead people to ignore official advice, or commit acts of vandalism or violence”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-845	“conspiracy theories have thrived on governments inability to have a clear message”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-848	“case numbers are spiking across most of the United States, leading to warnings about full hospitals, exhausted health care workers and potential lockdowns”	Iso/Quarantine/ROM Med. C4I & Dec. Support Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Facilities	Neutral
C-849	“ECDC has developed epidemiological criteria to categorize the epidemiological situation in countries as being “of concern” or “of serious concern”“	Med. C4I & Dec. Support Strat. Comms. Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral

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C-850	“although there has been a general increase in the levels of testing across all countries, which has resulted in the identification of additional cases who are asymptomatic or have experienced a mild form of the disease. In fact, the concurrent increase in test positivity... indicates an escalating epidemiological situation”	Lab Assets Deploy. Health Surv. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-852	per ECDC: a country is of concern if it meets two of the following criteria: 1) high (>60/100,000) or sustained increase (>1 week) in 14-day case notification rates, high (>3%) or sustained increase (>1 week) in test positivity, high or sustained increase in 14 day case rates for 65+, high(>10/100,000) or sustained increase in 14-day death rates	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-853	per ECDC: a country is of serious concerns if it meets at least 3-4 of the above criteria	Deploy. Health Surv. Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-854	“acute shortage of essential supplies... at the WHO and in support of the UN Crisis Management Team, a Supply Chain Task Force was convened to oversee the establishment of the COVID-19 Supply Chain System”	Med. Support Ops Other - civ support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge	Strategic	Doctrine / Policy Organization Interoperability	Neutral

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C-856	for HIV: “the unprecedented effort on the part of private industry in the COVID-19 vaccine response shines a light on what can be achieved when all interested parties engage. The HIV and TB vaccines endeavors need a similar effort”	Med Countermeasures Other - R&D	Strat. Surge Stabilize Prepare & Protect	Strategic	Doctrine / Policy Materiel Interoperability	Went Well
C-857	in Belgium: the Minister for Public Health adopted a new testing strategy involving testing all asymptomatic high-risk contacts via PCR tests	Lab Assets Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
C-858	in China: “institutional as well as collective memory of previous highly infectious diseases also serve to enable the viability of the current response....marked by high levels of interagency coordination and system integration”	CivMil Cooperation Med. C4I & Dec. Support Other - civ support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Interoperability	Went Well
C-860	Finland: success of low cases partly due to downloads of state app “Corona Flash” for contact tracing	Op. Epi. Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Went Well



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C-864	Spain: “the usefulness of PCR and antigen tests depended on the context, meaning it was important to be careful with large-scale testing. In example, antigen tests are not recommended in mass testing campaigns”	Lab Assets Med. C4I & Dec. Support Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-866	“there are three main challenges related to vaccination process, namely the preparation of a feasible vaccination plan, the readiness and willingness of human to be vaccinated, and, last but not least, the duration of the effect of the vaccine”	Med Countermeasures Med. C4I & Dec. Support Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-874	in India: “the authorities are also preparing cold storage facilities for the vaccines, while big cities are identifying hubs, where arriving vaccines will be stored before delivery to multiple locations”	Med Countermeasures Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Facilities	Neutral
C-875	the UK vaccination plan is split into 4 areas: 1) supply (development and manufacturing of vaccines) 2) prioritization 3) places (ensuring convenient and fair access to vaccinations) 4) people (mobilizing the workforce and providing information on vaccinations to local communities)	Med Countermeasures Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Organization Materiel Personnel Facilities	Neutral

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C-876	in the UK: "200,000 additional members of the public expressing their interest in helping with the non-clinical elements of the rollout such as administrative support, logistics, stewards, and first aiders. All offers of support have been recorded and individuals will be contacted when they are needed"	Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational Strategic	Doctrine / Policy Organization Personnel	Neutral
C-877	"two different approaches for vaccination can be distinguished. Some governments are offering two doses of vaccines to one group of people (according to prioritization) and then are offering vaccination to the next group. Other governments are releasing the available vaccines and are postponing the second dose as much as possible, in an attempt to cover quickly a bigger number of people from the high-risk groups"	Med Countermeasures Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-879	"a vaccine certificate... could make it easier to travel within the EU if more countries adopt the system for coronavirus vaccination"	Iso/Quarantine/ROM Med Countermeasures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Neutral
C-882	"the pandemic has pushed Spain's primary healthcare workers to the breakpoint point. When describing their situation, the words they use are	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational Strategic	Doctrine / Policy Organization	Could Be Better

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C-883	“overwhelmed” “disheartened” and “exhausted” in Spain “toll on both healthcare professionals, whose mental health is suffering as a result, and on patients, who are more likely to fall off of the radar”	Patient Manage. PsychoSocial Support	Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Organization	Could Be Better
C-884	in Spain “primary healthcare is the entry point to the health syste, but the pandemic has created a bottleneck that cannot easily be relieved. The workload of doctors and nurses has multuplied: as well as being responsible for detecting and tracking Covid cases, they also see their regular patients, as ws well as those who the pandemic may have left behind”	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Personnel	Could Be Better
C-886	most NATO countries prioritized vaccinations for medical personnel, people over 70 years, teachers and uniformed services	Med Countermeasures Med. C4I & Dec. Support Med. Risk Assess.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Neutral
C-889	Denmark “it has been decided to implement a COVID-19 vaccination passport in a very short time frame... the solution will be based on the existing national infrastructure and the	Iso/Quarantine/ROM Med Countermeasures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Doctrine / Policy Materiel	Neutral

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	national vaccination database and the aim is to have a more complete technological solution in 3-4 months”		Stabilize Trans. & Recover			
C-891	European Commission creating a new bio-defense plan called the HERA Incubator to bring together research, biotech companies, manufacturers, regulators, and public authorities to focus on rapid detection and characterization of variants, swift adaptation of vaccines, setting up a European Clinical Trials Network, and enabling scaling up of production”	Lab Assets Med Countermeasures Medical SA Other - R&D	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Personnel Interoperability	Neutral
C-893	Israel: incentivizing vaccinations with smartphone-downloadable “green passes” to get into public spaces	Iso/Quarantine/ROM Med Countermeasures Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-894	Israel: those reluctant to get the vaccine are displaying “a mix of apathy about the danger of the coronavirus, a wariness of the vaccine's potential long-term side effects and a belief that the shots might actually be harmful or lead in infertility”	Med Countermeasures Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Could Be Better
C-897	in Brazil: “the Federal Pharmacy Council (CFF) also warned there was evidence of the shortage of neuromuscular blockers, sedatives, and other drugs used in intensive care, like	Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage.	Strategic	Materiel	Could Be Better

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C-900	midazolam, essential for humane and safe intubation” “in many countries... the government has been forced to reintroduce restrictive measures, including lockdowns and curfews”	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - NPI	Op. Surge Strat. Surge Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Could Be Better
C-901	“living with COVID-19 will require ongoing effort that's why the risks associated with spread of COVID-19 and the unintended social and health consequences of restrictive public health measures must be carefully balanced”	Deploy. Health Surv. Med. C4I & Dec. Support Med. Risk Assess. Medical SA Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Could Be Better
C-903	in India: “experts believe that India should step up genomic surveillance to track down variants and ramp up vaccination in areas of high transmission and in states where elections are being held to prevent the virus from spreading”	Lab Assets Med Countermeasures Deploy. Health Surv. Op. Epi. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Could Be Better
C-904	Turkey: “experts tie the rise in case numbers to three factors: increased mobility amid normalization, new variants of the virus spreading faster across the country, and the public failure to comply with rules drop their	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Doctrine / Policy	Could Be Better

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C-906	guard in light of the normalization process” “the pandemic and stemming from it social distancing and confinement and also losses of jobs could be harmful for the mental health of the people”	Iso/Quarantine/ROM PsychoSocial Support Other - NPI	Stabilize Trans. & Recover Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy	Could Be Better
C-908	“Global restrictions imposed to limit the spread of this violent disease the resulting social distancing and isolation can be harmful and lead to mental disorders for many people. This must be taken into account and societies must be prepared to deal with this emerging problem.”	PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
C-916	the RO army is involved in “logistical, medical support, equipment transportation to hospitals, providing public order as well as supporting border police, control patrols” as well as “provide military medical professionals reinforcing civilian medical treatment facilities” and Role 2 hospitals, decontamination, testing, mortuary services and basic life support	Inf. Prevention & Control CivMil Cooperation Lab Assets Patient Manage. Fatality Manage. Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational	Doctrine / Policy Organization Materiel Personnel Facilities Interoperability	Neutral
C-917	“road military convoys consisting in vehicles with trailers helps with the transportation of Modular Medical	Iso/Quarantine/ROM CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational	Doctrine / Policy Materiel	Went Well

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C-918	Isolation and Treatment Systems so much needed” “special CBRN teams are present in critical quarantined cities, with the task of disinfecting the main routes as a response to top the spread of COVID-19”	Inf. Prevention & Control CivMil Cooperation	Strat. Surge Stabilize Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational	Facilities Interoperability Organization Personnel	Neutral
C-920	“the entire personnel were provided with individual protection equipment such as masks, gloves and bactericide gel dispensers located to every entries or access points”	Inf. Prevention & Control Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel	Neutral
C-922	during MEDEVAC: used smallest crews possible, required bio-hazard protection for flight and ground operators, patients transported inside of negative pressure isolation chambers with air filtering, materials transported in special bags, crew members and aircraft decontaminated after flights	Inf. Prevention & Control Cont. Med. Waste MEDEVAC Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational	Doctrine / Policy Organization Materiel	Neutral
C-923	“the crew members used civilian bio-hazard protection equipment which usually is not certified for flight; a request has been made to higher echelons for the acquisition of bio-hazard flight equipment”	MEDEVAC Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel	Could Be Better
C-924	“airlift base made a request for immediate acquisition of NATO standard bio-hazard air transport containers”	MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge	Operational Strategic	Doctrine / Policy Materiel	Neutral

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C-925	“the use of bio-hazard protection equipment was challenging for crew members due to limited field of vision, reduced mobility and capacity reaction, rapid dehydration, increased fatigue, increased necessary time for dressing/undressing the equipment, facts that resulted in reduced operational duty time and increased recovery time”	MEDEVAC Other - PPE	Strat. Surge Stabilize Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Could Be Better
C-926	“limited distance/time of operation due to discomfort produced by wearing the bio-hazard protective equipment; for longer flights and in case of a technical landing/emergency situation, inter-governmental prearrangements must be in place to allow the crew/passengers to go through decontamination process”	Inf. Prevention & Control Cont. Med. Waste MEDEVAC Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Could Be Better
C-928	MOD focused on ensuring: continuity of government services, resilient energy supplies, dealing with uncontrolled movements of people, resilient water and food sources, ability to deal with MASCAL, resilient comms and transportation systems	MEDEVAC Patient Manage. Strat. Comms. Med. Support Ops Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-931	“providing NATO Strategic airlift capability or long route air lift to supply	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge	Operational Strategic	Doctrine / Policy	Neutral



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	with medical assets and equipment from abroad”		Strat. Surge Stabilize		Materiel Interoperability	
C-932	“temporary replacement with military medical management on national authorities request for medical facilities such hospitals in some counties with specialized military medical personnel”	CivMil Cooperation Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Facilities Interoperability	Neutral
C-933	“provide decontamination/disinfection of civil Moldavian hospitals with CBRN units”	Inf. Prevention & Control CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Organization Materiel Interoperability	Neutral
C-934	“participation within UCPM, in order to support the Italian medical facilities with military medical personnel, as well as providing air lift of the ROU medical team designated to support hospitals in Italy and transportation of assets from RescEU reserve”	CivMil Cooperation Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Organization Materiel Personnel Interoperability	Neutral
C-935	military aiding in production of isolation transport cells and processing COVID-19 tests	CivMil Cooperation Lab Assets MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Materiel Interoperability	Neutral
C-936	ROU MOD has assisted national police force in enforcing measures, staffing border crossing points, and guarding	CivMil Cooperation Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge	Operational	Doctrine / Policy Personnel	Neutral

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	critical infrastructure and public institutions		Strat. Surge Stabilize			
C-937	“the designation of a single command has provided great efficiency and effectiveness in leading the Armed Forces' actions and has facilitated planning at all levels”	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Organization	Went Well
C-938	“the requests for support and material from the various civilian authorities have been channelled by the Ministry of Defence through its liason officers, achieving greater efficiency, agility and flexibility”	CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Organization Interoperability	Went Well
C-942	“the establishment of previously identified POCs at the different levels of decision-making has been really useful and effective”	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion	Prepare & Protect	Operational Strategic	Organization	Went Well
C-943	ROU MOD has assisted civilian authorities through: disinfection and CBRN decon, security support, air and ground transportation, military engineering and equipment, medical assistance (role 2 MTF, MEDEVAC, ground transportation)	Inf. Prevention & Control CivMil Cooperation MEDEVAC Patient Manage. Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Materiel Personnel Facilities Interoperability	Neutral
C-945	“it is important to highlight the role of NATO's EADRCC, since most of the international support received was requested from the Nations through this mechanism”	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel Interoperability	Went Well

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C-946	“measures [for ROU MOD personnel] include screening tests, and quarantine measures applied to individuals showing any symptoms or declaring that they have been in contact with potential sources like elderly people and at-risk personnel”	Iso/Quarantine/ROM Lab Assets Op. Epi. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
C-947	“the health of armed forces personnel have also affected military operations, exercises, and training”	Deploy. Health Surv. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Training	Neutral
C-948	“in some countries, this has facilitated the pace of change to enabling remote consulting, ‘military-service’-neutral models of provision, digital management of health records, digital prescribing, and the use of websites and smartphone apps to promote physical and mental wellness.”	Deploy. Health Surv. Patient Manage. PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization Materiel Facilities	Went Well
C-949	“breadth of capabilities that the military provided to support civilian authorities ranging from planning assistance, general logistics support, assistance with public order policing, and a wide variety of specific medical capabilities”	CivMil Cooperation Med. Support Ops Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Materiel Interoperability	Neutral
C-950	“all countries used military vehicles and medical teams to assist with the redistribution of COVID-19 patients”	CivMil Cooperation MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational	Materiel Interoperability	Neutral

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			Strat. Surge Stabilize			
C-951	civmil cooperation included: augmentations for civilian hospitals, deployment of military field hospitals, milmed assistance to nursing homes, medevac, redistribution of patients through military transports, COVID-19 screening, testing, laboratory capabilities	CivMil Cooperation Lab Assets MEDEVAC Med. Support Ops Other - NPI, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Materiel Facilities Interoperability	Neutral
C-952	“the COVID-19 crisis has exposed deficiencies in civil-military resilience and civil-preparedness to respond to mass-casualties and other consequences of significant conflict”	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Interoperability	Could Be Better
C-953	“whilst Spain did not build temporary hospitals in the same way as the UK or Sweden, the Spanish armed forces did assist with converting exhibition spaces into care centers... to alleviate the pressures on nursing homes”	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Facilities Interoperability	Neutral
C-954	“there are reports of DOD providing additional support to the national response through health intelligence, health research, vaccine production, invocation of the Defense Production Act, and redistribution of military medical stockpiles”	CivMil Cooperation Med Countermeasures Med. Risk Assess. Medical SA Med. Support Ops Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Interoperability	Neutral
C-955	“NATO presented its value as a multilateral organisation through the	CivMil Cooperation Med. C4I & Dec.	Mitigate Enh. Outbreak	Strategic	Doctrine / Policy	Neutral

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	establishment of the COVID Taskforce and the use of coordination mechanisms such as the Euro-Atlantic Disaster Response Coordination Center (EADRCC), NATO Procurement and Supply Agency (NSPA), the Sceience and Technical Organization (STO), the Strategic Airlift International Solution (SALIS), and the Rapid Air Mobility (RAM) initiative. However, the relative importance and value of these processes versus bilateral arrangements between nations is not clearly identifiable”	Support Med. Support Ops Other - civ support	Manage. Op. Surge Strat. Surge Stabilize		Organization Interoperability	
C-956	“all organizations have challenges with generating medical support for delployed missions and it is likely that providing care for COVID-19 patients will be even more difficult than providing high quality care for trauma patients”	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Organization Personnel	Could Be Better
C-958	“there are also suggestions that there is insufficient capacity and competence in national and multi-lateral security intelligence services to assess bio-security threats in contrast with CBRN. This also includes the capacity and capability of the technical staff to provide advice and implementation of COVID-19 force protection measures in armed forces”	Med. C4I & Dec. Support Med. Risk Assess.	Prepare & Protect	Operational Strategic	Doctrine / Policy Organization Personnel	Could Be Better

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C-959	“there is also scope for deeper collaboration and information-sharing between civilian and security organizations in the assessment of bio-security threats”	CivMil Cooperation Strat. Comms.	Prepare & Protect	Strategic	Doctrine / Policy Organization Interoperability	Could Be Better
C-960	“whilst local outbreaks have caused significant challenges, most countries have been able to mobilise sufficient extra capacity and re-distribute patients to avoid triage at the national level”	Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Organization Materiel Facilities	Went Well
C-961	“there has been evidence of excess mortality for non-COVID-19 patients and a substantial backlog for access to non-COVID-19 healthcare”	Patient Manage. Fatality Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Organization Personnel Facilities	Could Be Better
C-962	“military force health protection policies have mitigated some of this impact through pre and post-deployment isolation, formation of occupational protective bubbles nad active case detection and training”	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Other - NPI, testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Training	Went Well
C-963	“there might be universal lessons to be identified by comparing these arrangements across nations, including the potential for reserve 'civil-defence' forces to be created alongside existing reserve military forcse“	CivMil Cooperation Other - civ support	Prepare & Protect	Strategic	Doctrine / Policy Organization Interoperability	Neutral

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C-964	“a notable variation is the use of CBRN units to provide decontamination or disinfection of public spaces. The effectiveness of this activity in reducing the incidence of COVID-19 should be subject to further research”	Inf. Prevention & Control CivMil Cooperation Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization Materiel Interoperability	Neutral
C-965	military forces have aided in amphibious and logistic shipping and “no other component of government or commercial services is likely to have been able to fulfill this role”	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Organization Materiel Interoperability	Went Well
C-967	“the barriers to physical patient-provider delivery of healthcare are likely to have reduced community provision of dental services, musculoskeletal rehabilitation, immunisation programmes, and in-patient services hospital”	Iso/Quarantine/ROM Patient Manage. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Facilities	Neutral
C-968	“all nations have used their military medical logistics organizations to support civilian capacity including allocation of military stockpiles (PPE, drugs, and medical equipment) to civilian use”	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Organization Materiel Interoperability	Went Well
C-969	“military medical research institutions have conducted COVID-19-related medical research on military populations, been innovators in COVID-19 healthcare for wider populations, and been part of national vaccine	CivMil Cooperation Med Countermeasures Nat. Outreach, Reachback, Fusion Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Personnel	Neutral

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C-970	research programmes within existing bio-security research institutions” “greater use of Skype/MS Teams to conduct conferences/training has made it more accessible and efficient as people no longer need to travel to a venue. Blended approach on a case-by-case basis to reduce travel but maintain outputs”	Medical SA Other - R&D Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training Materiel Interoperability	Went Well
C-971	“IT limitations during periods of working from home has disproportionate effect on the junior cohort. More training packages required for those working from home, prioritize use of existing online resources, consider alternative un/funded professional development opportunities”	Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Training Materiel Facilities	Could Be Better
C-973	for MPs: “CBRN training vs. biological threat - the need for harmonization and interoperability in order to identify a common standardized approach”	Med. C4I & Dec. Support	Prepare & Protect	Operational Strategic	Doctrine / Policy Training	Could Be Better
C-976	in Austria: “press conferences were regular and televised. Information is cross-linked between Ministries and news outlets... the comprehensive website... is updated twice daily”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-977	in Austria: “measures to avoid shortages in hospitals... include the reorientation of departments,	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational	Doctrine / Policy Organization	Neutral



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C-979	postponement of elective surgeries, and non-urgent interventions” “to ensure Canadians get trusted and accurate information, the Government of Canada is providing \$50m to the Public Health Agency of Canada’s dedicated communications capacity and public education efforts”	Strat. Comms.	Strat. Surge Stabilize Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization	Neutral
C-980	“strict isolation, mass testing and strict health status monitoring of the chains these are the main tools of the Chinese authorities in the fight against coronavirus. This practice involves a complex health code issuance system for tracking people’s movements”	Iso/Quarantine/ROM Lab Assets Op. Epi. Other - testing, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
C-982	“the lesson from Denmark is this: lockdown fast and therefore, unlock faster”	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
C-984	in France: “the healthcare workers are very traumatized and exhausted by the situation”	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization	Could Be Better

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C-986	in Israel: 100 military doctors, nurses, and other medical personnel will work alongside hospital staff	CivMil Cooperation Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization Interoperability	Neutral
C-987	in Italy: "the inconsistency of data between different administrative levels has been a major issue"	Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
C-990	in Italy: "mental health programs should be targeted for different population groups, prioritizing those at higher risk"	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization	Neutral
C-992	"understanding stakeholders' degree of acceptability of stringent measures could improve communication and enhance compliance with government rules"	Strat. Comms. Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-993	"Japanese people who are sick with cold, flu, or allergies normally wear surgical masks in public to prevent others from getting sick"	Strat. Comms. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy Materiel	Went Well

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C-994	best practices from Japan include: early detection of the cluster and early response, enhancement of ICU care and securing medical services for severely ill patients, behavior modification of citizens	Deploy. Health Surv. Patient Manage. Strat. Comms. Other - unspecified measures	Strat. Surge Stabilize Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Organization Materiel	Went Well
C-995	in Romania: "the CBRN specialists shared their experience and expertise in how to limit the spread of the new coronavirus infection, notably through biological decontamination of personnel, equipment, and terrain"	Inf. Prevention & Control CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Interoperability	Neutral
C-996	in Romania: "the most apparent issues were found within the healthcare system, where a combination of mismanagement, ignored concerns of medical staff, and inadequate infrastructure drastically weakened the potential of the pandemic response"	Med. C4I & Dec. Support Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Leadership Facilities	Could Be Better
C-997	in South Korea: an epidemiological investigation support system is a software used by investigators to track and trace contacts by info from credit card and smartphone data to quickly identify close contacts	Op. Epi. Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
C-999	Sweden relied on localized response based on swift testing, isolation, and	Iso/Quarantine/ROM Lab Assets	Mitigate Enh. Outbreak Manage.	Tactical Operational	Doctrine / Policy Materiel	Went Well

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	contact-tracing to avoid having to take broad ROM measures	Op. Epi. Other - NPI	Op. Surge Strat. Surge Stabilize			
C-1001	many governments disseminated information in multiple languages on official websites	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Interoperability	Neutral
C-1002	in Turkey: "a commicative discursive strategy as a policy tool was introduced to influence thinking... by framing the COVID-19 pandemic as an existential threat and enemy"	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
C-1003	"UK defence chiefs are seeking to fast-track new virtual reality technology developed by a British gaming company to create a digital replica of the country, arguing this would help test resilience to future pandemics, natural disasters and attacks by hostile states. real-world uses could range from forecasting the adamage from natural disasters such as floods to calculating the effect of a cyber attack against a power station or presenting simulated hostage rescue scenarios to the government"	Med. C4I & Dec. Support Other - R&D	Prepare & Protect	Operational Strategic	Materiel	Neutral

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C-1004	On Austria “a number of measures and restrictions were imposed on society, which inevitably led to a psychological challenge for society.”	PsychoSocial Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-1005	“Especially during the spring lockdown the Greek population totally complied with the measures of social distancing and thus was socially and psychologically affected. According to some surveys the results indicate that the psychosomatic disorders, employment situations, changes in sleep habits, socialization on the internet, demographic status, health concerns and trust in government and the media response determine the Greeks social isolation feeling.”	PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Could Be Better
C-1007	On Poland “every day, soldiers support the health service and run a helpline with psychological help.”	CivMil Cooperation PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization Interoperability	Neutral
C-1010	“Policymakers should focus on the elaboration of the promotion, prevention and early intervention framework to prevent suicide and lower the long-term impact on people’s mental health due to isolation, social	Med. Risk Assess. PsychoSocial Support Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge	Operational	Doctrine / Policy Organization	Neutral Could Be Better

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	distancing and high stress levels. Mental health programs should be targeted for different population groups, prioritizing those at higher risk.”		Strat. Surge Stabilize Trans. & Recover			
C-1011	On Norway “there will inevitably be shifts in health policy, to ensure greater sensitivity and responsiveness to immigrant populations, support for vulnerable young people and greater attention to the mental health consequences of isolation.”	PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-1012	“Considering the damage inflicted by lockdown measures, including unemployment, poverty, delayed surgical procedures, delayed cancer diagnosis, neglected chronic disease, social isolation, and increased mental health burden and suicides, the Swedes could still fare better with their policy than more restrictive countries in the long run – while preserving the civil liberties of their citizens... the most severe interventions could potentially cause more harm than good.” **extreme side of the spectrum	Iso/Quarantine/ROM Med. C4I & Dec. Support Patient Manage. PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
C-1014	On India “the coronavirus caused fear and stress midst the population. The restriction of movements and self-isolation brought loneliness and anxiety. The cases of self-harming also increased. One of the most unexpected results of the lockdown was the	Iso/Quarantine/ROM PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better

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	increased level of the domestic violence. It must be also acknowledged, that the pandemic has a few positive impacts on the society. The lockdown provided an opportunity for people to spend more time with their families.”					
C-1015	On Norway “despite the decline in provision and formal demand a large-scale epidemiological investigation assessing the prevalence of depression and anxiety associated with COVID-19 mitigation strategies found a two to threefold increase in depressive and anxiety symptoms in individuals experiencing the restrictions... the groups expressing the greatest increase in level of concern were single people under the age of 45 and immigrants, followed by parents with children under the age of 17.”	PsychoSocial Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
C-1017	On Switzerland “however, the threatening news is that imposed measures could potentially cause stress, concern for family members, and drastic changes in daily routines, social contacts, and finances.”	PsychoSocial Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-1018	the EU “is mobilizing all means at its disposal to help the Member States coordinate their national responses and is providing objective information about	Med. C4I & Dec. Support Strat. Comms. Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge	Strategic	Doctrine / Policy Interoperability	Neutral

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	the spread of the virus and effective efforts to contain it"		Strat. Surge Stabilize			
C-1020	the EU is "ensuring conformity assessment and market surveillance to increase the supply of PPE without compromising health and safety standards"	Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel	Went Well
C-1021	the US is "discussing with industry how to convert production lines to supply more PPE and providing manufacturers with guidance to increase production of PPE, hand sanitisers and disenfectants	Med. Support Ops Other - NPI, PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-1022	EU Commision: "the commission's fighting coronavirus-disinformation page also provides materials for myth busting and fact checking"	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-1023	NATO: "the alliance's experience in disaster relief, the coordination operated by EADRCC, the easy access to military heavy cargo planes thanks to the NSPA procurement agencies" help coordinate medical capabilities across member states	Med. C4I & Dec. Support Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel Interoperability	Went Well



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C-1025	“there was an increased use of new technologies (e.g. mobile communication systems; drones) for tailored communication, contact tracing and management of priority populations groups, surveillance of confined areas, online training, and tele-working”	Op. Epi. Other - BCP, NPI, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Training Materiel	Neutral
C-1026	“there are medical observations and best practices to be considered for a potential second wave, including: conducting virus testing; effectiveness and shortage of PPE; training in using PPE; overload impact on doctors; use of social media by doctors; use of standardized digital thermometers:	Lab Assets Strat. Comms. PsychoSocial Support Other - PPE, testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Training Materiel	Went Well
C-1027	“since medical assistance for deployed personnel remains a national responsibility via local assistance or STRATEVAC- both options being difficult to follow in crisis conditions- consideration should be given to maintain a medical facility dedicated to own personnel”	MEDEVAC Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization Facilities	Neutral
C-1028	“much propaganda - and particularly that connected to far-right extremism - is focusing on conspiracy theories connected to COVID-19”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral

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C-1031	1CD FWD was able to protect the health of soldiers during LSGCO scenario during the Defender Europe 2020 plus exercise	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Training	Went Well
C-1032	“the first lessons learned, a team of teams approaches to engage all stakeholders from medical, training, and operational communities to develop the plans and marshal the resources necessary to protect as extensive of a population as the BCT plus. No single organization possesses all the knowledge or resources”	Med. C4I & Dec. Support Med. Support Ops	Prepare & Protect	Operational Strategic	Doctrine / Policy Organization Interoperability	Neutral
C-1033	“the second lesson learned a comprehensive protection strategy for a large scale event must start at home station and include control measures. For example, restrictions on movement prior, testing to verify the participants' health before training, non-pharmaceutical interventions during integration periods, monitoring and targeted testing during exercise, and robust measures to respond to should positive cases all help contribute to protecting the force”	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv. Other - NPI, testing, unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Training Materiel Leadership	Went Well
C-1034	“third, it is possible to test a large population of soldiers in a relatively short amount of time through batch	Lab Assets Deploy. Health Surv.	Mitigate Enh. Outbreak Manage.	Tactical Operational	Materiel	Went Well

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	testing. Soldiers of a BCT testing for COVID-19 in less than a week”		Op. Surge Strat. Surge Stabilize			
C-1035	“fourth, units can employed a targeting methodology to identify high-risk areas and populations to surveil and periodically test during training”	Lab Assets Deploy. Health Surv. Med. C4I & Dec. Support Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-1036	“fifth, the logistical planning factors for operation in this environment are different. Dispersion and segregation activities increase requirements for life support and sustainment. NPIs require units to procure masks, gloves, handwashing stations, cleaning supplies, and hand sanitizer in large quantities”	Inf. Prevention & Control Med. Support Ops Other - NPI, PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-1037	“final lessons learned units must rehearse their COVID-19 response plans to highlight the ability to contain contagion quickly and be conscious of the impacts of the training environment”	Med. C4I & Dec. Support	Prepare & Protect	Operational Strategic	Doctrine / Policy Training	Neutral
C-1038	“rapid testing procedures ensured accuracy and heightened situational awareness of commanders”	Lab Assets Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Went Well
C-1039	“the Analytical Laboratory System, designed for CBRN threat identification,	Lab Assets	Mitigate Enh. Outbreak	Operational Strategic	Doctrine / Policy	Neutral

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	was employed based on principles for Ebola virus detection”		Manage. Op. Surge Strat. Surge Stabilize		Materiel Facilities	
C-1040	“units identified and trained “trace teams” to work immediately after “presumptive positive” or positive covid-19 cases. This training ensured familiarity with techniques for asking questions, tracing interactions within/outside the cohort, and working with medical teams to isolate those most at risk. these teams regularly rehearsed the actions required, allowing them to react rapidly. while trace teams consumed limited human resources and could delay operations, they mitigated risk.”	Iso/Quarantine/ROM Op. Epi.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Organization Training Personnel	Went Well
C-1041	“medical evacuation crews executed multiple rehearsals real-world accidents and COVID evacuations. Medical teams coordinated with local medical facilities and hospitals to discuss capabilities and informed them of the size of the training population”	MEDEVAC Patient Manage. Other - civ support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Organization Training Interoperability	Neutral
C-1044	“foreign military, local, national vendors, and contractors remained a population that had the potential to bring outside vectors into the training area”	Iso/Quarantine/ROM Med. Support Ops Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Training	Neutral

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C-1045	"recommends one single reception site location to manage individual and unit infiltration and exfiltration operations"	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Facilities	Neutral
C-1046	"1CD FWS recommends a single point of entry during reception, staging, onward movement, and integration at the reception point to add a 14-day RoM and COVID-19 testing upon arrival"	Iso/Quarantine/ROM Lab Assets	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-1047	"through behavioral policies, screening, and testing, the 1CD FWD was able to conduct a high-quality multinational training event, while preserving force health protection and preventing the spread of COVID-19 within the host nation"	Lab Assets Deploy. Health Surv. Other - NPI, testing, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Training Materiel Interoperability	Went Well
C-1049	ITA "5Ds": distancing and IPE devices "social distancing and workplace precautionary measures will remain in place and the use of PPE will be further encouraged"	Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel	Neutral
C-1050	ITA "5Ds": diagnosis "the access to military infrastructures will be allowed only after individual screening by thermal cameras or close-range thermometers"	Deploy. Health Surv. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge	Strategic	Doctrine / Policy Materiel	Neutral

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C-1051	“the ITA Army has long played a key role helping Italian communities respond to natural disasters and other public health emergencies... [COVID] may lead to a new blueprint for the way soldiers provide civilian assistance”	CivMil Cooperation Other - unspecified measures	Strat. Surge Stabilize Prepare & Protect	Operational Strategic	Doctrine / Policy Organization Interoperability	Went Well
C-1052	the ITA Army has assisted by: deploying soldiers trained as health care professionals, constructing a field hospital, donating materials and equipment, using CBRN units for decontamination and disinfection, assisting in MEDEVAC	Inf. Prevention & Control CivMil Cooperation MEDEVAC Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Organization Materiel Facilities Interoperability	Went Well
C-1053	“the ITA Army promptly made available helicopters, vehicles and infrastructure in order to speed up the distribution of those materials and medical devices necessary for the management/containment of the COVID-19 epidemic”	CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Materiel Interoperability	Neutral
C-1054	“general coordination with government authorities has been significantly enhanced by repositioning 41 liaison officers at the Provincial Police Forces HQ, which will facilitate the overall inter-agency communication and synchronization”	CivMil Cooperation Strat. Comms. Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Organization Personnel Interoperability	Went Well

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C-1056	“within the Navy General Staff, a coordination cell for Navy’s emergency management activities has been set up. The cell collects the information, analyses, relevant aspects and relays them to the JOHQ”	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization	Neutral
C-1058	“air assets have been made available to transport infected personnel in bio-containment mode”	CivMil Cooperation MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Materiel Interoperability	Neutral
C-1059	“the Military Health System, with its knowledge in medical and research fields, has demonstrated in the last months the importance of collaborating with the Ministry of Health”	CivMil Cooperation	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Interoperability	Went Well
C-1060	“the ITA Army has set up 10 Health Task Forces in that, within the respective Areas of Responsibility, have made available quick health care capacities both for home care in favor of military/civilian personnel, and for NHS structures”	CivMil Cooperation Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Interoperability	Neutral
C-1061	the ITA Army runs drive-through testing centers for rapid tests	CivMil Cooperation Lab Assets	Mitigate Enh. Outbreak Manage.	Tactical Operational	Organization Materiel Facilities	Neutral

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			Op. Surge Strat. Surge Stabilize			
C-1062	“Liaison Officers that can help flatten bureaucratic structures by streamlining information flows and by reaching out to host nation counterparts early and often”	Med. C4I & Dec. Support Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Interoperability	Neutral
C-1063	“set reporting requirements prior to the next wave of the pandemic in order to enable faster information flow”	Medical SA	Prepare & Protect	Operational Strategic	Doctrine / Policy Interoperability	Could Be Better
C-1064	“definition of covid-19 terminology to ensure common situational awareness and accurate reporting and development of NATO's own MED-DOITs, since national priorities prevail for existing national MED-DOITs capabilities”	Med. C4I & Dec. Support Strat. Comms. Medical SA Other - lexicon	Prepare & Protect	Strategic	Doctrine / Policy Training Interoperability	Neutral
C-1065	“the ship is equipped with close goggles, which don't permit eyes transpiration. For this reason inside the goggles rise up many drops that degrade the visibility. Personnel has resolved this problem by personally buying ballistic glasses”	Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical	Materiel	Could Be Better
C-1066	“the masks used during FA/Boarding are FFP 3 type and they guarantee... protection... but compromise an easy breathing and increase the physiological breathlessness”	Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical	Materiel	Could Be Better



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C-1067	“each nation follows its own policy and has different equipment available for MIO teams.”	Other - PPE, unspecified measures	Prepare & Protect	Strategic	Doctrine / Policy Interoperability	Neutral
C-1068	“UAVs can be used to support COVID-19 countering, by e.g. monitoring appointed areas, controlling of home quarantine or convincing individuals to get back to their homes. What is more, using thermal cameras gives the ability to identify people with a fever”	Other - NPI, tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
C-1069	MP have been involved in aiding border guards, checking covid compliance, monitoring military personnel under quarantine, provide medical equipment transportation, support relocation of field hospitals, monitoring areas	Iso/Quarantine/ROM CivMil Cooperation Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization	Neutral
C-1070	“the biggest change regarding the new crisis situation was cooperation with other services (State Police, Border Guard, Municipal Police, Health Service)”	CivMil Cooperation Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Interoperability	Neutral
C-1071	“the pandemic proves that online solutions are highly important and we have to be ready to use them (IT infrastructure, software, know-how).”	Other - BCP, NPI	Prepare & Protect	Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-1072	“mobile applications help to monitor home quarantine by avoiding direct contact with potentially infected individuals”	Iso/Quarantine/ROM Other - NPI, tracking	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy Materiel	Neutral

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C-1073	“mobility support activities, including medical equipment convoys, helped in faster and safer transportation of requested goods”	Med. Support Ops	Strat. Surge Stabilize Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization Materiel Interoperability	Went Well
C-1074	“CCTV installations with AI capable to recognize faces or body temperature (thermal image) with a high accuracy could help to protect military/critical infrastructure facilities against unauthorized penetration, including infected personnel”	Deploy. Health Surv. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
C-1075	“it is recommended to equip MP service with above-mentioned equipment [ppe] in advance to provide proper precautionary measures”	Other - PPE	Prepare & Protect	Tactical Operational	Materiel	Neutral
C-1077	“the NATO Comprehensive response plan adopted for the COVID19 outbreak highlights that NATO might play a crucial role in the field of crisis management, in which NATO SP capability can be requested by NATO Members or Partners for assisting them in identifying ways that NATO might provide any support within their Nations, focusing mainly on a possible support to military and police forces	CivMil Cooperation	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Organization Interoperability	Neutral

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C-1079	involved in countering the pandemic challenges” key areas of focus for MP LL include: individual protection, cooperation with services, crisis management, home office, and education and training	Med. C4I & Dec. Support Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Training Interoperability	Neutral
C-1080	“PAF are trained, equipped and prepared not only for a war or military threat, but also to respond to other threats to national security, including a threat as surprising and unpredictable as as a pandemic”	CivMil Cooperation	Prepare & Protect	Strategic	Training Interoperability	Neutral
C-1084	“there was also a need to establish an international strategy, coordinated uniform actions and procedures enabling the implementation of a common policy and the exchange of disease data”	Med. C4I & Dec. Support Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Interoperability	Neutral
C-1085	“the lack of contact with others poses a huge risk of post-traumatic stress disorder (PTSD) which can develop in people constantly bombed with all the information about the risk of illness, deaths and funerals, but also about	Iso/Quarantine/ROM PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral

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C-1088	unemployment, bankruptcies and dismissals.” “low attractiveness of the specialization in infectious diseases, medical microbiology and epidemiology results in a decreasing number of specialists in these fields”	Op. Epi. Patient Manage.	Prepare & Protect	Strategic	Personnel	Could Be Better
C-1090	“groups of soldiers were directed support airport services, and cadets of military universities were assigned to support the society through the distribution of food and medical supplies to the most deprived”	CivMil Cooperation Other - NPI, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization Interoperability	Neutral
C-1091	“this year a dedicated COVID-19 reporting system was launched to provide continuous information supply on the pandemic's progress necessary to maintain high situational awareness”	Med. C4I & Dec. Support Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel Interoperability	Neutral
C-1092	“it was also necessary to support local authorities in providing assistance the supply of food and medicine to persons infected with the virus, those in quarantine, as well as the elderly and lonely”	Iso/Quarantine/ROM CivMil Cooperation Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Materiel Interoperability	Went Well
C-1095	“military medical personnel mission in Italy not only helped the one of the countries most affected by COVID-19 in	CivMil Cooperation	Mitigate Enh. Outbreak Manage.	Operational	Organization Training Interoperability	Went Well

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	Europe, but also provided an opportunity for their personnel to improve their skills and observe solutions other than the national ones”		Op. Surge Strat. Surge Stabilize			
C-1096	“the mission in Slovenia was of a similar nature and provided an opportunity to observe the organization of transition hospitals and population-based coronavirus resistance analyses which were carried out there”	CivMil Cooperation Patient Manage. Medical SA Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Facilities Interoperability	Went Well
C-1097	experience in the US “acquired is used to create modular temporary hospitals, in which, apart from ICU beds, a social and decontamination area has been prepared”	Inf. Prevention & Control Iso/Quarantine/ROM Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Facilities	Neutral
C-1099	“aggressive prevention and mitigation measures are essential” including restrictions on access to military posts, public spaces and schools, increasing hygienic practices, limiting travel, utilizing clear language, engaging in concise communication, and enacting social distancing guidelines”	Inf. Prevention & Control Iso/Quarantine/ROM Strat. Comms. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-1100	“taking these early preventative measures helped to ensure that the military units were not unduly impacted by the rapid spread of COVID-19 outside the gates”	Iso/Quarantine/ROM Other - NPI, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical	Doctrine / Policy	Went Well
C-1101	“large scale responses under Force Health Protection operations used an	Med. C4I & Dec. Support	Prepare & Protect	Operational	Doctrine / Policy	Neutral

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	operational approach - the wide scale understanding of the operational environment, the problem and general actions required detailed planning, preparation and execution”	Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge			
C-1103	“units worked with local authorities to pre-screen calls to minimize First Responder exposure to potential COVID-19 infected personnel”	Iso/Quarantine/ROM CivMil Cooperation Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Interoperability	Neutral
C-1104	“a technique utilized by First Responders was to wear appropriate personal protective equipment and have one First Responder conduct the initial patient COVID-19 questionnaire and general survey while the partner stayed out of the potential hot zone until needed”	Patient Manage. Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
C-1105	“units had a robust, accurate and rapid disclosure of information to the community using multiple methods - such as Commander's Updates via Facebook Live feeds, Twitter, daily informational updates, and educational video spots to protect the community”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
C-1106	units should leverage all available platforms and capabilities to maximize reach of command information products and coordinate and communicate with	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational	Doctrine / Policy	Neutral

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	higher echelon Public Affairs to ensure messaging is synched and shared”		Strat. Surge Stabilize			
C-1107	“National Guard assisted local governments on a plethora of tasks that ranged from managing drive-thru test sites and mega screening sites to developing cost estimates”	CivMil Cooperation Lab Assets Deploy. Health Surv. Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Facilities Interoperability	Neutral
C-1108	NG assisted in repatriation missions that required close coordination with non-governmental and governmental entities “the team immediately established a common operating picture, a common lexicon, and lines of communication which helped synchronize, coordinate, and integrate activities to achieve unity of effort”	CivMil Cooperation Med. C4I & Dec. Support Fatality Manage. Other - lexicon	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Training Interoperability	Went Well
C-1109	“talking points developed by the units PAOS were synchronized, communicated, and disseminated to all personnel involved in the mission. All personnel participated and contributed to the unified Public Affairs strategy”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-1110	liaison officers should be selected based on their ability to work with a group and experience rather than just expendable personnel bc they “are a key asset that can assist by providing advice and information, lexicon translation between organizational	Nat. Outreach, Reachback, Fusion Strat. Comms. Other - lexicon	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Training Personnel Interoperability	Neutral

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	cultures, and reach back to a home agency or organization”					
C-1111	“during this process, the medical team established a team which would identify personnel, buildings, and establishments impact by the COVID-19 patient's movements prior to the isolation”	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization Personnel	Neutral
C-1112	“the team identified all the contaminated material and personnel and would coordinate with an established team for decontamination and/or quarantine”	Inf. Prevention & Control Iso/Quarantine/ROM Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization Personnel	Neutral
C-1113	“HQ USAFE-AFAFRICA responded first with an Operational Planning Team, then leaders quickly activated the Crisis Action Team... to act as a central location for managing reporting and requests for information”	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Organization Interoperability	Neutral
C-1114	“multiple echelons and channels providing additional interpretations of COVID-19 guidance created confusion and in some cases were in conflict. Additionally, components need to coordinate before taking action to allow for more informed and understood transitions”	Med. C4I & Dec. Support Strat. Comms. Other - lexicon	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Training Interoperability	Could Be Better
C-1116	“the U-A Pandemic Influenza/Infectious Disease (PIID) Plan was outdated and	Med. C4I & Dec. Support	Prepare & Protect	Operational Strategic	Doctrine / Policy Training	Could Be Better



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	had not recently been exercised at scale”					
C-1117	“comm providers worked quickly to roll out new tools and telework capacity, through there were challenges”	Other - BCP, NPI	Mitigate	Tactical Operational Strategic	Materiel	Neutral
C-1118	“there were numerous demands for information from multiple organizations. at one point, U-A was providing 259 separate COVID-19 data points daily to six separate agencies”	Med. C4I & Dec. Support Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Could Be Better
C-1119	“update pandemic response plan and exercise that plan, including continuity of operations plan (COOP) and a primary alternate contingency emergency (PACE) comm plan elements common to other crisis responses”	Med. C4I & Dec. Support Strat. Comms. Other - BCP	Prepare & Protect	Strategic	Doctrine / Policy Training	Neutral
C-1120	“the most recent pandemic exercise conducted at ramstein only focused on components of the response plan and was a fairly small scale exercise... increase the size and scope of Pandemic Exercises to include staff/CAT/wing interaction and exercise solutions of the issues observed during the COVID-19 pandemic”	Med. C4I & Dec. Support	Prepare & Protect	Operational Strategic	Doctrine / Policy Training	Could Be Better

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C-1121	"COVID-19 and future pandemics response requires investment in near 100% workforce telework capacity, online collaboration tools and alignment of business practices"	Other - BCP, NPI	Prepare & Protect	Operational Strategic	Doctrine / Policy Materiel Facilities Interoperability	Neutral
C-1122	"identify ahead of time which events, functions, and training are critical and must be prioritized during a pandemic"	Med. C4I & Dec. Support Other - BCP	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy	Neutral
C-1124	-"with both CDCs and Schools closed and the inability to bring non-family members into the house to watch children, U-A personnel with children were left with no childcare options while finding a way to accomplish the mission. Dual working parents and single parents with children at home experienced high stress and in cases, reduced and limited work hours due to unavailability of childcare. This made for little to no time off with many members working all day and night. In a different way, Single Airmen were also affected as they did not have the ability to interact with their unit in person. Though teleconferences were helpful in maintaining continuity and connections, nothing can replace face to face interaction."	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Could Be Better
C-1125	-"recommendation: continue proactive communication (OPGRIT SharePoint Site and social media blasts providing resilience tools for parents and single	Strat. Comms. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational	Doctrine / Policy Organization	Neutral

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	Airmen) to help to alleviate some of those stresses. Continue to provide mental health resources for members/dependents. Continue regular check-ins with single personnel to prevent them from feeling too isolated. Identify childcare options for next pandemic." **guide for what recommendations could look like		Strat. Surge Stabilize			
C-1127	-"military/civilian personnel and their families required additional mental health resilience measures during COVID-19. Multiple interviews indicated that the demand on Mental Health providers, Chaplains, Military Family Life Consultants has increased and will continue for the long term. Leaders must employ new TTPs to care for and protect the mental health of the force with pandemic restrictions in place."	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Organization	Could Be Better
C-1128	-"recommendation: leaders must explore new ways to reach out virtually and connect to military members and families to provide counseling and emotional support. There is an opportunity for leaders to over-communicate with their teams through videos, town halls, e-mails and teleconferences. One unit successfully utilized teleconferences to host morale events separate from official updates or work events – they connected as a	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Went Well

<u>Identifier</u>	<u>Observation</u>	<u>Task</u>	<u>Phase/Tier</u>	<u>Operational Level</u>	<u>DOTMLPF-I</u>	<u>Sentiment</u>
	team with fun events including scavenger hunts, game nights, and beverage tastings. Staying socially connected through physical distancing is possible. Airmen need to know leadership cares and they are not alone to figure things out. Leaders must make every effort to continue OPGRIT monthly discussions and bring the group together to share positive content and schedule virtual meet ups. Facebook, Snapchat, Google Hangouts, Teams and other apps create fun and engaging experiences to stay connected.”					
C-1129	Observation 6.5: Command was generally able to provide a cohesive and consistent message to all levels of the Force -”communication channels...seemed to be effective in passing information to the entire force.” -”multiple platforms...all kept the force connected and informed. Additionally, it helped leaders keep a pulse on their personnel's mental well-being.”	Med. C4I & Dec. Support Strat. Comms. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Went Well
C-1132	“consolidate quarantine/isolation plan and HPCON guidance across all USAF installations. Distill for common points/best practices and integrate into installation planning”	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - PHM	Prepare & Protect	Operational	Doctrine / Policy	Could Be Better

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-1133	“update wing disease contamination plans to incorporate fast moving vs. slow moving infectious disease in plans”	Inf. Prevention & Control Med. C4I & Dec. Support	Prepare & Protect	Operational	Doctrine / Policy	Could Be Better
C-1134	“when additional clarification or interpretation is needed, coordinate policy decisions with all stakeholders or, at a minimum, disseminated to key stakeholders. Include deconfliction rules or mechanisms with issuance of policy guidance”	Strat. Comms. Other - lexicon	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Training	Neutral
C-1136	“continue proactive communication to help alleviate some of those [family] stresses. Continue to provide mental health resources for members/dependents. Continue regular check-ins with single personnel to prevent them from feeling too isolated”	Strat. Comms. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Neutral
C-1137	“leaders must explore new ways to reach out virtually and connect to military members and families to provide counseling and emotional support”	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Organization	Neutral
C-1138	“one unit successfully utilized teleconferences to host morale events seaparate from official updates or work events - they connected as a team with	PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy	Went Well

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-1139	fun events including scavenger hunts, game nights, and beverage tastings” “develop and maintain a NIPR version of the SIPR U-A situation room. A one stop shop for unclassified information: TMT instructions, battle rhythm, upcoming important events”	Strat. Comms. Other - BCP	Strat. Surge Stabilize Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel Facilities	Neutral
C-1140	“reach out to HN counterparts early and often. Do not set unrealistic asks or expectations when HN priority is on citizen health, but work to agree that DoD training, operations, and coalition/NATO exercises must eventually resume and be aligned”	Nat. Outreach, Reachback, Fusion Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy Training Interoperability	Could Be Better
C-1141	“coordinate with MAJCOMs to identify primary/alternate communication methods during teleworking”	Strat. Comms. Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel Facilities	Neutral
C-1142	“balance moving quickly against communication and coordination with those affected”	Med. C4I & Dec. Support Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-1143	“for mission areas that must continue, identify PPE required to enable service-members and local contractors to continue working. Consider reviewing mission areas where dependencies on contractors may be too high risk”	Med. Risk Assess. Other - civ support, PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
C-1144	“the 31 FW provided a food delivery program in order to ensure that Airmen who did not have transportation or had families that were quarantined and could not leave the house, had a means of obtaining food”	Iso/Quarantine/ROM Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Went Well
C-1145	“engage analytic organizations early so they can anticipate leadership decision challenges, capture necessary data, and build decision support tools. Develop a data-minded culture and invest in requisite technology to enable analytic exploitation at all levels of decision”	Med. C4I & Dec. Support Other - R&D	Prepare & Protect Mitigate	Operational Strategic	Organization Materiel	Neutral
C-1147	“from the outset, the Command took deliberate measures to help the force understand the potential severity of the medical threat. Medical leadership educated personnel about all known aspects of the contagion, including means of transmission, common symptoms, and practical measures to defeat the spread of the virus”	Strat. Comms. Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Training Personnel	Neutral

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-1148	“the Army Forces integrated practical controls for social distancing in all training plans in concert with host-nation Army leadership”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Training Interoperability	Neutral
C-1149	“the Army Forces and brigade leadership maintained continuous dialogue with their counterparts, maintaining flexibility to adjust desired training outcomes as the risk to force increase”	Strat. Comms. Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Training Interoperability	Neutral
C-1150	“medical planners and providers developed and rehearsed rigorous battle drills to isolate potential cases, conduct aggressive contact tracing, and isolate affected personnel”	Iso/Quarantine/ROM Op. Epi.	Prepare & Protect	Tactical Operational	Training	Went Well
C-1151	“develop tools to support regional intelligence and medical analysis (e.g. a COVID_19 “heat map”)”	Med. C4I & Dec. Support Med. Risk Assess. Medical SA	Prepare & Protect	Operational Strategic	Doctrine / Policy Materiel	Neutral
C-1152	“organize and supply the force to reduce the reliance on local contracting”	Med. Support Ops	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy Materiel	Could Be Better
C-1153	“maintain continuous commander's dialogue to maintain shared understanding of risk to force and mission”	Strat. Comms. Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral



<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-1154	“gate health screening included infrared thermometer checks, a short questionnaire related to COVID-19 hot spots and self-reporting of symptoms. Any identified indicators are sent to a secondary screening by a medical professional”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
C-1155	“upon positive confirmation of the infection, a full contact trace is conducted using all available means (CCTV, Army and Air Force Exchange Services/Morale, Welfare and Recreation receipts, Defense Biometric Identification System, and interviews) to develop a clear understanding of the potential risk areas”	Op. Epi. Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Neutral
C-1156	“identified as single Soldiers who lived off post who would have logistical restraints of obtaining essential goods such as food. An alternative location was identified for those Soldiers who... needed additional logistics support”	Iso/Quarantine/ROM Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel Personnel Facilities	Neutral
C-1157	“Army commanders utilized Armed forces Network television and radio spots, garrison broadcast on social media platforms like Facebook Live and Twitter, and town halls to fully inform our public with relevant transparent information as fast as possible”	CivMil Cooperation Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Went Well

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
C-1158	“communication strategy and force protection efforts had led our family members to maintain a culture of compliance with the health protection measures”	Strat. Comms. Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Went Well

Source: JALLC Observations

**Table 26. Metadata Tags for Observations from U.S. Lessons Learned Repositories**

<b>Identifier</b>	<b>Observation</b>	<b>Task</b>	<b>Phase/Tier</b>	<b>Operational Level</b>	<b>DOTMLPF-I</b>	<b>Sentiment</b>
D-2	“Create a COVID-19 Task Force or fusion cell to facilitate and manage the coordinated effort”	Med. C4I & Dec. Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Interoperability	Neutral
D-3	“Prevent Information Fratricide by delineating and enforcing appropriate use of Personnel, Medical, and Ops Channels”	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
D-4	“Rapid establishment and distribution of Public Affairs Guidance and pre-approved messaging, themes, and objectives followed by the authority to conduct public affairs operations across media platforms to the lowest possible level”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral

D-5	“Developing a non-standard [Common Operational Picture] “COVID Dashboard” is critical”	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Materiel	Neutral
D-6	Establish cleaning and contact tracing teams with flowcharts detailing steps and responsible units	Inf. Prevention & Control Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Neutral
D-8	Operationalize the response as a command (consider pandemic an operational problem not a medical problem)	Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral
D-9	Establish mission command to enforce health and force protection measures	Med. C4I & Dec. Support Other - PHM, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization	Neutral
D-11	Enforce HPCON conditions and limit off post activities to mission essential activities	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral

D-13	Create a protected population (establish screening and triaging measures at perimeter)	Iso/Quarantine/ROM Med. Risk Assess. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-14	Enforce protective measures (limit access to common areas and limited contractor/vendor/guest access to base)	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-15	Limit chance contact (limit off post activities, postpone/cancel training events)	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training	Neutral
D-16	Protect MTFs by pre-screening all patients in person or via telemedicine	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-17	Contact trace suspected/confirmed cases	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Neutral
D-18	Expand isolation capacity and create quarantine facilities	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge	Operational	Doctrine / Policy	Neutral

			Strat. Surge Stabilize		Organization Facilities	
D-20	Request additional forces to augment medical support for contact tracing teams and establishing lab capabilities	Lab Assets Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization	Neutral
D-21	Source Class VIII supplies (through sustainment enterprise and local purchases)	Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Materiel	Neutral
D-24	Ensure commander involvement to fully inform public with relevant transparent information ASAP (television, radio, garrison broadcast, social media, town halls)	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Neutral
D-29	Institute a daily public affairs ops (PAO) phone sync to gain a common level of understanding in the rapidly changing info environment	Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral
D-30	Save personnel bandwidth by keeping reporting requirements streamlined and simplified as much as possible and use existing slide templates	Med. C4I & Dec. Support Medical SA	Prepare & Protect	Operational	Doctrine / Policy	Neutral

D-31	There are not enough public affairs personnel to go around; existing personnel will work long hours	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Organization	Could Be Better
D-34	Set leadership expectations that speed of communications may need to be prioritized over accuracy (need to get initial information out to community, even if information is still changing)	Med. C4I & Dec. Support Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-35	Develop a top 10 crisis communication list (plan for the top 10 things that could happen next that would require communication: e.g., soldier has COVID, family member has COVID, death of soldier or family member, HQ staff needs to quarantine)	Strat. Comms.	Prepare & Protect	Tactical Operational	Doctrine / Policy	Neutral
D-36	Develop a plan for synchronization with local community (determine whether to align with community guidance that is more or less restrictive than military guidance)	CivMil Cooperation Strat. Comms. Other - civ support, unspecified measures	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Interoperability	Neutral
D-37	Have a list of definitions (military, medical, local community, CDC, government) to work with so the entire staff is using them correctly	Strat. Comms. Other - lexicon	Prepare & Protect	Strategic	Doctrine / Policy Training Interoperability	Neutral

D-38	Army policy prohibits surveys, but there is no US Joint policy, so USFK created the survey and distributed peninsula-wide	Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-39	Facebook Live streams are becoming similar to press conferences; see some initial best practices for using them	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Went Well
D-40	Monitor social media platforms for questions to answer in town halls or forward as RFIs to higher command	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-43	Speak with one voice and synchronize communications, clear commander intent	Med. C4I & Dec. Support Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral
D-45	Shared understanding: emphasize information sharing (meetings, working groups, use of unclassified networks)	Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak	Tactical Operational Strategic	Doctrine / Policy Facilities Interoperability	Neutral

			Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover			
D-46	Utilize transparent and open communication with the community (Facebook Live, town halls, breaking news, routine touch points on the garrison - be seen and talk to the people; media, print, national, GCs walk around with your PAO in your pocket)	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-47	"Go to 24 Hour Operations early"	Med. C4I & Dec. Support	Mitigate	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-48	"Coordinate with other garrisons early"	Med. C4I & Dec. Support	Mitigate	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-49	"Terminology is important to ensure enterprise understanding, have terminology agreed to by Medical SMEs and Operational folks early and published in initial OPORDS/Directives this will reduce reporting challenges later. Include in initial OPORDS the PPE Priorities and definitions of PPE"	Strat. Comms. Other - lexicon	Prepare & Protect	Strategic	Doctrine / Policy Training	Neutral
D-50	"Need to ensure Mission Essential personnel have been identified"	Other - BCP	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational Strategic	Doctrine / Policy Personnel	Neutral



			Strat. Surge Stabilize			
D-53	Generated Contact Trace Fusion Cell with combined medical and operational community involvement	Med. C4I & Dec. Support Op. Epi. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Interoperability	Neutral
D-55	Have key facilities develop a cleaning schedule with specifics of what is cleaned and when (helps with contact tracing after a positive case that visited facility)	Inf. Prevention & Control Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-56	Treat the initial implementation period (2-3 days) of gate operations as a severe weather day to rehearse and refine screening procedures	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training	Neutral
D-57	Rapid decision to limit movement by installation personnel, which included quick definition of mission/non-mission essential, to include contractors, is essential	Iso/Quarantine/ROM Other - BCP	Prepare & Protect Mitigate	Tactical	Doctrine / Policy Personnel	Neutral
D-58	Rapid implementation of screening process for those entering the installation, including temp check and "hot spot" visit questioning is vital to protecting those on the installation	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-59	Develop a Use of Force to address refusals to be screened, and how to	Other - NPI	Prepare & Protect	Tactical	Doctrine / Policy	Neutral

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	react to a gate runner under these conditions					
D-60	Enforcement of the installation ban for contractors is left to the honor system due to limitations with the current DBIDS system, but contractors understand they will be barred for life if caught on the installation before their access has been reinstated	Iso/Quarantine/ROM	Prepare & Protect	Operational	Doctrine / Policy Materiel	Neutral
D-61	Will need to identify temporary lodging for technical experts such as medical/infectious disease personnel that do not have quarters on the installation	Nat. Outreach, Reachback, Fusion Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Facilities	Neutral
D-62	Prior to quarantine, facilities will need to be inspected for any deficiencies (no hot water or functional HVAC) and fixed	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Facilities	Neutral
D-63	Directorate of Emergency Services should collaborate with Public Health officials to identify screening requirements and impacts to access control	CivMil Cooperation Other - civ support, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Interoperability	Neutral
D-64	Identify PPE requirements for responders: what materials are already on hand? Are existing supplies approved by the CDC to meet the existing threat? Identify consumption rates and supply channels for additional	Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Materiel	Neutral

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	CL VIII requirements (anticipate GCSS-A and local vendor shortages)					
D-65	Implement HPCON defensive posture within facilities: wipe down all touch points with disinfectant twice daily; restrict all customer interaction points that require physical contact; issue masks to Fire Inspectors, encouraging wear during inspections and interactions with Public; issue masks, gloves, and protective eyewear to Military Police patrols for use when responding to incidents at ACPs or potential COVID-19 patients	Inf. Prevention & Control Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-66	Minimize initial contact with EMS patients to one person for evaluation unless obvious cardiac or trauma issue/asking patient travel questions right up front	Patient Manage. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-67	Continue proper wear of PPE, contaminated equipment disposal, and wash up procedures after response	Inf. Prevention & Control Cont. Med. Waste Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-68	Limit public entry/exit points to one per facility	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Facilities	Neutral
D-69	Implement internal measures to prevent and detect the spread (limit points of	Other - NPI, PPE	Mitigate Enh. Outbreak	Tactical	Doctrine / Policy	Neutral

	entry; provide hand sanitizer; reduce face-to-face contact; don PPE)		Manage. Op. Surge Strat. Surge Stabilize		Materiel Facilities	
D-70	Off-post support will likely be required to increase force protection posture and expedite installation access	Iso/Quarantine/ROM Other - civ support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization Interoperability	Neutral
D-72	The fluid nature of a high OPTEMPO operation will often outpace the orders process; it is critical to continue to publish Operations Orders and Fragmentary Orders to maintain a shared understanding and synchronize staff efforts	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
D-73	Experienced challenge of patrons not wiping down (sanitizing) equipment after use; needed to dispel a perception that Fitness Center staff had the onus to clean behind each person (solution was to increase signage, conduct oversight and reminders, and have GC address situation in his social media engagements)	Inf. Prevention & Control Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Went Well
D-76	Childcare staff required to report to work felt they were being placed in harm's way for exposure while other members of the garrison were being released; required a "mini-townhall" with Deputy Director to explain situation and what the term "Mission Essential" meant in context of current situation	Strat. Comms. Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Personnel	Neutral

D-79	Exploit the use of staff idle time with concentrations on mandatory trainings, cleanings, preventative maintenance, and other duties	Inf. Prevention & Control Iso/Quarantine/ROM Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training	Neutral
D-80	Relook/retool impacted existing operations to create new services needed (e.g., conference center transformed from in-house catering to "take-out" with high end options for a new community need)	Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-81	Cleaning and sanitizing ramp up created increase in labor and need to rapidly increase on hand sanitizing products with a shortage across the (Korean) peninsula	Inf. Prevention & Control Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
D-85	Conduct working group meetings to assess future requirement and establish re-order points for critical supplies (sustainment/logistics)	Med. Support Ops Other - BCP	Prepare & Protect	Tactical Operational	Doctrine / Policy Organization Materiel	Neutral
D-86	Recommend continuous assessment to determine if issued equipment is needed and request retrograde for non-essential equipment to return to warehouse or relocate to other efforts	*didn't have any tagged tasks*	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy Materiel	Neutral
D-87	Recommend purchasing hand sanitizing machines for customers in	Other - NPI	Mitigate Enh. Outbreak Manage.	Tactical	Materiel	Neutral

	open areas as precautionary measures and calming the population		Op. Surge Strat. Surge Stabilize			
D-88	Initial reaction of the public involved doubt, fear, and disunity; after complete transparency of the command, that behavior shifted to calm and confidence and appreciation for the efforts of leaders	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Went Well
D-89	When addressing the public, the commander responded quickly and truthfully: held regular briefings; verified information before responding; answered questions honestly and sincerely; created calm, established credibility and trust, to strengthen the reputation; addressed the target public with a clear objective using strategies, command messaging, and talking points	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Went Well
D-90	Use every available social media; find your subject matter expert regardless of duty position	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-105	(p. 8) "Employed cleaning protocols should ensure adequate sanitization in all environments, including quarantine/isolation/patient care areas, as well as all workspaces and quarters. All non-dedicated, non-disposable patient care medical equipment should be cleaned and disinfected according to	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel Facilities	Neutral

	manufacturer's instructions and facility policies.”					
D-106	(p. 9) Consider tactical changes like opening high-flow doorways in hallways to reduce high-touch surfaces, closing doors to individual office spaces to reduce cross-contamination from outside the office, placing hand sanitizer dispensers, limiting flow of people in hallways/common areas, posting handwashing signs, positioning trash cans inside bathrooms near doors to allow paper towel use and disposal for no-touch exit	Inf. Prevention & Control Other - NPI, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
D-107	(p. 9) “While both COVID-19 positive and PUIs [patients under investigation] require isolation, it is important not to mix them to prevent the spread of COVID-19 to a non-infected PUI.”	Iso/Quarantine/ROM Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Facilities	Neutral
D-108	(p. 10) Most forward-deployed locations berth individuals in group berthing, which makes isolation difficult to achieve. While individual berthing with separated bathrooms is optimal, patient isolation cohorts may be the only option available.	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Facilities	Could Be Better
D-109	(p. 10) Consider any medical evacuation routes from patient isolation facilities in the event of worsening disease.	Iso/Quarantine/ROM MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral

D-111	(p. 10) "Quarantine is a unit responsibility, though medical experts have much to offer in advisement and assistance for quarantine planning, tracking, and execution."	Iso/Quarantine/ROM Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-113	(p. 11) "Units will investigate and proactively plan inpatient and outpatient surge capabilities within their existing resources. Special consideration should be given to preventing cross-infection of the patient population."	Iso/Quarantine/ROM Patient Manage.	Prepare & Protect	Tactical Operational	Doctrine / Policy Organization	Neutral
D-116	(p. 17) Outside of medical settings, personnel must practice basic public health and infection prevention guidelines that focus on social distancing, shelter-in-place activities, and hygiene and general protection measures	Iso/Quarantine/ROM Other - NPI, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-117	(p. 18) MTF managers should identify and assign essential personnel as per operational planning; plans should identify a tiered staffing strategy	Other - BCP	Prepare & Protect	Tactical Operational	Doctrine / Policy Personnel	Neutral
D-118	(p. 18) Consider designated and/or specialized COVID-19 care team separate from combat operations	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Personnel	Neutral
D-119	(p. 18) Consider designated runners to ancillary services to reduce donning/doffing activities and protect PPE supplies	Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy Materiel	Neutral



			Strat. Surge Stabilize			
D-120	(p. 18) Consider assignment and training of non-medical personnel to assist as runners, computer and administrative activities (e.g., transcribing notes for records, scanning/uploading patient files, etc.), and assisting with patient registration/screening (frontline)	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training Personnel	Neutral
D-121	(p. 18) Consider work/rest cycles for prolonged management of potentially overwhelming numbers of critical care patients	Patient Manage. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-122	(p. 19) All healthcare personnel should be up-trained and practice at the top of their licensure	Patient Manage.	Prepare & Protect	Tactical Operational	Doctrine / Policy Training Personnel	Neutral
D-123	(p. 19) All healthcare personnel should familiarize themselves with or review how to conduct certain critical activities (in case of personnel shortages): user of critical care medications and ward stock, daily preventative maintenance checks and services (PMCS) of critical equipment, and oxygen burn rate for patient usage and refill plan	Med Countermeasures Patient Manage.	Prepare & Protect	Tactical	Doctrine / Policy Training Materiel	Neutral
D-124	(p. 20) Units should conduct practice drills: PPE donning/doffing, patient procedures, transfers, proning, Code Blue, etc. (list of 8 recommended critical care topics for providers to	Patient Manage. Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage.	Tactical	Doctrine / Policy Training	Neutral

	review and drill to improve response and success in managing COVID-19 critical patients)		Op. Surge Strat. Surge Stabilize			
D-125	(p. 20) Leadership should consider cross-training non-medical personnel to assist clinical staff as appropriate and allowable (non-medical personnel must perform Just-in-Time HIPAA training and have CAC)	Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Training Personnel	Neutral
D-126	(p. 21) Individual risk assessment and fitness for duty for exposed healthcare workers should be determined with the support of COVID testing results, if available, and updated staff medical records	Lab Assets Med. Risk Assess. Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-127	(p. 21) All healthcare workers should engage in appropriate education, training and policies to comply with infection prevention and control	Inf. Prevention & Control	Prepare & Protect	Tactical Operational	Doctrine / Policy Training Personnel	Neutral
D-128	(p. 21) Any healthcare worker who develops fever or symptoms consistent with COVID-19 should immediately self-isolate and contact their established point of contact for testing	Iso/Quarantine/ROM Lab Assets Deploy. Health Surv.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-129	(p. 21) Healthcare workers who are ill should not be involved in direct patient care	Patient Manage. Other - BCP	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational	Doctrine / Policy Organization	Neutral

			Stabilize Trans. & Recover			
D-130	(p. 21) Consider “firewall quarantine” for certain mission critical healthcare units, personnel, and functions that are incapable of quarantining away from work for 14 days: firewall quarantine is a self-sustaining group of individuals exposed to COVID-19 that must continue to work to sustain mission-critical capabilities (see examples and SOPs)	Iso/Quarantine/ROM Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Personnel	Neutral
D-131	(p. 23) When disease prevalence in an area is sufficiently low, certain Nucleic Acid Amplification Testing (NAAT) diagnostic testing systems are approved for sample pooling in order to save time and Class VIII materials (but combining multiple specimens into one test dilutes the samples resulting in lower sensitivity)	Lab Assets	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
D-132	(p. 24) The DOD developed DOD COVID-19 Practice Management Guidelines to assist providers throughout the DOD with comprehensive care for treatment and management of COVID-19; a supplement to the PMG contains a section for considerations in the austere environment	Med. C4I & Dec. Support Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
D-133	(p. 24) Patients may require treatment over a prolonged time (possibly several days) prior to evacuation to a higher echelon of care	MEDEVAC Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Organization	Neutral

			Strat. Surge Stabilize			
D-134	(p. 24 and 25) Guidance (derived from CDC) on when patients can be discharged following isolation or quarantine	Iso/Quarantine/ROM Med. C4I & Dec. Support Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-135	(p. 25) At least 4 commercial telecommunications products (Google Duo, FaceTime, Skype, and Adobe Connect) were approved for teleconsultation services (forward medical teams/medics calling reachback)	Nat. Outreach, Reachback, Fusion Patient Manage. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel Interoperability	Neutral
D-136	(p. 25) VITAL-T and AD.VI.S.OR programs provide operational virtual health support (telemedicine)	Nat. Outreach, Reachback, Fusion Patient Manage. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel Interoperability	Neutral
D-137	(p. 25 and 26) Playbook provides consolidated and prioritized list of all reachback resources available to medical providers	Nat. Outreach, Reachback, Fusion	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Strategic	Doctrine / Policy	Neutral
D-138	(p. 27) Leaders must consider the behavioral health and mental/physical resiliency of health providers and staff responding to an outbreak, as well as that of COVID-19 patients and the general population, who are experiencing major life-style changes	PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral

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	and isolation; a number of tools have been provided for leaders to respond to behavioral health concerns and improve resiliency					
D-139	(p. 27) Forward stationed medics/medical teams are encouraged to reach back locally to Role 2/Role 3 facilities, where behavioral health resources may be stationed, utilize chaplain services, and telehealth resources to connect persons in need with help	Nat. Outreach, Reachback, Fusion PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Organization Materiel	Neutral
D-140	(p. 27) Special considerations for behavioral health include: 1) prolonged isolation of COVID-19 designated staff and patients, 2) disruption of non-duty activities and resiliency behaviors (e.g., physical activity, rest/relaxation), 3) risk for minimal work/rest cycles due to potentially overwhelming numbers, 4) moral stressors of triaging patients to receive care in the pandemic environment, and 5) fear response for novel or unfamiliar risks/threats	Iso/Quarantine/ROM Patient Manage. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Organization	Neutral
D-142	(p. 28) Mortuary affairs SOPs (immediately notify AFMES if a death occurs, all medical intervention should remain in place, contact mortuary affairs for further guidance on handling of the decedent, secure clothing/PPE/medical records to accompany the decedent to mortuary affairs)	Fatality Manage. Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral

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D-143	(p. 29) Pharmacy goals are to reduce the impact of exposure risks and preserve access to medications; pharmacists will support ongoing clinical evaluation studies and treatment protocols for emerging therapeutics	Med Countermeasures Other - NPI, R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-144	(p. 29) Once providers deem a (radiology) diagnostic study necessary, take measures to minimize risk of cross contamination of equipment and environment (some SOPs listed)	Inf. Prevention & Control Clinical Diagnosis	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-146	(p. 30) A series of continually updated supplemental guidance documents outline the DOD position on all aspects of force health protection related to COVID-19 to include: testing, restriction of movement, diagnosis, recovery, travel restrictions, patient movement, non-pharmaceutical interventions (mas wear, social distancing, building occupancy restrictions, etc.), return to work criteria, and health protection conditions (HPCON)	Iso/Quarantine/ROM Lab Assets Med. C4I & Dec. Support MEDEVAC Patient Manage. Clinical Diagnosis Other - NPI, PHM, testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy Materiel	Neutral
D-147	(p. 30) Contact tracing is a critical part of COVID-19 mitigation, and must be supported by the command group; COVID Trace Team members must complete training (see training appendix)	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Training	Neutral
D-148	(p. 30) Some food safety and food service SOPs to minimize spread	Other - PHM	Mitigate Enh. Outbreak Manage.	Tactical	Doctrine / Policy	Neutral

			Op. Surge Strat. Surge Stabilize			
D-149	(p. 44) "If cohort quarantine is undertaken, it is imperative to test all close contacts regardless of symptoms before group quarantine. A single asymptomatic COVID-19+ individual can spread the virus across an entire cohort. It also establishes the boundary of the COVID-19 spread."	Iso/Quarantine/ROM Lab Assets Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
D-150	(p. 44) "An analogy of wildfire containment is useful in explaining contact tracing objectives and policies. Wildfires are first contained and then extinguished."	Op. Epi. Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-151	(p. 44) "Any personnel can be trained in contact tracing utilizing free online courses and forms."	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Training Personnel	Neutral
D-152	(p. 44) "Contact tracing is a joint responsibility between the medical team and the affected unit/company. Our best results occur when medical staff engage the unit/company leadership and jointly produce a close contact list."	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Neutral
D-153	(p. 44) "Most close contacts can be identified with the following questions: Who are your roommates? Whom do you eat with? Whom do you exercise	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy	Neutral

	with? Whom do you work closely with? Can you think of any other persons with whom you were within 6 feet for a total of 15 minutes?"		Strat. Surge Stabilize			
D-154	(p. 44) "Utilization of mobile contact tracing teams for educating units, testing, evaluating high-risk work areas, or handling outbreaks in transient berthing where no unit chain-of-command exists is essential."	Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization Training	Neutral
D-155	(p. 44) "It is crucial to identify a team leader when coordinating contact tracing, testing, placement of individuals in appropriate quarantine or isolation facilities, and meals."	Iso/Quarantine/ROM Lab Assets Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
D-156	(p. 44) "A centralized medical tracker is essential for maintaining accountability and documentation."	Deploy. Health Surv. Op. Epi. Other - tracking	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-158	(p. 44) "Overhead base announcements proved an effective means of communication. Similarly, signs with posted COVID numbers outside the DFAC helped keep the public engaged, as did a base-wide catchphrase: "Don't let anybody close contact you.""	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Went Well
D-159	(p. 44) "A wide-distribution daily email with current case numbers, new case locations, narrative, and a daily COVID-19 question enabled general populace	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy	Went Well



	education, base situational awareness, and unified messaging.”		Strat. Surge Stabilize			
D-160	(p. 44) “A pamphlet addressing the long-term health risks of COVID-19 helped bridge the lack of information many patients had about COVID-19.”	Patient Manage. Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Went Well
D-161	(p. 44) “The use of a phone messenger application allowed real-time communications within the Role 2 and between the base medical assets, allowing for facilitated decision making, unified policies, and streamlined treatment.”	Med. C4I & Dec. Support Patient Manage. Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel Interoperability	Went Well
D-162	(p. 44) “Commanders, both local and theater-level, were able to make decisions based on up-to-date information. Daily counts of infections, quarantined folks, isolation folks, and PUIs enabled resources to match needs.”	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational	Doctrine / Policy	Went Well
D-163	(p. 44) “Collaboration with individual unit leaders was paramount in enforcing the strict but necessary guidelines and restrictions. The ultimate responsibility rested with unit leadership to ensure their personnel complied with required mitigation policies.”	Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Leadership	Neutral
D-164	(p. 45) “Monitor external sources of data for trends of COVID-19 in the surrounding cities and countries.”	Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge	Operational	Doctrine / Policy	Neutral

				Strat. Surge Stabilize Trans. & Recover			
D-165	(p. 45) "You can learn more from close contact tracing by physically assessing the location as well as interviewing the exposed personnel."	Op. Epi.		Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-166	(p. 45) "Strict controls of movement on and off the base in conjunction with testing helped identify the local national sub-contractor population as a reservoir for COVID-19."	Iso/Quarantine/ROM Lab Assets Other - BCP		Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Went Well
D-167	(p. 45) "The basic rules of masking, avoiding large groups of people, and social distancing work well to minimize infectious spread but require constant messaging and monitoring due to human factors."	Strat. Comms. Other - NPI		Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-168	(p. 45) "Frequent communications involving as many leaders as possible helped disseminate information. Public announcements and signage helped ensure the message was also pushed to the general base population."	Strat. Comms.		Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Went Well
D-169	(p. 45) "Running the lab specimens posed a significant risk to lab personnel. Ensuring the lab spaces are safe, secure, and have adequate ventilation as well as protective hood may decrease the risk of transmission."	Lab Assets		Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel Facilities	Neutral

D-170	(p. 45) "Use of N95s for mission-critical workers successfully ensured the continuation of critical operations."	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel Personnel	Went Well
D-171	(p. 45) "Decreasing the use of tents and increasing the use of containerized housing units (CHUs) will decrease the risk of exposure and help develop "neighborhoods" where units can work near where they live."	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel Facilities	Neutral
D-172	(p. 45) "Quarantine tents should ideally be spaced appropriately and contain ten or fewer people per tent."	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Facilities	Neutral
D-173	(p. 45) "Understand the limitations of the COVID-19-PCR test (false-negative rates)."	Lab Assets Other - R&D	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel	Neutral
D-174	(p. 45) "Develop a testing strategy for when testing supplies are limited vs. plentiful."	Lab Assets Med. C4I & Dec. Support Other - testing	Prepare & Protect	Operational	Doctrine / Policy Materiel	Neutral
D-175	(p. 45) "Procure individual rooms for quarantined close contacts whenever possible."	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy Facilities	Neutral

			Strat. Surge Stabilize			
D-176	(p. 45) "Create a rolling average for cases per day, and establish a cutoff value to trigger base-wide action."	Med. C4I & Dec. Support Op. Epi. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Neutral
D-177	(p. 45) "A "one-size fits all" base posture response is ineffective as ever outbreak has unique dynamics, threat profile, and containment strategy."	Med. C4I & Dec. Support Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-178	(p. 45) "Create a panel of medical experts on base who demonstrate an evidence-based approach to decision-making and understand epidemiology."	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Neutral
D-179	(p. 45) "Establish responsibilities of all base stakeholders: base leadership, medical leadership, medical staff, embedded unit medical personnel, and BOS-I."	Med. C4I & Dec. Support	Prepare & Protect	Tactical Operational	Doctrine / Policy Interoperability	Neutral
D-180	(p. 45) "Ensure broad, effective lines of communications among stakeholders that allow communication 24/7."	Med. C4I & Dec. Support Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral

D-181	(p. 45) "Identify POCs for every unit or contractor company. Medical personnel are preferred, but supervisors or leaders can substitute if no medical assets are attached."	Nat. Outreach, Reachback, Fusion	Prepare & Protect	Tactical Operational	Doctrine / Policy	Neutral
D-182	(p. 45) "Conduct frequent, established meetings with key medical staff (ISOFAC mayors, mobile team leaders, lab, supply, etc.)"	Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-183	(p. 45) "Train each unit on contact tracing, proper quarantine procedures, and support for personnel in quarantine and isolation."	Iso/Quarantine/ROM Op. Epi.	Prepare & Protect	Tactical Operational	Doctrine / Policy Training	Neutral
D-185	(p. 46) "24/7 communication between COVID-19 isolation berthing and the role of care is mandatory as patients may develop worsening symptoms."	Iso/Quarantine/ROM Patient Manage. Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Facilities	Neutral
D-186	(p. 46) "Design ISOFAC policies and areas to allow maximum autonomy and self-management by the ISOFAC occupants and their units, including cleaning, food delivery, and transport."	Inf. Prevention & Control Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Facilities	Neutral
D-187	(p. 46) "A designated "dead drop" area allows unit representatives to deliver food and supplies while avoiding inadvertent interactions with COVID positive patients."	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral

D-188	(p. 46) "Identify a camp mayor for each isolation facility. Camp mayors should become familiar with base policies and instructions for requested services, repairs, and maintenance."	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Personnel	Neutral
D-189	(p. 46) "Isolation facilities must include plans for medical or security evacuations including a designated shelter area."	Iso/Quarantine/ROM	Prepare & Protect	Tactical	Doctrine / Policy Facilities	Neutral
D-190	(p. 46) "Quarantine is a unit responsibility, though medical has much to offer in advisement and assistance for quarantine planning, tracking, and execution."	Iso/Quarantine/ROM Med. C4I & Dec. Support Op. Epi.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-191	(p. 46) "Establishing a base quarantine camp required strong partnerships between medical, BOS-I, BDOC, and base leadership."	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-192	(p. 46) "Designating one or two days per week to start travel quarantine cohorts helps reduce limited quarantine resources and streamlines throughput."	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Went Well
D-193	(p. 46) "Base camps require daily walkthroughs from a Camp Mayor to mitigate current or future concerns."	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy	Neutral

			Strat. Surge Stabilize			
D-194	(p. 46) "Daily vital sign checks for quarantined personnel increases the risk of close contact exposure with little benefit."	Iso/Quarantine/ROM Med. Risk Assess. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-195	(p. 47) "Patients with known or suspected COVID-19 symptoms should be kept separate from other patients and medical staff throughout their medical care, to include triage, resuscitation, and inpatient stay."	Iso/Quarantine/ROM Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Facilities	Neutral
D-196	(p. 47) "A standalone five-bed COVID ward/ICU and a separate COVID resuscitation facility allows COVID-19 patients to receive the same level of care as they would in the primary facility while protecting other patients, medical providers, and staff."	Iso/Quarantine/ROM Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel Facilities	Neutral
D-197	(p. 47) "COVID-19 laboratory facilities should either include a hood for specimen processing and testing or be located in an independent lab annex."	Lab Assets	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Materiel Facilities	Neutral
D-198	(p. 47) "Inadequate test kit supplies frequently threatened our response capability."	Lab Assets Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational Strategic	Materiel	Could Be Better

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			Strat. Surge Stabilize			
D-199	(p. 47) "Outside X-rays may help prevent COVID transmission, though accommodations need to be considered for inclement weather."	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Facilities	Neutral
D-200	(p. 47) "DOD medication lists were beneficial in helping pharmacy stock appropriate medications."	Med Countermeasures Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Went Well
D-201	(p. 47) "With most COVID-19 cases demonstrating only mild symptoms, the OTC symptomatic medications proved the highest demand items."	Med Countermeasures Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel	Neutral
D-202	(p. 47) "Common OTC "go-bags" were supplied to patients in ISOFACs, preventing the need for a medical visit whenever an individual requested symptomatic treatment."	Iso/Quarantine/ROM Med Countermeasures Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel	Neutral
D-203	(p. 47) "Medical personnel should obtain proper fit testing with multiple styles of N95 masks before deployment."	Other - PPE	Prepare & Protect	Tactical	Doctrine / Policy Materiel	Neutral

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D-204	(p. 47) "Ensure providers have access to properly fitted masks per fit testing results."	Med. Support Ops Other - PPE	Prepare & Protect	Operational	Doctrine / Policy Materiel	Neutral
D-205	(p. 47) "Separate COVID-19 facilities from normal daily operations."	Iso/Quarantine/ROM Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Organization Facilities	Neutral
D-206	(p. 47) "Consider keeping operational areas "clean" by swabbing patients outside. If not possible, at least separate from the main facility to decrease exposure in close quarters."	Iso/Quarantine/ROM Lab Assets Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-207	(p. 47) "Ensure measures to maintain and allow for social distancing, such as minimizing unnecessary staff at the patient care facilities."	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Neutral
D-208	(p. 47) "Keep N95s out of the direct sunlight and away from the outdoor elements. Conserve PPE in a dry, temperature-controlled environment."	Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel	Neutral
D-209	(p. 47) "Create a bleach/water ratio for cleaning when Cavicide wipes are not available."	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Materiel	Neutral

			Strat. Surge Stabilize			
D-210	(p. 47) "Do not use chairs or equipment that are fabric and cannot be appropriately sanitized."	Inf. Prevention & Control	Prepare & Protect	Tactical	Materiel	Neutral
D-213*	(p. 1-2) Continue direct Behavioral Health Service Line (BHSL) updates down to the MTF behavioral health clinic level, reinforcing in engagements with Regional Health Command (RHC) BHSL leadership, as well as further reinforcing other means of information sharing, such as the Behavioral Health Clinical Management Team (BHCMT)/BHSL Sharepoint site.	Strat. Comms. PsychoSocial Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-214*	(p. 2) MEDCOM BHSL leadership should participate in Headquarters COVID-19 synchronization opportunities, as well as lead BHSL engagements with RHC BH leadership, BHCMT staff, and individual BH program leadership.	Med. C4I & Dec. Support Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy	Neutral
D-215*	(p. 2) Based upon identified opportunities, continue to develop products in order to rapidly fill identified knowledge gaps and provide guidance to be applied to development of local procedures.	Med. C4I & Dec. Support Medical SA Other - R&D	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral

D-216*	(p. 2) Maintain the BHCMT/BHSL Sharepoint site as continuously as possible to ensure a reliable data source for BG staff across the enterprise.	Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Materiel	Neutral
D-217*	(p. 2) Maintain coordination/linkage between DHA BHCMT, OTSG/MEDCOM BSL, and RHC BH leadership. This should be done through regular and recurring formal and informal engagements between BHSL leadership that are aligned to OTSG/MEDCOM and BHCMT leadership that are aligned to DHA, under the DAD-MA, clinical operations section.	Med. C4I & Dec. Support Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral
D-218*	(p. 2) Ensure a seamless partnership between DHA BHCMT leadership and the OTSG/MEDCOM BHSL to rapidly identify health care delivery issues and collectively partner to work through and develop solutions. OTSG/MEDCOM BHSL staff should help to develop orders of priority that can then be focused on by the Behavioral Health System of Care staff largely aligned to the DHACMT.	Med. C4I & Dec. Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral
D-220*	(p. 3) Develop, establish, and continuously refine an enterprise BH COP that can describe, visualize, and	Med. C4I & Dec. Support Medical SA	Prepare & Protect Mitigate	Operational	Doctrine / Policy	Neutral

	monitor current capability and capacity by BHSL program in order to orient and direct necessary change for best effect.		Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover			
D-221*	(p. 3) Through a team effort, develop the format for individual MTF reports and modify as often as needed.	Medical SA	Prepare & Protect	Tactical Operational Strategic	Doctrine / Policy Interoperability	Neutral
D-222*	(p. 3) Ensure individual MTF reports are sufficiently structured to enable an enterprise-wide summary of BHSL capabilities and capacity, both enterprise-wide as well as able to be subdivided into RHC-specific content. Subdividing MTF reports into RHCs facilitates reporting, clarifying, and any required corrective efforts.	Medical SA PsychoSocial Support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Interoperability	Neutral
D-225*	(p. 1) "As the DHA transition continues, Service contracting activities supporting MTF delivery of care and operational contracting support should be assigned/attached to a Joint Medical Contracting Activity that provides all MHS delivery of care and readiness contract support. This would enable Phase 0 integration into HHS and FEMA planning and exercise support, and ensure MTF contracts are written to support both MTF and operational forces. It also provides a single organization enhancing DOD internal and external coordination. Additionally, the establishment of an	Med. Support Ops	Prepare & Protect	Operational Strategic	Doctrine / Policy Organization Materiel	Neutral

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D-226*	<p>organization/agency/activity that performs the functions of the deactivated IMSAs would streamline the procurement process within the new structure/joint agency.”</p> <p>(p. 2) “A joint medical contracting capability would facilitate a seamless leveraging of all DHA and Service MTF contracting support vehicles across the MHS, serve as a single touchpoint for these capabilities, and be available to leverage pre-existing, world-wide contract vehicles instead of relying on local contracting officers with limited experience or knowledge of the most efficient methods to purchase medical support for deployed forces.”</p>	Med. Support Ops	Prepare & Protect	Operational Strategic	Doctrine / Policy Organization	Neutral
D-227*	<p>(p. 2) “For GPC purchases of PPE, emergency medical kits, and other Class VIII, cards must be on-hand and ready for immediate use, personnel must be trained and authorized to execute purchases, and funding thresholds must be clearly established and properly communicated to card holders and unit commanders.”</p>	Med. Support Ops	Prepare & Protect	Tactical	Doctrine / Policy Materiel	Neutral
D-228*	<p>(p. 2) “Regardless of the contracting/purchasing vehicle, the process must be streamlined for rapid execution. Recommend developing rapid medical support contracting processes and policies that facilitate immediate response and are flexible enough to provide for unique</p>	CivMil Cooperation Med. Support Ops	Prepare & Protect	Operational	Doctrine / Policy Materiel Interoperability	Neutral

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D-230*	<p>requirements associated with domestic response.”</p> <p>(p. 1) “MEDCOM and subordinate units must identify opportunities for improvement in work schedules and staffing solutions through continual Process Improvement (PI). An example of process improvement focus is the COVID-19 Task Force established at APHC. The Task Force must provide project management that addresses the high volume of requests for information and alleviates the work that takes place outside of the normal duty day across the organization. Several iterations of PI enabled the Task Force to more effectively meet demands occurring outside of normal work hours.”</p>	Other - BCP	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	Operational	Doctrine / Policy	Went Well
D-231*	<p>(p. 1) “For future planning, MEDCOM, APHC and other Army Medicine agencies must establish a structure that provides depth to manning and institutes an operational methodology at the beginning of an emergency response while also allowing for the agility to scale it back as needed. Understaffing was part of the root cause for burnout resulting from a high number of hours worked is an essential component to the solution.”</p>	<p>Med. C4I &amp; Dec. Support Other - BCP</p>	Prepare & Protect	Operational	<p>Doctrine / Policy Organization</p>	<p>Could Be Better</p>
D-232*	<p>(p. 1) “Adding depth to the manning model could alleviate some of the burden related to organizations executing 24-hour operations.”</p>	Other - BCP	Prepare & Protect	Operational Strategic	<p>Doctrine / Policy Organization</p>	Neutral

D-234*	(p. 1-2) "MEDCOM must also continue to develop solutions that directly address the diverse/comprehensive resources that are essential to support MEDCOM and subordinate staffs as they execute extended telework. An example of such a resource is the "IMD telework support page" created by the APHC Information Systems Branch and housed on the Center's intranet."	Other - BCP, NPI	Prepare & Protect	Operational	Doctrine / Policy Materiel Facilities	Neutral
D-235*	(p. 2) "Some Army contracts and position descriptions (PDs), as written, do not include language permitting telework or remote work capabilities/authorizations. Those contracts/PDs that did not include language for telework for remote connectivity for contract employees resulting in the organization to be fully prepared for large scale continuity of operations including telework. Recommend that contracts and Department of the Army Civilian (DAC) PDs are modified to permit remote work in a way that defines connectivity requirements such as portable computing and CAC access including Secure network access (SIPR). Additionally, as the organizational staff transitions to telework, the IT department must address issues with shared drives, VPN and software issues. The APHC IT department recognized the need to provide easy access to resources for the workforce"	Other - BCP, NPI	Prepare & Protect	Operational	Doctrine / Policy Materiel Facilities	Could Be Better

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	and created an intranet site telework support page for staff. The site provided APHC teleworkers with application guidance, tip sheets and site links. The IT department must continue to update and expand staff resources on sites that are well developed with universal access and awareness. The APHC model can be applied to the larger Army Medicine community.”					
D-236*	(p. 3) “There is an immediate requirement to build and sustain telework readiness during emergency events that require widespread telework. Planning efforts must include convening a working group that identifies, documents, and resolves performance gaps in enabling TW policies, teleconferencing, and network capabilities, and refines written guidance to optimize the work force in long-term TW situations.”	Other - BCP, NPI	Prepare & Protect	Operational	Doctrine / Policy Materiel Facilities	Neutral
D-237*	(p. 4) “Traditional workforce models must be updated to leverage flexible work schedules and staffing with telework support in order to provide the fast paced response necessary during a pandemic.”	Other - BCP, NPI	Prepare & Protect	Tactical Operational	Doctrine / Policy Organization	Neutral
D-239*	(p. 1-2) The COVID-19 pandemic response required MTFs to shift focus from routine, ongoing healthcare across the total force, resulting in troops falling out of compliance with annual Periodic	Patient Manage.	Prepare & Protect Mitigate Enh. Outbreak Manage.	Tactical Operational	Doctrine / Policy Organization Materiel	Could Be Better

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D-240*	<p>Health Assessment, annual dental exam, immunization, hearing and vision evaluations. In order to return to a level of readiness consistent with pre-COVID-19 pandemic levels, Army and MTFs are shifting from COVID-19 response to regaining readiness, requesting a waiver in meeting medical readiness goal of 90% Total Force Medical Readiness, and ensuring MTFs remain postured to provide ongoing non-emergent care (immunizations for deploying Soldiers, flight physicals) and care needed for transitioning Soldiers.</p>	<p>Med. C4I &amp; Dec. Support Medical SA Other - BCP</p>	<p>Op. Surge Strat. Surge Stabilize</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	<p>Tactical Operational Strategic</p>	<p>Doctrine / Policy Materiel Facilities Interoperability</p>	<p>Could Be Better</p>
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	cloud based application to document bed status, personnel status, equipment status, and patient care in one HIPAA & FEDRAMP compliant system. Recommend the Joint Staff Surgeon, in conjunction with the Service Surgeons General, further develop the internet accessible, cloud based solution to encompass all DoD leadership information requirements and allow filters to present information for the specific leader.”					
D-241*	(p. 2-3) “Army Command surgeons and consultants are key leaders during a pandemic as they provide clinical advise needed to inform Army senior leader decision making. Flattening communications and ensuring a shared understanding of the strategic environment is imperative to unity of effort and providing Army senior leaders the best medical advice synchronized at echelon. Recommend the establishment of a battle rhythm that includes frequent touch points with command surgeons and consultants, i.e. weekly for surgeons; monthly for consultants for an ops update.”	Med. C4I & Dec. Support Nat. Outreach, Reachback, Fusion Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Strategic	Doctrine / Policy Organization Personnel	Neutral
D-242*	(p. 3) “Army Public Health Center developed a knowledge management system to organize materials related to the pandemic response. Materials were organized and labeled in a rapidly expanding database to allow for searches by categories such as:	Med. C4I & Dec. Support Medical SA	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational	Doctrine / Policy Materiel	Went Well

	stakeholder, topic, product type and key word. This knowledge management system facilitated rapid identification and utilization of content, informed process improvement initiatives, and fostered timely information to senior leader decision cycles. Recommend MEDCOM sustain and continue to develop this knowledge management system to increase the efficiency and effectiveness of MEDCOM's current and future pandemic responses."		Stabilize Trans. & Recover			
D-243*	(p. 3) "Disaggregation of MAP. MAP disproportionately reduces the ability of MTFs to provide installation medical support. At its origin, MAP personnel were selected as close as possible to the MTOE unit with duty at the MTF. Although good for readiness, this is a disadvantage because a disproportionate number of personnel are taken from the local MTF which negatively impacts the MTFs ability to support medical readiness and provide care for Soldiers, families, and retirees. Recommend disaggregating the MAP personnel from a specific MTF to disperse the burden across all MTFs, thus reducing risk to select MTFs during a time of deployment. Also recommend re-integrating an Army-wide central management of MAP."	Med. C4I & Dec. Support Patient Manage. Other - BCP	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy Organization	Could Be Better
D-244*	(p. 3) "MAP Cross-Leveling. During a deployment of operational medical units, FORSCOM is often required to	Med. C4I & Dec. Support Other - BCP	Prepare & Protect Mitigate	Operational	Doctrine / Policy Organization	Could Be Better

	cross-level medical personnel to mitigate non-deployable or unavailable MAP personnel. MTOE units often cross-level personnel from other MTOE units, generally within the same Corps. Cross-leveling not only negatively impacts the readiness of operational units, but it also negatively impacts MTFs. MEDCOM does not have the ability to influence cross-leveling actions and is limited in its ability to mitigate these actions due to lack of strategic depth. Recommend operational units be required to notify MEDCOM of any cross-leveling of MAP personnel.”					Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover
D-245*	(p. 3) “MAP Impact on Strategic Depth. MEDCOM’s limited strategic depth to respond to a crisis while mitigating gaps at MTFs was evident during COVID-19 operations. During the COVID-19 response, MEDCOM had little power to influence the distribution and deployment of MAP personnel. Consequently, gaps were created at some MTFs while other MTFs remained untouched. This was further compounded by the potential requirement to expand medical capability at MTFs. A means to mitigate this shortfall would be to re-install the central management of MAP at the MEDCOM level to allow the ability to cover gaps and surge capability when needed.”	Med. C4I & Dec. Support Other - BCP	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy Organization	Could Be Better

D-246*	<p>(p. 4) “COMPO 3/Reserve Component Augmentation. OTSG HRD/G1 quickly developed and implemented a process to identify individuals in critical AOCs needed for the COVID-19 Response. OTSG developed an internal process to streamline the acceptance of volunteer Individual Ready Reserve (IRR)/Retiree Recalls (RRs). OTSG established a regular t-con to facilitate greater communication with HRC on the status of IRR/RR. This process continues to be refined. There is a need for a shared collaborative system to be used by OTSG and HRC to help maintain accuracy of the IRR/RR tracker.”</p>	<p>Med. C4I &amp; Dec. Support Other - BCP</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	Operational	<p>Doctrine / Policy Organization Personnel</p>	Neutral
D-247*	<p>(p. 4) “A key impact of medical reform was the disaggregation of the medical logistics enterprise across MEDCOM, AMC, Forces Command (FORSCOM), Training and Doctrine Command (TRADOC), Army Futures Command (AFC), and DHA. This impacted unity of effort during COVID response planning, duplication of effort and poor synchronization as Army sought to rapidly acquire and distribute capability shortfalls across the globe. GCCs and ASCCs were leanly staffed with medical logistics expertise due to HQs cuts applied to Surgeons cells, resulting in requests for augmentation for medical logistics planners (NORTHCOM, ARNORTH, HQDA G4, etc.). OTSG/MEDCOM was</p>	<p>Med. C4I &amp; Dec. Support Med. Support Ops Other - BCP</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	Strategic	<p>Doctrine / Policy Organization</p>	<p>Could Be Better</p>

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D-248*	<p>inadequately resourced to perform three functions simultaneously: TLAMM, ARSTAF advisory Role, and MEDCOM Oversight of Direct Support medical logistics functions.”</p>	<p>Med. C4I &amp; Dec. Support Med. Support Ops</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	Strategic	<p>Doctrine / Policy Organization Materiel</p>	Neutral
	<p>(p. 4) “MEDCOM retained the Joint Chiefs of Staff (JCS) designation as NORTHCOM TLAMM. MEDCOM was able to quickly establish the TLAMM due to strong experience, established relationships, and immediate embedding of LNOs with ARNORTH. DHA supported augmentation of MEDCOM with 8 x MEDLOG personnel with operational expertise that were transferred to DHA under MHS reform in FEB 20. Without this augmentation, MEDCOM would have lacked personnel and expertise to conduct 24 hours operations, 7 days/week. The Army seeks to retain TLAMM designation for NORTHCOM who recommends Air Force designation as the TLAMM. Recommend Army appoints Army Materiel Command as the TLAMM executing command, once AMC establishes capacity. AMC could leverage the Army Medical Logistics Command to integrate operations from the tactical level to the strategic level. This allows the DHA to focus on the Military Health System response planning ISO global operations during DSCA operations (including Pandemic).”</p>					

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D-249*	<p>(p. 4-5) "In the context of current COVID-19 conditions, force protection measures and social distancing require rapidly expanded application of existing and emerging Virtual Health (VH) tools to "flatten the curve," increase healthcare worker standoff, decrease exposure and spread to contagion, reduce Personal Protective Equipment (PPE) consumption, enable continued care delivery and support for non-infected patients while in their home, and conserve MTF capability and capacity. Consequently, established commercial VH platforms that integrate American Psychiatric Association/American Telemedicine Association best practices, and the MHS transformation represent an unprecedented confluence of opportunities to rapidly meet mission, reinforce patient and provider trust, and advance the practice of virtual medicine. Virtual behavioral health encounters are twice as high as average during COVID-19 response."</p>	<p>Iso/Quarantine/ROM Patient Manage. PsychoSocial Support Med. Support Ops Other - NPI, PPE, R&amp;D</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. &amp; Recover</p>	<p>Tactical Operational</p>	<p>Doctrine / Policy Materiel</p>	<p>Neutral</p>
D-359*	<p>(p. 1) "Acquire COTS healthcare-specific platforms that integrate a VH platform and infrastructure and include integrated business practices, scheduling, demand management, load balancing, technical/training/customer support, and support that can contact emergency services based on the patient's location (as needed)."</p>	<p>Patient Manage. Other - BCP, NPI</p>	<p>Prepare &amp; Protect</p>	<p>Tactical Operational Strategic</p>	<p>Doctrine / Policy Materiel Interoperability</p>	<p>Neutral</p>

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	Recommend also having a scheduling option that is not only tied to specific individuals (e.g., only certain staff can schedule), instead have the flexibility for the provider to be able to book their own virtual room if needed.”					
D-361*	(p. 2) “Formalize training for BH providers and patients into a formal POI.”	Patient Manage. PsychoSocial Support	Prepare & Protect	Tactical Strategic	Training Personnel	Neutral
D-362*	(p. 2) “Acquire a COTS healthcare-specific VH platform that includes fillable, self-scoring screeners and provides secure transmission.”	Patient Manage. Other - NPI	Prepare & Protect	Operational Strategic	Materiel	Neutral
D-363*	(p. 1) “An inter-Service Collaboration Veterinary Services (VS) Operational Planning Team (OPT) stood up in January 2020 to monitor the COVID-19 emerging situation and any potential impact on VS mission spaces (i.e. food safety, food security, food protection, working animal health, veterinary public health, animal health, and One health). Members include stakeholders from Army, Air Force, Navy, and DHA as well as Combat Support Agencies (Defense Logistics Agency (DLA), Defense Commissary Agency (DECA), Army Air Force Federal Exchange Service (AAFES), Navy Supply Command (NAVSUP), etc.). Members have been coordinating across sectors to ensure VS mission assurance to the DoD. This early OPT and its composition allowed the DoD	Med. C4I & Dec. Support Strat. Comms. Med. Support Ops Other - PHM	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Organization Materiel	Went Well

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Veterinary Service response to the pandemic to address issues proactively versus reactively, synchronized efforts across the VS enterprise, and was invaluable in addressing concerns and providing guidance to the field. Additionally, the parent OPT engaged in the interagency space to ensure DoD's veterinary-related efforts were incorporated and synchronized with those of the other Federal agencies. The OPT also set up a milSuite repository for all VS COVID-related products and guidance produced by the OPT as well as weblinks and other helpful resources for the field. The milSuite site is easily accessed and is a one-stop shop for all VS COVID-related information. The OPT and its subgroups remain active at this time.”  
 “Sustain the inter-Services Collaboration VS OPT.”

D-364	(p. 1) “Early actions and planning across all sectors are exponentially more important than reactive measures once the disease is widespread.”	Med. C4I & Dec. Support Medical SA	Prepare & Protect	Strategic	Doctrine / Policy	Went Well
D-366	(p. 2) “While a response will often focus on serving the infected, any response must also focus on all the ways to lower the R “naught” or R0 (the average number of people infected by each new person infected). Regularly identifying high-risk practices that raise the R0 and replacing them with suitable alternatives for a population is an	Inf. Prevention & Control Iso/Quarantine/ROM Med. C4I & Dec. Support Op. Epi. Other - NPI, unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral

	exceptionally difficult and absolutely essential factor for success.”					
D-367	(p. 2) “Forced mass quarantine or other top down approaches to an outbreak that securitize the response with law enforcement and/or military enforcement may not be successful and could increase the spread of the disease.”	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
D-370	(p. 2) “Establish local media relationships early for risk communication as outbreak intensifies. In order to effectively combat misinformation and rumors, risk communication should be hyper-local, establish a track record for truth early, and directly involve known community members with a stated focus of honesty over polished language or production value.”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Neutral
D-371	(p. 2) “Responders may be overconfident if they are not directly connected to the field. Frontline healthcare workers and first responders are often a good source of realistic assessments.”	Med. C4I & Dec. Support Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical	Doctrine / Policy	Neutral
D-375	(p. 3) “Private sector organizations are an absolutely essential and uniquely nimble component of any large-scale response. They must be integrated into planning throughout all phases of a response.”	Nat. Outreach, Reachback, Fusion Other - civ support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Doctrine / Policy Organization Interoperability	Neutral

			Stabilize Trans. & Recover			
D-381	(p. 1) "The lack of tests has made it difficult to track exactly how many people within each state, as well as the US at-large have been affected, which has implications both for the extent of public health response, and considerations for approaches to stabilize and sustain the national economy."	Lab Assets Deploy. Health Surv. Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Could Be Better
D-382	(p. 1) "PCR testing has incurred a number of problems: there have been considerable delays in making test results available to healthcare professionals and patients; the test may provide false negative results if administered soon after initial infection <sup>3</sup> ; and PCR methods only assess the presence of a current viral infection, but do not afford information about whether the test recipient has recovered from prior COVID-19 infection."	Lab Assets Medical SA Other - testing	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Could Be Better
D-383	(p. 3) "Yet here too, increased availability and accessibility of serological tests will be essential to reveal who has been infected, and therefore who may be potential plasma donors. Improving the ability to quickly produce these resources, and creating them with accessible supply will be vital to rectify the US' ability to effectively respond to pandemics - and other	Lab Assets Deploy. Health Surv. Medical SA Other - R&D, testing	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel	Could Be Better

D-384	<p>biological threats –at present and in the years to come.”</p> <p>(p. 4) “And, as the COVID crisis is revealing, both readiness and response will require a whole-of-nation approach, not merely coordinated whole-of-government activity (although such coordination and collaboration is surely necessary). We further opine that any such whole-of-nation engagement must be multi-nationally cooperative to enable effective surveillance, prompt notification, tactical flexibility of resource utilization and response, and fixity in strategic planning to ensure the success of outcomes.”</p>	<p>CivMil Cooperation Med. C4I &amp; Dec. Support Medical SA Med. Support Ops Other - civ support</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	<p>Operational Strategic</p>	<p>Doctrine / Policy Organization Interoperability</p>	<p>Neutral</p>
D-385	<p>(p. 2) “Early in response efforts, a critical questions and ethics committee was formed. Pulling from a multidisciplinary base, its purpose was providing a space for leadership and others to air questions, concerns, and challenges that might represent an obstruction to effective risk management—a space to reflect amidst an otherwise operationally fast-paced environment.” (University of Nebraska Medical Center/Nebraska Medicine)</p>	<p>Med. C4I &amp; Dec. Support Med. Risk Assess. Medical SA</p>	<p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	<p>Operational</p>	<p>Organization Leadership</p>	<p>Neutral</p>
D-386	<p>(p. 3) “The existence of a well-developed protocol with case report form, informed consent documents, and other supporting materiel had immediate advantages.</p>	<p>Patient Manage. Other - R&amp;D</p>	<p>Mitigate Enh. Outbreak Manage. Op. Surge</p>	<p>Operational</p>	<p>Doctrine / Policy</p>	<p>Went Well</p>

	From a science management perspective, the most striking aspect was that the well-documented evolution of the protocol simplified local scientific review requirements. Moreover, it was easier to edit than to initiate writing.”		Strat. Surge Stabilize			
D-387	(p. 1) “STRATEGY #1: Repurpose Existing Anesthesia Ventilators: Most immediately impactful strategy since the devices are available now and in place and work is virtually complete to insure they are deployed safely.” (see supporting details for implementation and special considerations)	Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Materiel	Neutral
D-388	(p. 2) “STRATEGY #2: BUILD LARGE QUANTITIES OF NEW VENTILATORS: NOT IMMEDIATELY IMPACTFUL BUT HAS THE POTENTIAL TO PROVIDE MANY NEW VENTILATORS OVER WEEKS NOT MONTHS. IMMEDIATE NEEDS ARE TO VET THE MOST PROMISING DESIGNS AND IDENTIFY MANUFACTURERS”	Patient Manage.	Prepare & Protect	Operational Strategic	Materiel	Neutral
D-389	(p. 3) “STRATEGY #3: MODIFY VENTILATOR CIRCUITS TO ALLOW ONE VENTILATOR TO SUPPORT MORE THAN ONE PATIENT”	Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel	Neutral
D-393	(p. 2) “Thus, having clear objectives as to what to communicate is essential. Three fundamental goals during crisis communication include:	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical Operational Strategic	Doctrine / Policy	Neutral

	<ul style="list-style-type: none"> <li>• To increase knowledge and understanding</li> <li>• To enhance trust and credibility</li> <li>• To minimize the negative impacts of fear and concern”</li> </ul>		Strat. Surge Stabilize Trans. & Recover			
D-394	<p>(p. 2) Three questions guide what to communicate to individuals impacted by the crisis:</p> <ul style="list-style-type: none"> <li>• What happened?</li> <li>• What are you doing about it?</li> <li>• What does it mean to me?</li> </ul>	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-398	(p. 2) Some hospitals are overwhelmed with too many patients and too few ventilators to provide them adequate care	Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Materiel Facilities	Could Be Better
D-399	(p. 2) “There is also a shortage of personal protective equipment (PPE). For economic reasons, US companies have moved production of PPE to foreign nations resulting in a substantial delay in production of further equipment, and hospitals, including those within the MHS, have failed to maintain sufficient stores of PPE.”	Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Doctrine / Policy Materiel	Could Be Better
D-400	(p. 3) Challenge of explaining to line leadership why COVID-19 is a strategic issue; “The US military is...duty bound...to avoid adversely impacting public health.”	Strat. Comms.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge	Operational Strategic	Leadership	Could Be Better

			Strat. Surge Stabilize			
D-401	(p. 3) "The disease presents multiple complex issues to include the ethical challenges of providing healthcare in a resource-limited environment (lack of personal protective equipment, ventilators, and medications) and balancing the control of the disease spread with the economic impact of quarantines."	Iso/Quarantine/ROM Med Countermeasures Med. C4I & Dec. Support Patient Manage. Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel	Could Be Better
D-402	(p. 3-4) "[t]he lack of prior experience with this disease, or any large US pandemic in recent history, in combination with a current lack of texting and treatment options leaves great ambiguity. This ambiguity has been exacerbated by the lack of a clear strategy and message from political leaders."	Lab Assets Med Countermeasures Med. C4I & Dec. Support Strat. Comms. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Materiel Leadership	Could Be Better
D-403	(p. 5) The ongoing cuts in personnel and funding may limit the ability of the US military health system to complete its mission	Patient Manage. Med. Support Ops Other - BCP	Prepare & Protect	Strategic	Doctrine / Policy Organization	Could Be Better
D-404	(p. 5) "[t]here is need for improvement in cross-cultural competency regarding the US military and its medical capabilities."	CivMil Cooperation Patient Manage.	Prepare & Protect	Operational Strategic	Training	Could Be Better
D-405	(p. 5-6) "[t]he deployment rate of emergency physicians (one of the key specialties needed to address an epidemic) remains high, leaving a shortage of emergency medical staff at	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization	Could Be Better

	MHS facilities prior to the COVID-19 outbreak.”					
D-406	(p. 6) “The military also lacks the PPE and ventilators necessary to manage a large pandemic. Unfortunately, many line and civilian leaders are unaware of the limitations of MHS capabilities.”	CivMil Cooperation Strat. Comms. Med. Support Ops Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Materiel	Could Be Better
D-407	(p. 6) “Communication between the MHS, military line leadership, government agencies, Congress, and Office of the President is essential to ensure leaders remain aware of the impact of COVID-19 and public health measures on the military’s capabilities. Appropriate communication between and within the military and other governmental agencies can improve organizational alignment with national objectives. Given the significant unpredictability of a novel pandemic in modern history, communication must be frequent and rapid.”	CivMil Cooperation Med. C4I & Dec. Support Strat. Comms. Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Interoperability	Neutral
D-408	(p. 6) “While this communication is vital, so too is the requirement to ensure national security by avoiding the inadvertant dissemination of US vulnerabilities.”	Strat. Comms. Med. Risk Assess.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
D-409	(p. 6-7) “Currently, military treatment facilities (MTFs) do not see non-beneficiary patients. If COVID-19	CivMil Cooperation Med. C4I & Dec. Support	Prepare & Protect Mitigate	Operational	Doctrine / Policy	Neutral



	overwhelms the civilian healthcare system, allowing civilian patients to be treated at MTFs could increase the pool of hospital beds and ventilators available for patient care. However, allowing COVID-19 patients to be treated at MTFs runs the risk of spreading the disease to military personnel, potentially impacting mission capabilities.”	Patient Manage. Med. Risk Assess. Med. Support Ops	Enh. Outbreak Manage. Op. Surge Strat. Surge		Facilities Interoperability	
D-410	(p. 7) “Protecting the military force will also require policy changes focused on preventing the spread of COVID-19 to critical military personnel with an extended training pipeline such as missileers, pilots, and special force units. Potential strategies to protect personnel include isolation, limited leave, stop-loss, extension of deployments, and minimizing permanent change of station orders. Such measures must be weighed against the potential negative impact on morale and mental health.”	Iso/Quarantine/ROM Med. C4I & Dec. Support Med. Risk Assess. PsychoSocial Support Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
D-411	(p. 8) “Policies must address whether US military personnel who are deployed should be sheltered-in-place to prevent spreading the disease to MTFs or if personnel should be flown back to the US to receive the highest standards of medical care.”	Iso/Quarantine/ROM Med. C4I & Dec. Support MEDEVAC Patient Manage. Med. Risk Assess.	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral

D-412	(p. 8) "In the event that COVID-19 becomes as severe as what was experienced in Italy, military physicians will be faced with the dilemma of focusing on those with the highest risk of adverse outcomes (elderly patients and those with co-morbidities) or those most essential to the military mission (combatants with critical skills)."	Med. C4I & Dec. Support Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Organization	Neutral
D-413	(p. 8-9) "I would clearly explain to leadership what protective measures are required to ensure our military force and medical force remains combat effective. This would include significant efforts to minimize the spread of coronavirus to, and within, military bases and ships by mandating social distancing, quarantining ill individuals, and the use of telecommuting when possible."	Iso/Quarantine/ROM Med. C4I & Dec. Support Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Leadership	Neutral
D-414	(p. 9) "For those personnel assigned to critical nuclear deterrence capabilities, I would advise the adoption of a deployment schedule similar to that used in combat operations. Missileers, nuclear submarine personnel, strategic bomber crews, and other critical personnel could be quarantined for two weeks and then begin a one month "deployment" to their duty locations with limited to no contact with the outside world. I would advise the use of telecommunication and mental health	Iso/Quarantine/ROM PsychoSocial Support Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy Personnel	Neutral

D-415	<p>resources to limit the impact upon the individuals and their families.”</p> <p>(p. 9) “As coronavirus testing capabilities become available, I would advise line leadership on the inherent limitations of said testing (limited accuracy) and the need for retesting. I would advocate for the use of triaged testing, with those assigned to the nuclear deterrence being tested first, followed by those preparing to deploy, those returning from deployment, and those arriving at a new permanent duty station. In the event an individual tests positive, I would advise they be immediately quarantined until they are no longer infectious to prevent further spread to other personnel.”</p>	<p>Iso/Quarantine/ROM Lab Assets Med. Risk Assess. Other - NPI, testing</p>	<p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	<p>Tactical Operational</p>	<p>Doctrine / Policy Materiel</p>	<p>Neutral</p>
D-416	<p>(p. 9) “With regards to the employment of MHS personnel in treatment of non-beneficiaries, I would advise the use of infrequently deployed medical specialties (pediatrics, infectious disease, obstetrics) to support civilian hospitals or establish field hospitals geographically separated from military bases. I would also advise that combat deployable medical specialties (i.e. trauma surgeons, anesthesiologists, and emergency physicians) remain at military bases and continue preparation for support of combat operations.”</p>	<p>CivMil Cooperation Patient Manage.</p>	<p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	<p>Tactical Operational</p>	<p>Doctrine / Policy Organization Facilities Interoperability</p>	<p>Neutral</p>

D-417	(p. 9-10) "Additionally, I would advise that Air Force Critical Care Air Transport Teams (CCATTs) should immediately prepare for the potential to evacuate critically ill COVID-19 patients to advanced medical facilities."	MEDEVAC Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy Materiel	Neutral
D-418	(p. 10) "I would recommend that organizations in the military and those that support the military (i.e. State Department, American Red Cross, local hospitals, and foreign nations where US military personnel are stationed/deployed) be advised of the lack of military ICUs and advanced medical care OCONUS and at smaller bases. These limitations may force a reliance on the civilian healthcare system for those who may become critically ill, and awareness can aid in planning for such an event. I would also advise military leaders as to the civilian healthcare systems capabilities, and to their abilities and limitations in the care of military beneficiaries."	Patient Manage. Medical SA Med. Support Ops Other - civ support	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy Organization Facilities Interoperability	Neutral
D-419	(p. 1) "In the event of isolated outbreaks, case contact investigators are useful in identifying those at increased risk of infection and placing them in quarantine in an effort to halt the spread of disease."	Iso/Quarantine/ROM Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Personnel	Neutral
D-420	(p. 3) "This investigation demonstrated that, in the event of an outbreak, rapid and coordinated responses between public health experts and the office	Medical SA Other - BCP	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy	Neutral

	management authorities may be effective in controlling the occupational spread of an infectious outbreak.”		Strat. Surge Stabilize			
D-421	(p. 3) “Military and government vessels can keep sailors safe, though with mental health effects. Navies, particularly large ones like the US Navy, have maintained operations by screening crew and limiting contact with non-crew. ... Overall, governments have demonstrated the benefits of consolidation and control over crew behavior, but with potentially deleterious consequences for mental health and sailor retention due to long isolated deployments.”	Iso/Quarantine/ROM Deploy. Health Surv. PsychoSocial Support Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational	Doctrine / Policy	Neutral
D-422	(p. 4) “New research indicates that the use of authoritarian measures is not only ineffective in addressing public-health emergencies but can also make them worse.” (State of emergency generally lasts pas the immediate crisis and reduces overall oversight of other government institutions, like the police.)	Strat. Comms. Other - unspecified measures	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational Strategic	Doctrine / Policy	Neutral
D-425	(p. 12) “Effective communication, therefore, was essential in securing public buy-in to counter the Ebola virus.”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy	Went Well
D-431	(p. 4) “The establishment of the CSC [Crisis/Contingency Standards of Care] should enable specific legal and	Med. C4I & Dec. Support Patient Manage.	Prepare & Protect	Operational	Doctrine / Policy	Neutral

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	<p>regulatory protections for health care providers when having to operate under conditions of limited medical resources and alternate models of care. ... Design and implementation of these standards for each agency should remain flexible based on each situation and should be tiered (i.e. normal operations, contingency, crisis) and have specific triggers to engage. In general contingency when &gt;120% typical capacity and crisis when &gt;150-200% capacity though this may be revised down or up depending on availability of staff, stuff, and space.”</p>					
D-432	<p>(p. 4) “CSC should be developed by multi-disciplinary groups and collated by the Incident Command Center (ICC) and should in some ways be individualized to a facility. A list of topics that should be included:  - Authority and triggers for enacting escalating CSC  - Emergency credentialing and scope of practice changes as CSC escalate (nursing, physician, etc)  - Alterations in practice allowed (limiting documentation, changes in work hours and locations, changes in location of patient care and monitoring requests)”</p>	<p>Med. C4I &amp; Dec. Support  Patient Manage.</p>	<p>Prepare &amp; Protect</p>	<p>Operational</p>	<p>Doctrine / Policy  Personnel</p>	<p>Neutral</p>
D-433	<p>(p. 5) “Establish clear Lines of Communication (LOC) to ensure:  - The ability to maintain power, particularly at austere or atypical sites of care.</p>	<p>Med. C4I &amp; Dec. Support  Strat. Comms.  Med. Support Ops</p>	<p>Mitigate  Enh. Outbreak Manage.  Op. Surge</p>	<p>Operational</p>	<p>Doctrine / Policy  Materiel  Facilities</p>	<p>Neutral</p>

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	<ul style="list-style-type: none"> <li>- The ability to rapidly download a transferrable version of clinical information to follow patients through the system.</li> <li>- That the systems exist to efficiently share this information with staff.</li> <li>- That the communication be consistent, from designated sources, and the information be trusted by staff.”</li> </ul>		Strat. Surge Stabilize			
D-434	(p. 5) “Establish Patient Tracking and Re-unification systems” (may not apply to deployed forces)	Op. Epi. Other - tracking	Prepare & Protect	Operational	Doctrine / Policy Materiel	Neutral
D-435	<p>(p. 5) “Establish security, access points, and “clean” areas with access restricted:</p> <ul style="list-style-type: none"> <li>- Given high levels of stress, limited resources, potentially crowded living conditions, and considerable anxiety surrounding pandemic disease, coordination with security both for a facility and the ICU should be included in the planning process.</li> <li>- Establish “satellite” units in alternative locations to care for critically ill patients unaffected by the pandemic to group contagious patients, cohort staff, and protect non-infected patients.</li> <li>- Consider allocating “high risk” staff (underlying medical conditions, age &gt;60) to these sections.</li> <li>- Consider access to specialty care that may be needed in these sections with screening as patients enter.”</li> </ul>	Iso/Quarantine/ROM Med. C4I & Dec. Support Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Operational	Doctrine / Policy Facilities	Neutral

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D-436	(p. 5) "Coordination of re-prioritization of clinical duties: - Limitation of non-urgent care, well visits, routine visits or imaging - If prolonged, give consideration to designating satellite sites to continue routine, but necessary care - Coordinate re-allocation of assets off loaded by limitations to areas of need (Critical Care, Inpatient Care, Initial triage, and Urgent/Emergency Care) - Limit administrative, educational and academic duties to those necessary to directly support patient care"	Med. C4I & Dec. Support Patient Manage. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Organization Facilities	Neutral
D-437	(p. 5) "Develop Recall Roster for all assets (nursing, physician, housekeeping, dietary, security, admin, etc) and triggers for re-calling those who may be needed from remote work."	Other - BCP, NPI	Prepare & Protect	Tactical	Doctrine / Policy	Neutral
D-438	(p. 5) "Consider logistic/ancillary support needs when determining "Essential Personnel" for tasks including: - Disposal of PPE and cleaning both "dirty" rooms and shared spaces. These tasks should be prioritized and will be in very high demand. - Allocation of adequate space for safe, respectful care of the deceased. - Designating locations and facilities to shelter and feed families of ill patients, staff members, and even families of staff members to augment and limit the up to 40-50% absenteeism anticipated	Inf. Prevention & Control Cont. Med. Waste Med. C4I & Dec. Support Fatality Manage. Med. Support Ops Other - BCP	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Personnel Facilities	Neutral



D-439	<p>with illness, school/childcare closure, and fear.”</p> <p>(p. 5) “Staffing. Many MTFs have reduced staffing capabilities to support their ICUs. However, in a global pandemic requiring care for a surge of critically ill patients, additional staffing models should be considered. Although tele critical care resources should be optimized, there may still be significant deficits in critical care trained healthcare workers.</p> <p>-Staff shortages: -Preparation also needs to be made to compensate for reduced staffing. Illness, fatigue, fear, and care giver duties, particularly with school/daycare closure, limit staff availability with some estimates as high as 60% absenteeism.</p> <p>-Strategies listed above may mitigate (facility based child care, cohort care teams, etc.) but planning should consider at least a 25-40% reduction in staff availability.”</p>	<p>Patient Manage. PsychoSocial Support Other - BCP</p>	<p>Prepare &amp; Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	Tactical	<p>Doctrine / Policy Organization</p>	<p>Could Be Better</p>
D-440	<p>(p. 6) “The Society of Critical Care Medicine (SCCM) recommends the following staffing model to support expanded critical care bed capacity in the event of a global pandemic, which includes use of multiple non-ICU trained healthcare workers.”</p>	<p>Patient Manage.</p>	<p>Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize</p>	<p>Tactical Operational</p>	<p>Doctrine / Policy Organization Personnel</p>	<p>Neutral</p>
D-441	<p>(p. 6) “In accordance with Joint Commission regulations facilities and local leadership may cross-level</p>	<p>Med. C4I &amp; Dec. Support Patient Manage.</p>	<p>Mitigate Enh. Outbreak Manage.</p>	Tactical	<p>Doctrine / Policy</p>	<p>Neutral</p>

	providers as needed to provide any type of patient care, treatment and services necessary as a life saving measure or to prevent serious harm, provided the care, treatment, and services provided are within the scope of the individual's license without modification of existing privileges. Privileging authorities may award disaster privileges on activation of their emergency management plans consistent with provisions established in DHA PM 6025.13 Volume 4.”		Op. Surge Strat. Surge Stabilize		Organization Personnel	
D-442	(p. 6) Resources listed for ICU “just in time training” for augmentees from other areas and teleconsultation platforms	Patient Manage. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Training Materiel Personnel	Neutral
D-443	(p. 6) Donning and doffing officers should be assigned to train and monitor PPE procedures (training video linked)	Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational	Training Personnel	Neutral
D-444	(p. 6-7) “Daily assessment of ventilators, ventilator circuits, PPE, fluids, and sedating medication should be tracked with equipment burn rates estimated and updated as more information is available. - Creation of intubation packs consisting of all necessary PPE (N95,	Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral

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	hats, eye protection, gowns, shoe covers, disposable stethoscopes) to avoid providers assembling gear outside of treatment rooms should be considered and would augment ability to track supplies. This will both avoid delays in care and the potential for entering the room without proper PPE.”					
D-445	(p. 7) “Consider alternative options to reduce and re-use critical items such as PPE and ventilator circuits. No current guidance but local policies and solutions should be shared as they become available.”	Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-446	(p. 7) “When expanding into OR or PACU, the spaced utilization of anesthesia ventilators should be considered. Some should be held in reserve based on facility needs for acute, non-COVID needs.”	Med. C4I & Dec. Support Patient Manage. Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational	Doctrine / Policy Materiel	Neutral
D-447	(p. 7) “ICU Contingency Units. Most MTFs have cancelled elective surgeries, which means that some operating room capacity, pre- or post-anesthesia recovery, and other monitored, ventilator capable areas may be available to use as alternative ICU rooms.”	Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Facilities	Neutral
D-448	(p. 7) “Ward cohorting: Consideration should be given to establishing COVID wards This includes regular as well as ICU care areas. Clean barriers on open units similar to chemical “hot lines” could be used. This includes cohorting	Iso/Quarantine/ROM Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Facilities	Neutral

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	staff to “COVID-positive” or “COVID-negative” teams based on which cohort they are caring for to reduce transmission. In particular, it is recommended that patients with non-COVID-19 coronavirus be separated from COVID-19 patients because of the risk of homologous recombination.”					
D-449	(p. 7) “ Establishment of a DoD Case Registry for Clinical Performance Improvement. Systematic collection and iterative analysis of key data on risk factors and outcomes, coupled where possible with collection and repository storage of residual material from pertinent clinical diagnostic specimens, is essential to optimization of care delivery. This should be executed urgently in the context of an approved, directed performance improvement initiative, in the setting of a learning health system.”	Patient Manage. Sample Manage. Med. Risk Assess. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Operational Strategic	Doctrine / Policy Organization	Neutral
D-450	(p. 7) Implement protocols to screen and triage patients for early recognition of patients with COVID-19	Patient Manage. Clinical Diagnosis Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-452	(p. 8) Immediate implementation of appropriate infection prevention control (IPC) measures. “Prior to hospital admission, the patients should be actively separated such as through a tent outside the traditional confines of	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Facilities	Neutral

	the hospital for testing purposes or a private room with the door closed within a facility as improved separation is ideal for infection control purposes.”					
D-457	(p. 29) “clinicians who engage in telemedicine (especially forms that utilize video with the patient) must appreciate the burden it places upon valuable network resources. The solution that achieves clinical needs and uses the minimal network resources should be utilized whenever possible.”	Patient Manage. Other - BCP, NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel Facilities	Could Be Better
D-458	(p. 30) Teleconsultation (reachback) resources listed for MTFs that must (but typically do not) care for critically ill patients	Nat. Outreach, Reachback, Fusion Patient Manage. Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Personnel	Neutral
D-459	(p. 31-32) Framework for thinking about non-DoD approved telehealth solutions and additional use cases	Patient Manage. Other - NPI	Prepare & Protect	Operational	Doctrine / Policy Organization Materiel	Neutral
D-460	(p. 33) PPE procedures for emergency medical services personnel transporting patients with possible COVID-19 infection	MEDEVAC Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-461	(p. 34) Cleaning EMS transport vehicles after transporting a PUI or patient with confirmed COVID-19	Inf. Prevention & Control MEDEVAC	Mitigate Enh. Outbreak Manage.	Tactical	Doctrine / Policy Materiel	Neutral

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D-469	Specific recommendations to protect the confidentiality, integrity, and availability of patient health information (e.g., use multifactor authentication and strong passwords)	Medical SA	Op. Surge Strat. Surge Stabilize  Prepare & Protect	Strategic	Doctrine / Policy Materiel	Neutral
D-470	(p. 2) "Communication and collaborative discussion of best practices between surgical and anesthesia services with review of local, national and international guidelines was key to a broad, shared understanding for patient admission and consultation. An area for further refinement would be a preestablished ship-based guideline for triage as the ship did not have the same resource constraints as many hospitals which may have implemented different parameters for triage."	Med. C4I & Dec. Support Patient Manage. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-471	(p. 2) "Leadership support and emphasis on personal protection and acquisition of appropriate PPE was key. No OR personnel tested positive for SARS-CoV-2 at the conclusion of the mission after performing the vast majority of high-risk aerosolizing procedures as well as surgical intervention on SARS-CoV-2 positive patients."	Patient Manage. Med. Support Ops Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Went Well

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D-473	(p. 42) “- The nearly 20% of subjects who reported worsened seizure control during the COVID-19 peak tended to report more severe epilepsy and seizures precipitated by stress as well as increased stress related to the pandemic - Barriers to care, including difficulty obtaining antiseizure medications, were more common among subjects who reported worse seizure control - There is a need for more effective delivery of neurologic care via telehealth tools” (barriers to routine care may be less relevant to deployed military populations, but this would likely apply beyond just epilepsy patients)	Patient Manage. PsychoSocial Support Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize Trans. & Recover	Tactical Operational Strategic	Doctrine / Policy Materiel	Could Be Better
D-474	(p. 1) “A flight surgeon/medical director should be available 24/7 for COVID-19 related advice”	Med. C4I & Dec. Support	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Personnel	Neutral
D-476	(p. 1) “Short-term extension of aviation currencies are acceptable when social distancing and/or mission requirements preclude this training”	Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Training	Neutral
D-477	(p. 1) “COVID-19 symptom and temperature screening of the entire flight crew should occur at the beginning of each duty day. However,	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy	Neutral

	the outgoing crew should not conduct this check given the potential for viral transmission to the oncoming crew.”		Strat. Surge Stabilize			
D-478	(p. 1) “Facilities should require employees to respond to symptom screening questions prior to entering the work facility”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-479	(p. 1) “Whenever possible, website portals for posting the latest COVID-19 related policies and resources - important updates should be made available in the reading file”	Strat. Comms.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational Strategic	Doctrine / Policy	Neutral
D-480	(p. 2) “The same 'bubble' of crews and administrative staff should habitually work together in order to limit cross transmission between personnel”	Iso/Quarantine/ROM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-481	(p. 2) “Companies should require mask use for personnel in non-patient settings”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-482	(p. 2) “Companies should prohibit gaiters, bandanas, scarves, and turtlenecks in both patient and non-patient settings”	Other - NPI	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Strategic	Doctrine / Policy Materiel	Neutral



D-483	(p. 2) Companies should require the cleaning of crew eating rooms, with frequency dependent upon the degree of crew turnover”	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-484	(p. 2) Companies should mandate occupancy limits”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-485	(p. 2) Companies should ensure close monitoring of high demand supplies”	Med. Support Ops	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Materiel	Neutral
D-486	(p. 2) “Companies should re-organize workstations as needed to preserve physical distancing”	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-490	(p. 2) Change of shift brief should include review of personal protective equipment (PPE) procedures, anticipated loading challenges and decontamination requirements”	Inf. Prevention & Control Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-491	(p. 2) “All meetings should be conducted via virtual platform, if possible”	Strat. Comms. Other - BCP, NPI	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy	Neutral

			Strat. Surge Stabilize			
D-492	(p. 2) "Companies should provide validated training on the use of PPE"	Other - PPE	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge	Tactical Operational	Doctrine / Policy Training	Neutral
D-493	(p. 2) "Flight Paramedic/nurse training should have a special focus on first time intubation success"	Patient Manage.	Prepare & Protect	Tactical	Training	Neutral
D-494	(p. 2) "Companies should establish written procedures for emergency de-proning should re-intubation be required"	Patient Manage.	Prepare & Protect	Tactical	Doctrine / Policy Training	Neutral
D-495	(p. 2) "Unused N95 masks which are past expiration dates should continue to be used for individual training rather than disposed of without further use"	Other - PPE	Prepare & Protect	Tactical Operational	Doctrine / Policy Training Materiel	Neutral
D-496	(p. 2) "Quantitative fit testing of the N95 mask should be undertaken prior to mission assumption"	Other - PPE	Prepare & Protect	Tactical	Doctrine / Policy Materiel	Neutral
D-497	(p. 2) "Quantitative fit testing should occur in the presence of all applicable safety equipment (i.e., visor down, helmet, and facial shield)"	Other - PPE	Prepare & Protect	Tactical	Doctrine / Policy Materiel	Neutral
D-498	(p. 2) "Flight uniforms should be washed daily and if at all possible, an extra flight uniform should be provided to each member of the flight crew in order to mitigate the effects of repeated laundry cycles"	Inf. Prevention & Control	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy Materiel	Neutral

			Strat. Surge Stabilize			
D-499	(p. 2) "Decontamination procedures should be regularly drilled"	Inf. Prevention & Control	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training	Neutral
D-502	(p. 2-3) (Pre-flight) "Crews should pre-brief PPE and disinfection measures, cough etiquette, face and/or hand hygiene through the medical crew"	Inf. Prevention & Control Other - NPI, PPE, PHM	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-503	(p. 3) "Prior to flight, a deliberate staging area for disposal of PPE and biohazard bag should be designated"	Cont. Med. Waste	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-504	(p. 3) "Receiving healthcare facility should be notified if the patient is suspected or known to be COVID-19 positive"	Patient Manage. Medical SA	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-505	(p. 3) "Mission should group multiple COVID-19 patients on one aircraft to minimize crew exposure"	Iso/Quarantine/ROM MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral

D-506	(p. 3) "Patient escorts should be prohibited with the exception of when absolutely necessary (i.e., parent/legal medical decision maker). In these cases, the escort should be screened for symptoms, provided with an N95 mask, hand sanitizer, and instruction on cough etiquette"	Iso/Quarantine/ROM Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
D-508	(p. 3) "Static loading and unloading is preferred (presents lower risk for aerosolization of virus, potential PPE disruption, and/or foreign object debris secondary to rotor wash)"	MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-509	(p. 3) "Patients (ambulatory) should secure themselves into seat (with crew supervision), with the understanding that the movement of non-urgent patients is highly discouraged"	MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-510	(p. 3) "Patients (ambulatory) should use hand sanitizer if at all possible, with the understanding that the movement of non-urgent patients is highly discouraged"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-511	(p. 3) "Patients' dressings, infusions, and monitor attachment points should be reviewed in order to confirm secure placement"	MEDEVAC Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral

D-512	(p. 3) "Medics should not touch hospital doors, walls, or other surfaces during patient transfer"	Inf. Prevention & Control MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-513	(p. 3) "Medics, prior to patient pick-up, should stow flying gloves, wash hands (as available) then don disposable gloves"	MEDEVAC Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-514	(p. 3) "Crew should use hand sanitizer after entering and exiting aircraft"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-515	(p. 3) "Pilot and non-medical aircrew must wear PPE (full) if helping with loading (although assisting with loading is discouraged)"	MEDEVAC Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-516	(p. 3) "Handwashing should occur after glove removal at any time"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
D-517	(p. 3) "Hands should be sanitized with soap and water washing if visibly soiled"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge	Operational	Doctrine / Policy	Neutral

			Strat. Surge Stabilize			
D-518	(p. 3) "Hand sanitizing should occur with every location change (i.e., entering and leaving the cockpit, contacting any surface that may have been touched by others)"	Inf. Prevention & Control MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-519	(p. 3) "Doors should be open for ventilation during static phase of transfer"	Inf. Prevention & Control MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-520	(p. 3) "Crew members should not interact with refuelers and maintain a 6 foot distance"	MEDEVAC Med. Support Ops Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-522	(p. 3) "Patient's endotracheal tube should be confirmed as secure"	MEDEVAC Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-523	(p. 3) "Medics should rehearse emergency deproning for unplanned extubation as well as cardiopulmonary resuscitation (CPR) hand placement on prone patients in the event of re-intubation immediately prior to transfer"	MEDEVAC Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Training	Neutral

D-524	(p. 3) "A clean runner should be designated during patient transfer"	MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-525	(p. 4) "Pre-packed COVID-19 kits should be assembled and contain enough equipment to allow for back-to-back missions"	Patient Manage. Med. Support Ops	Prepare & Protect Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Materiel	Neutral
D-526	(p. 4) "Crew members should re-mask away from COVID-19 threat when an initial mask becomes damaged, uncomfortable, or damp"	MEDEVAC Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-527	(p. 4) "Crew members should crosscheck PPE donning and doffing"	Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-528	(p. 4) "PPE should be matched for COVID-19 status; a minimum of surgical mask for patients without suspected/actual COVID-19 status"	Patient Manage. Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral

D-529	(p. 4) "All flight crew should wear N95 mask and a maxillofacial shield with visor down. Non-medical crew may use a surgical mask (preferred over cloth mask) if supplies are limited but should otherwise be in the same PPE configuration"	MEDEVAC Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-530	(p. 4) "Medical crew should wear a single pair of surgical gloves, changing them if soiled"	MEDEVAC Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-531	(p. 4) "Patients (ambulatory) should use hand sanitizer prior to entering aircraft, with the understanding that the movement of ambulatory patients is highly discouraged"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-532	(p. 4) "Patients should wear a surgical mask at a minimum"	MEDEVAC Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-533	(p. 4) "Patient belongings should be sealed in plastic (biohazard) bag and name labelled"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral



D-534	(p. 4) "Patients' nasal cannula (if required) should be placed under mask"	MEDEVAC Patient Manage. Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
D-535	(p. 4) "Facial hair that could impact mask use should be prohibited"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy	Neutral
D-536	(p. 4) "Hand sanitizing and avoidance of face touching during all phases of flight is critical"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-537	(p. 4) "Hand sanitizer should be within hands-reach and easily accessible for all crew"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-538	(p. 4) "Field expedient pods/patient isolation units are not recommended (no extra protection for ventilator patients, can cause respiration difficulty, may represent flight safety risk)"	Iso/Quarantine/ROM Patient Manage.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel Facilities	Could Be Better
D-539	(p. 4) "PPE can cause fatigue - crew members should declare themselves and risk mitigate as appropriate"	MEDEVAC Med. Risk Assess. Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy Materiel	Neutral

			Strat. Surge Stabilize			
D-540	(p. 4) "Pilots should not be required to wear disposable gloves at the flight controls"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Could Be Better
D-541	(p. 4) "Generic (flammable) Tyvek suits should not be worn"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Could Be Better
D-542	(p. 4) "Improvised cockpit barriers should not be used"	MEDEVAC Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel	Neutral
D-543	(p. 4) "Per the International Air Transport Association, the aircraft should be decontaminated at the receiving hospital helipad if possible, and the aircraft should be left to dry for 10 minutes after decontamination"	Inf. Prevention & Control MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy Materiel	Neutral
D-544	(p. 4) "In general, ventilation within the cabin should be encouraged"	Inf. Prevention & Control MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral

D-545	(p. 4) "The decontamination team's PPE and process should be pre-established and use a team approach"	MEDEVAC Other - PPE	Prepare & Protect	Operational	Doctrine / Policy Materiel	Neutral
D-546	(p. 4) "The medic and/or decontamination team should supervise the removal of PPE"	MEDEVAC Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Operational	Doctrine / Policy Materiel Personnel	Neutral
D-547	(p. 4) "The crew should decontaminate any cell phone if used during flight"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-548	(p. 4) "The crew should decontaminate/discard any pens used for transcription/marketing"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-549	(p. 4) "The medical crew should disinfect in the following manner - disinfect gloves, remove gloves, hand disinfection, remove aviation life support equipment (ALSE) and helmet, hand disinfection, remove flight suit and boots, clean hands"	Inf. Prevention & Control MEDEVAC Other - NPI, PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-550	(p. 4) "The crew should was the flight suit daily regardless of COVID-19 mission, ideally with disposable or washable liners in laundry hampers"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy Materiel	Neutral

			Strat. Surge Stabilize			
D-551	(p. 5) "The crew should wash hands between washing and drying of laundry"	Other - NPI	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-552	(p. 5) "Cleaning of cockpit should be the responsibility of the pilot"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-553	(p. 5) "Decontamination sprays must be approved substances at recommended contact times"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-554	(p. 5) "Decontamination with compressed air is prohibited"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-555	(p. 5) "The outside of alcohol spray bottles should be decontaminated"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral

D-556	(p. 5) "For helmet decontamination - apply disinfectant and let settle for 3 minutes (5 minutes for blood), do not scrub, wipe clean with cloth"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral
D-557	(p. 5) "Decontaminate ALSE or survival equipment without the use of bleach"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-558	(p. 5) "Decontamination of ALSE and survival equipment should be the responsibility of the mission flight crew"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-559	(p. 5) "Decontamination of ALSE should be undertaken through gentle scrubbing"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-560	(p. 5) "Following full decontamination process, there should be immediate resumption of first up crew duties"	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-561	(p. 5) "After-action reviews should be conducted after every mission in order"	MEDEVAC	Mitigate Enh. Outbreak Manage. Op. Surge	Tactical	Doctrine / Policy	Neutral

	to improve the evacuation process and increase safety”		Strat. Surge Stabilize			
D-562	(p. 5) “The aircraft should be left open as long as possible after decontamination”	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-563	(p. 5) “Aircraft decontamination should occur downwind if at all possible”	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-564	(p. 5) “Currently, disinfective fogging should not be undertaken especially in the instrument areas”	Inf. Prevention & Control	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy	Neutral
D-565	(p. 5) “Post flight health monitoring should be conducted in accordance with Center of Disease Control guidelines pertaining to anyone who has been exposed to COVID-19”	Deploy. Health Surv. MEDEVAC Op. Epi.	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical Operational	Doctrine / Policy	Neutral
D-566	(p. 5) “No need for quarantine if all PPE measures have been undertaken”	Iso/Quarantine/ROM Med. C4I & Dec. Support Med. Risk Assess. Other - PPE	Mitigate Enh. Outbreak Manage. Op. Surge Strat. Surge Stabilize	Tactical	Doctrine / Policy Materiel	Neutral

Source: U.S. COVID LL Observations

*Note:* This table excludes ninety-two of the relevant observations from U.S. sources because of distribution restrictions.

*Note:* Observations with identifiers that have an asterisk are no longer available from the repository to which they were originally submitted. These observations are available from the authors upon request

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## **Appendix C. Complete Text of Observations, Discussions, Conclusions, and Recommendations in Observation, Discussion, Conclusion, Recommendation (ODCR) Forms Submitted to the Joint Analysis and Lessons Learned Centre (JALLC)**

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**B-1:** The use of the appropriate face masks, as advised by WHO [World Health Organization], cause the goggles of MIO [Maritime Interdiction Operation] team members to fog up and become difficult to see through.

- **Discussion:** A validation fit test / training took place on 08th of Apr 2021 by VANOS SA with their SME on personal protective equipment (Theofilos Kourounis) at Cosastal Urban Training Area (CUTA). A tactical test took place on NMIOTC premises on 10th of Jun 21 at HS ARIS. The aim of the aforementioned tests was to find a solution for the foggy ballistic eyewear problem for centers trainees and the trainers as well as to provide suggestions to operational MIO teams.
  - The test resulted in the following findings, divided to each category of equipment:
    - One use Respirators without valve.
    - Due to the humidity produced inside the mask after a short period of time they are not comfortable.
    - Medium voice distortion is caused.
    - Low foggy effect is caused when used with sunglasses and high when used with goggles.
    - Vulnerable to humidity and especially to sea spray.
    - Have to be adjusted before the wearing of helmet and other equipment and difficult to be replaced during the operation.
    - Have to be paired with the users face shape and the type of ballistic eyewear in order to fit correctly.
  - Additionally the following parameters may be considered:

- During MIO, team members have high heart rate and need to exhale air accordingly.
  - The one use respirators may be easily damaged by water or the user and cannot be easily and safely replaced.
  - During helicopter insertion safety issues may arise by the use of one use respirators.
  - From the late 2020 when the observation was made the status of COVID-19 has drastically changed. Today most of the military personnel are fully vaccinated and undergo a prolonged isolation period prior to their deployments. So the possibility to infect others when using respirators with valve is lower than it was in past. On the other hand the necessity to protect NATO teams and crews is always high.
- Conclusion: The simultaneous use of protective masks (as approved by WHO), and proper eye protection (as required in ATP-71) may result in foggy goggles which reduces the ability of MIO team members to see. According to the results from the tests at NMIO TC, when proper type of equipment is chosen and paired correctly, there will be limited impact on the operational capability of MIO teams.”
  - Recommendation: (a) Trainers and Trainees in classroom: Use N95 (FFP2) masks without valve. (b) Trainers and Trainees in outdoor activities: Use N95 (FFP2) masks with valve or reusable tactical masks, depending on their equipment and type of module. (c) MIO Teams during operations: Use of reusable masks.”

**B-2:** More Evidence Hydroxychloroquine Is Ineffective, Harmful in COVID-19.

- Discussion: The study was published online May 22 in The Lancet. The absence of an effective treatment for COVID-19 has led to the “repurposing” of the antimalarial drug chloroquine and its analogue hydroxychloroquine, which is used for treating autoimmune disease, but this approach is based on anecdotal evidence or open-label randomized trials that have been “largely inconclusive,” the authors write. Additional agents used to treat COVID-19 are second-generation macrolides (azithromycin or clarithromycin), in combination with chloroquine or hydroxychloroquine, “despite limited evidence” and the risk for ventricular arrhythmias, the authors note. The primary question was whether there were any associated benefits of the use of hydroxychloroquine, chloroquine, or a combined regimen with macrolides in treating COVID-19, and — if there was no benefit — would there be harm? The investigators used data

from a multinational registry comprising 671 hospitals that included patients (n = 96,032, mean age 53.8 years, 46.3% female) who had been hospitalized between December 20, 2019, and April 14, 2020, with confirmed COVID-19 infection. Patients receiving treatment (n = 14,888) were divided into four groups: those receiving chloroquine alone (n = 1868), those receiving chloroquine with a macrolide (n = 3783), those receiving hydroxychloroquine alone (n = 3016) and those receiving hydroxychloroquine with a macrolide (n = 6221). The researchers also collected data about demographics, underlying comorbidities and medical history, and medications that patients were taking at baseline. 1. The remaining patients not treated with these regimens (n = 81,144) were regarded as the control group. Most patients (65.9%) came from North America, followed by Europe (17.39%), Asia (7.9%), Africa (4.6%), South America (3.7%), and Australia (0.6%). Most (66.9%) were white, followed by patients of Asian origin (14.1%), black patients (9.4%), and Hispanic patients (6.2%). 2. Comorbidities and underlying conditions included obesity, hyperlipidemia, and hypertension in about 30%.

- Conclusion: In the largest observational study of its kind, including close to 100,000 people in 671 hospitals on six continents, investigators compared outcomes in 15,000 patients with COVID-19 treated with hydroxychloroquine and chloroquine alone or in combination with a macrolide with 80,000 control patients with COVID-19 not receiving these agents. Treatment with any of these medications, either alone or in combination, was associated with increased death during hospitalization: compared with about 10% in control group patients, mortality rates ranged from more than 16% to almost 24% in the treated groups. Patients treated with hydroxychloroquine plus a macrolide showed the highest rates of serious cardiac arrhythmias, and, even after accounting for demographic factors and comorbidities, this combination was found to be associated with a more than 5-fold increase in the risk of developing a serious arrhythmia while in the hospital. Researchers found no benefit in any of the 4 treatment regimens for hospitalized patients with COVID-19 but we did notice higher rates of death and serious ventricular arrhythmias in these patients, compared to the controls,” Mehra reported. Of the patients in the control group, roughly 9.3% died during their hospitalization compared with 16.4% of patients treated with chloroquine alone, 18.0% of those treated with hydroxychloroquine alone, 22.2% of those treated with chloroquine and a macrolide, and 23.8% of those treated with hydroxychloroquine and a macrolide. After accounting for confounding variables, the researchers estimated that the excess mortality risk attributable to the use of the drug regimen ranged from 34% to 45%. Patients treated with any of the four regimens sustained more serious arrhythmias compared with those in the control group (0.35), with the biggest increase seen in the group treated with

the combination of hydroxychloroquine plus a macrolide (8.1%), followed by chloroquine with a macrolide (6.5%), hydroxychloroquine alone (6.1%), and chloroquine alone (4.3%).

- **Recommendation:** Hydroxychloroquine and chloroquine, with or without azithromycin or clarithromycin, offer no benefit in treating patients with COVID-19 and, instead, are associated with ventricular arrhythmias and higher rates of mortality, according to a major new international study .David Holtgrave, PhD, dean of the University at Albany School of Public Health: “while no one observational study alone would lead to a firm clinical recommendation, I think it is helpful for physicians and public health officials to be aware of the findings of the peer-reviewed observational studies to date and the NIH COVID-19 treatment guidelines and FDA statement of drug safety concern about hydroxychloroquine to inform their decision-making as we await the results of randomized clinical trials of these drugs for the treatment of COVID-19,”. SOURCE: Lancet, 22 May 2020; Medscape Medical News © 2020.

**B-3:** In order to respond to the SARS-CoV-2 pandemic, many NATO countries followed a previous national pandemic influenza preparedness plan. Most of those are based on 4 principal phases: the interpandemic phase, the alert phase, the pandemic phase and the transition phase. Unfortunately, due to lack of information about the first cases of new virus in humans as well as the absence of relevant medical/scientific literature and relevant countermeasures, current plans switched from the interpandemic phase directly to the pandemic phase, overriding the alert phase. As that results, risk assessments as well as the related impact (risk groups, healthcare capacities and essential public services) and effectiveness of countermeasures, both medical (e.g. influenza-specific antivirals, antibiotics and pandemic vaccines) and non-pharmaceutical public health measures (e.g. social distancing, individual protective equipment, (IPE) hygiene measures), needed to be developed during a pandemic phase rather than an alert one, resulting in contradictory and less than effective responses. Those challenges as well as no developed/implemented civil-military cooperation guidelines in case of pandemics (currently non-binding medical guidelines refer to respond effectively to CBRN mass casualty incidents) revealed additional difficulties at the intersection of civil-military interaction for civil preparedness and more traditional military capacities and capabilities. Moreover, uncertainty on pandemics mitigation measures challenged both the military operations planning as well as definition of military capabilities to respond effectively to the pandemic.

- **Discussion:** Civil-military plans sharing and coordinated execution of tasks against COVID-19 outbreaks is tremendously crucial to mitigate consequences of pandemics. For civil-military CBRN Defence cooperation, current guidelines consider outbreak management and infectious disease as a topic for civil sector,

which should deliver healthcare in response to a CBRN incident via the civilian healthcare system. However, recent events such as the west-African Ebola outbreak in 2015 and the Salisbury incident in 2018 underlined the need for comprehensive civil-military interaction at both international and national levels. Both events were civilian led but recognised and incorporated the expertise, experience and specialist capabilities that the military can provide.

- Conclusion: Civil-military plans sharing and coordinated execution of tasks against COVID-19 outbreaks is tremendously crucial to mitigate consequences of pandemics. For civil-military CBRN Defence cooperation, current guidelines consider outbreak management and infectious disease as a topic for civil sector, which should deliver healthcare in response to a CBRN incident via the civilian healthcare system. However, recent events such as the west-African Ebola outbreak in 2015 and the Salisbury incident in 2018 underlined the need for comprehensive civil-military interaction at both international and national levels. Both events were civilian led but recognised and incorporated the expertise, experience and specialist capabilities that the military can provide.
- Recommendation: TA and AB to be identified.

**B-4:** In the context of COVID-19, sex-disaggregated data has been essential for understanding the distribution of risk, infection, and disease in populations and the extent to which sex and gender affect clinical outcomes. It is also been essential to understanding who is involved in responses in order to inform any actions taken to support them. Access to this kind of data is applicable in crises and contexts well beyond pandemics. While the experience during COVID-19 demonstrated the usefulness of sex-disaggregated data, it also highlighted that such data is often not reported or made available to NATO.

- Discussion: Relevance of sex-disaggregated data: All available sex-disaggregated data on COVID-19 indicate that men have higher morbidity and mortality rates than women. While there is not yet agreement on why this is the case, the implications are significant, not only in terms of treatment but also in relation to the follow-on effects of losing significantly more men to this disease. Disaggregated data on morbidity and mortality, however, is only one aspect of the information required to understand this crisis. Who is being tested? Who is being treated and with what result? It is also essential to understand who is involved in the response in order to inform the actions taken to support them. According to the WHO, 70% of the global health work force is female. The OECD reports that women also make up over 90% of the long-term care workforce across OECD countries. Consideration of how the crisis and potential response measures might affect men and women differently is important to ensure that actions taken have the desired effects and that they reduce the likelihood of potential inequitable consequences based on gender. For NATO,

the relevance of gender analysis of this crisis is clear, particularly in relation to the potential implications on resilience. What is the impact of school closures during crises on health care workers, the majority of whom are women? And what are the consequential impacts on the capacity of national health systems to deal with mass casualty situations during a crisis? What are the impacts on stability when citizens are isolated and unemployed, and there is a significant rise in domestic violence? Availability of sex-disaggregated data: While the usefulness of sex-disaggregated data is broadly accepted, the availability of this data is not consistent. The World Health Organization has called on all countries reporting on epidemics to include sex-disaggregated data, yet most do not. In the NATO context, Allies and partners agreed in 2018 to disaggregate all data by sex, yet in our experience, most data produced by or made available to NATO is not disaggregated by sex. This information gap is relevant not only in relation to health crises but can have implications in a range of contexts in which NATO requires situational awareness.

- Conclusion: NATO has already recognized the importance of sex-disaggregated data to its effectiveness. Allies and partners committed in the 2018 NATO/EAPC Policy on Women, Peace and Security that “NATO Headquarters, Allied Command Operations (ACO), and Allied Command Transformation (ACT) reports shall include reference to WPS where appropriate and all data should be disaggregated by sex.” (EAPC(C)D(2018)0008). The experience with COVID-19 makes clear that sex-disaggregated data can contribute crucial situational awareness needed to inform NATO’s actions.
- Recommendation: Ensure that data on people involved in or affected by an activity or crisis is disaggregated by sex, whether it is collected by Allied and partner nations, NATO bodies, or International Organisations, and that this sex-disaggregated data is shared with and examined by NATO in order to inform more effective action.

**B-5:** Source: MEDSCAPE, Hospitals Muzzle Doctors and Nurses on PPE, COVID-19 Cases (Alicia Gallegos) March 25, 2020.

- Discussion: Quotations from surgeons: (1) “I also receive a daily reminder from hospital management: Don’t talk about it.” (about lack of PPE). (2) “We get a daily warning about being very prudent about posts on personal accounts. They’ve talked about this with respect to various issues: case numbers, case severity, testing availability, [and] PPEs.” (3) “Staff have been cautioned not to talk with the media and to be careful what they post on social media regarding COVID-19. The general rule is that only information approved by administrators can be shared,” (4) “The Administration warned the doctor not to

make such posts about PPE because it made the hospital appear incompetent and.....the larger message is that patients are money.”

- Conclusion: “Frontline” physicians are being warned not to speak or post publicly about their COVID-19 experiences, including PPE shortages, case specifics, and the percentage of full hospital beds.
- Recommendation: This is counterproductive. It is understandable not inducing panic, but these are real stories that are important for people to understand so they do stay home and increase the systemic pressure to get sufficient PPE, so that we can preserve our health care workforce for a problem that is going to get worse before it gets better. The health authorities should tell the public what we know and don't know.

**B-6:** The use of the appropriate face masks, as advised by WHO, cause the goggles of MIO team members to fog up and become difficult to see through.

- Discussion: In light of the COVID-19 pandemic, a great emphasis shall be given not only to safety procedures intended to reduce the risk of infection for MIO team members, but also to measures aimed at reducing the risk of MIO team members infecting civilians (merchant vessel crew, migrants, members of local communities) in case a carrier is part of the team. IAW ATP-71, MIO team members are required to use protective eye equipment in the form of sunglasses and goggles (Ballistic eyewear).. IAW with WHO recommendations, personnel must wear surgical or fabric/cloth masks without a valve. The use of masks as recommended by WHO aims not only to protect an individual from being infected, but also to protect others with whom the individual comes in contact (break the chain). Therefore, both goggles and masks are mandatory protective equipment for MIO teams. During trainings and simulated MIO exercises at NMOTC, trained teams faced the problem of foggy goggles (Ballistic eye wear) when simultaneously using masks as recommended by WHO. This is an issue not only for the trainees but also for trainers. The problem of foggy goggles, which was not an issue in the past, occurred when using goggles or sunglasses with surgical or fabric/cloth masks during training. This problem affects the operational capability and safety of MIO team members, because they will face difficulties in moving through target vessels, and will be forced to choose between eye protection (goggles) or protection from the pandemic (mask). Current MIO operation SOPs do not account for the use of these types of masks to be used with the required type of goggles. This effect occurs due to the lack of research into the use of pandemic masks for MIO team members, and also into the simultaneous use of proper pandemic masks with proper goggles. We identify the root cause of the issue of foggy goggles to be the lack of research

for standardizing the type of COVID-19 protective mask that must be used in combination with proper eye protection.

- **Conclusion:** The simultaneous use of protective masks (as approved by WHO), and proper eye protection (as required in ATP-71) result in foggy goggles which reduces the ability of MIO team members to see. There is no research or standard what dictates what masks shall be used, what type of goggles shall be used with masks, nor what is the interaction of these two pieces of equipment and the impact on the operational capability of MIO teams.
- **Recommendation:** In order to recommend the proper type of mask in the MIO operator TTP and to have a final solution to the problem of foggy goggles, research regarding the various types of masks, goggles, and other materials (liquids etc) that may reduce the impact of this effect is recommended to take place.

#### **B-7:** Information Campaigne

- **Discussion:** Two information campaigns need to be launched as soon as possible. The first is about effective preventive measures to be observed in all circumstances. Those measures are physical distancing, wearing face masks in public places, proper hand hygiene among others. The second campaign is about the importance of influenza vaccination in the following influenza season.
- **Conclusion:** A massive information campaign should be launched in order to control and minimise the transmission of the virus. Everyone must know the COVID-19 hasn't gone away yet. The influenza campaign would be very important in order to prevent overloading the health system and maintaining the capacity of medical systems.
- **Recommendation:** The timely implementation of preventive measures is recommended, and an information campaign is recommended about its importance. The influenza vaccine administration should be taken very seriously this winter, not only in missions, but also in the homeland of ALL soldiers and servicemen. Therefore an excessive campaign is recommended.

**B-8:** SARS-CoV-2 Subject Matter Expert (SME) network and exchange platform requirement. Source: MilMed CoE COVID-19 Response and MilMed CoE on Pandemic Lessons VTCs.

- **Discussion:** Since the beginning of the COVID-19 pandemic, there has been a visible inability to communicate quickly and in accessible network between medical cells at NATO missions, international organizations (MilMed CoE), and national subject matter experts in epidemiology, headquarters, medical facilities at ongoing infectious diseases and medical planners. Lack of access to a



commonly available information exchange tool / portal, results in delays or a complete absence of answers from national SMEs and international institutions. In consequences the NATO medical advisers and medical staff from deploy MTF has been deprived of support of current access to expertise and best practices regarding preventive measures, diagnostic, patient care and mitigation of COVID-19 disease.

- Conclusion: The result of this observation is the indication that tightening the cooperation between medical advisers of NATO structures and experts from the Alliance states and medical institutions will be possible by building mechanisms for secure and easy access to a dedicated portal. This solution may increase NATO's readiness to respond to the second wave of the COVID-19 pandemic.
- Recommendation: It is recommend the organization of a network of SMEs from each of the NATO commands, associated organizations and nations who can rapidly exchange critical information regarding detection, isolation, and mitigation of bio-threats. We feel development of this network should occur as soon as possible to respond to the second wave of COVID and should be maintained for the inevitable next public health emergency. These SMEs should have access to a dedicated platform on a secret network for sharing information at a classified level.

**B-9:** Need for Establishing a Near Real-time Surveillance System for NATO Theatres

- Discussion: NATO has been struggling to establish a near real-time surveillance system for decades, but these efforts have failed so far. Still, there is a strong need for new ways to establish a near real-time surveillance system for NATO theatres. A functional Medical Intelligence and Bio-Security capability cannot exist without such a system. It was visible that the lack of strong medical intelligence and information structures causing a gap of information circulation. This domain require also improvement.
- Conclusion: EpiNATO2, as used currently will not detect an outbreak close to real time as data is reported only once per week in a limited way. For years the DHSC has been experimenting with near real time surveillance, as for example syndromic surveillance. MEDICS should have supplied the Alliance with SENSOR, a syndromic surveillance system. However, MEDICS failed, and it is unclear if and when the programming problems can be solved. So, there is still a requirement for a near real time surveillance system for NATO. Nations asked for this not only in two SD projects but also in the COMEDS questionnaire done during the COVID-19 crisis. A functional Bio-Intelligence and Bio-Security capability cannot exist without such a system.
- Recommendation: Establish a near real time surveillance system for NATO.

**B-10:** Inside the EU OHQ OPLAN SOPHIA and SOP covered Management of Medical Support in OHQ, only the general medical support are designated.

- Discussion: These documents do not specify how set a COVID-19 preventive and protective measures and to establish an effective response plan in the event of infected cases in OHQ. Noone was prepared for issue like COVID-19 pandemic which affected the World in the year 2020.
- Conclusion: Operational documents does not contain measures and information that could be applicable to the epidemic/pandemic situation.
- Recommendation: SOP “COVID-19 preventive and protective measures in OHQ “ was made by OHQ CJMED. This preventive medicine and epidemiology focused SOP should be renewed according new diseases thread through the World.

**B-11:** Worst-case Scenario Outlined for COVID-19 This Winter.

- Discussion: The Government has been urged to use the next 2 months to make intense preparations for a potential second wave of COVID-19 this winter. Academy of Medical Sciences (AMS) outlines modelling of a 'reasonable worst-case scenario' that could see as many as 119,000 excess hospital deaths between June 2020 and September 2021 (95% confidence level, 24,500 - 251,000) in the UK. Experts warn that National Health Service (NHS) disruption from the first wave of COVID-19, a backlog of patients needing treatment, and the possibility of a 'flu epidemic, pose a serious threat to public health.
- Conclusion: Under the scenario, infections could be expected to rise gradually with a peak in hospital admissions and deaths, of a similar magnitude to the first wave, occurring in January and February 2021 and coinciding with a period of peak demand for NHS services. Prof Azra Ghani said “some of the U.S. states where we're currently seeing rises in infection cases currently have estimates of the reproduction number in the range 1.1 to 1.4”, and if translated to the UK that would mean the health service would still be overwhelmed.
- Recommendation: If infections will start to rise, and we start to see more cases, we'd expect the Government to take action. 1. Minimizing transmission of coronavirus in the community, with a public information campaign launched in the autumn; 2. Reorganizing health and social care staff and facilities to maintain separate COVID-19 and COVID-19-free zones to minimize nosocomial infection; 3. Ensuring adequate testing and personal protective equipment (PPE); 4. Establishing a comprehensive, near-real-time, population-wide surveillance system to monitor COVID-19 levels; 5. Preventing the worst effects of flu with a concerted vaccination effort. We must help as many

vulnerable people as possible, and as many health and care workers as possible, to get the flu vaccine. Testing and tracing programmes would be absolutely vital, because there's going to be a lot more people with infections that may actually similar in some ways the coronavirus infection, and we need to separate those that have true coronavirus from those that have influenza and other respiratory viruses. (Source: Medscape News UK, Peter Russell)

**B-12:** Back to School Guidance.

- Discussion: This summary would like to provide a quick tour of current guidance and point out some good resources. The most important points made in the American Academy of Pediatrics guidance: (1) Training Train school staff and parents on how to screen for symptoms of COVID-19 prior to the child's arrival at school, ideally on daily basis. Train students on proper hand hygiene, proper fit and wearing of masks, and even coughing and sneezing “etiquette.” (2) Face covering Face musk to be worn all day at school and not just in public areas. Exceptions can be made for children who have conditions that would make mask-wearing difficult. (3) PPEAll school personnel, notable nurses, should have access to PPE. (4) Building changes. The guideline suggests limiting points of entry and changing arrival and dismissal times for groups of students to limit the typical logjams. Other suggestions:- One-way traffic in hallways- Lunch served in classrooms- More frequent cleaning of outdoor play equipment- Physically distancing desks (1.8m is ideal, but 1 m may be just as effective if face coverings and partitions are utilized)- Teachers rather than students change class if needed- Keep students in small groups with a limited number of teachers, which makes contact tracing and possible quarantine easier. (5) Age Matters- Elementary school. All of the recommended mitigation efforts should be used. Creating small groups of students with the same teachers throughout the day may be easier than with secondary school students but probably would still be a challenge.- Middle and high school. Physical distancing appears to provide the most benefit out of all of the mitigation strategies. With older students, schools can consider alternate block schedules and school start and end times. Given that a single teacher does not typically teach all subjects, team-based approaches that expose students to a limited number of teachers, ideally with teachers (instead of students) changing classrooms, maybe the best approach. Lockers are discouraged, primarily because locker use leads a large group of students and presents yet another “high touch” surface.
- Conclusion: n/a.
- Recommendation: To follow the recommendations.

### **B-13:** Triple Antiviral Therapy May Speed up COVID-19 Recovery

- **Discussion:** In an open-label, randomized phase 2 trial in patients with mild or moderate COVID-19 infections, the median time to viral negativity by nasopharyngeal swab was 7 days for 86 patients assigned to receive a 14-day course of - lopinavir 400 mg and ritonavir 100 mg every 12 hours, - ribavirin 400 mg every 12 hours, and - three doses of 8 million IU of interferon beta-1b on alternate days, compared with a median time to negativity of 12 days for patients treated with lopinavir/ritonavir alone ( $P = .0010$ ) A total of 86 patients were randomly assigned to the combination and 41 to lopinavir/ritonavir alone as controls, at doses described above. Patients who entered the trial within less than 7 days of symptom onset received the triple combination, with interferon dosing adjusted according to the day that treatment started. Patients recruited 1 or 2 days after symptom onset received three doses of interferon, patients started on day 3 or 4 received two doses, and those started on days 5 or 6 received one interferon dose. Patients recruited 7 days or later from symptom onset did not receive interferon beta-1b because of its pro-inflammatory effects. Adverse events were reported in 41 of 86 patients in the combination group and 20 of 41 patients in the control arm. The most common adverse events were diarrhea, occurring in 52 of all 127 patients, fever in 48, nausea in 43, and elevated alanine transaminase level in 18. The side effects generally resolved within 3 days of the start of treatments. There were no serious adverse events reported in the combination group. One patient in the control group had impaired hepatic enzymes requiring discontinuation of treatment. No patients died during the study.
- **Conclusion:** Triple-antiviral therapy with interferon beta-1b, lopinavir/ritonavir, and ribavirin were safe and superior to lopinavir/ritonavir alone in shortening virus shedding, alleviating symptoms, and facilitating discharge of patients with mild to moderate COVID-19. Patients who received the combination also had significantly shorter time to complete alleviation of symptoms. The median hospital stay was 9 days for patients treated with the combination, compared with 14.5 days for controls (HR 2.72,  $P = .016$ ). In most patients treated with the combination, the SARS-CoV-2 viral load was effectively suppressed in all clinical specimens, including nasopharyngeal swabs, throat, and posterior oropharyngeal saliva, and stool. In addition, serum levels of interleukin 6 (IL-6) □□an inflammatory cytokine - were significantly lower on treatment days 2, 6, and 8 in patients treated with the combination, compared with those treated with lopinavir/ritonavir alone. The trial demonstrates that early treatment of mild to moderate COVID-19 with a triple combination of antiviral drugs - may rapidly suppress the amount of virus in a patient's body, - relieve symptoms, - and

reduce the risk to health care workers by reducing the duration and quantity of viral shedding (when the virus is detectable and potentially transmissible).

- **Recommendation:** This is a promising study that suggests that a regimen of interferon beta-1b, lopinavir/ritonavir, and ribavirin can shorten the duration of infection and improve symptoms in COVID-19 patients especially if started early in the disease, in less than 7 days of symptom onset. A recommendation, that the researcher should confirm in larger phase 3 trials that interferon beta-1b alone or in combination with other drugs is effective in patients with more severe illness (in whom the virus has had more time to replicate).

**B-14:** Public health and infectious disease experts warn that it would be vital to increase the influenza vaccination rate substantially this fall to mitigate a potentially deadly confluence of seasonal influenza with an anticipated second wave of COVID-19.

- **Discussion:** A bad flu outbreak this year would be ruinous for the healthcare system. If we continue to have COVID spikes as a second wave, there would probably be 50% or 100% more hospitalizations on top of those from the flu. According to the CDC, getting a flu vaccine is more important than ever as it will not only protect against flu, but it also will help preserve scarce medical resources for healthcare providers and COVID-19 patients. Although not as lethal as COVID-19, seasonal influenza causes a lot of deaths, especially among the elderly. In 2018-2019, the United States had 35.5 million influenza cases, with nearly 500,000 hospitalizations and 34,200 deaths attributed to the virus. The year before, a particularly nasty flu caused 79,400 deaths in the US. Scientists warn that social media is spreading misinformation about flu shots, such as the claim that they increase the risk of SARS-CoV-2 infection.
- **Conclusion:** Despite adult vaccination coverage of only 45% in 2018-2019, the vaccine prevented approximately 4.4 million influenza cases, 58,000 hospitalizations, and 3,500 deaths. Besides preventing flu infections, vaccines also reduce intensive care admissions and the duration of hospitalizations. The editorialists attribute the relatively low vaccination rate to public perceptions of low effectiveness, along with safety concerns.
- **Recommendation:** CDC recommends that every person 6 months and older get vaccinated for seasonal influenza. - A key effort to attain high influenza vaccine coverage, including near-universal coverage among healthcare personnel and other groups at high risk for COVID-19. - This effort should include a mass communication campaign, tailoring messages to specific populations. Scientists, health care providers, and public health leaders must counter these claims with clear, evidence-based information on the importance of influenza vaccination during the COVID-19 pandemic.

**B-15:** There was not enough PPE (masks, FFP2/FFP3, disinfection gel, other disinfectants, latex gloves) for OHQ EUNAVFOR MED SOPHIA members in the event of an epidemic.

- **Discussion:** During the operation, there was not enough PPE (masks, FFP2/FFP3, disinfection gel, other disinfectants, latex gloves for OHQ EUNAVFOR MED SOPHIA members. Although the situation was monitored during the development of the situation in China and it was recommended by CJMED to procure PPE material in time, it was decided by COMMAND and CJ8 that this material is not needed yet. Subsequently, the epidemic spread to European countries and PPE material could no longer be purchased.
- **Conclusion:** All units should be pre-prepared for situations like the COVID-19 pandemic and they should try to be equipped according to the indications of a possible threat.
- **Recommendation:** The logistic life support must have a storage of this material for the case of possible epidemic breakout to protect the personnel of OHQ/FHQ/units for minimal 1 month and moreover there should be established a functional plan for resupply.

**B-16:** How to prevent getting infected? CDC Guidance.

- **Discussion:** There are a number of personal measures that have to observe in order to prevent getting infected. (1) Wash your hands often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry. Avoid touching your eyes, nose, and mouth with unwashed hands. (2) Avoid close contact Avoid close contact with people who are sick, even inside your home. If possible, maintain 6 feet between the person who is sick and other household members. Put distance between yourself and other people outside of your home. Remember that some people without symptoms may be able to spread the virus. Stay at least 6 feet (1,5 meter; about 2 armslength) from other people. (3) Do not gather in groups. Stay out of crowded places and avoid mass gatherings. Keeping distance from others is especially important for people who are at higher risk of getting very sick. head side mask icon. Cover your mouth and nose with a cloth face cover when around others. You could spread COVID-19 to others even if you do not feel sick. Everyone should wear a cloth face cover when they have to go out in public, for example to the grocery store or to pick up other necessities. (4) Cloth face coverings should not be placed on young children under age 2, anyone who has trouble breathing, or is unconscious,

incapacitated or otherwise unable to remove the mask without assistance. The cloth face cover is meant to protect other people in case you are infected. Do NOT use a facemask meant for a healthcare worker. Continue to keep about 6 feet between yourself and others. The cloth face cover is not a substitute for social distancing. (5) Cover coughs and sneezes If you are in a private setting and do not have on your cloth face covering, remember to always cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow. Throw used tissues in the trash. Immediately wash your hands with soap and water for at least 20 seconds. If soap and water are not readily available, clean your hands with a hand sanitizer that contains at least 60% alcohol. cleaning icon. (6) Clean and disinfect Clean AND disinfect frequently touched surfaces daily. This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks. If surfaces are dirty, clean them. Use detergent or soap and water prior to disinfection. Then, use a household disinfectant. The most common EPA-registered household disinfectant external icon will work.

- Conclusion: These basic personal hygienic rules must be observed in any case.
- Recommendation: Follow and observe this CDC guidance.

#### **B-17:** Antibody Testing.

- Discussion: WHO: (1) Those who feel that they've been exposed to COVID-19 and did not have symptoms, (2) Those who are suspicious that they may have been infected but are asymptomatic. IMMUNITY The presence of antibodies to COVID-19 does grant immunity? Most probably, yes. But we need more data. REINFECTION People who tested positive for the virus then tested negative and then tested positive again. Was it truly a reinfection or was it just persistent RNA? Most probably it is because of a remnant virus RNA. ACCURACY OF TESTS We all have been infected with a coronavirus in our lifetime, with a common cold. If the test for SARS-CoV-2 COVID-19 virus antibodies are not really specific for that particular virus, there will be cross-reaction. Because it is a novel virus, many of the tests have not been validated by the U.S. Food and Drug Administration (FDA). FALSE POSITIVE TEST Somebody gets a positive antibody test to coronavirus and assumes that it's SARS-CoV-2 and thinks” I'm protected. I can relax.”
- Conclusion: GOALS For understanding the prevalence of circulating SARS-CoV-2 in the community. This is best done through serologic (antibody) testing, but this has its own challenges. The tests must be validated to avoid false-positive results.

- Recommendation: Consider doing antibody tests in order to know the prevalence of SARS CoV 2 in the population.

**B-18:** COVID-Associated Pediatric Multisystem Inflammatory Syndrome.

- Discussion: Pediatricians felt a sense of relief that children appeared to be spared from severe COVID-19 disease. But, in just the past few weeks, a new syndrome has emerged. New York City has recorded more than 100 cases of what's provisionally being called COVID-associated pediatric multisystem inflammatory syndrome. Ninety percent of affected children have abdominal symptoms early on, including abdominal pain, diarrhea, emesis, or enteritis upon imaging. A nondescript rash, fever, headache, conjunctivitis, and irritability are common, cough much less so □□under 25%.(!) Diagnosis: These patients have C-reactive proteins of about 240 mg/L on average, ferritin is quite high at around 1,200 ng/mL, and d-dimers of 2,300 ng/mL. We've also found very high brain natriuretic peptides and troponins in these patients, Therapy: Most of the affected New York City children have recovered after 5 or 6 days in the pediatric ICU with empiric treatment using intravenous immunoglobulin (IVIG), corticosteroids, and/or interleukin-6 inhibitors. However, five recent deaths are now under study. It is very interesting that this new disease is strongly linked to congregants and the poorness. This link must be investigated.
- Conclusion: It seems that our belief that children appeared to be separated from COVID-19 was false.
- Recommendation: Be cautious and prevent the children from COVID-19.

**B-19:** A clinical trial of remdesivir in COVID-19 patients suggests remdesivir shortens the disease course for hospitalized COVID-19 patients.

- Discussion: In the ACTT-1 randomized, placebo-controlled, double-blinded trial, researchers enrolled 1063 patients from February 21 to April 19 at 60 trial sites and 13 subsites worldwide (45 sites in the United States). The remdesivir group had 541 patients, and the placebo group 522. A small number of patients (49 in the remdesivir group and 53 in the placebo group) discontinued treatment before day 10 because of an adverse event or withdrawn consent. When data collection for this preliminary analysis ended in late April, 301 patients had not recovered and had not completed their final follow-up visit. Most of the patients had one (27%) or more (52.1%) preexisting conditions, including hypertension (49.6%), obesity (37%), and type 2 diabetes mellitus (29.7%). The mean patient age was 58.9 years, and the majority of patients were men (64.3%). The median number of days from symptom onset to randomization was 9, and 53.6% of the patients were white, 20.6% were black, 12.6% were Asian, 23.4% were Hispanic or Latino, and the ethnicity of 13.6% were not reported or reported as



other. Patients received one 200-mg loading dose on the first day of the trial, and then one 100-mg maintenance dose every day for days 2 through 10, or until discharge or death. Patients in the control group of the study received a matching placebo on the same schedule and volume. The clinical status of each patient was assessed every day, from day 1 through day 29 of his or her hospital stay, according to an eight-category ordinal scale. Time to recovery was defined as the first day during the 28-day enrollment period that a patient's clinical status met a 1 (not hospitalization, no activity limitations), 2 (not hospitalized, activity limitation, oxygen requirement or both), or 3 (hospitalized, not requiring supplemental oxygen or medical care if hospitalization was extended for infection-control reasons) on the eight-category scale. A score of 4 indicated a patient was hospitalized and needed ongoing medical care, but did not require supplemental oxygen; a score of 8 signified death.

- **Conclusion:** RESULTS: In the study of 1063 patients the analysis found a 10-day course of remdesivir patients had a median time to recovery of 11 days, compared with the median 15 days for patients on the placebo (rate ratio for recovery, 1.32; 95% confidence interval [CI], 1.12 - 1.55; P <.001; 1059 patients). Mortality was also lower in the remdesivir group (hazard ratio for death, 0.70; 95% CI, 0.47 - 1.04; 1059 patients), but the result was not statistically significant. By 14 days, the Kaplan-Meier estimate of mortality was 7.1 % in the remdesivir group and 11.9% in the placebo group. The findings also suggest remdesivir should be started, if possible before patients have such severe pulmonary disease that they require mechanical ventilation.
- **Recommendation:** There is clear and consistent evidence of clinically significant benefit for those hospitalized on oxygen but not yet requiring mechanical ventilation, Surprisingly, early dosing as measured from time to onset of symptoms did not seem to make a difference. SOURCE: New England Journal of Medicine; 22 May 2020; Medscape Medical News © 2020.

**B-20:** Reopen the society now? Iceland Cohort Study 3. Randomly selected testing.

- **Discussion:** In the randomly selected cohort, personally invited by the health service for testing, independent of symptoms. Though only 34% of the 6782 invited Icelanders responded to the invite, this still represents the best measure yet of how much of the underlying Icelandic population was infected, at least between April 1 and April 4, when this group was tested. The background rate of infection in Iceland in early April was around 0.6%.
- **Conclusion:** The test positivity in the targeted testing group was 14 % as we might remember. The population-based results (0.8%) show dramatically less positive cases. Random testing results (0.6%) shows even less, 0.2% is the

difference. The population of Iceland is 350,000, the 0.6% would extrapolate to about 2,100 people. So in Iceland might have 2100 infected patients, and there are 1,220 confirmed cases. It is possible that around two individuals infected for those whose symptoms brought him or her to medical attention (confirmed cases). This is not great, actually. While it implies that Iceland's social distancing policies have limited the spread of disease, it also implies that there is still a long way to go before herd immunity develops, and also that the observed COVID-19 death rate while higher than the true death rate but the difference is not of magnitude.

- **Recommendation:** Making decisions about reopening society without information about the population prevalence of this disease is like trying to land a plane blindfolded. The Iceland data show us the value of a robust community-testing apparatus before making the decisions.

**B-21:** Clinical Practice Guideline on the role of chest imaging in the management of patients with COVID-19.

- **Discussion:** There is no need for DISCUSSION.
- **Conclusion:** (1) Patients with mild features of COVID-19 Imaging is advised for patients with risk factors for COVID-19 progression and either positive COVID-19 testing or moderate-to-high pre-test probability in the absence of COVID-19 testing. Imaging is not indicated in asymptomatic patients or those with suspected COVID-19 and mild clinical features unless they are at risk for disease progression. Imaging is indicated in COVID-19 patients with worsening respiratory status. (2) Patients with moderate-to-severe features of COVID-19 Imaging is advised regardless of the results or availability of COVID-19 testing for patients who present with moderate-to-severe features consistent with COVID-19 infection and a pre-test probability of infection. For patients with COVID-19, imaging establishes baseline pulmonary status and identifies underlying cardiopulmonary abnormalities that may facilitate risk stratification for clinical worsening. (3) Patients with moderate-to severe-features of COVID-19 in a resource-constrained environment Imaging is advised when point-of-care COVID-19 testing is available and positive. Imaging is indicated for medical triage in resource-constrained environments for patients with suspected COVID-19 with moderate-to-severe clinical features and high pre-test probability of the virus. There is no role for imaging of patients with mild features of COVID-19 if there are significant constraints on resources. (4) Patients recovered from COVID-19 Imaging is appropriate in patients with functional impairment and/or hypoxemia after recovery from COVID-19. (5) Other scenarios Daily chest radiographs are not indicated in stable intubated patients with COVID-19.

COVID-19 testing is indicated in patients who are found incidentally to have typical findings of the virus on a CT scan.

- Recommendation: Follow the CPG in the daily management of COVID 19 patients.

**B-22:** Quick and Timely Lockdown Proved Critical.

- Discussion: The implementation of preventive measures, such as social distancing, border closing, wearing face masks in public places were able to slow down the spreading of the virus. The social distancing and isolation proved effective measures if that was timely implemented. For the timely implementation of measures, the proper situational awareness was inevitable. Situational awareness must be based on information. All information related to the threat and adequate countermeasures, such as means, tools, equipment and stockpiles. As well as the comprehensive and functioning Medical Intelligence is critical.
- Conclusion: Those Nations were relatively more successful in the fight COVID-19, which implemented adequate preventive measures as early as possible. Situational awareness is inevitable for the right decision making.
- Recommendation: The Nations must be able to gain all necessary information (Medical Intelligence) and based on that knowledge must act and react as early as possible in order to manage any crisis.

**B-23:** The enablement of staffing/tracking functionality was crucial for the successful collection of observations during COVID-19 crisis. This functionality made possible the submission of observations from different mobile office solutions across NATO. In addition, it enabled screening of observations collected from various NATO services, areas and nations.

- Discussion: Although the NU staffing/tracking functionality was implemented IOT gather observations during the crisis, it should not be disabled when the crisis ends. The COEs had called for this functionality for years but without success. The requests had been declined for various reasons. However, the functionality has been online for several months and is appreciated by all COEs. The COEs provided more than one hundred observations via NU NLLP. COEs either enter the NS system via national means (with different browsers etc.) or cannot enter the NS system at all. These one hundred and twenty observations would have been lost without this functionality. In addition, the tracking area allows the NU NLLP users to actually see tangible observations/lessons sortable and trackable according to various parameters. Although it is clear that the NU

database will never present full picture (due to security reasons and the fact that NCS use NS NLLP) it still makes the difference and makes sense.

- **Conclusion:** The NU Staffing/tracking functionality should be kept in use even in “post-COVID world” as Best Practice. It is a vital tool to get observations from COEs and from NATO nations/entities who have limited access to NS NLLP.
- **Recommendation:** SACT should request/task JALLC to identify conditions for keeping NU Staffing/tracking functionality online for regular use. JALLC should identify the limitations of such possibility and communicate them clearly to the Tasking authority. SACT should decide if such limited opportunity is beneficial for NATO (after discussion with COEs if feasible).

**B-24:** JCBRN Defence COE Operational Planning Support to SHAPE

- **Discussion:** During the COVID-19 crisis, the JCBRN Defence COE increased their CBRN reachback and operational planning support to SHAPE, specifically the SHAPE COVID-19 Task Force and Crisis Action Team (CAT). The support was in the form of CBRN reachback, COVID-19 planning assessment (including CBRN defence capacities, capabilities and logistics) and assistance in the development of Annex U, Operations in a CBRN Environment.
- **Conclusion:** COVID-19 crisis required enhanced support from the JCBRN Defence COE in the form of CBRN reachback and operational planning support. This CBRN reachback and operational planning support provided the SHAPE COVID-19 Task Force with critical CBRN planning and analysis that allowed them to conduct crisis response planning and OPLAN development. JCBRN Defence COE also developed a paper titled ‘<sup>3</sup>CBRN Defence operational planning support against COVID-19’ to provide analysis of enabling components of CBRN defence support of COVID-19 responses. The intended audience of the paper was mainly NATO commanders and their staffs involved in mitigating COVID-19 effects, especially when CBRN specialists are unavailable.
- **Recommendation:** JCBRN Defence COE will continue providing ACO (strategic and operational level commands) with CBRN reachback and operational planning support.

**B-25:** The MILMED COE conducted a weekly VTC using MS Teams through the peak of the European COVID-19 pandemic. The VTC forum enabled experts from across the Medical COE (located in Hungary and Germany), JMED and CBRN communities (to include the JCBRN Defence COE) to share information and coordinate projects. In addition, to provide coordinated support, reduced duplication and enhanced synergies, the

JCBRN Defence COE CBRN Reachback coordinated their support to NATO and its partners in conjunction with the MILMED COE.

- Discussion: The VTC provided an effective forum to discuss the latest developments and research regarding COVID-19. Whilst MS-Teams was new to most personnel in attendance, it was user friendly and was an effective communication method. New accounts, separate from the daily JCBRN Defence COE MS Team accounts, were required in order to access the MILMED VTC forum, which caused some initial technical issues. While some improvement to the VTC were and can still be made to improve the effectiveness and efficiency of the VTC, the forum was extremely informative and enabled the wider community to coordinate their efforts and share technical advice to a wider forum.
- Conclusion: With minor improvements, MILMED COE should keep the VTC as best practice. For future forums, a platform should be explored that will enable maximum participation to include civilian organisations to join the VTCs and enable homeworking/ institutional resilience. In addition, accounts should be created and used periodically to enable the crisis VTCs to begin quickly with fewer technical issues.
- Recommendation: MILMED COE is to accept the MILMED COE Routine COVID-19 VTC as best practice for pandemic crises.

**B-26:** Under the COVID-19 circumstances, the information flow between the COEs and HQ SACT has been complemented with regular VTC with the COE Directors. The chair of the VTC clearly has focused on the COVID-19 topic, and every COE has got an opportunity to present its contribution to the campaign. As the crisis continued, the VTC also began to discuss non-COVID-19 topics in order to increase information sharing and cooperation.

- Discussion: The well-structured, lead and focused VTC has unified the SACT and COEs effort under the COVID19 circumstances greatly exceeding the NATO COVID-19 LL Campaign. The common venue to present COEs activities also helped to deconflict COEs efforts and to optimize the outcomes across 25/26 COEs. Both, the existence of clear guidance (SACT) and feedback provided by COEs, created the feeling of mutual understanding enabling the tangible results of relating activities.
- Conclusion: Even when the crisis diminishes, the HQ SACT should continue with VTC on regular basis (as best practice) allowing full cooperation on various topics. In addition, HQ SACT might state main topic(s) of such meetings as well as they can be proposed by COEs.

- Recommendation: HQ SACT should decide on possibility to continue with regular VTC with COEs after the crisis. COEs are to support such initiative.

**B-27:** There is currently only limited NATO solution to access NR and no NATO solution to access NS information while working remotely. During crisis that require remote working such as COVID-19, the ability for NATO organizations to conduct work on and with NR and NS information is severely limited, which affect their ability to continue critical NATO business.

- Discussion: While security of classified information is essential, other nations have found solutions to conducting limited official work with classified information while working remotely. Without a NATO solution to allow this classified work while working remotely, NATO may not be able to conduct critical functions if remote work is required such as was the case during the COVID-19 crisis. NATO-wide solution is critical to comply with NATO AC/35-D/10 Guidelines on Physical Security' AC/35-D/2004 Primary Directive on INFOSEC' and AC/35-D/1034 Supporting document on the security protection of NATO Restricted information.
- Conclusion: Possibility to create MOS solutions for remote working in classified systems will allow NATO to continue essential official business during future crisis that requires remote working should be analysed.
- Recommendation: TA and RA to be identified. AB - NCIA.

**B-28:** The COVID-19 crisis forced NATO organizations to conduct remote work using MOS. However, since NATO does not have a shared NU portal that each organisation has access to such as SharePoint, there was no effective method of sharing data and information other than email. While email can share data and information, it is ineffective and inefficient at knowledge management of that data/information resulting in a lack of share understanding.

- Discussion: Since there is no single NATO shared NU portal that each organisation has access to such as SharePoint, there was no effective method of sharing data and information other than email, which is ineffective and inefficient. Personnel at major NATO staffs and headquarters have access to a shared NATO SharePoint site, not all organisations have similar access to or storage capability on that site (e.g. COEs). This created a lack of information sharing and shared understanding, which hindered NATO ability to effectively conduct essential official business and respond to the crisis. A NATO-wide share portal site such as SharePoint will allow NATO to continue essential official business, especially during future crisis that required remote working.
- Conclusion: Possibility to create NATO shared NU portal should be considered.

- Recommendation: To be identified by TA. Ta for discussion. AB NCIA.

**B-29:** During the COVID-19 crisis, there was insufficient consolidated and regular information sharing with the COEs of NATO's COVID-19 crisis response activities and mitigation measures.

- Discussion: SACT held coordination VTCs with COE Directors, these VTCs were focused on the COEs support to NATO COVID-19 crisis response activities., Inputs provided from ACT and ACO during these VTCs did not provide the COEs with a consolidate understanding of what NATO was working on, developing and how there were mitigating the risk.
- Conclusion: A process or method of regular sharing of consolidated information on NATO crisis activities and efforts with COEs should be developed.
- Recommendation: A process or method of regular sharing of consolidated information on NATO crisis activities and efforts with COEs should be developed. Concrete RA to be developed by respective TA. Proposed TA: HQ SACT.

**B-30:** The Resilience through Civil Preparedness Pilot course content does not reflect the latest revision of the seven Baseline requirements for Resilience.

- Discussion: Resilience Through Civil Preparedness Course is a pioneer course for professionals involved in NATO Resilience. This course is a collaborative effort of two NATO Centres of Excellence: Civil-Military Cooperation and Crisis Management and Disaster Response. The course was intended to take place in The Hague in March 2020 but was postponed due to the Covid 19 pandemic. The seven Baseline Requirements for Resilience are fundamental part for the Resilience concept and thereby part of the course content. These has been recently updated in the light of the pandemic.
- Conclusion: The update of the seven Baseline Requirements for Resilience requires an update of the Resilience through Civil Preparedness Pilot Course, as those a fundamental for the whole resilience concept.
- Recommendation: CCOE and CMDR COE need to and will update the course in the light of the current pandemic.

**B-31:** The defined Training requirements for NATO CIMIC do not reflect on pandemics.

- Discussion: The Training requirements for NATO CIMIC has been defined in the last Training Requirements Analysis (TRA) in December 2018. The Performance Statements of the TRA has been transformed into the Discipline Alignment Plan (DAP) thereafter. CIMIC COE as DH for CIMIC and Resilience

through Civil Preparedness (RtCP) is responsible for this transition. The seven Baseline Requirements for Resilience has been recently updated in the light of the COVID 19 pandemic. As stated by the requirement authority (RA) in the last Annual Discipline Conference (ADC) in June 2020, this needs to be reflected in existing and future training solutions.

- Conclusion: Performance Statements that are related to Resilience through Civil Preparedness and associated seven baseline requirements have to be revised in order to trigger an update of current training solutions for RtCP.
- Recommendation: CCOE as DH for CIMIC Training has to and will reflect the revised seven baseline requirements in the upcoming revision of the DAP.

**B-32:** During Covid 19 many training solutions were canceled/ postponed.

- Discussion: Restrictions to fight the COVID 19 pandemic caused many training institutions to postpone or cancel their courses and trainings. E-learning is often proposed as an interim/future training solution in this context. Developing a full e-learning substitute is time and resource intensive. In general, but especially in pandemic lockdowns, flexibility in how and where employees learn is increasingly important. Classical elearning solutions are often not suited for mobile devices and 'learning-on-the-go.' In addition, the human attention span has decreased to an average of 8 seconds, affected by an increasingly digitalized lifestyle (<https://time.com/3858309/attention-spans-goldfish/>). Furthermore, interaction is an effective method to bind trainees attention and use training time efficiently. UN OCHA developed micro e-learning solutions in order to maintain a certain level of training for personnel during pandemics, that are flexible and efficient. (<https://sites.google.com/dialoguing.org/home/training-and-partnership/un-cmcoord-digital-learning?authuser=0>).
- Conclusion: In times of pandemics and its implied restrictions, e learning solutions can be an effective tool to maintain a certain level of training. Instead of full developed online course, smaller solutions like micro elearning have the potential to cover parts of customers training requirements in an effective and efficient way.
- Recommendation: Here are 3 recommendation to make micro learning work: a. Make the learning modules/updates mobile compatible. The whole point of micro learning is flexibility for the learner. That flexibility means that all modules and all updates must be mobile-friendly. People do not go home and get on their desktops. They use their phones and gadgets and should have easy access to their learning with fast loads and 5-10 minute chunks. b. Less information at a time. Students make flash cards for a reason: They allow them to absorb small bits of information at a time and the brain processes it better.



Condensing a learning/training module down to the size of a flash card would be tough if it were all text, of course, but this is where graphics and videos come in. And they are far more engaging for learners. c. Include as much interaction as possible. An interactive quiz, even a game, can be a powerful learning tool. For more details : <https://elearningindustry.com/micro-learning-future-of-training-workplace>.

**B-33:** The immediate unavailability of face masks or veils has been observed at the beginning of COVID19 pandemic. The veils have been ordered and purchased several days later. Several sanitary measures were introduced into practice during the COVID-19 crisis. Some of them should be in place also under normal circumstances.

- Discussion: Each COE member should be delivered a proper number of onetime use veils in case of a threat. Liquid soap, disposable towels, towels holders and disinfection should be available at the working place at all times. Especially in the places of gathering (kitchen corners, corridors, classrooms etc.)
- Conclusion: The COE should possess a sufficient amount of personal and sanitary equipment for future crisis and day to day business as well.
- Recommendation: JCBRND COE (SD) should be keeping a stockpile of veils for the predicted time period (i.e. 30 days) and deliver those to COE members upon request. SD should initiate the project of sanitary enhancement of the COE also under normal circumstances. This enhancement to personal safety is to be tracked and documented in a List to have a clear picture.

**B-34:** During the use of MOS, the COE members were encouraged to participate at e-learning programmes (language, CBRN defence, COVID-19, ...) for their professional development - in the frame of available working hours.

- Discussion: On a mid- and long-term basis Those who participated at resp. programmes will benefit from their participation and indirectly the COE will benefit likewise.
- Conclusion: COE should encourage its members to continue participating in these programmes even after returning to the regular office infrastructure.
- Recommendation: Keep supporting online education of the COE members as best practice. By including in IER etc. TEED is to present and maintain a list of feasible learning opportunities before mid-July.

**B-35:** A capable CIMIC capability supports a comprehensive approach in the fight against pandemics.

- Discussion: It is clear that Armed Forces across NATO played and still play a significant role in a whole of government Comprehensive Approach to fight this

COVID-19 crisis. Also NATO is directly supporting via CEP-C and EADRCC. It is evident that Civil-Military liaison and support to non-military actors and the civil environment, being two of CIMIC's core functions, must be institutionalized before the COVID-19 crisis occurred. It seems that the national CMI/CIMIC structures/procedures in all member states and in NATO were in place before the crisis occurred. In general, timely information sharing (best practices) amongst the nations might be beneficial 1. in the current fight (adaptation) and 2. post the COVID-19 crisis (transformation). More specifically, in the NATO Comprehensive Approach Action Plan (CAAP) and the 2019 IMS BISC annual report on the CAAP (10 SEP 2019 'Enhancing Cooperation with External Actors' is one of the pillars of the implementation of the CAAP. Mentioned is that 'although NATO interacts with external actors at a relatively high frequency, efforts need to be put into sustaining and increasing the momentum throughout the whole of the organisation' and understanding and building a long-standing relationship in peacetime situations increases the quality of the interaction during a crisis.

- Conclusion: The ongoing COVID-19 crisis provides an opportunity to keep momentum of establishing permanent Civil-Military liaison and an exchange of information at all levels and this will contribute to a wished for “increased level of understanding of the Civil Environment.” In the end enhanced Civil-Military Interaction and a better understanding of the Civil Environment will contribute to enabling SACEUR's AOR, whatever the crisis, operation, mission or activities in general.
- Recommendation: Enhance Civil Military Liaison relationships to be better prepared for fights on future pandemics.

**B-36:** The Baseline Requirements for Resilience through Civil Preparedness require a socio-stability factor to reflect the relevant factors for society stability and their capability to support military operations in pandemics.

- Discussion: NATO and its member states must be ready for a wide range of contingencies, which could severely impact societies and critical infrastructure. In 2016, at the Warsaw Summit, Allied leaders committed to enhancing resilience by striving to achieve seven baseline requirements for civil preparedness: (1) assured continuity of government and critical government services; (2) resilient energy supplies; (3) ability to deal effectively with uncontrolled movement of people; (4) resilient food and water resources; (5) ability to deal with mass casualties; (6) resilient civil communications systems; (7) resilient civil transportation systems. Resilience is increasingly seen as the corollary of deterrence and reassurance measures in the classical military sphere as part of a comprehensive security strategy for the Alliance. The resilience of

civil structures, resources and services is the first line of defence for today's modern societies. More resilient countries--where the whole of government as well as the public and private sectors are involved in civil preparedness planning--have fewer vulnerabilities that can otherwise be used as leverage or be targeted by adversaries. One of the largest challenges is that we do not adequately know how civilian populations will react and/or behave during a crisis. Our resilience baseline requirements are top down, that is, dependent upon state and alliance actors to implement, often making a default assumption that average civilians are passive elements in a crisis situation. However, lack of trust in authorities could lead to increased "self-help" solutions by individuals or groups of people based on false or misleading information. Thus, defence against disruption or destabilisation requires not only state-based measures, but also societal capacities. Resilience is an important component in a comprehensive approach and civilian resilience (both institutional and within society itself) is crucial. This entails an improved civilian situational awareness and a clear understanding of evolving relationships between civilian and military--but prioritises citizen leadership relying on trust between citizens and the authorities to work together and support each other in crisis. However, open and democratic societies can be extremely vulnerable to disinformation and polarisation of political views, which destabilises the social trust upon which cooperation relies, and reduces resilience capacities to adapt or "bounce back." It makes a difference to security when people express distrust in a unified response to a threat, for example by defying quarantine regulations, hoarding toilet paper or responding with anti-social bravado ("I am not afraid of a disease"). Those countries that have higher levels of trust--regardless of political regime--have been more successful in combating the pandemic than those with lower trust levels. The current seven baseline requirements does not reflect the "trust"-component at all. The whole resilience system will collapse if the population does not trust and hence, does not follow governmental advice and concepts e.g. in a pandemic. This will have direct implications on the ability to provide civil support to military operations.

- Conclusion: The fight against pandemics is a national responsibility that strongly depends on the level of trust (between citizens and government) and social stability within a nation/society. The Baseline Requirements for Resilience through Civil Preparedness require to comprise a socio-stability component in order to reflect the essential pillars to fight a pandemic like COVID 19. Otherwise any resilience assessment will be incomplete and not reflect the status of stability/security in a pandemic.

- Recommendation: The upcoming review of the & Baseline requirements for resilience need to reflect the socio- stability factor of societies.

**B-37:** NATO Crisis Response System faces a delay in reaction time in pandemics.

- Discussion: NATO Intel and Planners have triggers established for military crisis events that initiate the NATO Crisis Response System (NCRS) planning process and/or ops plans. However, there were not sufficient Pandemic related triggers established to identify a non-military crisis that required a NATO response. Hence, the NCRS process was not initiated at the start of the crisis. Since the response was not of a military nature, SHAPE planners waited to be tasked by NATO HQ before starting prudent operational planning and before advising SACEUR to activate his pre-authorized Crisis Response Measures that could have been of use earlier in the COVID crisis.
- Conclusion: In order to react faster in future crisis, pandemic related triggers that identify the non-military crisis earlier and initiate NCRS Phase 2 (Assessment) and Phase 3 (Options Development) needs to be developed.
- Recommendation: SHAPE (?) requires to develop triggers that identify a similar crisis in its early stages and, hence, start NCRSM Phase 2 (Assessment) and Phase 3 (Options Development).

**B-38:** Prior to the crisis the Agency was steadily developing its medical expertise and logistic capabilities. It had a small team that were expanding the portfolio of offerings and potential suppliers. This small team became the hub and primary responders to all the requests for medical supply during the crisis, and they coped magnificently.

- Discussion: As well as an exponential growth in demand on the medical logistics team, across the world readily available supplies were inadequate so costs escalated and varied almost by the minute.A
- Conclusion: Medical Support Partnership would be a useful addition in this type of scenario as the contacts with suppliers would pre-exist and supply agreements easily arranged. Similarly, such a partnership would be capable of managing ready use stock either controlled by NATO or within supplier premises.
- Recommendation: That the Agency Supervisory Board approves a Medical Support Partnership and the member nations of the partnership consider funding a supply of ready-use equipment and supplies available for their use in either a second wave of COVID or some other medical crisis.

**B-39:** At the outset of this crisis the very small medical team were overwhelmed with the level of demand and the confusion caused by the multitude of different actors engaged in the process. The Agency had to rapidly generate a team to coordinate the demands and requests placed on it.

- Discussion: As well as dealing with the internal consequences of the COVID crisis (teleworking, testing, monitoring, reporting, lockdown etc.) The Agency was central to supplying considerable quantities of PPE for many nations and providing mobile hospital facilities to augment existing but insufficient national facilities. The Agency is manned very tightly and only resourced to carry out its existing and contracted role, leaving no spare capacity for activity beyond that. The crisis required the Agency to pull people from existing effort and redirect their work towards solving the logistics issues related to COVID. The small medical team (3 staff) did not have the additional capacity to cope with the escalation in demands placed on them so also needed help.
- Conclusion: A small Crisis Response Organisation funded for the Agency would allow a rapid and coordinated response and could be used in peacetime to cover other vacancies or to resource shortfalls.
- Recommendation: The Agency should consider a minimum Crisis Response Organisation (CRO) at the NSPA in peace time to respond to an emerging crisis.

**B-40:** In a crisis there is no authorization within the Agencies to respond to extraordinary circumstances allowing management to take extraordinary actions, e.g. increasing working hours (with appropriate compensation), short-cutting or bypassing bureaucratic procedures (Finance, Recruitment, Procurement). Establishment of a revolving fund would also allow for flexibility in these cases.

- Discussion: There is no laid down principle of what comprises a crisis, what the response can be, its effect on the CPR, NATO Financial Regulations and NATO Procurement regulations. Who can determine that crisis management conditions exist and how. This would be relevant in major operational circumstances as well as particular crisis events, such as the COVID pandemic. While this will increase the risks to a small degree, this is outweighed by the additional flexibility to respond to meet the urgent demands of the crisis.
- Conclusion: Within a crisis situation there must be a legitimate relaxation of some key practices to enable rapid reaction to serve the crisis solution. This could be a planned as a managed escalation in stages, each level giving increased freedoms to act.
- Recommendation: NATO HQ should consider an escalating procedure to authorize certain exemptions and waivers against the current regulations in order to give freedom to the Agencies to deliver more effectively during a crisis. They should also prepare either a standing revolving fund or an immediate raising of such a fund for each crisis as a matter of course.

**B-41:** The consultation process between NATO Bodies during the COVID-19 crisis was impaired by the lack of a common audio/video collaboration solution across the NATO Enterprise.

- **Discussion:** In a period of social distancing and teleworking, different NATO Bodies use different tools for audio/video collaboration (e.g. Webex, GoToMeeting, Polycom, Microsoft Teams, Skype for Business, WhatsApp) which are not interoperable. This lack of interoperability is worsened by corporate firewall security controls which block some or all services. The end result in many occasions is the inevitable recourse to personal devices using “dirty Internet” connection. Lack of capability results in unnecessary risk to NATO information and to reduction of effectiveness in fulfilling NATO's mission.
- **Conclusion:** The lack of a common solution for audio/video collaboration is limiting NATO's effectiveness.
- **Recommendation:** NATO should prioritize the identification and provision of a common solution for audio/video across the NATO Enterprise, and with Non-NATO Entities connected to the Public Internet, to improve NATO's resilience and continuity of operations.

**B-42:** Many CMRE staff have become accustomed to remote teleworking from home. During the COVID-19 crisis such work has become more efficient and effective as staff have adapted to the new situation. However, the tools provided by NCIA for teleconferencing have been largely inadequate.

- **Discussion:** Prior to the COVID-19 crisis, teleworking was uncommon. In the future it is anticipated that more CMRE staff will work remotely, more frequently. There are many well-documented advantages to remote/home working, including saving travel time and flexibility in balancing home and work needs. It is noted that the CMRE HR branch took swift action to minimize the approval process for teleworking. Such action assisted the transition to teleworking. However, remote/home working has to be supported by adequate tools. In this respect, the tools provided by NCIA for teleconferencing have been largely inadequate. The only “approved” PC-based teleconferencing tool available to CMRE is Skype for Business which is restricted to the REACH network which is only available to CMRE (although not all staff) and NCIA personnel. WebEx teleconferencing has been extensively exploited by staff, but most commonly on personal devices which has required an exception from the Security Office to be issued on a temporary basis to permit official CMRE business to be conducted on personal devices. The use of WebEx has been generally successful, once standard protocols and “rules of engagement” have

been learned and established, such as microphone muting and the importance of an experienced lead/facilitator. A continued, increased level of remote/home working will see such lessons for effective teleconferencing institutionalized.

- Conclusion: Ready access to standard VTC capabilities such as WebEx is necessary to support effective and efficient home/remote teleworking. Effective use of the tools requires experience and continual use.
- Recommendation: It is recommended that NCIA continue to seek a solution to an approved personal remote teleconferencing capability for CMRE staff<sup>2</sup> and indeed staff in other NATO HQs.

**B-43:** CMRE's response to the COVID-19 pandemic were largely reactive and resulted in a direct cost to the CMRE of more than 260,000 EUR.

- Discussion: The COVID-19 Italy-wide lockdown was announced 9 Mar 2020. In response, CMRE's director closed the Centre temporarily. Over the next few weeks, the number of staff working on site was gradually increased, while the majority of CMRE staff continued to work from home. Up until 22 May 2020, it is estimated that 11% of the CMRE's resource was lost owing to the crisis, representing a total direct labour cost of more than 260,000 EUR. This cost may have been significantly less if adequate business continuity plans had been in place. One challenge was the lack of IT capabilities for staff to be able to work remotely, particularly to be able to continue scientific work. The problem was solved by the CMRE's IT staff and NCIA staff setting up the necessary VPN connectivity to the servers and procuring additional laptops. A fit-for-purpose business continuity plan would have anticipated such a situation with contingency measures already in place.
- Conclusion: CMRE lacked business continuity plans to ensure an effective and timely response to the COVID-19 health situation which led to a significant cost to the Centre.
- Recommendation: CMRE review and improve its business continuity plans.

**B-44:** The STO and OCS were engaged (CMTF, NAC discussions) late in the process of the NATO HQ COVID-19 response, mostly through ad hoc and informal channels. The consequences were that S&T advice, activities and options are not integrated in the OPLAN nor are they fully supportive of future pandemic plans.

- Discussion: Lack of institutionalized NATO STO crisis response, supporting NATO operational and strategic activities.
- Conclusion: Lack of clearly articulated and practiced role for STO limits the ability of S&T to enable development and implementation of a NATO response to a crisis.

- Recommendation: Develop SOPs (standard operating procedures) to support STO crisis response activities to facilitate alliance operations, collaboration and information sharing, especially in support of operational or contingency planning. Ensure that CSO is engaged in future crisis management exercises, as well as development and execution of operational plans. Such SOPs should include creation of a standing committee with a variety of international organizations (e.g. UN and EU) on S&T contributions to resilience and civil emergency planning.

**B-45:** In April the STO created the S&T COVID-19 Oversight Group (COG) bringing together key national S&T Directors to support quick information sharing and collaboration. While this was successful in ensuring best practices, sharing of national strategies and oversight such activities were ultimately limited by the ad hoc nature of this support and coordination.

- Discussion: Lack of institutionalized STO crisis response.
- Conclusion: Lack of surge emergency and innovation resources and alliance processes limits STO-OCS's ability to facilitate national responses to crisis.
- Recommendation: Develop SOPs (standard operating procedures) to support STO crisis response activities to facilitate Alliance collaboration and information sharing.

**B-46:** In mid-April the STO created the COVID-19 Science Connect portal for quick information sharing, collaboration exploration and the chief scientist challenge. While these were successful, many opportunities for collaboration or rapid application of S&T solutions were missed or deemed impractical as no funding or surge personnel were available to provide support or coordination. This ultimately limited the STO's ability to support nations, employ CMRE as a surge capability (as it is customer funded) and bring together nations to support NATO.

- Discussion: Lack of agility funding to support crisis response or rapid innovation activities.
- Conclusion: Lack of surge emergency and innovation resources limits the STO-OCS's ability to rapidly respond to urgent priority demands.
- Recommendation: Provide limited (< 1M€) agility funding for rapid innovation and emergency response capabilities. Funding is in the process of being requested through the financial controller. This should include use to support national VNCs (e.g. travel to NATO HQ), provision of advice from national experts, innovation funding of promising short term projects or the application of emerging/disruptive technologies to respond to the immediate crisis.



**B-47:** The STO and OCS were engaged (CMTF, NAC discussions) late in the process of the NATO HQ COVID-19 response, mostly through ad hoc and informal channels. The consequences were that S&T advice, activities and options were never fully integrated in the NATO response to COVID-19 and the subsequent ACO developed opplan.

- Discussion: Lack of a formally defined and practiced role for the NATO Chief Scientist in NATO emergencies.
- Conclusion: Lack of clearly articulated and practiced role for STO-OCS limits the ability of NATO S&T to inform and impact NATO's response to emergencies.
- Recommendation: Formally define the role of S&T advisor (Chief Scientist) within NATO emergency response plans and procedures.

**B-48:** Teleworking was maximised by the rapid procurement of an additional 1200 portable devices and their configuration, with appropriate security during the first month of the crisis. In addition, the Agency's video conferencing capability and bandwidth were upgraded to accommodate the dramatic growth in remote working. Nearly all Agency personnel who could homework were teleworking after approximately a month and overall the business output remained largely stable meeting normal customer demands, as well as those driven by the crisis simultaneously. This change in ways of working has triggered further technical innovation that will support a new post-COVID-19 way of doing business. The time to rollout of some capabilities has been determined by the speed of the CIS security accreditation, a step outside the Agency's control.

- Discussion: The COVID crisis provided a spur to change the focus of replacing desktop IT infrastructure with predominantly mobile devices, which allowed the vast majority of staff to continue working normally but from their homes. This changed the perception of teleworking across the Agency as output was maintained despite only 10% of staff remaining on-site to carry out critical tasks. Further lessons showed that after some time of teleworking there is a need for improved coordination, so a need to return to the office to meet with others.
- Conclusion: Teleworking and working from remote locations are now an accepted norm within the Agency with acceptance that many new methods of working will be possible. IT support and innovation is critical in enabling this new thinking.
- Recommendation: The Agency will evolve to a new post COVID-19 way of doing business enabled through the design and delivery of an associated IT Vision.

**B-49:** For transportation of medical materiel from manufacturers in the Far East, nations consolidated their requirements and utilised the SALIS capability to move over 850

tonnes of supplies over strategic distances, without concerns on diplomatic clearances for military aircraft. Non-member nations generated significant enquiries about using SALIS hours.

- Discussion: Many of the supplies of PPE and other material to deal with COVID was provided by CHINA and other non-NATO nations. The restrictions on the ability to fly military transport aircraft to these locations precluded the use of the SAC and national military assets. With the SALIS contract it was possible to fly heavy lift civilian aircraft into those locations to bring back bulk supplies of PPE and other goods.
- Conclusion: This demonstrates a continued need to provide civilian air transportation as an alternative to military aircraft in order to reach some non-NATO suppliers in times of crisis.
- Recommendation: Nations who are not members to consider joining the SALIS partnership to harness a multinational mechanism to move large quantities of supplies over strategic distances without concerns about military aircraft diplomatic clearances. Extending the membership of the SALIS partnership is the responsibility of the individual nations, encouraged by the Agency Supervisory Board.

**B-50:** The problems of border crossings in turn forced further competition for limited air transportation, which was used to overcome the delays imposed by crossing multiple borders using road haulage across Europe.

- Discussion: Reverting to air transportation for all supplies rapidly increased costs for delivery of crucial supplies and being in shorter supply than road transportation, further increased competition and pricing. Along with this, the air logistics hubs suffered problems in dealing with the increased flow of goods and traffic that would otherwise have travelled by road.
- Conclusion: Exceptions are needed in border crossing for essential military supplies and personnel to ensure safe continuation of the operation. Similarly, in provision of much needed medical supplies to support the COVID treatment the safe border crossing exceptions would ease transportation considerably.
- Recommendation: Freedom of movement is not only put in place for military mobility during a crisis but also for the movement of commercial transportation of materiel and civilian personnel supporting movement of these commercial supplies. Freedom of movement for NATO International Civilians (NICs) in support of operations should also be assured, this could be either through recognition across all Allies of the NATO Travel Order also applies to NICs as well as military personnel, or through provision of a universal NICs Identity

Card. Freedom of movement is a NATO HQ diplomatic responsibility to improve and ensure access across borders.

**B-51:** Nations closed their borders to contain the virus and stop its spread. This hampered the rapid surface movement of commercially provided medical materiel, or the deployable infrastructure used to augment medical facilities together with the associated supporting personnel.

- Discussion: With borders closed to protect nations from the COVID pandemic, this hampered the supply of both operational stocks and medical supplies from reaching the demanding nations. It also delayed activities in theatre for building programmes as supplies of material could not cross borders into the country. Other essential supplies had to transition from road transport to much more expensive air transportation into theatre. Similarly, NIC staff and contractors needed to replace, refresh or as new employees faced severe restrictions to enter the country and start their work.
- Conclusion: Exceptions are needed in border crossing for essential military supplies and personnel to ensure safe continuation of the operation. Similarly, in provision of much needed medical supplies to support the COVID treatment the safe border crossing exceptions would ease transportation considerably.
- Recommendation: Freedom of movement is not only put in place for military mobility during a crisis but also for the movement of commercial transportation of materiel and civilian personnel supporting movement of these commercial supplies. Freedom of movement for NATO International Civilians (NICs) in support of operations should also be assured, this could be either through recognition across all Allies of the NATO Travel Order also applies to NICs as well as military personnel, or through provision of a universal NICs Identity Card.

**B-52:** During the COVID crisis, Nations were competing amongst themselves in a very limited market place seeking the same medical supplies, equipment and consumables. It was also detected that different national agencies were also competing with one another. As there were insufficient supplies and demand was extremely high, this forced up prices and resulted in contractual fratricide between nations. This occurred not only for supplies and equipment but also for transportation to move the materiel.

- Discussion: While a unique set of circumstances for this crisis, any future business continuity crisis such as this would benefit from a centrally coordinated response with a single point of contact able to manage and integrate the disparate numbers of demands into a unified set of requirements.

- Conclusion: Future business continuity crisis of this nature would benefit from a central controlling point and preexisting stocks or supply agreements to ease pressure on the Agency.
- Recommendation: Nations to put in place multinational solutions for commercial support through NSPO Support Partnership contingency planning before a crisis, to avoid the resort to national solutions during the onset of a crisis. This will also have the advantages of unifying effort by countering unnecessary competition, increasing responsiveness by reducing delays and achieving cost savings through economies of scale. This equally applies to pandemics as well as crisis associated with collective defence. Coordination across national demands should be actioned by the EARDCC for crisis management and for the Agency at other times.

**B-53:** NATO was caught relatively unprepared for the COVID pandemic and its repercussions around the globe.

- Discussion: Completely unique event causing major lockdown of businesses, borders and major medical impacts. However, supply lines closed, building material, food and fuel could not cross borders by road to Afghanistan etc. This resulted in additional cost for air transportation. If air transport had also stopped there could have been impact on supplies reaching operational theatres.
- Conclusion: While the pandemic quickly spread across the globe, nations and international organisations were not prepared for the scale of response needed or its impact on the activities in those nations.
- Recommendation: In order to address the lack of resiliency in the medical domain and to ensure responsiveness, especially before the next wave of COVID but also in support of current operations, nations should consider establishing a Medical Support Partnership. This event and future examples should be prepared for through the NATO Business Continuity Strategy Group for normal activity but a similar effort may be necessary in the Military Committee areas for impact to ongoing or future operations.

**B-54:** NATO Bodies and Nations have been unable to collaborate, exchange and access information effectively when not physically in a NATO premise due to the heterogeneous nature of the internet-connected networks used by NATO bodies and Allies.

- Discussion: Unlike the NS WAN, which connects all NATO bodies and has a point of presence in all member nations, the internet-connected networks are unique to each NATO body with Allies typically relying on national networks. While there are some public facing portals available for specific Community of

Interest (COI) collaboration, there is no standardized capability that allows for collaboration, information access and exchange on the internet connected networks. The challenges created by this were well known; however, with the persistence of the NS WAN, they did not compromise the effective functioning of the Organization as long as staff and Allies were able to access their NS terminals either in NATO facilities or in capitals. With the COVID-19 pandemic, the majority of personnel both in NATO facilities and capitals have been forced to work from home with mixed results. Not all NATO bodies and member nations have the ability to work remotely and those that do have mixed capabilities. The ability to communicate, even via e-mail, is hampered by the absence of centralized controls and services as there is not a single management authority. To communicate between SHAPE and NATO Headquarters, for example, requires staff to know specific e-mail addresses rather select a name from a global address list. It is even harder when trying to reach Allied points of contact as most Allies have multiple national networks. NOTE: This observation is classification neutral. The promotion of any one network to NR would not improve the situation and, in the absence of a coordinated approach, could make it worse.

- Conclusion: Absence of a NATO-wide internet-connected network capability has negatively impacted the ability of Allies and NATO Bodies to collaborate, exchange and access information when they have been unable to access NATO premises or NATO-network connected facilities in member nations.
- Recommendation: (1) Develop a NATO-wide (Enterprise and Allies) approach to the interconnection of existing internet-connected networks. Action Body: NHQC3S and the C3 Board. (2) Identify remedial actions that could be implemented to improve / implement interconnection between existing NATO networks (Enterprise). Action Body: NCIA.

**B-55:** The Defence Forces (DF) has been involved in the transportation of suspected COVID-19 positive civilians to and from COVID-19 Test Centres. The vehicles used, while military owned and operated, are civilian specification and civilian design, passenger type vans. A COVID-19 Protective Barrier (PB) has been developed and installed in military vehicles. This has proved to be an effective means of isolating passengers from military drivers, and other passengers.

- Discussion: Since the commencement of the COVID-19 crisis, military involvement in “Patient Transfer” has been an effective part of the DF response. In collaboration with the Health Service Executive (HSE), the DF has transported civilians to and from Coronavirus Testing Centres and hospitals. Risk assessments identified the hazard of Coronavirus transmission from potentially infection passengers to military drivers and amongst each other. In

order to mitigate the risk, the DF designed, manufactured and fitted COVID-19 Protective Barriers (PBs) to a number of military vehicles. The PBs are made from a non-porous plasticised PVC, which can easily be decontaminated with appropriate disinfectant. Manufacture of the PBs can be complete in 30 minutes, with fitting taking a further 30 minutes. The COVID-19 PBs can be removed and replaced with ease; see attached photographs. A military medical doctor and a Health & Safety officer has approved the design. Currently the DF has fitted the PBs predominantly in civilian spec Ford Transits vehicles, which are in use for the transportation of civilians who are suspected COVID-19 cases. The design, however, is such that it can be altered to fit other vehicle types, as necessary.

- Conclusion: The COVID-19 PB is a useful force protection health measure. It provides protection to both vehicle drivers, crew and other passengers from travelers who may be COVID-19 positive. It is cheap and made from readily obtained material. It can easily be manufactured and installed by military personnel.
- Recommendation: DF continues to utilize the COVID-19 Protective Barrier (PB) when transporting passengers who are suspected COVID-19 positive cases.

**B-56:** Lack of laptop for partnership status officer.

- Discussion: All NSO staff, with the exception of the Partnership Status Officer, was equipped with notebooks/tablets prior to the COVID crises and therefore immediately able to work from home on matters up to NATO UNCLASSIFIED. The partnership status officer was/is not able to work from home even though they have access to Magellan (NU) in their office.
- Conclusion: This pandemic took us by surprise therefore it was not anticipated that all staff would also need portable stations in the event they should work at home. Since partner officers have access to NU in their office, they should also be able to work to NU levels at home.
- Recommendation: Equip all staff- regular and partner status with laptops or notebooks to ensure business continuity and prepare should there be a second wave of infections in Europe.

**B-57:** For Ship's crews Live Virtual Constructive Training can mitigate the effects of a pandemic on training in preparing for a NATO deployment or maintaining the readiness status.

- Discussion: During a pandemic situation measures like social distancing, reduced personnel/home office working structure have impact on mainly the land based HQs, training centers etc. On the other hand measures for ships and

their crews differ from navy to navy, but they will be affected as well, especially if they are under training for achieving their operational readiness, preparing for a NATO deployment/ mission or need warfare training for maintaining their readiness status. Moreover the tactical/operational situation may require ships continuing sailing, patrolling, operating etc. For example, FGS Mecklenburg-Vorpommern, was deployed to the Aegean Sea from January to April 2020 during the COVID-19 outbreak. The Crew remained onboard the ship for nine weeks in a row to prevent an infection.

- Conclusion: Live Virtual Constructive Training (LVC-T) which is currently in the implementation phase in NATO, can be utilized to mitigate the negative training effects of a pandemic. If the required technical prerequisites for distributed synthetic training are implemented in the NATO navies, then ships/crew teams have the flexibility to connect to the training environment via a pier side or even SATCOM connection at sea and they will be able to train/exercise regardless of the geographical location and ship's position. When such a distributed synthetic training environment (like LVC-T or Joint Mission Training through Distributed Simulation (MTDS)) are available, it is only an organizational challenge to connect the required entities to conduct national or international training, a pre-deployment training for a SNMG or execute mission rehearsal for an upcoming operation without being negatively affected by a pandemic.
- Recommendation: Continue the implementation of LVC-T as described in the LVC-T Concept and the LVC-T Implementation Paper; MARCOM as the requesting NATO entity for LVC-T needs to encourage nations to gradually build the technical prerequisites and establish a national organisational structure and procedures to facilitate national and international training. This includes to establish the required training-databases, which are readily available for all NATO nations and will allow a quick and flexible training setup.

**B-58:** NATO SP COE personnel can perform their daily working activities having access to the server through a Virtual Private Network (VPN).

- Discussion:
  - When: On daily bases
  - Who: All NATO SP COE personnel.
  - What: A virtual private network (VPN) is an Internet security service that allows users to access the Internet as though they were connected to a private network. VPNs use encryption to create a secure connection over unsecured Internet infrastructure

- How: All devices that connect to the VPN set up encryption keys, and these keys are used to encode and decode all information sent between them.
- Drawbacks of using VPNs for access control: Single point of failure. Attackers cannot monitor VPN-encrypted traffic from outside the VPN. But if they are able to connect to the VPN, they gain access to any resources connected to that network. It only takes one compromised account or device for an attacker to gain access to VPN-gated data.
- Conclusion: VPN can allow all NATO SP COE personnel to have access to the NATOSPCOE server, documents, and archives through a secure connection. The COVID 19 emergency experience gained during this period, shows how the VPN was effectively adopted IOT to grant the continuity of the activities.
- Recommendation: The use of VPN connectivity should be kept on IOT enhance the business continuity in a safe way especially when travelling abroad.

**B-59:** The Framework Nation foresaw the working programme in shifts as one of the possibilities to mitigate COVID19 outbreak. The COE adopted this option in coordination with the smart working IOT reduce the presence of NSPCOE personnel within their offices.

- Discussion: Working in shifts is defined by business Cambridge Dictionary as “a system in which groups of employees work for different agreed periods during the day and night”. Working in shifts involves scheduling personnel to perform their job duties during the entire week. There are different types of working in shifts schedules. The personnel could be assigned to work regularly during that shift, called a fixed shift, or to work rotating shifts. Fixed Shifts: Employees are assigned to a fixed shift work the same hours every day while rotating Shifts: Instead of having the same shift every day, workers on rotating shifts work different hours depending on the day (for example, one may work first shift three days a week and second shift two days). In order to ensure the business continuity within NSPCOE and to reduce the risk of infection, all Italian colleagues living within the city of Vicenza were requested and planned to work in shifts, limiting, in this way, the number of the personnel in the offices. This measure is aimed to avoid unnecessary assembly as well as to reduce the risks arising from commuting through public transportation. This alternative work programme, is interconnected with smart working programme. The working shift program chosen within NSPCOE was from Monday to Saturday (6 hrs per day) and this programme can be adopted on regular bases. The positive aspects that the NSPCOE observed during the COVID19 outbreak are the following: Non-traditional hour allows personnel to commute during less busy travel times by avoiding heavy traffic on the roads and crowded public



transportation; Those who work non-traditional schedules also enjoy attending to errands during less busy times of the day. They can go shopping, for instance, while most other people are at work; Families may be able to avoid the expense of childcare.

- Conclusion: Due to this way of re-adapting the working conditions, by interconnecting the “working in shifts” with the “Smart Working” programme results in augmented productivity, objectives fulfilment and shared results. For the COE, this alternative programme means to ensure the business continuity, generate savings but also for the personnel and to foster their work-life balance.
- Recommendation: NATO SP COE (NSPCOE) should continually monitor, adjust or implement working in shifts in coordination with smart working programme to ensure business continuity for the NSPCOE staff in case of emerging crisis and also to adopt this programme on daily basis by the COE personnel, in case by case bases.

**B-60:** It was observed a general supply shortage of personal protective equipment (face masks, medical gloves and bactericide gel) during the initial phase of COVID19 outbreak. Even not one-cent from welfare budget has been spent to supply PPE, distributed to the NSPCoE personnel for duty reasons. Masks procured through welfare budget, upon Senior National Representatives requests, were intended for private use and in benefit of the personnel and their families. Moreover the actions taken to face the current pandemic were managed by using also some of the items used in the training process by the Training Branch.

- Discussion: Due to the fact the COVID19 became a pandemic outbreak, the high demand of PPE and the related COVID19 restrictions affected all the world and the production of these equipment was not able to respond to the unpredictable demand of the customers. The Framework Nation and NATO SP COE promoted a strong culture of safety that includes a commitment to personnel safety, adequate access to Personal Protective Equipment (such as masks, gloves and bactericide gel). The purpose of developing a positive and strong culture of safety in the workplace is/was to promote habitual safety practice. Due to the fact that the international markets were overwhelmed by the high demand of PPE, the shortage of PPE affected also the NATO SP COE's supply chain. Personal protective equipment constitutes of face masks, gloves and bactericide gel. Face masks reduce the transfer of saliva and respiratory droplets to others and help block blood and other potentially infectious materials from the skin, mouth, or nose of the wearer. FP2 and FP3 without filter are the most effective protective face masks even if the surgical mask can also offer a basic protection. Due to the fact the particularities and the consequences of the outbreak are still unpredictable for the scientists, it will be in handy to have a stock. Establishing a

dedicated line in the POW with an 'activity code' to ensure the procurement of PPE.

- Conclusion: The usage of Personal Protective Equipment can mean the difference between going home healthy from work and suffering ill health. The supply chain of the PPE during an emergency can be affected by the high demand and the lack of the PPE for the personnel and their families can influence negatively the business continuity of the NSPCoE. It should also be considered that the current guidelines stipulate that face masks for virus and bacterial infection control are the most effective when the contagion is spread through coughing and sneezing (such as with the coronavirus).
- Recommendation: The NSPCoE should adopt concrete measures IOT ensure an adequate number of PPE for its personnel. It is necessary to establish a dedicated line in the future POWs, with an "activity code" for having an adequate stockpile of PPE. In addition, it's worth to assess the idea to purchase such protective equipment for the staff families' members in order to protect the staff itself. The amount of PPE should be established in line with CONTPLAN. It is up to the NSPCoE functional areas to make the estimation in terms of needed numbers and costs.

**B-61:** The internal and external activities and events, such as trainings, conferences, WS, forums or visits, have almost come to a halt because of this worldwide crisis.

- Discussion: By resetting to this new normal the NATO SP COE can learn how to assess it's current baseline--successes and the areas in which desires improvements. Developing strategies, structures and supports the NSPCOE can learn ways to set up new processes to deal with in this new environment. The NSPCOE have tried to anticipate some of its projects specified in the POW, by focusing COE's efforts on those that can be conducted by electronic means (emails, VTCs, open source info) such as LL studies, assessing and providing inputs on different doctrinal and conceptual documents, developing online courses programmes, etc. Consequently, the NSPCOE re-focused its capacity and priorities, and employed all available staff in the most sensible way, ensuring activities which carry the highest priority are at the heart of its efforts. This decision led us to keep doing "business as usual" despite the emergency and will allow us not to be taken by surprise, when we resume normal activities, thus permitting the Centre to keep up the momentum at full speed.
- Conclusion: The emergencies can affect the NATO SP COE performances, established through the POW. The management of the POW includes flexibility IOT mitigate the effects of these circumstances.

- Recommendation: In order to avoid the POW “collapse,” the NSPCOE should foresee flexibility and this should run ICCW with SNs and NATO guidance by re-focusing its efforts on the projects that can be developed in emergencies circumstances.

**B-62:** It was observed that in the POW2020 there was not a dedicated budget line dedicated to face the emergency cases, like the current pandemic.

- Discussion: The current expenditures for responding to the COVID19 outbreak was partially managed through the welfare budget. If the crisis happened at the end of the fiscal year, availability would not be assured.
- Conclusion: A dedicated line in the POW, with an “activity code” allows the COE to manage the emergency cases avoiding any impact on the funds foreseen in the COE's POW for the regular activities.
- Recommendation: It is recommended to identify within the PoW a dedicated line with an “activity code” for managing the emergency cases that can affect the business continuity of the COE.

**B-63:** The safety measures for containing the COVID19 Outbreak imposed to ban in person attendance of meetings and conferences. This implied that some videoconferencing platforms such as Skype, Cisco Webex have been adopted by the COE for the following reasons: businesses adapting to remote working environments and relying on video conferencing platforms to conduct both internal and external meetings; and single COE members seeking to stay connected to their colleagues, relatives and friends following governmental restrictions on physical social interactions.

- Discussion: For the business continuity purposes the videoconferencing can cover these critical areas: a. courses on SP related activities; b. meetings and workshop for developing COE products (e.g. support the development of ATP/AJP, SP related doctrine assessments, LL researches, training course's curricula, etc.). By being reliable and available the NSPCoE can stay in touch and keeps its stakeholders engage in its activities. While these platforms are useful in aiding business continuity and facilitating social intimacy, the rapid uptake has given rise to certain data protection concerns. These concerns were brought into sharp focus recently when some platforms were reported to have been subject to security attacks affecting many users. Some have announced additional security enhancements that are being made available to users. In light of these threats, there has been a renewed emphasis on the application of data protection principles to video conferencing which sets out how NATO SP CoE CIS has thought to comply with the EU General Data Protection Regulation (the GDPR) when utilising these services.

- Conclusion: NSPCOE needs to assess new events and information, new electronic platforms and new internal operations processes to ensure continuity. Moreover a complementary tailored training programme for the NATO SP CoE personnel could enhance the ability to use the video conferencing software and related tools.
- Recommendation: The NSPCoE should continually monitor, adjust or implement the latest electronics platforms to ensure continuity both for the NSPCoE staff and its customers that could successfully mitigate the future challenges and boosting the capabilities of the COE in terms of future events and training opportunities. Moreover a complementary training programme must be developed in line with the aforementioned future engagements.

**B-64:** The FN Ministry of Defence foresaw the smart working programme as one of the possibilities to mitigate COVID19. This programme was adopted by the NATO SP COE for reducing the number of the staff in the offices to prevent the spreading of the virus.

- Discussion: Smart working is known as a new model of work that uses the new technologies and the development of existing technologies to improve both the performance and the satisfaction that is obtained from the job but also to ensure the business continuity. Smart Working, notably called as Agile Working or Flexible Working depending on the country itself, refers to rethink and redesign work practices in a smart way, by questioning the traditional outdated concept of “physical workplace”, “working time”, thanks to augmented responsibilities fulfilled thanks to shared trust, autonomies and flexibilities. Job performance is supported by technology, which helps in sharing real-time, dealing with issues and creating connections. Smart working offers a wide branch of advantages, both for the COE and its personnel: energy efficiency; reduce CO2 pollution; re-generative of energy; reducing of the traffic; reducing the risk of traffic victims and healthy problems.
- Conclusion: NSPCOE needs to assess the application of smart working in the framework of a contingency plan in respond an emerging crisis. Thanks to this way to re-adapt the work conditions, the smart working results in augmented productivity, objectives fulfilment and shared results. For the COE. Smart working means to generate savings but also for the personnel and to foster their work-life balance. Moreover, the smart working, in line with the environment sustainability, can help to reduce further degeneration.
- Recommendation: The NSPCOE should continually monitor, adjust or implement the smart working programme to ensure business continuity for the NSPCOE staff in case of emerging crisis and also to adopt this programme as a

possible way to perform the ordinary activities by the COE personnel, case by case bases.

**B-65:** During the current emergency crisis related to the COVID19, it was observed that the measures taken by NSPCoE were not covered by any official established procedures, policies or standards governing the “crisis management.”

- **Discussion:** Crisis management is the process by which an organization deals with a disruptive and unexpected event that threatens to harm the organization or its stakeholders. Within the crisis management policy, an essential element of NATO Stability Policing Centre of Excellence (NSPCoE) to respond to the novel crisis/virus/ pandemic, etc, is the establishment of a Crisis Response Task Force (CTF) at once. The CTF is an entity formed to meet the requirements imposed by countering the “crisis”. The steps taken by the NSPCoE during this emergency to ensure the continuity of the business activities and the protection of the personnel were as follows: C2 continuity; Working in shifts; Medical check “serological test” on voluntary bases; Smart working; Virtual Private Network distribution; Videoconferencing; Adoption of Protective Equipment (mask and gloves); Procurement programme; Electronic platform to run webinars, ws's or conferences and e-learning courses; Protective safety measures within the offices (plastic panels); Banners about the rules to be followed within the centre; Quota for the canteen; Re-scheduled trips for missions and internal courses or training activities; Advertisement on NATO SP COE website and through social media; Combat uniform was adopted IOT easily keep it clean and sanitized.
- **Conclusion:** Direction and guidance specific to any operation is most desirable, however, the necessity for rapid action means highly targeted policies and procedures will seldom exist. A Contingency Plan for crisis management, enables the minimal steps/processes that would ensure the continuity of NSPCoE's Mission Critical Functions and the protection of all personnel on site including staff. The Crisis Task Force (CTF) enables to put in place procedures, policies or standards that may aid the NSPCoE chain of command to manage crises and other emergent conditions.
- **Recommendation:** NSPCOE should develop procedures, policies or standards governing/countering the “crisis management” through the development of a Contingency Plan (CP), in accordance with the HN regulations. The CP should be based on best practices and on lessons learned from previous crisis and, in the same time to be flexible and practical. The contingency plan should enable and operationalize a dedicated task force as the chain of command focal point for information and management responding to the impact of the “crisis”.

**B-66:** The use of military personnel for contact tracing has proved very effective. A number of these personnel who have become qualified “Superusers” could be offered to the Health Service Executive (HSE) to conduct a national training programme for civilians in order to facilitate the level of contact tracing required to ensure public health safety and allow the Defence Forces(DF) to stand down at an appropriate time.

- Discussion: Since the commencement of the COVID-19 crisis, military involvement in contact tracing has been an effective part of the DF response. In collaboration with the HSE, the DF has developed SOPs and the online COVID-19 tracker which has streamlined the process. This is an iterative process and constant liaison between the HSE and the DF will remain an essential element of the system. Whilst restrictions may be lifted nationwide, it is certain that the long-term public health strategy to keep the virus under control will be an effective contact tracing system. Tracers underwent a two (2) day course under the auspices of the HSE. The use of the Cadet School in the initial phase was most appropriate as they are a cohort of young, intelligent, tech savvy adults. This allowed them quickly understand the tech systems employed by the HSE. Allied to their ability to assimilate instruction quickly and their ability to issue orders/instruction enhanced their effectiveness. The qualification of “Superusers” through a train the trainer one (1) day course has allowed the DF develop other Call Centres. When developing the new call centre these “Superusers” remain with the new tracers until they are satisfied that they understand the entire procedure effectively. This can take up to one (1) week. Initially contact tracing was conducted from 0800hrs until 2000hrs daily. It was quickly observed that this was not an effective use of resources as the tracers required the initial call to be conducted by clinical professional prior to the contact tracing commencing. Staggering the start times created the time and space to allow the initial call to be made by the clinician and then for the tracers to commence their calls. The key time in this process is between 1700hrs and 2000hrs. By utilising non-frontline personnel such as the DF School of Music the DF have the opportunity to promote a widespread contact tracing training programme without negatively impacting on a possible return to core military training.
- Conclusion: The DF are currently the SME in contact tracing, however it is essential that the DF plan for an exit strategy that will ensure the effective handover of contact tracing to civilian entities at an appropriate time. The use of DF “Superusers” would allow the DF assist in the development of a nationwide network of civilian Call Centres without a drop in standards or effectiveness. This will maintain a positive DF presence in the public arena with minimum engagement.

- Recommendation: DF actively engage with the HSE to further develop the training programme and identify the technical skill sets required by future tracers.

**B-67:** Online Education allows for a higher number of participants without the risk of getting infected with COVID 19, and avoid expenses such as travel, course and accommodation fees.

- Discussion: This measure is compulsory for now and also might outweigh to the negative aspects of on-line meetings (e.g. no direct contact, more difficult networking, slower and more unwieldy communication).
- Conclusion: It is clear that there is no alternative other than on-line education under the current circumstances. To do this in the most effective way, COE-DAT is working on a new program with the support of the private sector. With this program, it is aimed to obtain an environment where the courses can be prepared for the participants and on-line or off-line training can be provided. It also allows trainees in different time zones to take the course at reasonable times.
- Recommendation: Under the current COVID-19 conditions, the effective continuation of COEs depends on the establishment of an online education system that can meet the needs. The establishment of this system depends on the fact that each organization correctly identifies its needs as soon as possible on the basis of confidentiality.

**B-68:** The exercise was planned to start on 23rd of March 2020 but due to COVID-19, external participation (Evaluation Team-SHAPE J7) was cancelled. To our best knowledge, the exercise was played with minimum internal personnel.

- Discussion: Besides all preparation made by the Evaluation Team, also, all the efforts given by JFCBS were wasted or did not produced the expected results. Many goals of this exercise are not achieved. It was the right decision to cancel external participation and downsizing the personnel. What if this situation has happened in the middle of a real operation? Would we have the chance to cancel that? Of course not. We would continue to plan and operate under these circumstances but how far?
- Conclusion: Unexpected things can happen, no chance of avoiding it. Nevertheless, the operations must be continued. For this time we need concepts based on personal distance, avoidance of large group formations and hygiene measures. The smaller and more fragmented the organizational units are, the easier it is to follow the required measures. But the headquarters at operational level are not able to work in a distributed and dispersed manner. The NATO

C2COE has advocated this concept (Distributed and Dispersed HQ) since 2018. In short, headquarters are vulnerable because 800 men and women work together. What would hit them makes no difference, a missile or a virus. The result will be the same: the HQ is not operational.

- Recommendation: (1) The need for the ability to work dispersed is for HQs now a reality and we need to train as we “should” fight. (2) Special exercises can be created for these situations and can be run every 2–3 years. Planning and operating should be able to be done by working dispersed. (3) Evaluation of the exercises should be able to be done by attending from distant locations. (4) For the upcoming exercises, after gaining some ability to plan and operate from different locations as a team, these situations can be injected to exercises. (5) In the long term, working dispersed should be part of the daily business of HQs.

**B-69:** The COVID 19 crisis cancelled opportunities to conduct trials of new doctrines, impeding the evaluation of Remedial Actions.

- Discussion: When developing Remedial Actions for doctrinal issues, trials session are paramount to assess their efficiency. New procedures needs to be tested in real life situation during international exercises. However the emergence of COVID-19 forced some units to withdraw from events or hoist Nation to reschedule their planning, reducing the trials opportunities for new doctrines.
- Conclusion: When trials opportunities are already very limited in normal situations (what it is the case for small expertise niches like Naval Mine Counter Measures), the effect of crisis such as the Covid-19 can dramatically impede the development of Remedial Actions, and so the overall improvement of NATO warfighting capabilities.
- Recommendation: (1) Exercise planners of international exercise should consider allocating more opportunities for trials. Offers and Demands could be coordinate from early planning phases throughout the NATO Command Structures. (2) Permanent NATO Response Force (like the 4 Standings NATO Naval Groups for instance) can play an important role as back up assets to trial new doctrines and procedures.

**B-70:** Reopen the society now? Iceland Cohort Study 1. Targeted Testing Strategy

- Discussion: Targeted testing. You test people who you think are likely to have COVID-19: those with classic symptoms, exposure to an infected individual, or recent travel to a high-risk area. Iceland started its targeted testing program in January, 1 month before the first COVID-19 case was documented in that country. And they ramped up quickly. From January 31 to March 31, the



targeted testing program tested around 9200 individuals. The percentage of COVID 19 positives until 15. March was less than 10 percentage, that the tested positive was as high as 14% in the later weeks as the population prevalence was increasing.

- Conclusion: But targeted testing doesn't tell us much about how the disease is spreading; it really just represents the tip of the iceberg. The big question is, how much of that iceberg is underwater? How many COVID-19 cases are we missing because they are minimally symptomatic? This question is hugely important. If there is a high rate of minimally symptomatic infection, this would be great because it would imply that the death rate from the virus is much lower than the 1%–3% currently reported. It would also imply that herd immunity is developing, meaning, it may be safer to remove some social distancing provisions more quickly.
- Recommendation: See Iceland Cohort 2 and 3.

**B-71:** Testing Is Key to reopen the economy.

- Discussion: The key to opening up the American economy rests on the ability to conduct mass testing, according to the Infectious Diseases Society of America (IDSA). IDSA, along with its HIV Medicine Association, issued a set of recommendations outlining the steps that would be necessary in order to begin easing physical distancing measures. A stepwise approach to reopening should reflect early diagnosis and enhanced surveillance for COVID-19 cases, linkage of cases to appropriate levels of care, isolation and/or quarantine, contact tracing, and data processing capabilities for state and local public health departments, (1) Widespread testing and surveillance, including use of validated nucleic acid amplification assays and anti\_±SARS-CoV-2 antibody detection. (2) The ability to diagnose, treat, and isolate individuals with COVID-19. (3) Scaling up of health care capacity and supplies to manage recurrent episodic outbreaks. (4) Maintaining a degree of physical distancing to prevent recurrent outbreaks, including use of masks, limiting gatherings, and continued distancing for susceptible adults.
- Conclusion: The recommendations stress that physical distancing policy changes must be based on relevant data and adequate public health resources and capacities and calls for a rolling and incremental approach to lifting these restrictions, In order to fully lift physical distancing restrictions, there would need to be effective treatments for COVID-19 and a protective vaccine that can be deployed to key at-risk populations, Easing restrictions too soon could have “disastrous consequences,” including an increase in the spread of infection, hospitalization, and death rates, as well as overwhelming health care facilities.

- Recommendation: In order to reopen, we have to have the ability to safely, successfully, and rapidly diagnose and treat, as well as to isolate, individuals with COVID-19, as well as track their contacts, The implementation of more widespread, comprehensive testing would better enable targeting of resources, such as personal protective equipment, ICU beds, and ventilators. This is needed in order to ensure that, if there is an outbreak and it does occur again, the health care system and the first responders are ready for this.

**B-72:** Reduction in manning during crisis as COVID-19 is affecting INTEL picture & updates

- Discussion: Intelligence function uses to work on classified networks, which makes extremely difficult to continue tasks from outside normal working space; overall reduction of manning is limiting the information collection & intelligence production, which could guide to think that the threat is decreasing or making the Commander relatively blind about Threat Networks' dynamics.
- Conclusion: Crisis could offer a great opportunity for Threat Networks to recover/expand/attack, which is making INTEL extremely relevant during those periods.
- Recommendation: TO MAINTAIN EVEN INCREASE the Intelligence function's activity during critical periods.

**B-73:** Duplication of INFO accounts to improve communications and saving time.

- Discussion: The duplication of INFO accounts that has permitted continue the access to all those documents received in BICES and to be communicated to the AO of every activity involved in order to be noticed of relevant INFO in their BICES accounts in order to be checked ASAP.
- Conclusion: Duplication of INFO accounts allows to reduce time of notifications and hence to improve effectiveness and efficiency.
- Recommendation: TO KEEP and to explore to be implemented in other areas

**B-74:** Activity of SNR as real National decision makers in COE.

- Discussion: The role played by SNR has permitted to Director to make the C-IED COE to be some steps forward to the Framework Nation restrictions about movements. Their agreement and support has been really important, as decided by SC during the last SC meeting, in relationship to use the SNR as much as possible as interlocutors with all Nations.
- Conclusion: SNR's role established in C-IED COE, in accordance with SC's agreement and decision, is really successful and suitable to support and execute DIR's decisions for crisis situations similar to COVID-19.

- Recommendation: TO KEEP.

**B-75:** Whilst the COVID-19 pandemic has been developing, increasing engagement of MP assets in countering activities is observed. As such, MP handle various tasks alongside with other military and civilian stakeholders within the crisis management system.

- Discussion: COVID-19 disease has influenced almost every sphere of our everyday life, starting from individual protection, through considerable modification of the extent and way of tasks execution. Due to this pandemic, a lot of activities in public services, also involving military sphere, have been changed and new priorities have been established. Based on the own NATO MP COE observations, media coverage and open source information, it is noticed that various MP organisations/units have been utilized by the governments to COVID-19 countering activities. Military Police/GTF are playing now a vital role in support of national military and civilian responses across the Alliance. However, MP conduct their national/NATO doctrinal functions, but some new employments in cooperation with other military and non-military services have been noted. It includes mobility support, border crossing tasks, security of institutions or conveying medical transports, etc. Therefore, it is required to explore these new areas for the benefit of secure, stable and safe environment viewed from NATO as well as Nations perspective. The above-mentioned project is in concurrence with the ongoing NATO Covid-19 LL campaign (RFS 20#042).
- Conclusion: Research on “MP LL Collection regarding COVID-19 pandemic” is required in order to capture, analyze and share new experience garnered from the national and NATO fields of activities. Therefore, an overview of MP engagement, their additional tasks and cooperation procedures with other services is crucial. Furthermore, a deep analysis of lessons will enhance further evolution of MP standards and capabilities' development as well as it will support co-operation and interoperability among NATO and partners.
- Recommendation:
  - 1. Collect experience (OBS, LI, LL, BP) from national MP as well as NATO HQ Provost Marshals in the COVID-19 countering activities. (The NATO MP COE has spread out a Calling letter to MP Chiefs and NCS/NFS PMs with questionnaire in order to explore MP engagements and knowledge - see attachment).
  - 2. Analyze the feedback in order to make an analysis report, which should be used for NATO MP CoI benefit, as well as introduced as an MP input for the JALLC Joint Analysis Report (JAR).

- 3. MP Discipline Department Head should, based on the JAR, propose up-to-date training solutions suitable to the changed environment (ADL courses, blended training, etc).
- 4. Tasking Authority was identified as COM SACT (COE Coordination LL & SME Military Police SACT).

**B-76:** The budget surpluses 2020 are currently determined and reported for distribution at the strategic level. At the same time many observations indicate that the abilities to execute tele-work in NATO are not fully elaborated and improvements are urgently needed.

- Discussion: The COVID-19 restrictions had a great impact on daily work and mission accomplishment all over NATO. In order to cope with this extraordinary challenge the use of modern communication means like SKYPE for Business and GoToMeeting and the regular work from home offices became extremely important. NATO had to cancel many events, exercises and conferences. The first half of 2020 will therefore most likely indicate a huge amount of surpluses in budgets.
- Conclusion: It is now the best moment to start emergency requirements in order to purchase the necessary hard- and software as well as additional licenses in the remote communications and tele-working domains. Additional capabilities could be available in NATO already at the end of 2020.
- Recommendation: Use all available observations with regard to COVID-19 triggered internal staff work and tele-working approaches, identify the most important emergency requirements and start the respective budgetary processes.

**B-77:** The common countermeasures to prevent respiratory viral transmission is to use face masks. An earlier study reported that surgical masks and N95 masks were equally effective in preventing the dissemination of influenza virus (Lee SA, Grinshpun SA, Reponen T. Respiratory performance offered by N95 respirators and surgical masks: human subject evaluation with NaCl aerosol representing bacterial and viral particle size range. *Ann Occup Hyg.* 2008; 52:177-185. [PMID: 18326870] doi:10.1093/annhyg/men0054), so surgical masks might help prevent transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). However, the SARS-CoV-2 pandemic has contributed to shortages of both N95 and surgical masks, and cotton made masks have gained attention as a substitute. Therefore it is important to know whether face masks worn by patients with COVID-19 prevent contamination of the environment?

- Discussion: To compare the effectiveness of cotton and surgical masks, a group of four patients (Seoul, South Korea) infected with SARS-CoV-2 coughed five times each into petri dishes which was placed approximately 20cm from the

patients' mouths, when wearing no mask, a surgical mask, and a cotton mask. Subsequently the mask surfaces were swabbed to evaluate viral presence on the mask itself. The median viral loads of nasopharyngeal and saliva samples from the 4 participants were 5.66 log copies/mL and 4.00 log copies/mL, respectively. The median viral loads after coughing was 2.56 log copies/mL without a mask, 2.42 log copies/mL with a surgical mask, and 1.85 log copies/mL with a cotton mask. On the other hand, all outer surfaces of the mask were positive for SARS-CoV-2, while most inner surfaces were free of the virus contamination.

- **Conclusion:** In accordance with prior evidence that surgical masks effectively filtered influenza virus, it has been recommended that patients with confirmed or suspected COVID-19 should wear face masks to prevent coronavirus transmission. However, the size and concentrations of SARS±CoV-2 in aerosols generated during coughing are unknown. Oberg T and Brousseau LM ([PMID: 18455048] doi:10.1016/j.ajic.2007.07.0083) demonstrated that surgical masks did not show adequate filter performance against aerosols measuring 0.9, 2.0, and 3.1 µm in diameter. Lee SA. ([PMID: 18326870] doi:10.1093/annhyg/men005) and colleagues showed that particles 0.04 to 0.2 µm can penetrate surgical masks. The size of the SARS-CoV particle from the 2002-2004 outbreak was estimated as 0.08 to 0.14 µm. Assuming that SARS-CoV-2 has a similar size like SARS-CoV, surgical masks are unlikely to effectively filter this virus. Regarding the greater contamination on the outer than the inner mask surfaces. The mask's aerodynamic features may explain this finding. A turbulent jet due to air leakage around the mask edge could contaminate the outer surface. Alternatively, the small aerosols of SARS-CoV-2 generated during a high-velocity cough might penetrate the masks. However, this hypothesis may only be valid if the coughing patients did not exhale any large-sized particles, which would be expected to be deposited on the inner surface despite high velocity. These observations support the importance of hand hygiene after touching the outer surface of masks. The test did not include N95 masks and does not reflect the actual transmission of infection from patients with COVID-19 wearing different types of masks. As well during experiment didn't check whether cotton or surgical masks shorten the travel distance of droplets while coughing.
- **Recommendation:** Summing up, the surgical and cotton masks seem to be ineffective in preventing the spreading of SARS-CoV-2 from the coughs of patients with COVID-19 to the environment and virus can be found in external mask surface. It is recommended to keep high importance to avoid touching the outer surface of the masks and carry out hand hygiene. What is more, additional study is needed to recommend whether face masks decrease transmission of

virus from asymptomatic individuals or those with suspected COVID-19 who are not coughing.

**B-78:** Digital thermometers usually don't work properly! Lot of article in the news about Covid-19 show thermometers displays extreme low (lethal!) body temperature.

- Discussion: Regulations not strict enough!
- Conclusion: Who knows how many infected people slips through the control and infect the others.
- Recommendation: Very high standards and strict regulations for thermometers - doesn't matter it's only for home or medical/pro using because not enough tools in a mass infection situation.

**B-79:** Distancing as mandatory precautions to prevent SARS-CoV-2 during outdoor activities. Aerodynamic social distance.

- Discussion: The standard recommended social distance to be kept between two people standing still to avoid respiratory droplets of person A reaching person B is 1.5 m, 2 m or 6 ft (depending on the country). The objective of the study was to find out that 1.5 m is enough or not for two people walking, running, cycling in each other's vicinity. And if not, how it should be tailored to provide a similar (non-droplet exposure risk as for the case of 1.5 m with two people standing still. What was found during the experiment? First of all, it was found that the drops (40 mm - 200 mm range) exhaled by a moving person are mainly directed behind that person and the biggest particles fall down faster - moving shorter distance. Second, in absence of wind, the equivalent social distance for walking/running/cycling can remain 1.5 m (or 2 m or 6 ft) if the two persons are moving side
- Conclusion: The outcome of this study is to indicate that when someone during a walk, run or cycling breathes, sneezes or coughs, those particles/droplets stay behind in the air. Presented aerodynamic experiment does not directly assess the risk of infection associated with specific social distances or activities. Indicates that when moving in the same direction in 1 line (walking, running, cycling), greater distances should be kept to reduce exposure to exhaled drops and avoid possible contamination / contagion
- Recommendation: It is recommended to keep at least 4±5 meters distance, for running and slow biking it should be 10 meters and for hard biking at least 20 meters whenever the persons are behind each other. When above conditions can be achieved outdoor activity can be considered more safely. Additional research is required to determine infectivity depending on distance and type of activity.

**B-80:** Doctor's Burnout due to COVID 19 pandemic.

- Discussion: The BMA released more results from its COVID-19 snapshot survey of more than 6000 members. It found 44.47% of UK doctors are experiencing burnout, depression, or anxiety due to working in the pandemic. Of the rest, 44.53% did not have those experiences, and others didn't know or preferred not to say. When it came to feel supported by their national Government, 51.8% said 'not very' or 'not at all'. Of the rest, 45.92% said 'very' or 'to some extent', and 2.27% didn't know.
- Conclusion: This is a deeply disturbing finding and demonstrates the toll this pandemic is having on the wellbeing of frontline doctors.
- Recommendation: The psychiatrist must manage that situation and try to find a way to overcome burn out syndrome.

**B-81:** How the COVID-19 Pandemic May Reshape U.S. Hospital Design.

- Discussion: As COVID-19 cases fill emergency rooms and intensive care units across the U.S., local officials have been rushing to convert hotels, convention centers, and city parks into new hospital spaces. Amid the scramble, many physicians, architects, and health care consultants are already talking about how modern hospital designs could change to avoid a repeat of the current national crisis. Modern hospitals often lack the flexibility to accommodate a sudden surge of patients. In particular, many hospitals have been running out of space and resources to treat COVID-19 patients with severe symptoms, while at the same time handling those with mild symptoms and the asymptomatic who may infect health care workers and other patients. “We set up beds in the lobbies, set up beds in conference rooms, and in cafeterias,” says the senior vice president and chief public relations officer at one of the largest health care providers in New York state. “We're adding beds in private rooms and really identifying any available space.” The bed's placement in a Nightingale ward (, they were supposed to be six feet apart <sup>2</sup>that's beyond a distance where one patient can reach out and touch another,” Still, the Nightingale ward could prove effective for handling mild COVID-19 cases, which can be safely isolated together in groups.
- Conclusion: These temporary hospital spaces are more likely to support isolation and medical care for milder COVID-19 cases than to fully replicate a permanent hospital's ICU, and they will likely be needed again for the second wave of outbreaks. One example of flexible hospitals is the Rush University Medical Centre in Chicago, Rush has 40 negative pressure rooms that help prevent the spread of potentially infectious diseases through the air. Each room has a negative pressure compared to the outside hallway, which means that air flows from the hallway into the room and then exits the hospital through a HEPA

filter. But the hospital can also convert an additional wing into a negative pressure ward capable of accommodating an additional 32 patients. The emergency department also has three 20-bed units <sup>2</sup>called pods <sup>2</sup>that can each be isolated to handle even more potentially infectious patients.

- Recommendation: The COVID-19 pandemic is also exposing new needs for hospitals: (1) that either open wards or more flexible capacity. (2) the need for touch-free control for lighting, temperature, and other building functions, to help avoid spreading diseases on these highly used surfaces. (3) Building with materials that are less hospitable to microbes, such as copper, may also reduce the risk of surface transmission. (4) Some hospitals have already eliminated window curtains, which can become easily contaminated, by installing windows made of e-switchable privacy glass--also known as e-glass or smart glass—which can switch between translucent and opaque and are easy to clean. (5) New hospital designs could also help patients stay connected to friends and family by incorporating widely available technologies such as video chat and virtual reality headsets, Anderson says. In the pandemic, many patients and health care workers have shared stories detailing the emotional pain associated with long, lonely hospital stays. Due to the huge caseload, the hospitals have moved toward eliminating sleeping quarters for hospital staff and reducing the number and size of break rooms and rest areas. The current pandemic has shown the need for giving health care workers a place to rest in between grueling shifts, especially given reports of nurses and physicians sleeping in camper vehicles and avoiding their homes to protect their families from possible infection.

**B-82:** How to get in and out PPE properly?

- Discussion: A radiologic technician who performs bedside procedures in the rooms of COVID-19 patients at New York University's 591-bed Winthrop Hospital in Mineola described a constantly shifting landscape that undermined confidence. He received training before the pandemic and was fit tested for an N95 mask. But when he came in for his most recent shift, he was handed a different style of N95, and it felt looser. It appeared to be a different size. A 2018 study in the United Kingdom showed that even after going through simulator training, contamination was commonplace. Using fluorescent simulants of body fluids detected with ultraviolet light, the researchers saw that workers were frequently contaminated, either through a failure of the PPE ensemble itself or because of post-doffing errors. A study from Wuhan, China, that's in preprint but has not yet been peer-reviewed suggests that workers might contaminate the environment just by taking off PPE. In a sampling of various environments, the researchers found that some of the highest viral concentrations were in PPE removal rooms. “The virus aerosol deposition on



protective apparel or floor surface and their subsequent resuspension is a potential transmission pathway and effective sanitization is critical in minimizing aerosol transmission of SARS-CoV-2,” they write.

- Conclusion: Read the Discussion.
- Recommendation: Clinicians and staff must go through training. The training should include watching a short video and then undergoing a 20-minute tutorial in which they donned and doffed PPE while being monitored, But the training is not enough. It should be periodically updated and done again by the staff. The applied PPE must be the same as at the training was.

**B-83:** The appearance of COVID-19 and the effect it has on NATO and therefore on JFTC through taking necessary precautions against the virus has instantly put a focus on the NLLP in order to identify not only shortfalls but also valuable lessons which can be learned for the future.

- Discussion: Is the current implementation of the NLLP (personnel-wise, material-wise and process-wise) setting up the JFTC for success or are necessary adjustments required? For example, do we have enough trained personnel (i.e. LLSOs / LLPOCs)? Do we need to train more LLPOCs? Do we need and have enough trained personnel to run shifts? Is the PE structure reflecting what is expected of the NLLP to achieve?
- Conclusion: An open-minded discussion as well as a critical examination of the implemented structure, processes, and tools at JFTC is needed.
- Recommendation:
  - 1. JFTCs LLPOCs should start internal discussions and interviews in order to collect observations for a upto-date picture.
  - 2. Creation of a JFTC NLLP Working Group (JFTC NLLP WG), led by TAQA Duty Officer and standing members are the DLLPOCs. On request, SMEs will be invited.
  - 3. Based on the upto-date picture, the JFTC NLLP WG will conduct meetings for further elaboration.
  - 4. The JFTC ePortal Observation Collection Tool is the first device of choice to collect observations.

**B-84:** The COVID-19 crisis forced NATO organizations to conduct remote work using MOS. However, since NATO does not have an approved and resourced NU MOS, each organization found their own solution. This lack of coordinated MOS resulted in ineffective and inefficient work on NATO business.

- Discussion: Since no single NATO NU MOS was approved, resourced or rehearsed, some organizations were unable to effectively and efficiently cross-communicate, share essential information and conduct essential NATO business. This main shortfalls were in the areas of automation systems with VPN access to content stored behind firewalls; sharing of data as there is no single shared NATO portal that all organizations have access to; and no system to conduct official meetings/VTCs.. A NATO-wide solution to remote working and MOS will allow NATO to continue essential official business during future crisis that required remote working.
- Conclusion: Possibility to create MOS solutions for remote working will allow NATO to continue essential official business during future crisis that requires remote working should be analysed.
- Recommendation: RA, TA to be identified. AB - NCIA.

**B-85:** Workshops and roundtables reduced drastically

- Discussion: Workshops, roundtables and seminars are a tangible, unique and precious resource of NATO COEs for developing network, mutual trust, enhance different approaches and improve interoperability. The lack of these opportunities can affect the outcomes
- Conclusion: In order to mitigate this critical aspect, it should be appropriate to develop a proper webinar platform for NATO. The COVID-19 pandemic may not be the last time in which NATO elements need to operate in an isolated manner
- Recommendation: Develop a specific webinar portal or software for NATO events, roundtables, workshops and seminars

**B-86:** During the current emergency crisis related to the COVID19, it was observed that the measures taken by NSPCoE were not covered by any official established procedures, policies or standards governing the “crisis management.”

- Discussion: Crisis management is the process by which an organization deals with a disruptive and unexpected event that threatens to harm the organization or its stakeholders. Three elements are common to a crisis: (a) a threat to the organization; (b) the element of surprise; (c) a short decision time. The steps taken by an organization when an unexpected situation or event occurs is a contingency plan. Within the crisis management policy, an essential element of NATO Stability Policing Centre of Excellence (NSPCoE) to respond to the novel crisis/virus/ pandemic, etc, is the establishment of a Crisis Response Task Force (CTF) at once. Since its institution, the CTF will be the NSPCoE chain of command’s focal point for information and management responding to the

impact of the “crisis” on assigned staff and enabling continuity of “missions” in support of the Alliance. The CTF is an entity formed to meet the requirements imposed by countering the “crisis”. The life of the CTF is expected to follow normal organizational phases: preparation – establishment – operations – conclusion/closure. WHO: Within NATOSPCOE there is no evidence of procedures, policies or standards governing the “crisis management”, generally. WHAT: According to the NSPCoE Operational MoU (point 6.10), the FN regulations applies in the field of occupational safety and health, including the supervision of standard safety precautions. So, the FN (for NSPCoE meaning COESPU as instructed by Carabinieri HQs in course of action with other national authorities) is responsible for the safe and security of NSPCoE's working places and personnel during emergencies. The steps taken by the NSPCoE during this emergency to ensure the continuity of the business activities and the protection of the personnel were as follows: C2 continuity; Working in shifts; Medical check “serological test” on voluntary bases; Smart working; VPN distribution; Videoconferencing; Adoption of Protective Equipment (mask and gloves); Procurement programme; Electronic platform to run webinars, ws's or conferences and e-learning courses; Protective safety measures within the offices (plastic panels); Banners about the rules to be followed within the centre; Quota for the canteen; Re-scheduled trips for missions and internal courses or training activities; Advertisement on NATO SP COE website and through social media Combat uniform was adopted IOT easily keep it clean and sanitized; WHERE: NATO SP COE WHEN: The emergency period was official declared on 31st January 2020 by the Italian Prime Minister, but due to the absence of procedures, policies or standards the measures taken to reduce the risk of infection were put into practice way long after the identification of the official “RED ZONES”. WHY: To maintain business continuity while protecting the NATO SP COE personnel. HOW: The emergency measures were adopted randomly following the development of the situation and the guidelines from Italian MoD/Carabinieri HQs.

- Conclusion: Direction and guidance specific to any operation is most desirable, however, the necessity for rapid action means highly targeted policies and procedures will seldom exist. A Contingency Plan for crisis management enables the minimal steps/processes that would ensure the continuity of NSPCoE's Mission Critical Functions and the protection of all personnel on site including staff. The Crisis Task Force (CTF) enables to put in place procedures, policies or standards that may aid the NSPCoE chain of command to manage crises and other emergent conditions. A contingency plan can also include other safety measures as follows:  Dedicated banner “COVID19” within the NSPCoE webpage;  Self-quarantine for whom come from red zones;

Assistance for international NSPCoE members (to provide meals and medicine) that are in need; Disinfection of the offices in case of positive confirmation of the disease of one NSPCoE personnel.

- Recommendation: NSPCoE should develop procedures, policies or standards governing/countering the “crisis management” through the development of a Contingency Plan (CP), in accordance with the HN regulations. The CP should be based on best practices and on lessons learned from previous crisis and, in the same time to be flexible and practical. The contingency plan should enable and operationalize a dedicated task force as the chain of command focal point for information and management responding to the impact of the “crisis”

**B-87:** Recovered COVID-19 Patients Testing Positive Again

- Discussion: South Korean officials on Friday reported 91 patients thought cleared of the new coronavirus had tested positive again. Director of the Korea Centres for Disease Control and Prevention told that the virus may have been “reactivated” rather than the patients being re-infected. WHO: We are aware of these reports of individuals who have tested negative for COVID-19 using PCR (polymerase chain reaction) testing and then after some days testing positive again. According to the WHO's guidelines on clinical management, a patient can be discharged from hospital after two consecutive negative results in a clinically recovered patient at least 24 hours apart, it added.
- Conclusion: We are aware that some patients are PCR positive after they clinically recover, but we need a systematic collection of samples from recovered patients to better understand how long they shed live virus,” WHO statement: As COVID-19 is a new disease, we need more epidemiological data to draw any conclusions of virus shedding profile,
- Recommendation: Collection of epidemiological data by WHO and draw the conclusions ASAP.

**B-88:** Shortages on PPE in many countries

- Discussion: Quotations from surgeons: (1) “Over the past month, an orthopedic surgeon has watched as the crowd of sick patients at his hospital has grown, while the supply of personal protective equipment (PPE) for staff has diminished.” (2) “I have one mask. We're expected to reuse them, unless you were exposed or worked with a known COVID victim, however, with the numbers in our region rapidly increasing, you can't assume that people don't have it or that you don't have particles on your mask, even if you're not in a known quarantine zone within the institution.” (3) The frontline physician, who has close contact with COVID-19 patients, said he has access to N95 masks at

the moment, but when he requested higher-level protective gear, hospital management refused the request and denied that such supplies were needed. “Safety of frontline workers appears to not be taken seriously.”

- Conclusion: The critical shortage of PPE is influencing not only the lives of front-line health care workers that are at risk, but it's those that they're going to spread it to and those that are going to be coming to the hospital requiring our care
- Recommendation: Nations must be better prepared for such an endemic or pandemic. Large quantities and appropriate protective clothing should be kept in stock and the industries must be more flexible to start the PPE production if necessary

**B-89**: Treatment SARS-CoV-2 positive patients with convalescent plasma. Source: MEDSCAPE: 'FDA OKs Emergency Use of Convalescent Plasma for Seriously Ill COVID-19 Patients', Doug Brunk March 28, 2020. PUBMED: 'Collecting and Evaluating Convalescent Plasma for COVID-19 Treatment: Why and How?' Pierre Tiberghien , Xavier de Lambalerie, Pascal Morel, Pierre Gallian, Karine Lacombe, Yazdan Yazdanpanah, 2020 Apr 15. doi: 10.1002/jmv.25882 Could administration of convalescent plasma transfusion be beneficial in the treatment of ill patients with coronavirus disease 2019 (COVID-19)?

- Discussion: Coronavirus disease 2019 (COVID-19) is a pandemic with no specific therapeutic agents and substantial mortality. To date, there are no proven options for prophylaxis for those who have been exposed to SARSCoV-2, nor therapy for those who develop COVID-19. Therefore it is critical to find effective treatments. There are numerous examples, where convalescent plasma has been used successfully as post-exposure prophylaxis and/or treatment of infectious diseases, including other outbreaks of coronaviruses (e.g., SARS-1, Middle East Respiratory Syndrome [MERS]). Convalescent plasma has also been used in the COVID-19 pandemic; limited data from China suggest clinical benefit, including radiological resolution, reduction in viral loads and improved survival. As well in March, the Food and Drug Administration is easing access to COVID-19 convalescent plasma for use in patients with serious or immediately life threatening COVID-19 infections. Nowadays, the conditional treatment with the help of plasma of the healers has been set up not only in USA but as well in a few European Countries. Mechanism of action The antibodies present in immune (i.e. 'convalescent' plasma mediate their therapeutic effect through a variety of mechanisms. Antibody can bind to a given pathogen (here virus), thereby neutralizing its infectivity directly, while other antibody-mediated pathways such as complement activation, antibody dependent cellular cytotoxicity and/or phagocytosis may also contribute to its therapeutic effect.

Non-neutralizing antibodies that bind to the pathogen but do not interfere with its ability to replicate in in vitro systems may also contribute to prophylaxis and/or enhance recovery. Donor eligibility Currently proposed criteria for potential donors include a history of COVID-19, as confirmed by approved molecular testing (e.g., nasopharyngeal [NP] swab), at least 14 days passing after the resolution of symptoms (e.g., fever, cough, shortness of breath), and a negative follow-up molecular test for SARS-CoV-2 (e.g., NP swab). Individuals need to be virus-free at the time of blood collection given the potential risk posed to blood collections staff and other donors. FDA advises that donors have defined SARS-CoV-2 neutralizing antibody titers, if testing can be conducted (optimally greater than 1:320). FDA statement regarding the patients. Patients eligible to receive COVID-19 convalescent plasma must have a severe or immediately life-threatening infection with laboratory-confirmed COVID-19. The agency defines severe disease as dyspnea, respiratory frequency of 30 per minute or greater, blood oxygen saturation of 93% or less, partial pressure of arterial oxygen to fraction of inspired oxygen ratio of less than 300, and/or lung infiltrates of greater than 50% within 24–48 hours. Life-threatening disease is defined as respiratory failure, septic shock, and/or multiple organ dysfunction or failure. Patients must provide informed consent.

- Conclusion: In accordance with previous experience with SARS-1 and MERS as well as current SARS-CoV-2 from China it has been convinced that convalescent plasma contains neutralizing antibodies. Therefore, plasma provided by COVID-19 convalescent patients may deliver therapeutic relief. Prior findings in various viral respiratory diseases including SARS-CoV related pneumonia suggest that convalescent plasma can reduce mortality, although formal proof of efficacy is still lacking. “I think of it as a bridge, until we can develop a vaccine or pharmaceutical that can be shown to be safe, and effective, and can be produced in mass quantities,” says Elliott Bennett-Guerrero, who is studying the use of this convalescent plasma in COVID-19 patients at Stony Brook Medicine
- Recommendation: It is required to organized controlled clinical trials of convalescent plasma therapy, underscoring the need to evaluate its use objectively for a range of indications (e.g., prevention vs. treatment, minimum donors antibody level, severity of disease to be treated) and patient and donor populations (e.g., age, comorbid disease, AB0 compliancy).

**B-90:** Source: MEDSCAPE, 'Stealth Transmission' of COVID-19 Demands Widespread Mask Usage (Eldad Einav, MD) March 29, 2020.

- Discussion: Centers for Disease Control and Prevention (CDC-P) and the World Health Organization (WHO) restricting mask use mostly to close encounters

with symptomatic individuals or confirmed cases with COVID-19. Mask use is one of the most effective physical interventions to prevent the spread of respiratory viruses (face masks are an effective barrier against COVID-19, as its primary mode of transmission is through respiratory droplets.) A comprehensive Cochrane review examined multiple physical preventive measures (eg, screening at entry ports, isolation, quarantine, social distancing, barriers, personal protection, hand hygiene) and found that masks were the most consistent and comprehensive measure. The main reason given by authorities is that there is no evidence showing that it is effective in the community. However, “there is an essential distinction between absence of evidence and evidence of absence,” write Hong Kong scholars in a comment in *The Lancet*. The other rationale against mask use in the community partially relies on the premise that people without symptoms don't spread the virus

- Conclusion: But this view is changing as new data are accumulated. Even the CDC has acknowledged reports of asymptomatic and presymptomatic transmission: “Some spread might be possible before people show symptoms “but this is not thought to be the main way the virus spreads.” (1) A study published in the *New England Journal of Medicine* evaluated a group of returning travelers from Wuhan, China, to Frankfurt, Germany. The researchers discovered “that shedding of potentially infectious virus may occur in persons who have no fever and no signs or only minor signs of infection.” (2) Asymptomatic transmission was also estimated in the journal *Science* shows that “nondocumented infections were the infection source for 79% of documented cases.” Jeffrey Shaman, the lead author, stated that this “stealth transmission” is flying under the radar and becoming a major driver of the epidemic
- Recommendation: The message that masks not only can protect healthcare workers but also can help control the outbreak may recruit more efforts, allocate more resources, and make this a national top priority. This was exactly what happened in Asia, where universal mask wear has been advised. Both Taiwan and South Korea faced shortages of masks, and they responded by increasing mask production. Taiwan opened 60 new productions at various manufacturing plants across the country to produce 10 million masks a day.

**B-91:** To support the patrols of the Vicenza Provincial Carabinieri Command in the surveillance of the area of responsibility by the use of the Remotely Piloted Aircraft System (RPAS). The RPAS was controlled by two members of the NATO SP CoE.

- Discussion: Two carabinieri of the NATO SP CoE, who possess the certification to pilot Remotely Piloted Aircraft System (RPASs), were employed to support the local Carabinieri Provincial Command. Normally this Remotely Piloted Aircraft System is used by the Centre for training purposes. Due to the fact that

the Carabinieri Provincial Command, which does not have this capability, nor specialised personnel amongst its ranks, it was really useful in Carabinieri operations for preventing and countering mass-gathering in the area of Vicenza.

- Conclusion: Helping the local community through the Carabinieri Provincial Command with personnel and equipment it was a great opportunity to assist the local authorities and in the same time a training opportunity for the authorized NATO SP CoE personnel.
- Recommendation: NATO SP CoE should continue to support the local authorities with personnel and equipment when needed.

**B-92:** What If a COVID-19 Test Is Negative?

- Discussion: The Chinese ophthalmologist, Li Wenliang, who originally sounded the alarm about coronavirus, had several negative tests. He died from the infection. In one Chinese study, the sensitivity of RT-PCR—that's the proportion of the infected who test positive—was around 70%. To put this in perspective, 1000 people infected with coronavirus: 700 will test positive but 300 will test negative. 300 “false negative” people may believe they're not contagious because they got a clean chit and could infect others. False negatives could undo the hard work of containment
- Conclusion: Asymptomatic people are feeling well and don't know they've been colonized by the virus. RT-PCR's sensitivity, which is low in early illness, is even lower in asymptomatics, likely because of lower viral load, which means even more false negatives. The virus's average incubation time of five days is enough time for false negative asymptomatics – remember they resemble the uninfected. The asymptomatic people who drive the epidemic.
- Recommendation: Does that mean testing has no value? Testing is valuable in managing populations. Testing enables us to think globally but act locally. To individuals, the results must be framed wisely, such as by advising those who test positive to quarantine because “you're infected” and those who test negative to keep social distancing because “you could still be infected.”



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## Appendix F. Abbreviations

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AAFES	U.S. Army Air Force Federal Exchange Services
ACO	Allied Command Operations
ADC	Annual Discipline Conference
AE	aeromedical evacuation
AFMES	Armed Forces Medical Examiner System
ALSE	aviation life support equipment
AMC	U.S. Army Materiel Command
AMS	Academy of Medical Sciences
APHC	U.S. Army Public Health Center
ARV	anti-retroviral
ASCC	U.S. Army Service Component Command
AZ	AstraZeneca
BCP	business continuity planning
BCT	brigade combat team
BDOC	base defense operations center
BGR	Bulgaria
BH	behavioral health
BHCMT	Behavioral Health Clinical Management Team
BHSL	Behavioral Health Service Line
BICES	Battlefield Information Collection & Exploitation Systems
Bi-SC	Bilateral Strategic Command
BOS-I	base operating support-integrator
CAAP	Comprehensive Approach Action Plan
CCATT	Critical Care Air Transport Team
CCTV	close circuit television
CDC	Center for Disease Control
CDC-P	Center for Disease Control and Prevention
CEP-C	Civil Emergency Planning Committee
CHU	containerized housing unit

CI	confidence interval
C-IED	counter-improvised explosive devices
CIMIC	civil-military cooperation
CIS	communications information system
CJMED	Combined Joint Medical Branch
CMRE	Centre for Maritime Research and Experimentation
CMTF	Civil-Military Task Force
COA	course of action
COE	Centre of Excellence
COG	COVID-19 Oversight Group
COLPRO	collective protection
COMEDS	Committee of the Chiefs of Military Medical Services
CONTPLAN	contingency plan
COOP	Continuity of Operations Plan
COP	common operating picture
COTS	commercial off the shelf
CP	contingency plan
CPR	cardiopulmonary resuscitation
CPR	Civilian Personnel Regulations
CRO	Crisis Response Organization
CSC	Crisis/Contingency Standards of Care
CSO	Collaboration Support Office
CTF	Crisis Task Force or Crisis Response Task Force
CUTA	Coastal Urban Training Center
DAC	U.S. Department of Army Civilian
DAD-MA	Deputy Assistant Director – Medical Affairs
DAP	Discipline Alignment Plan
DBIDS	Defense Biometric Identifications Systems
DECA	U.S. Defense Commissary Agency
DF	defence forces
DFAC	dining facility
DHA	U.S. Defense Health Agency
DHACMT	Defense Health Agency Behavioral Health Clinical Management Team
DLS	U.S. Defense Logistics Agency

DSCA	Defense Support of Civil Authorities
EADRCC	Euro-Atlantic Disaster Response Coordination Center
EAPC	Euro-Atlantic Partnership Council
EATC	European Air Transport Command
ECDC	European Center for Disease Control
EMS	emergency medical services
EU	European Union
EUNAVFOR MED	European Union Naval Force Mediterranean
FDA	U.S. Food and Drug Administration
FEDRAMP	Federal Risk and Authorization Management Program
FEMA	U.S. Federal Emergency Management Agency
FHP	Force Health Protection
FHQ	Force Headquarters
FN	Finland
FORSCOM	U.S. Army Forces Command
GCC	U.S. Army ground component command
GDPR	General Data Protection Regulation
GPC	Government Purchase Card
GTF	gendarmierie-type force
HCW	health care worker
HHS	U.S. Department of Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act
HN	host nation
HPCON	health protection condition
HQ SACT	Headquarters Supreme Allied Command Transformation
HR	health records
HSE	Health Service Executive
HUMINT	human intelligence
HVAC	heating, ventilation and air conditioning
IAF	Italian Air Force
IAW	in accordance with
ICAO	International Civil Aviation Organization
ICC	Incident Command Center
ICCW	in close coordination with

IER	Information Exchange Requirement
IOT	in order to
IPC	infection prevention control
IPE	individual protective equipment
IRL	Ireland?
IRR/RR	Individual Ready Reserve/Retiree Recalls
ISO	International Security Operations
ITA	Italy
JAR	Joint Analysis Report
JCBRND	Joint Chemical, Biological, Radiological, and Nuclear Defense
JFCNP	Allied Joint Force Command Naples
JFLCC	joint forces land component commander
JFTC	Joint Force Training Centre
JOHQ	Joint Operations Headquarters
JWC	joint warfighting center
KCDC	Korean Centers for Disease Control and Prevention
LANDCOM	Allied Land Command
LLPOC	NATO Lessons Learned Point of Contact
LLSO	NATO Lessons Learned Staff Officer
LOC	Lines of Communication
LSGCO	large scale ground combat operation
LVC-T	Live Virtual Constructive Training
MAJCOM	major command
MAP	MTOE Assigned Personnel
MARCOM	Allied Maritime Command
MASCAL	mass casualty event
MCM	medical countermeasure
MED-DOIIT	Medical Deployable Outbreak Incident Investigation Team
MEDEVAC	medical evacuation
MERS	Middle East Respiratory Syndrome
MI	medical intelligence
MI2	military intelligence and information
MIO	Maritime Interdiction Operation



MHS	Military Health Service
MLLCT	Medical Lessons Learned Core Team
MoD	Ministry of Defense
MOS	military operating system
MP	military police
MP COE	Military Police Centre of Excellence
MSAT	Medical Situational Awareness Theater
MTDS	Mission Training through Distributive Simulation
MTOE	Modified Table of Organization and Equipment
MTP	Medical Training Panel
NAC	North Atlantic Council
NATO	North Atlantic Treaty Organization
NATO eFP	NATO Enhanced Forward Presence
NAVSUP	U.S. Navy Supply Command
NCIA	NATO Communications and Information Agency
NCRS	NATO Crisis Response System
NCRSM	NATO Crisis Response System Manual
NHS	National Health Service
NIC	NATO International Civilians
NIH	U.S. National Institute of Health
NIPR	non-classified internet protocol router
NMIOTC	NATO Maritime Interdiction Operational Training Centre
NP	nasopharyngeal
NPI	non-pharmaceutical intervention
NORTHCOM	U.S. Northern Command
NS	NATO Secret
NSP CoE	NATO Stability Policing Centre of Excellence
NSPA	NATO Support and Procurement Agency
NU	NATO Unclassified
OCONUS	Outside the Continental United States
OCS	Office of Chief Scientist
OECD	Organization for Economic Co-operation and Development
OHQ	operation headquarters

OPGRIT	OPERATION GRIT
OPLAN	operation plan
OPORDS	operation order
OPT	Operational Planning Team
OPTEMPO	operational tempo
OR	operating room
OSD HA	U.S. Office of the Secretary of Defense, Health Affairs
PACE	primary alternate contingency emergency
PAF	Partner Augmentation Force
PAO	public affairs officer
PD	position description
PHM	public health measures
PI	process improvement
PIID	Pandemic Influenza/Infectious Disease
PMG	Politico-Military Group
POC	point of contact
POI	program of instruction
POW	Programme of Work
PTSD	post-traumatic stress disorder
PUI	person under investigation
RAM	Rapid Air Mobility
RHC	Regional Health Command
ROU	Romania
RPAS	Remotely Piloted Aircraft System
SA	situational awareness
SACEUR	Supreme Allied Commander Europe
SACT	Supreme Allied Commander Transformation
SALIS	Strategic Airlift International Solution
SARS	Severe Acute Respiratory Syndrome
SATCOM	satellite communication
SCCM	Society of Critical Care Medicine
SHAPE	Supreme Headquarters Allied Powers Europe
SIPR	secret internet protocol router
SNMG	Standing NATO Maritime Group
SNR	Senior National Representative

SOP	standard operating procedure
STO	Science and Technology Organization
STRATCOM	U.S. Strategic Command
STRATEVAC	strategic evacuation
TEED	Training and Exercise Enabling Division
TLAMM	Theater Lead Agent for Medical Materiel
TRA	Training Requirements Analysis
TRADOC	U.S. Army Training and Doctrine Command
TW	telework
UK	United Kingdom
UN	United Nations
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNESCO	United Nations Education, Scientific and Cultural Organization
USAFE-AFAFRICA	US Air Force Europe-Air Force Africa Command
USFK	United States Forces Korea
VH	Virtual Health
VNC	Voluntary National Contribution
VPN	virtual private network
VS	Veterinary Services
VTC	video teleconference
WAN	wide area network
WHO	World Health Organization

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