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Report of the Project Team for Smart Defence Project 1.1045

Volume 2

Concept of Operations (CONOPS) for Bio-Response

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Volume 2

Concept of Operations (CONOPS) for Bio-Response

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Contents

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1. Introduction

A. Purpose

This CONOPS provides a commander and his/her Medical Advisor (MEDAD)[1] with the information needed to generate an effective response to an outbreak of infectious disease of military significance in the Joint Operating Area (JOA), and by so doing, protect the health of the force and maintain or restore operational effectiveness.

Although envisioned as a CONOPS for an operational-level commander and his/her MEDAD at the joint command level, this CONOPS is equally designed to support decision making and requests for assistance by component commands, and to guide strategic responses and requests for forces from the nations at the strategic commands.

Specifically, this CONOPS serves as a guide for development of a bio-response specific annex to the operations plan (OPLAN) that includes use of specialized bio-response capabilities available to the force. The command can execute many of the response activities described in this CONOPS sooner if they anticipate and consider them in the planning process. Preparing an OPLAN annex focused on bio-response allows the command and the MEDAD to be proactive rather than reactive and gain time in the execution of a response.

Although this CONOPS suggests a linear process moving through phases, outbreak response is unlikely to be linear. Commanders may execute aspects of later phases earlier than suggested in this document. A specialized operational or even strategic capability may be applied during a tactical phase, with or without transitioning out of the tactical phase. As an example, determining the cause of an outbreak, developing a case definition, and designing control measures may require strategic capabilities, even if the tactical and operational commands can implement an effective response.

This CONOPS is one of the products of NATO Smart Defence Project 1.1045: Bio-responsiveness (SD 1.1045). SD 1.1045 seeks to increase NATO's ability to respond to biological outbreaks by pooling existing national and Alliance capabilities in five broad categories: outbreak investigation, diagnostics, evacuation, isolation, and patient

[1] The MEDAD is the senior medical staff officer in a formation headquarters responsible for ensuring that the commander and his staff are properly aware of the health and medical implications of their actions and any related issues connected to an operation. *NATOTerm* NATO Terminology Database (record 23919; accessed October 24, 2019), https://nso.nato.int/natoterm/.

management. SD 1.1045 previously: identified the tasks and capabilities necessary to successfully respond to a militarily significant outbreak of infectious disease; developed a basic concept paper describing a framework and components of bio-response and evaluated NATO's ability to perform those tasks based on national capabilities and has facilitated the exercise of those capabilities through NATO exercises. This CONOPS seeks to bridge those efforts with guidance to successfully respond to, investigate, and manage a biological outbreak.

B. Organization

This CONOPS begins with general planning assumptions for bio-response. It then discusses the background of SD 1.1045 and key bio-response capabilities. Following an overview, the bulk of the CONOPS is devoted to a discussion of the phases of a bio-response. The body of this document concludes with considerations for implementation of the CONOPS. The document includes seven appendixes:

- Appendix A: Bio-response task list with definitions;
- Appendix B: Outbreak identification checklist for use by medical directors and medical advisors;
- Appendix C: Checklist for the MEDAD when faced with recognizing and responding to a biological outbreak;
- Appendix D: Highly contagious disease first contact checklist for MTFs;
- Appendix E: Template for force health protection guidance;
- Appendix F: References;
- Appendix G: Abbreviations and acronyms.

C. Planning Considerations

This CONOPS provides guidance to manage an outbreak of military significance. Bio-response begins with a deliberate planning process and extends through the operation. During deliberate planning, the MEDAD and medical staffs at a minimum should develop plans for:

- Developing and maintaining a Common Operating Picture (COP) for contagious disease outbreaks. The plan can be integrated into routine deployment health surveillance and disease non-battle injury (DNBI) reporting and will likely provide the first indication of an outbreak. It also can facilitate communications across the deployed medical force as well as to and from the MEDADs at various levels of command. The frequency of reporting should increase during a biological outbreak.

- Identifying bio-response assets, whether assigned or potentially available via augmentation. This includes planning for the management, command and control, and integration of specialized capabilities.
- Identifying and planning for the use of subject matter expertise through reach-back or augmentation. This may include expertise in the management of an outbreak as well as expert guidance to disseminate through the operational area.
- Identifying and planning for changes in logistics requirements resulting from both the outbreak and the response.
- Mitigating the operational impact of the biological outbreak on military operations.

An outbreak of military significance is likely to extend to the local civilian population. Deployed NATO members may be evacuated to their home nation during the outbreak. Both possibilities will require significant civilian-military coordination and cooperation. The MEDADs at all levels must understand their liaison authority with the civilian authorities, and likely international organizations (IOs) and non-governmental organizations (NGOs). Some information within the NATO force will have operational security concerns. Liaison authority and information sharing arrangements should be considered during deliberate planning, including staff relationships with the J9, Civil-Military Cooperation staff.

General principles of NATO medical support, including command and staff relationships, are found in Allied Joint Publication 4.10 (AJP-4.10), Allied Joint Doctrine for Medical Support. Managing an outbreak of military significance will require coordination across the staff elements, from intelligence (J2) to operations (J3) and logistics (J4), as well as legal and public information.

General medical planning considerations apply to planning for a potential outbreak. Within the medical support operation, these include the following.

- National Force Health Protection policies, such as vaccination policies.
- Force health protection posture of the force.
- Medical ethical considerations.
- National pharmaceutical policies and stockpiles.

Planning considerations that require external coordination include the following.

- Legal considerations and authorities.
- CBRN posture of the force.
- General logistics support.

- Host nation and home nation medical capabilities.
- Transportation, to include strategic lift.
- Civilian-military coordination and cooperation.

Logistics requirements vary based on the cause of the outbreak, number of cases, and geographic dispersion. At a minimum, planners should consider the following.

- Oral and intravenous fluid requirements, both type and quantity.
- Personal Protective Equipment (PPE) requirements and quantity.
- Specialized pharmaceuticals.
- Vaccines.
- Diagnostic assays.
- Specialized medical equipment.
- Cold chain maintenance for pharmaceutical, vaccines, and diagnostic assays.
- Contaminated waste disposal and fatality management.
- Sustainment requirements and methods if Restriction of Movement (ROM) is implemented.
- Vector control measures.
- Secure food and water supplies.
- Equipment cleaning and sanitation requirements, including vehicles and airframes.

This CONOPS discusses the deployment and employment of specialized bio-response capabilities. Some capabilities are assigned, and others are available at other levels of command or as strategic reach-back.

Medical staff elements must plan to integrate these assets into a response and to become familiar with their individual capabilities and requirements. For example, the Rapidly Deployable Outbreak Investigation Team (RDOIT) has a set of core capabilities and optional capabilities. An RDOIT may deploy with a laboratory capability and be prepared to immediately process samples on site as part of its investigation, and/or it may bring an investigation capability and require support to move samples to an out of theater reference laboratory. The medical staff must understand not only the general capabilities needed, but also the specific capabilities and limitations of the actual assets available.

Information collection and sharing is critical to maintaining situational awareness and monitoring both the outbreak and the effectiveness of a response. Developing a COP of the outbreak allows medical staffs, MTFs, specialized bio-response capabilities, and

evacuation assets including the Patient Evacuation Coordination Cell (PECC) to maintain visibility and track progress. At a minimum, the COP should include numbers of suspected and confirmed cases by location; patient tracking of suspected and confirmed cases; locations, actions, and results of specialized bio-response assets; and locations and availability of specialized evacuation assets. The COP information should be updated as needed, and the frequency of the deployment health surveillance reporting should be increased as necessary to maintain situational awareness.

MEDEVAC assets with containment capability are low density and high demand capabilities. The medical staff must work closely with the PECC and the Troop Contributing Nations to ensure these assets are tracked separately, monitored closely, and carefully allocated to appropriate missions. It may be necessary to provide guidance on the use of normal MEDEVAC assets, to include potentially designating some for contagious patients as well as managing assets that inadvertently transport contagious patients.

Some NATO nations can provide mobile medical isolation capabilities; in the initial stages of an outbreak, however, the existing medical assets, largely the Role 2 facilities, will likely receive and need to manage contagious patients. Along with pre-deployment training of personnel, medical staff should plan for logistics push packages of PPE and prepare to assist in additional training on its use to protect staff and minimize spread to other patients.

Effective execution of a bio-response must consider operations and operational planning. Planning must consider:

- Theatre force flow—The surge capability into an active theatre is dependent on the flow of forces into the theatre. Bio-response capabilities may compete with other capabilities within that force flow.
- Theatre lines of communication—Effective implementation of this CONOPS requires identified lines of communication within the theatre and from the theatre to home nations.
- Reception, Staging, and Onward Movement (RSOM) areas—Bio-response capabilities must be received within a theatre and prepared for onward movement to respond.
- Maneuver—An effective bio-response must adapt to maneuver by the force, and minimize the impact of the outbreak and control measures on the commander's freedom to maneuver.

D. Scope

Responses to biological incidents will likely be recognized and first addressed at the tactical level. However, an operational-level response to outbreaks of infectious disease is

necessary when the health and/or operational consequences of those outbreaks are not manageable by deployed medical units or by a single force-contributing nation. This CONOPS and associated bio-response capabilities will also allow NATO to respond to disease outbreaks in a civilian setting, at the formal request of a host nation, or to augment a civilian-led response. A militarily significant outbreak will rise to the strategic NATO level when needed capabilities require new force requests from nations or when significant civilian response capabilities are necessary. Agricultural diseases may also present strategic challenges for NATO; although important, and many of the principals in this document would apply to such diseases, this CONOPS addresses person-to-person transmitted diseases.

Outbreaks of infectious disease become militarily significant when they cause a change in the commander's chosen course of action by:

- Reducing in-theater operational end strength;
- Negatively impacting the ability of the Alliance to project power;
- Creating a logistics burden that overwhelms the current force on the ground; and/or
- Overwhelming the ability of the medical forces to provide the appropriate routine medical care necessary to support the operational force.

This CONOPS encompasses deliberate, accidental, or naturally occurring outbreaks caused by endemic, emerging, or imported pathogens, bio-mimickers, or biological warfare agents, including those requiring maximum infection control.

The need to generate an operational-level outbreak response and the specific capabilities required depend heavily on circumstance and the information available to support medical advice and decision-making. Medical staffs must have situational awareness, including accurate and timely reporting from the tactical level. Potential triggers for operational-level execution of bio-response tasks and capabilities include:

- A single suspected case of an uncommon disease;
- Single or multiple cases of a suspected common disease or syndrome that does not respond to treatment as expected;
- Clusters of a similar illness occurring in the same time frame in different locales; and
- Unusual clinical, geographical, seasonal, or temporal presentation of a disease and/or unusual transmission rate.

Other considerations may include an unexplained increase in incidence of an endemic disease, an unusual illness that affects a large disparate population or is unusual for a population or age group, or an unusual pattern of illness or death among animals or humans.

These triggers primarily focus on the force at the operational level and indicate the need for a response to manage an outbreak within the NATO force. Their presence in the local civilian population may also trigger a local response within the NATO force to minimize transmission to the force. The presence of these triggers in the local population may also initiate a strategic decision to provide outbreak support to the local population, led either by a NATO military force or by civilian authorities. The MEDAD and medical staffs must establish and maintain situational awareness of medical risks in their area of operations to facilitate an effective response.

The response described in this CONOPS also provides a framework to address management of a regional epidemic or pandemic beyond the NATO force. Such a response would likely be coordinated within NATO Headquarters, possibly at the level of the North Atlantic Council.

E. Assumptions

This CONOPS makes assumptions about NATO operations prior to an outbreak of infectious disease of military significance:

- NATO is engaged in normal operations (peacekeeping, defensive operations, offensive operations, etc.) in an environment where a militarily significant infectious disease outbreak is possible. This could include an infectious disease imported by the NATO force.
- The Joint Force and contributing nations have performed routine and appropriate pre-deployment activities.
- The Joint Force has implemented appropriate force protection and force health protection actions, including routine actions such as:
    - Performing a health risk assessment,
    - Establishing routine consultation communication channels for reach back, and
    - Consulting medical intelligence and information to establish endemic disease risks and biological warfare or terrorism threats.
- Routine deployment health surveillance activities are in place, the force has established means of maintaining medical situational awareness, and health surveillance information is being reported to the Deployment Health Surveillance Capability (DHSC).
- Internal risk communications procedures are in place.
- Operationally, the Joint Force has produced a bio-response annex to its OPLAN considering:

- The need for specialized capabilities, such as pre-positioning elements of a Rapidly Deployable Outbreak Investigation Team (RDOIT),
- Infectious disease specific logistics requirements based on the health risk assessment,
- Alternative patient management requirements, and
- The need for specialized medical evacuation capabilities.

See Appendix B, Appendix C, Appendix D and Appendix E for example elements to consider in the annex.

F. Specialized Bio-response Capabilities

Most of the capabilities required to manage contagious disease outbreaks exist within deployed medical forces and/or standard medical treatment facilities. The biological response capacity of those forces may be insufficient and require augmentation. Some additional, specialized bio-response capabilities may be required to perform certain outbreak investigation and response tasks. If force-generated prior to deployment, these capabilities would be assigned to the Joint Force Commander and available for execution; if not, they would have to be generated via a request to nations from a NATO strategic command or NATO Headquarters. These specialized capabilities include: [2]

- *Rapidly Deployable Outbreak Investigation Teams* capable of providing reachback advice and/or rapidly deploying to an area of operations in order to support the investigation of a suspected or confirmed outbreak to provide operational and clinical advice, enhance deployed medical capabilities and support patient care.
- *Deployable Medical Bio-Laboratory* capable of safely receiving, processing, analyzing, and packaging clinical diagnostic samples up to Biosafety Level 3.
- *Medical Isolation Treatment Facility* capable of triaging, assessing and providing secondary healthcare in support of an infectious disease outbreak and/or any highly contagious patients, within the constraints of the revised theatre (outbreak) holding policy.
- *Tactical Transportable Isolator* capable of providing physical protection to enable safe forward and tactical medical evacuation of a highly contagious patient.

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[2] The RDOIT is a NATO standardized capability. The remaining specialized capabilities exist within nations and these capability statements are provided as examples to request specialized capability in the face of an outbreak. The remaining specialized capabilities are being proposed as new capability codes as part of the products of SD 1.1045.

- *Strategic (Air) Transportable Isolator* capable of providing individual or collective negative pressure protection system, trained medical personnel, aeromedical certified equipment, maritime certified equipment and transport platform to undertake a safe strategic medical evacuation of a highly contagious patient(s).

G. Bio-response CONOPS Overview

Although this CONOPS presents a linear response, the response to any given outbreak is unlikely to be linear. An effective response may require capabilities associated with a later phase even without transition to that phase.

This CONOPS describes a phased response as shown in **Error! Reference source not found.**. For planning purposes, it is structured from Phase 0 (Protect) to Phase 4 (Transition and Recovery). During Phases 0 (Protect) and 1 (Mitigate), primary outbreak response efforts will be conducted at the tactical level by assigned and attached medical assets. During these phases, the primary focus of operational-level response should be on promoting and enhancing situational awareness, determining as quickly as possible whether an outbreak is militarily significant, and generating contingent plans for enhancement or augmentation of the tactical level response if required. Operational level planners should also prepare for the possibility of transitioning to a full NATO response in Phase 2. An initial checklist to assist in the recognition of an outbreak is in Appendix B.

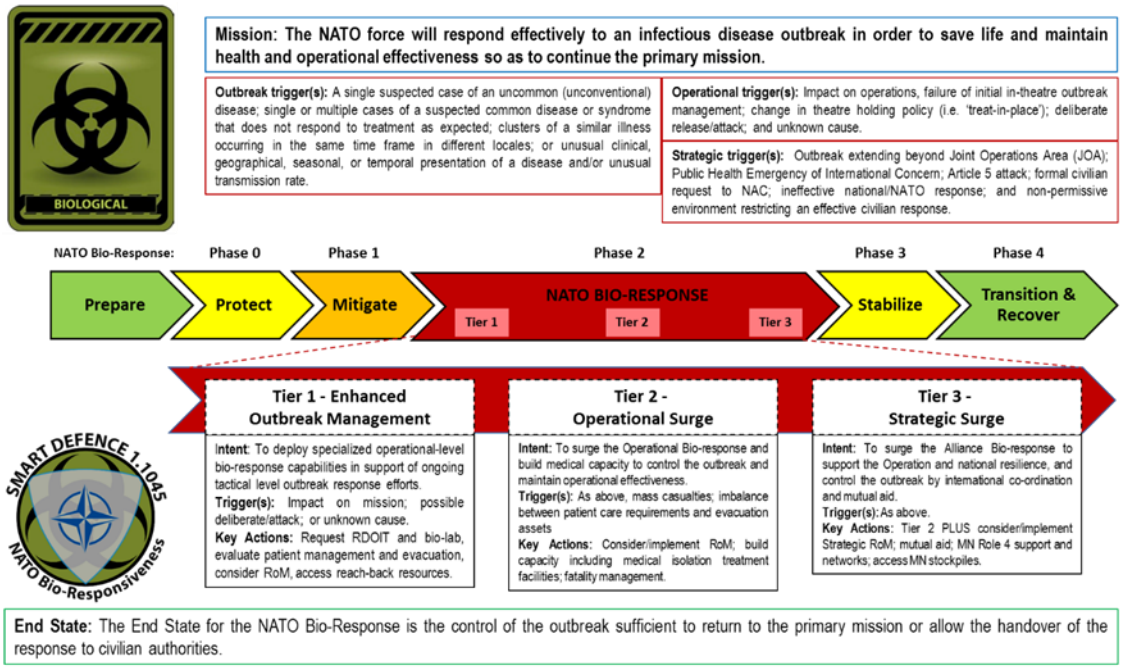

Figure 1. Phased Outbreak Response

Should an outbreak require response capabilities beyond those available at the tactical level or expand in scope and scale to become militarily significant, the response will move to Phase 2 (NATO Bio-response), which encompasses the active execution of operational-level response tasks and capabilities described in this CONOPS. The NATO Bio-response Phase has three possible tiers, executed in isolation, sequentially, or in combination:

- Tier 1: Enhanced Outbreak Management, involving the deployment of specialized operational-level bio-response capabilities to enhance tactical level outbreak response efforts;
- Tier 2: Operational Surge, involving the deployment and employment of additional military assets to increase outbreak response capacity; and
- Tier 3: Strategic Surge, involving the deployment and employment of additional outbreak management assets from home and host nations and international organizations. Tier 3 includes a whole of government response extending beyond military capabilities and a shift in command priority from its assigned mission to the bio-response and outbreak management.

The Joint Force may enter the CONOPS in any Phase or Tier, depending on the presentation of the outbreak and the triggers for movement into the phase. For example, in cases where the Joint Force's primary mission is outbreak response, the force would enter the CONOPS in Phase 2 Tier 3. Likewise, a capability from a later phase may be necessary earlier than suggested, such as an RDOIT in what would otherwise be Phase 1 to establish the cause of the outbreak and assist in developing a case definition.

If the tasks performed in any given phase are fully successful, that phase ends with a transition to Phase 3 (Stabilization) or Phase 4 (Recovery) and a return to normal operations (Phase 0). An initial investigation in Phase 1 could determine that there is no outbreak of military significance, and that the initial concern is under control. In that case, operations would immediately proceed to Phase 4, and return quickly to Phase 0. Each subsequent phase represents a greater departure from baseline, and more time needed in Phase 4 before returning to normal operations.

The preceding description of the phases is further illustrated in Table 1.

Table 1. Outbreak Response Phase Descriptions

	Phase Title	Description	
	Prepare	Pre-deployment preparation including training, planning, medical risk assessment, force health protection policy, and vaccination.	
0	**Protect**	Conventional patient management, including the use of standard precautions and isolation, case reporting, and health surveillance.	
1	**Mitigate**	In-theatre outbreak management, following recognition of a potential or confirmed outbreak. Management includes patient management, isolation and quarantine, post-exposure prophylaxis, and operational epidemiology	
2	**Respond**	**NATO BIO-RESPONSE PHASE**	
		Tier 1	**Enhanced Outbreak Management** Enhancement of the in-theatre outbreak management with RDOIT, an enhanced bio-laboratory capability, and an appropriate MEDEVAC chain. *Main effort*: Command's primary mission.
		Tier 2	**Operational Surge** Surge of the Operational Bio-response using national resources to build medical capacity including medical isolation facilities and a robust MEDEVAC chain in order to control the outbreak and maintain operational effectiveness. *Main effort*: Command's primary mission.
		Tier 3	**Strategic Surge** Surge of Allied and Multinational (MN) Bio-response resources by international coordination and mutual aid in order to support the operation and/or national resilience; optimise patient management; and control the national, regional, and global spread of the outbreak. *Main effort*: Outbreak response.
3	**Stabilize**	Monitor the effectiveness of outbreak response and control measures, as well as operational effect.	
4	**Transition and Recovery**	Stand down or handover of outbreak response to appropriate health authority, restoration of operational tempo, resupply and redeployment, and after-action reporting.	

H. Bio-response Task Summary

Bio-response tasks identified in SD 1.1045 are performed or emphasized in each phase. In many cases, tasks are performed throughout all phases of response, but the conditions of those tasks will change, as will the level of emphasis and the operational level of execution. The full list of SD 1.1045 bio-response tasks and definitions is provided as

Appendix A. The MEDAD and staff must be prepared to coordinate these tasks at the operational level, assess the adequacy of available capability, and request augmentation when needed to ensure their completion.

I. General Considerations

Standardized reporting of cases is vital to planning for, adapting to, and judging the effectiveness of outbreak management, and medical staffs should establish reporting requirements early from medical units to the operational command's Joint Medical (JMed) Division as well as to higher NATO headquarters. A very early action of the JMed staff is the development and distribution of a "medical case definition" to facilitate accurate reporting; standardized case counting is vital. At the time the command implements a control measure, some unknown cohort may be infected but asymptomatic, so at least one full incubation period is necessary to judge the effectiveness of control measures. Similarly, even if overall cases are declining, there may still be locations that are not stable and require more intense management. Moreover, changes in reporting requirements, especially changes in medical case definitions will prevent comparison to earlier data and make it very difficult to assess the true impact of management activities. Indications of effective outbreak management include:

- A decrease in new cases reported;
- A decrease in new cases by geographic area; or
- A decreased rate of new case growth.

The principles in this CONOPS generally apply whether the outbreak is within the NATO force or the surrounding population or in cases where the NATO mission is to respond to the outbreak. Responding within a host nation's population requires a much more thorough understanding of the civil-military relationship. In addition to the tasks and phases discussed in this CONOPS, the operational commander must consider:

- His/her authority to support local authorities and populations;
- His/her capability to provide support;
- Any national limitations on military support;
- Any legal limitation;
- Whether and how to treat civilian patients in military treatment facilities; and
- Internal and external risk communications.

These considerations should be included in the bio-response annex to the OPLAN discussed above and within the medical annexes and plans. Required specialized bio-response capabilities will need to be force-generated in a timely manner.

2. Phases of the CONOPS

The following sections provide detailed descriptions of each phase of this CONOPS. The descriptions include:

- The goal of the phase;
- A statement of the operational goal and elements of execution;
- Triggers for the phase;
- Key decision points and considerations;
- Emphasized essential tasks; and
- Requirements for support or information from higher command levels or outside the military chain of command.

Each section further discusses actions the operational-level commander should consider with the advice of the MEDAD. Most of these actions are within the medical system. Each phase specifically includes changes to the baseline medical situation and the support that may be necessary.

A. Phase 0—Protect

Phase 0 represents normal operations. During this phase, the deployed health care system supports traumatic injuries and routine illness. Forward, tactical, and strategic evacuation operate normally to move patients rapidly to the appropriate level of care, including strategic evacuation to home nations as needed. Deployment health surveillance occurs at the baseline frequency (normally weekly) with reports to the Deployment Health Surveillance Capability. Force health protection activities are in place, including national responsibilities such as immunizations and chemoprophylaxis for malaria where appropriate. Sanitation activities, including hygiene, food and water safety, waste management, and vector control measures, are implemented.

Bio-response tasks are performed routinely at baseline levels. The tasks in Phase 0 maintain awareness of the health of the force and of its environment. Patient management and infection control occur continuously, but no additional requirements or precautions exist.

Deployment health surveillance provides insight into the health of the force, and recognizes trends across the force that may not be apparent at a local level. Health surveillance, along with medical information and intelligence provides overall medical situational awareness and facilitates the preparation and maintenance of the medical risk assessment to inform force health protection actions. At Phase 0, patient management

focuses on trauma and minor injuries and routine disease. Infection prevention and control actions are directed at routine disease, such as diarrhea or upper respiratory disease.

Phase 0 ends when one or more of the criteria for triggering Phase 1 occurs, indicating a potential outbreak.

B. Phase 1—Mitigate

The goal of Phase 1 is to understand the initial cause and potential scope of the outbreak and to implement basic control processes to minimize its effects. Phase 1 is a response within the deployed medical force that concentrates on outbreak investigation and the elements of outbreak response, supported by the MEDAD. Appendix B presents an initial set of considerations for outbreak recognition. The triggers to begin Phase 1 are:

- A single suspected case of an uncommon disease;
- Single or multiple cases of a suspected common disease or syndrome that does not respond to treatment as expected;
- Clusters of a similar illness occurring in the same time frame in different locales; or
- Unusual clinical, geographical, seasonal, or temporal presentation of a disease and/or unusual transmission rate.

In Phase 1, the MEDAD:

- Provides an initial assessment of the outbreak to the commander; and
- Encourages forward medical units to consult as needed with reach-back for assistance with patient management and to implement MTF-specific outbreak response plans established in the preparation phase.

In addition, after reviewing the capabilities of the deployed force, the MEDAD:

- Assigns forward medical units outbreak investigation roles commensurate with their capabilities;
- Directs tactical level medical forces to perform operational epidemiology that facilitates improved medical treatment and improved control measures to prevent additional cases;
- Considers dedicating a facility to the management of cases and evacuating cases preferentially to that facility;
- Considers requesting an RDOIT if the initial investigation suggests a need for a more robust in-theatre outbreak investigation capability than is available from currently assigned units;

- Ensures a case definition is developed and disseminated to increase awareness of the potential outbreak and to more easily cohort patients for management (reach-back support may be particularly helpful);
- Disseminates actionable Force Health Protection (FHP) information on diagnostics, Personal Protective Equipment (PPE) recommendations, isolation recommendations, treatment recommendations, other advice from reach-back, and outbreak investigation results (see Appendix D and Appendix E);
- Advises the commander and staff of how the outbreak, outbreak investigation activities, and outbreak response activities may impact operations and logistical demands;
- Continues deployment health surveillance activities and uses the results to increase situational awareness of the outbreak; and
- Increases frequency of reporting as necessary to gain and maintain situational awareness.

In Phase 1, patient management differs from Phase 0 due to the need to manage a larger number of contagious disease patients and in the potential need for strict isolation at MTFs and during forward, tactical, and strategic evacuation by ground and air to conduct infection prevention and control.

Phase 1 ends if the initial investigation does not identify a militarily significant event, or if local control measures are successful. Phase 1 then transitions to Phase 4 and back to normal operations. Otherwise, Phase 1 transitions into Phase 2.

PHASE 1 – MITIGATE	
Intent: To understand the initial cause and potential scope of the outbreak and to implement basic control processes to minimize its effects.	
Trigger(s): Phase 1 is triggered by: • A single suspected case of an uncommon disease • Single or multiple cases of a suspected common disease or syndrome that does not respond to treatment as expected • Clusters of a similar illness occurring in the same time frame in different locales • Unusual clinical, geographical, seasonal, or temporal presentation of a disease and/or unusual transmission rate	
Tasks Emphasized: • Perform deployment health surveillance • Perform operational epidemiology • Perform national outreach, reach-back, and fusion • Provide medical situational awareness • Perform patient management • Conduct infection prevention and control	**Supporting Tasks**: • Perform medical C4I and decision support • Prepare medical risk assessment • Perform strategic communications • Conduct military and civilian cooperation • Support clinical diagnosis • Perform sample management • Perform medical evacuation (as required) • Employ medical countermeasures • Conduct isolation, quarantine, and restriction of movement • Sustain medical support operations • Manage contaminated clinical waste • Provide fatality management • Provide psychosocial support

C. Phase 2—NATO Bio-response

The goal of Phase 2 is control of the outbreak while committing the least number of resources. Phase 2 begins the NATO bio-response and is further divided into three tiers of response capability to resolve the outbreak as quickly as possible through the application of the appropriate capability at the appropriate time.

Phase 2 is the transition from a largely tactical response to a routine contagious disease outbreak to an operational-level response through the request of additional assets from nations and the deployment of NATO bio-response capabilities, triggered by:

- The failure of Phase 1 outbreak management;
- Decreased operational effectiveness of the force as a consequence of the outbreak;
- A change in theatre holding policy as a result of numbers or nature of patients;
- Suspected deliberate release of a pathogen; or

- An outbreak with an unknown cause.

In Phase 2, tasks generally increase in intensity and emphasis from Phase 1. Additional tasks may be performed, such as forensic functions if intentional release is suspected or the source of the outbreak is unknown. Fatality management is emphasized for outbreaks with a high case fatality rate or special handling requirements. Depending on the nature of the outbreak, contaminated waste disposal may be significant, and medical support and sustainment operations will reflect increasing logistics requirements for infectious disease management, including pharmaceuticals, medical supplies, and personal protective equipment.

In Phase 2 and subsequent phases, the operational commander in consultation with the MEDAD and strategic commands must establish strategic communications:

- Within the force,
- To the population at risk,
- To those impacted by the outbreak,
- To the local population and host nation, and
- To the home nations.

An outbreak that enters Phase 2 will almost certainly have significant impacts on the commander's ability to execute his/her operational missions. The MEDAD should specifically consider augmentation to:

- Support clinical diagnosis,
- Provide care in place,
- Provide medical management under strict isolation,
- Provide medical evacuation (forward, tactical, and strategic) under strict isolation, and
- Enhance in-theater outbreak investigation and management capability.

Appendix C presents a checklist for considerations by the MEDAD in responding to an outbreak.

1. Phase 2, Tier 1: Enhanced Outbreak Management

The goal of Phase 2, Tier 1 is to enhance the in-theatre outbreak management capability with outbreak investigation and diagnostic support capabilities while ensuring appropriate medical evacuation. Phase 2, Tier 1 involves the deployment of specialized operational-level bio-response capabilities in support of ongoing tactical level outbreak response efforts.

In Tier 1, the MEDAD:

- Requests an RDOIT, if not previously requested, to conduct a more thorough investigation with sample and specimen collection as appropriate and transport if necessary to an appropriate laboratory;[3]
- Requests, if not previously requested, enhanced medical laboratory support to aid in diagnosis of patients;
- Evaluates patient management and patient holding assets for capability and capacity;
- Evaluates any needed changes in evacuation policies or requirements, such as evacuation under strict isolation or treatment in place in lieu of evacuation;
- Establishes reporting requirements to measure the extent of the outbreak and monitor the impact of control measures;
- Evaluates medical sustainment requirements;
- Ensures MTF(s) implement patient isolation procedures to isolate infected cohorts and minimize transmission (see Appendix D);
- Updates the medical risk assessment;
- Updates FHP guidance (see Appendix E);
- Evaluates alternatives and advises the commander on the impact of recommended changes on operations:
    - Potential limitations in maneuver
    - Changes in logistics requirements
    - Changes in intratheater and intertheater movement; and
- Considers recommending actions such as Restriction of Movement to and from the impacted units, including the quarantine of high-risk contacts, for the commander's consideration.

[3] A deployable laboratory is an optional module of the RDOIT. Depending on the providing nation, the RDOIT may be able to perform laboratory analysis in theater without requiring a reach-back laboratory.

PHASE 2 TIER 1 – ENHANCED OUTBREAK MANAGEMENT	
Intent: To enhance the in-theatre outbreak management with RDOIT, an enhanced bio-laboratory capability, and an appropriate MEDEVAC chain.	
Trigger(s): Phase 2 Tier 1 is triggered by: • Potential impact on operations • Possible deliberate release or attack • Unknown cause	
Tasks Emphasized: • Perform deployment health surveillance • Perform operational epidemiology • Perform national outreach, reach-back, and fusion • Support clinical diagnosis • Perform sample management • Perform patient management • Employ medical countermeasures • Conduct infection prevention and control • Conduct isolation, quarantine, and (possibly) restriction of movement	**Supporting Tasks**: • Perform forensic functions • Perform medical C4I and decision support • Provide medical situational awareness • Prepare medical risk assessment • Perform strategic communications • Conduct military and civilian cooperation • Employ laboratory assets • Perform medical evacuation (as required) • Sustain medical support operations • Manage contaminated clinical waste • Provide fatality management • Provide psychosocial support
Related Capabilities: Rapid Deployable Outbreak Investigation Team; Deployable Medical Bio-Laboratory	

2. Phase 2, Tier 2: Operational Surge

The goal of Phase 2, Tier 2 is to surge the operational-level bio-response using national military resources to build medical capacity in order to maintain operational effectiveness and control the outbreak. Phase 2, Tier 2 involves the use of available military assets to increase outbreak response capacity. Tier 2 actions continue the activities of Tier 1, but Tier 2 emphasizes a surge of operational capability.

Tier 1 transitions into Tier 2 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.

In Tier 2, the operational-level commander, in consultation with the MEDAD requests, receives, and employs augmentation as needed to perform all identified tasks in SD 1.1045.

The MEDAD:

- Revises and implements evacuation policy if:

    - Assets are insufficient for the number of cases;
    - Patients are not stable enough for evacuation; or
    - Strict isolation requirements exceed available evacuation assets;
- Implements treat-in-place options as necessary to best manage patients. Options that should be considered include:
    - Augmentation with additional patient management capability such as an additional MTF, and
    - Movement of additional health care providers to facilities of opportunity to provide isolation and patient management;
- Implements patient isolation capabilities and requests augmentation by a mobile isolation capability as required (see Appendix D);
- Updates sustainment requirements resulting from changes in patient type (infectious disease vice traumatic injuries) as needed;
- Updates requirements for medical waste disposal and update plans for disposal;
- Updates FHP guidance to address outbreak (see Appendix E); and
- Applies available public health and preventive medicine assets and requests augmentation if needed.

The standardized reporting begun in Tier 1 continues in Tier 2 and provides vital insight into the success of outbreak management activities. There will be a lag of at least one incubation period before a new control measure can be fully evaluated.

If case reports and operational epidemiology investigations indicate effective outbreak management and patient management and medical evacuation are in balance to provide an appropriate standard of care, Tier 2 continues until the outbreak is stable and begins trending to baseline. At that time, the response transitions to Phase 3. If the operational surge of Tier 2 does not stabilize the outbreak, the response transitions to Tier 3, Strategic Surge.

<table>
<tr><th colspan="2">PHASE 2 TIER 2 – OPERATIONAL SURGE</th></tr>
<tr><td colspan="2">Intent: To surge the operational bio-response using national resources to build medical capacity including medical isolation facilities and a robust MEDEVAC chain in order to control the outbreak and maintain operational effectiveness.</td></tr>
<tr><td colspan="2">Trigger(s): Phase 2 Tier 2 is triggered by:
Risk of mission failure
Failure of in-theatre outbreak management
Change in theatre holding policy (i.e., ‘treat-in-place’)
Mass casualties
Inadequate strategic MEDEVAC chain</td></tr>
<tr><td>Tasks Emphasized:
Perform deployment health surveillance
Perform operational epidemiology
Perform national (and NATO) outreach, reach-back, and fusion
Conduct (local) military and civilian cooperation
Employ laboratory assets
Support clinical diagnosis
Perform sample management
Perform medical evacuation
Perform patient management
Employ medical countermeasures
Conduct infection prevention and control
Conduct isolation, quarantine, and (operational) restriction of movement
Manage contaminated clinical waste
Provide fatality management
Provide psychosocial support</td><td>Supporting Tasks:
Perform forensic functions
Perform medical C4I and decision support
Provide (strategic) medical situational awareness
Prepare (updated) medical risk assessment
Perform strategic communications
Sustain medical support operations</td></tr>
<tr><td colspan="2">Related Capabilities: Rapid Deployable Outbreak Investigation Team; Deployable Medical Bio-Laboratory; Strategic (Air) Transportable Isolator; Medical Isolation Treatment Facility</td></tr>
</table>

3. Phase 2, Tier 3: Strategic Surge

The goal of Phase 2, Tier 3 is to surge the NATO bio-response resources to optimize patient management and control the national, regional, and global spread of the outbreak. Phase 2, Tier 3 involves requests for additional outbreak management assets from home and host nations, international organizations, etc. A Tier 3 outbreak response requires whole of government support, such as home nation Role 4 medical facilities, national or international public health agencies, or strategic lift beyond available military capability or capacity. Tier 3 begins when capability or capacity described in Tier 2 is exceeded and the outbreak continues, either through further spread or significant patient management

requirements. Tier 3 moves the outbreak response to the strategic level, and engages home and host nation civilian capabilities, and potentially International Organizations and Non-Governmental Organizations. An outbreak requiring a Tier 3 response will likely produce illnesses in both the NATO military force and the local civilian population.

In the case of a NATO deployment specifically to conduct outbreak response and management, the force will most likely enter this CONOPS in Phase 2, Tier 3.

In Tier 3, the operational commander shifts priority from the assigned operational mission to outbreak response. With the arrival of civilian capabilities and their potential prominence in the outbreak response, the operational commander's role becomes one of facilitation and support. Military and civilian cooperation predominates.

The tasks identified and discussed in Tier 2 continue in Tier 3. They largely increase in scale as the outbreak continues, and transition from military forces to civilian agencies.

- Medical evacuation may increasingly involve strategic evacuation under strict isolation to home nations.
- Patient management increasingly involves Role 4 facilities in home nations.
- Specialized laboratory capabilities from national public health laboratories perform laboratory support and provide diagnostic support.
- An extended response may require the rotation of capability providers and the transfer of supplies, equipment, facilities and increased logistical support.

Military and civilian cooperation activities increase during this phase as the operational commander coordinates with civilian agencies and authorities and transitions outbreak management functions to those agencies as appropriate. The operational level commander should anticipate increasing requirements for coordination with the NATO strategic commands and through those commands to NATO civilian agencies who are providing and coordinating civilian capability. The operational command should anticipate that home nations that are providing forces will seek to directly support their forces in the JOA, likely creating additional coordination needs.

Case reporting requirements continue within the NATO force. The MEDAD and JMed staff can anticipate increased case investigation and counting in the civilian population and by civilian agencies. This may include reporting cases within the NATO force to home nation civilian authorities and potentially to civilian agencies in the JOA. The NATO force and civilian authorities must use the same case definition to compare actions and results.

Phase 2 transitions to stabilization as the outbreak plateaus and begins to wane.

PHASE 2 TIER 3 – STRATEGIC SURGE	
Intent: To surge Allied and MN Bio-response resources in order to support the operation and/or national resilience, optimise patient management and control the national, regional and global spread of the outbreak.	
Trigger(s): Phase 2 Tier 3 is triggered by the recognition of: • Outbreak extending beyond Joint Operations Area (JOA) • Declaration of a Public Health Emergency of International Concern (PHEIC) by the World Health Organization • Article 5 response • Formal civilian request to the North Atlantic Council (NAC) • Ineffective national or NATO response • Non-permissive environment restricting an effective civilian response	
Tasks Emphasized: • Perform deployment health surveillance • Perform operational epidemiology • Perform national outreach, reach-back, and fusion • Perform strategic communications • Conduct (strategic) military and civilian cooperation • Employ laboratory assets • Support clinical diagnosis • Perform sample management • Perform medical evacuation • Perform patient management • Employ medical countermeasures • Conduct infection prevention and control • Conduct isolation, quarantine, and (operational and strategic) restriction of movement • Manage contaminated clinical waste • Provide fatality management • Provide psychosocial support	**Supporting Tasks**: • Perform forensic functions • Perform medical C4I and decision support • Provide (strategic) medical situational awareness • Prepare (updated) medical risk assessment • Sustain medical support operations

D. Phase 3—Stabilize

The goal of Phase 3 is to maintain control of the outbreak. Phase 3 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. Phase 3 continues until the outbreak is clearly over and returned to baseline.

Activities from the previous phase continue, but now concentrate on maintaining control and monitoring for unexpected increases in the number of cases, or a second outbreak of another disease. The operational commander maintains activity as required and may assume roles performed by civilian authorities in Phase 2, Tier 3 if those civilian

agencies decrease their activities or depart the operating area. This might include a greater role in strategic evacuation, for instance, if civilian agencies had provided that capability in the Phase 2 response.

Phase 3 ends when the outbreak is stable, new cases, if any, are at or near baseline, and the patient population is decreasing. In general, an outbreak ends when there are no new cases after twice the maximum incubation period of the pathogen. By that definition, an outbreak of an endemic disease with a routine, low incidence will not end; it will transition into recovery.

<table>
<tr><th colspan="2">PHASE 3 – STABILIZE</th></tr>
<tr><td colspan="2">Intent: To monitor the effect of the Phase 2 tiered response.</td></tr>
<tr><td colspan="2">Trigger(s): Phase 3 is triggered by:
An epidemic plateau</td></tr>
<tr><td>Tasks Emphasized:
Perform deployment health surveillance
Perform operational epidemiology
Perform national outreach, reach-back, and fusion
Prepare medical risk assessment
Perform strategic communications
Conduct (strategic) military and civilian cooperation
Employ laboratory assets
Support clinical diagnosis
Perform sample management
Perform medical evacuation
Perform patient management
Employ medical countermeasures
Conduct infection prevention and control
Conduct isolation, quarantine, and restriction of movement
Sustain medical support operations
Manage contaminated clinical waste
Provide fatality management
Provide psychosocial support</td><td>Supporting Tasks:
Perform forensic functions
Perform medical C4I and decision support
Provide medical situational awareness</td></tr>
</table>

E. Phase 4—Transition and Recovery

The goal of Phase 4 is to return to as much of the original (Phase 0) baseline as possible and to resume operations while incorporating appropriate lessons learned into routine operations. The transition to Phase 4 begins when control measures are successful, the outbreak is over, and the patient population is returning to baseline.

Phase 4 actions concentrate on returning to pre-event operations. Augmentation assets are prepared for release to pre-event roles and to home nations as appropriate. Organizations are reconstituted or replaced, sustainment operations return to baseline. Psychosocial support requirements are evaluated and support provided.

The MEDAD:

- Evaluates psychosocial support requirements and facilitates the required support, and
- Evaluates residual impacts of the outbreak on the force and advises the commander on the force's medical readiness to resume normal operations.

<table>
<tr><th colspan="2">PHASE 4 – TRANSITION AND RECOVERY</th></tr>
<tr><td colspan="2">Intent: To return to the primary mission and/or handover the response to civilian authorities.</td></tr>
<tr><td colspan="2">Trigger(s): Phase 4 is triggered by:
Effective outbreak response e.g. fall in case reports and epidemiology curve
Adequate medical capability and capacity
Adequate MEDEVAC assets
Adequate hazard management
Adequate fatality management
Regional security and stability</td></tr>
<tr><td>Tasks Emphasized:
Perform deployment health surveillance
Provide medical situational awareness
Perform medical risk assessment
Perform strategic communications
Perform military and civilian cooperation
Perform patient management
Conduct infection prevention and control
Sustain medical support operations
Manage contaminated clinical waste
Provide fatality management
Provide psychosocial support</td><td>Supporting Tasks:
Perform national outreach, reach-back, and fusion
Perform medical C4I and decision support
Employ laboratory assets
Support clinical diagnosis
Perform sample management
Perform medical evacuation
Employ medical countermeasures</td></tr>
</table>

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Appendix A. Tasks and Definitions

The listing of tasks associated with each bio-response component is intended to support the identification of medical capabilities needed to perform them. Many of these tasks must be performed in support of multiple components; in such cases, multiple capabilities may be required.

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 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.

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 theater organizations.

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 MEDAD 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.

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 and environmental analysis results, and operational epidemiology, including 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.

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.

Perform strategic communications

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.

Conduct military and civilian cooperation

Liaise with NGOs, IOs, the host nation’s medical system, other multinational medical forces, and NATO medical personnel.

Employ laboratory assets

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.

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.

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 medical evacuation

Provide medically supervised enroute 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-theater 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 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.

Employ medical countermeasures

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.

Conduct infection prevention and control

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.

Conduct isolation, quarantine, and restriction of movement

Establish isolation wards or separate MTFs 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 theater level. Personnel interacting with isolated individuals must use good infection control and personal protection practices.

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).

Manage contaminated clinical waste

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.

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 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.

Appendix B. Outbreak Identification Checklist[4]

This section is designed to provide some common steps for medical personnel and medical staff at all levels to guide their response to a potential outbreak.

- Verify the initial clinical or laboratory diagnosis; this may be a probable or confirmed diagnosis.
- Confirm there is an outbreak based upon current and background rates.
- Establish a case definition for reporting and generation of epidemiological curves.
- Collect case information on person, place, time, and activities.
- Develop the hypothesis.
- Implement control measures.
- Evaluate control measures.
- Collect data and evaluate the hypothesis (analytical epidemiology).
- Formulate conclusions.
- Communicate findings and risks.

[4] Adapted from NATO, *The Medical Management of CBRN Casualties*, AMedP-7.1(A), (Brussels: June 2018).

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Appendix C. Medical Advisor Checklist

The following are questions and actions the MEDAD at the operational level should consider.

- Is there an outbreak supported by clinical diagnosis and local medical intelligence?
- Is the outbreak localized and manageable by the local medical hospital or clinical organizations?
- Consider requesting specialized investigation capability, such as an RDOIT, early.
- Does the outbreak meet the criteria for a NATO bio-response?
    - A single suspected case of an uncommon disease;
    - Single or multiple cases of a suspected common disease or syndrome that does not respond to treatment as expected;
    - Clusters of a similar illness occurring in the same time frame in different locales; or
    - Unusual clinical, geographical, seasonal, or temporal presentation of a disease and/or unusual transmission rate.
- What is the case definition?
- Has the causative agent been identified through laboratory testing?
- Is diagnostic testing available and appropriate for identification of the causative agent?
- Consider requesting diagnostic support to augment deployed medical units.
- Is there a specific treatment protocol in place? Is the treatment available and appropriate for the roles of care?
- Establish reporting requirements to higher medical authorities and local civilian reporting health agencies.
- Consider the need for and operational impacts of restrictions of movement for both military and displaced civilian populations.
- Can patients be appropriately isolated and treated in the available roles of care?

- Will the numbers and types of patients exceed the capability or capacity of available medical facilities? Consider the use of civil and military facilities for patient treatment.
- Can patients be safely evacuated through the standard medical evacuation system?
- Do patients require evacuation under strict isolation?
- Are there national or international restrictions on moving patients or receiving them in home nation facilities?
- Can a medical facility be devoted to treating outbreak patients?
- Can the host nation provide medical support in their facilities?
- If there are more patients than deployed treatment capacity and evacuation is insufficient, what other options are available? Is the use of a non-medical shelter and medical personnel augmentation possible?
- How and with what frequency do we evaluate the success of our control measures?

Appendix D. First Contact Checklist[5]

Prepare

- ☐ Obtain the most updated epidemiological information
- ☐ Identify a room for isolation with a blocked access point (door, lock)
- ☐ Identify a potential corridor
- ☐ Identify a donning/doffing area or a decontamination area
- ☐ Check dedicated equipment (PPE, disinfection, communication devices, waste management) and establish procedures for use
- ☐ Conduct regular exercise

Identify

- ☐ Check travel or exposure history
- ☐ Collect information to support contact tracing
- ☐ Check signs and symptoms (fever, myalgia, vomiting, diarrhea, coughing)
- ☐ Use PPE

Isolate

- ☐ Immediately arrange a private room (minimal requirements):
    - ☐ Remove reusable porous surfaces
    - ☐ Protect necessary porous surfaces (mattress, pillow) with an impermeable material
    - ☐ Place an approved disinfection product—gel, spray, wipes
    - ☐ Place spare nitrile gloves and tape
    - ☐ Place a mobile toilet
    - ☐ Place biohazard bags and a bin
    - ☐ Place a puncture-proof, sealed container for sharps
    - ☐ Organize communications (phone, radio in a sealed bag)
- ☐ Establish a corridor
- ☐ Establish a donning/doffing area
- ☐ Use PPE
- ☐ Escort patient to the dedicated room

[5] Checklist provided by LTC Ales Rybka, Commander, CZE Mobile Hospital Isolation Unit, with minor modifications by the SD 1.1045 team.

Inform

- ☐ Contact local authorities/JMed/infection control staff
- ☐ Report information to support contact tracing
- ☐ Request an immediate patient transfer

Manage

- ☐ Limit the number of providers
- ☐ Use PPE
- ☐ Regularly perform hand hygiene and change gloves
- ☐ Avoid invasive or aerosol-generating procedures (e.g., positive pressure ventilation (BiPAP and CPAP), endotracheal intubation, airway suction, high frequency oscillatory ventilation, tracheostomy, chest physiotherapy, nebulizer treatment, sputum induction, bronchoscopy)
- ☐ Supervise donning/doffing/decontamination procedure
- ☐ Supervise waste management
- ☐ Consider use of an absorbent powder to prevent spillages of liquid waste
- ☐ Report occupational exposure
- ☐ Perform surface cleaning of any contaminated area or equipment

Decontaminate

- ☐ Use PPE
- ☐ Decontaminate (disinfect) equipment and room
- ☐ Consider use of an absorbent powder to prevent spillages of liquid waste
- ☐ Dispose of waste

Appendix E. Force Health Protection Template[6]

FOR IMMEDIATE ACTION

Distribution:

Situation: Brief description of the outbreak, including cause (if known) and location.

Mission:

- Prompt recognition, identification, and control of outbreak.
- Identification of cases and prevention of further spread.

Timings:

- Effective date and time of guidance. Upon receipt if immediately effective.

Orders:

IDENTIFICATION OF CASES

- Provide direction for case identification such as referencing and attaching a case definition.
- Provide guidance on reporting suspected cases and on the process for confirming cases.
- Provide guidance on contact tracing (such as questionnaires and interviews).

REPORTING

- Provide reporting instructions and follow-up reporting through Epi-NATO.

CONTROLS

- Provide guidance on:
    - Personal hygiene,
    - Isolation of symptomatic individuals, and
    - Importance of reporting for medical care.
- Reinforce personal and communal hygiene measures IN ALL AREAS.
- Isolate all cases and contacts as appropriate.
- Reinforce barrier nursing.

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[6] Adapted from guidance provided by the Air Component Command MEDAD during the Trident Juncture 2018 Command Post Exercise.

- Identify contaminated areas and manage consequences in order to prepare for necessary disinfection and waste management.

ACTIONS ON OUTBREAK

- Confirm outbreak.
- Inform higher formation.
- Implement local outbreak control plan—establish outbreak control team.
- Implement concurrent control measures (seek advice from issuing HQ FHP where required).
- Monitor and report situation.

CSS:

- Provide any specific guidance. This might include equipment requirements and reporting, personal protective equipment specifications, etc.

Amplifying Information:

- Consider direct liaison authority (DIRLAUTH) with local NATO and host nation (HN) medical authorities/representatives if appropriate.

Summary. The management of communicable disease incidents will vary according to the severity of the outbreak, population at risk, and vulnerability to spread at the location. It may range from the provision of advice to the formation of the outbreak control team. In any case, deployed medical staff must ensure that an executable and coordinated outbreak control plan is in place and MTFs are able to promptly control and investigate an outbreak of communicable disease.

Appendix F. References

STANAG 2228 AJP-4.10(C)	*Allied Joint Doctrine for Medical Support*
STANAG 2481 AMedP-3.2(A)	*Medical Information Collection and Reporting*
STANAG 2529 AMedP-7.7(A)	*Rapidly Deployable Outbreak Investigation Team (RDOIT)*
STANAG 2535 AMedP-4.1(A)	*Deployment Health Surveillance*
STANAG 2542 AJMedP-1(A)	*Allied Joint Medical Planning Doctrine*
STANAG 2546 AJMedP-2(A)	*Allied Joint Medical Doctrine for Medical Evacuation*
STANAG 2547 AJMedP-3(A)	*Allied Joint Medical Doctrine for Medical Intelligence*
STANAG 2552 AMedP-1.3(A)	*Guidelines for a Multinational Medical Unit*
STANAG 2560 AMedP-1.6(A)	*Medical Evaluation Manual*
STANAG 2560 AMedP-1.7(A)	*Capability Matrix*
STANAG 2560 AMedP-1.8(A)	*Skills Matrix*
STANAG 2561 AJMedP-4(A)	*Allied Joint Medical Force Health Protection Doctrine*
STANAG 2562 AJMedP-5(A)	*Medical Communications and Information Systems (MedCIS)*
STANAG 2563 AJMedP-6(A)	*Allied Joint Civil-Military Medical Interface Doctrine*

STANAG 2571 AMedP-8.5(A)	*Minimum Test Requirements for Laboratory Units of in Theatre Military Medical Treatment Facilities (MTFs)*
STANAG 2596 AJMedP-7(A)	*Allied Joint Medical Doctrine for Support to CBRN Defensive Operations*
STANAG 2872 AMedP-1.14(A)	*Medical Design Requirements for Military Motor Ambulances*
STANAG 2873 AMedP-7.6(A)	*Commander's Guide on Medical Support to Chemical, Biological, Radiological, and Nuclear (CBRN) Defensive Operations*
STANAG 2879 AMedP-1.10(A)	*Medical Aspects in The Management of a Major Incident/Mass Casualty Situation*
STANAG 6505 AJMedP-9(A)	*Multinational Medical Support*

Appendix G. Abbreviations and Acronyms

A	
ACO	Allied Command Operations
ACT	Allied Command Transformation
AE	Aeromedical Evacuation
AJP	Allied Joint Publication
AJMedP	Allied Joint Medical Publication
AMedP	Allied Medical Publication
AOR	Area of Responsibility
AOO	Area of Operations
APOD	Air Point of Disembarkation
APOE	Air Point of Embarkation
ASU	Aeromedical Staging Unit
B	
BC	Battle Casualty
BioMedEP	Biomedical Expert Panel
C	
C2	Command and Control
C3	Consultation, Command and Control
C4I	Command, Control, Communication, Computers and Information
CBRN	Chemical, Biological, Radiological and Nuclear
CBRN MedWG	Chemical, Biological, Radiological and Nuclear Medical Working Group
CC	Component Commands
CIM	Critical Incident Management
CIMIC	Civil-Military Cooperation
CIS	Communications and Information System
CJOC	Combined Joint Operations Centre
CM	Consequence Management
COA	Courses of Action
COMEDS	Committee of the Chiefs of Military Medical Services in NATO
CONOPS	Concept of Operations
COP	Common Operating Picture
CRO	Crisis Response Operations
CSU	Casualty Staging Unit
D	
DHSC	Deployment Health Surveillance Capability
DNBI	Disease and Non-Battle Injury(ies)
DR	Disaster Relief
E	
EIH	Environmental and Industrial Hazards
EU	European Union

F

FAE	Forward Aeromedical Evacuation
FHP	Force Health Protection

H

HA	Humanitarian Assistance
HN	Host Nation
HNS	Host Nation Support
HQ	Headquarters

I

ICRC	International Committee of the Red Cross
ICU	Intensive Care Unit
IDRO	International Disaster Relief Operation
IMS	International Military Staff
IO	International Organisation

J

JALLC	Joint Analysis and Lessons Learnt Centre
JC	Joint Command
JFC	Joint Forces Command
JMed	Joint Medical
JOA	Joint Operations Area
JOC	Joint Operations Centre
JTF	Joint Task Force

L

LN	Lead Nation

M

MASCAL	Mass Casualty
MC	Military Committee
MEDDIR	Medical Director
MED	Medical
MEDAD	Medical Advisor
MedEvac	Medical Evacuation
MMU	Multinational Medical Unit
MN	Multinational
MOU	Memorandum of Understanding
MTF	Medical Treatment Facility

N

NATO	North Atlantic Treaty Organisation
NBC	Nuclear, Biological and Chemical
NGO	Non-Governmental Organisation
NRF	NATO Response Force

O

OPCOM	Operational Command
OPCON	Operational Control
OPLAN	Operation Plan

P

PAR	Population at Risk
PECC	Patient Evacuation Coordination Cell
PfP	Partnership for Peace
R	
RDOIT	Rapidly Deployable Outbreak Investigation Team
RFI	Requests for Information
RSN	Role Specialisation Nation
RSOM	Reception, Staging, and Onward Movement
S	
SC	Strategic Command(er)
SD	Smart Defence
SOP	Standing Operating Procedure
SPOE	Sea Point of Embarkation
STANAG	Standardisation Agreement
T	
TCN	Troop Contributing Nation
TOA	Transfer of Authority
W	
WMD	Weapons of Mass Destruction

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14. ABSTRACT

Following the international response to the outbreak of Ebola Virus Disease in West Africa in 2014, the International Military Staff of the North Atlantic Treaty Organization (NATO) proposed a Smart Defence project to enhance the alliance's ability to respond to a biological outbreak. The United States agreed to lead the project, and the U.S. Army Office of the Surgeon General served as the office of primary responsibility. The project, ultimately titled Smart Defence 1.1045 (SD 1.1045) involved 14 nations and multiple NATO commands and activities. This paper serves as the historical record of the activities of SD 1.1045, and delivers the results of those activities to the Committee of Chiefs of Military Medical Services (COMEDS), the Allied Command Transformation, the Allied Command Operations, and the International Military Staff. Volume 1 summarizes the historical record of the project and Volume 2 presents a concept of operations (CONOPS) for a NATO response to a biological outbreak.

15. SUBJECT TERMS

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