

NATO STANDARD

AMedP-7.6

**COMMANDER'S GUIDE ON MEDICAL
SUPPORT TO CHEMICAL, BIOLOGICAL,
RADIOLOGICAL, AND NUCLEAR (CBRN)
DEFENSIVE OPERATIONS**

Edition A Version 1

FEBRUARY 2018



NORTH ATLANTIC TREATY ORGANIZATION

ALLIED MEDICAL PUBLICATION

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NATO LETTER OF PROMULGATION

8 February 2018

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CHAPTER 1 INTRODUCTION

1.1. BACKGROUND

1. Incidents involving the employment or threat of chemical, biological, radiological, and nuclear (CBRN) weapons and other toxic materials pose serious challenges to Allied military operations worldwide. CBRN incidents include the detonation of CBRN weapons and the accidental or deliberate release of chemical and biological agents, toxic industrial chemicals (TICs) and toxic industrial materials (TIMs), biological pathogens and toxins, and radioactive material. Commanders must consider the possibility that CBRN incidents will occur and should develop appropriate CBRN defensive measures against the effects of these incidents when planning and conducting operations.
2. As detailed in this document, CBRN incidents pose several unique challenges to medical operations. Many aspects of CBRN medical support will be different from conventional medical support and may require coordination and collaboration with non-medical forces. In addition, medical forces have a special role in CBRN defence, since these forces may provide the primary means of detection of covert attacks or other unrecognized CBRN incidents.
3. Medical command and staff elements are responsible for advising the Combined Joint Force Commander (CJFC) on medical aspects of CBRN defence, for generating health risk assessments and integrating those assessments into command advice and decision making, for monitoring the health of the force, and for guiding and integrating all medical support capabilities available to the command.
4. Medical support—through the prevention of illness or injury, the detection of CBRN incidents via health and disease surveillance, the evacuation and treatment of CBRN casualties, and the rapid return to duty of as many individuals as possible—is a critical component of CBRN defence. While Allied policy and doctrine acknowledge that medical support is primarily a national responsibility, the CJFC directs medical support capabilities and individual and unit health-related practices to prevent or mitigate any effects of CBRN incidents that would impair or preclude the joint force from achieving its objectives.
5. AMedP-7.6, *Commander's Guide on Medical Support to Chemical, Biological, Radiological, and Nuclear (CBRN) Defensive Operations*, is subordinate to STANAG 2596 (AJMedP-7), *Allied Joint Medical Doctrine for Support to CBRN Defensive Operations*, which provides doctrine for medical support to the North Atlantic Treaty Organization (NATO) multinational joint CBRN operations and essential medical CBRN defence background for medical planning staff. STANAG 2542 (AJMedP-1), *Allied Joint Medical Planning Doctrine*, describes the medical planning process for allied joint operations. STANAG 2461 (AMedP-7.1), *The Medical Management of*

CBRN Casualties, is a parallel document to AMedP-7.6 and guides CBRN casualty management from point of exposure through care at a Role 3 Medical Treatment Facility (MTF). STANAG 2228 (AJP-4.10), *Allied Joint Medical Support Doctrine*, provides overarching medical support doctrine for NATO multinational joint operations. STANAG 2451 (AJP-3.8), *Allied Joint Doctrine for Chemical, Biological, Radiological, and Nuclear Defence*, provides CBRN defence doctrine for NATO multinational joint operations.

1.2. AIM

1. This publication is intended to inform commanders and provide guidance to Medical Advisors, Medical Directors, and medical staff at the CJFC level on the development and execution of CBRN medical courses of action (COAs). It explicitly considers the interactions of medical staff elements with operational staff (particularly CBRN defence staff); the role of medical support in CBRN defence COAs; and the interface with host nations, international and non-governmental organizations (NGOs), and member nations. This publication focuses on those operational-level aspects of medical support that are unique to CBRN incidents or would differ from conventional medical support when conducted in a CBRN environment.

1.3. SCOPE

1. AMedP-7.6 encompasses all aspects of CBRN medical support at the operational level, with specific attention given to the flow of resources, information, and casualties to, from, and among medical units. The operational level is “the level at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theatres or areas of operations.”¹ AMedP-7.6 contrasts with AMedP-7.1, which considers medical support in MTFs and at the tactical unit level.

2. The Medical Advisor is the senior medical staff officer in a formation headquarters who is 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 the operation. AMedP-7.6 provides commanders, staffs, and medical advisors guidance on the medical implications of actions taken in all phases of operations to mitigate the effects of CBRN incidents.

3. The Medical Director is the functional head of the medical services in a formation or theatre of operations. He may also have the additional responsibility of being the Medical Advisor to a senior commander. AMedP-7.6 provides the Medical Director guidance or direction on the development of medical COAs and their integration within operational COAs in a potential CBRN environment.

¹ NATO agreed term, Terminology Tracking Form (TTF) 1991-0008, modification agreed 2008-11-15.

4. The Medical Coordination Cell (MEDCC) is the executing body of the medical organization. It works under the direction of the Medical Director and coordinates multinational, joint, and multifunctional medical issues. AMedP-7.6 identifies and provides guidance on CBRN-specific medical issues that require coordination through the MEDCC.

5. This publication is applicable across the full spectrum of potential NATO operations (Article 5 as well as non-Article 5) from crisis through conflict. It considers the development and execution of CBRN medical COAs in all phases of operations, for all types of operations, and for CBRN incidents of any scale.

1.4. CHALLENGES TO MEDICAL OPERATIONS IN A CBRN ENVIRONMENT

The conduct of operations in a CBRN environment poses significant challenges to medical support forces worldwide. These challenges (discussed in the following subsections) influence planning and execution of medical support operations in a number of different areas. At the operational level, the response to these CBRN challenges will focus most strongly on training and education; resource management and logistics support; and command, control, and communications.

1.4.1. Casualty Types

1. The types of illnesses and injuries afflicting casualties from a CBRN incident are not those normally managed in the military medical support system. Medical units are designed, staffed, and equipped to treat conventional combat trauma casualties and other non-CBRN health threats to the force. At the individual level, many aspects of casualty management and supportive care may be the same as what is provided for conventional casualties; however, CBRN illnesses and injuries may require different medical countermeasures and different clinical investigations and procedures. Military medical personnel do not have any modern experience managing either CBRN casualties or conventional casualties in a CBRN environment.

2. Five types of casualties can result directly from CBRN incidents:

- a. Chemical casualties result from inhalation, ingestion, ocular exposure, and/or skin exposure to chemical agents. Clinical signs and symptoms will vary by agent and route of exposure and include systemic intoxication and/or local effects, such as chemical burns. These signs and symptoms can manifest either promptly following exposure or after a delay of several hours. Follow-on casualties may occur from residual contamination or from migration of agent via pick-up and transfer. Some individuals may develop symptoms and become casualties without knowing the source of their exposure.
- b. Biological casualties result from exposure to disease-inducing microorganisms or biological toxins; this exposure can occur through a

variety of pathways, including direct inhalation of biological aerosols, ingestion of contaminated food or water, skin contact with contaminated substance, and bites, stings, or handling of animal or insect vectors. Onset of illness can range from hours to days or even weeks after exposure. If a biological incident is known to have occurred, this delay between exposure and onset time may provide an opportunity to use prophylaxis to avoid some fraction of casualties among exposed personnel. However, biological incidents may be very difficult to differentiate from natural outbreaks of communicable disease. In some cases, biological casualties may be contagious; this creates additional risk and additional requirements for reporting, casualty management, infection control and prevention, and restrictions of movement.

- c. Radiological casualties result from exposure to ionizing radiation and can occur in incidents in which radiation is deliberately or accidentally released (e.g., the use of radiation dispersal devices or the accidental release of radiation from nuclear, industrial, or research facilities). In addition, in incidents involving the use of improvised nuclear devices or nuclear weapons, some casualties may occur solely as the result of exposure to ionizing radiation. The onset of symptoms in radiation casualties can be delayed for hours, days, or even weeks, and these symptoms may be somewhat mild initially and not reflective of the true underlying severity of illness. In addition, the risk of developing cancer years to decades after exposure to ionizing radiation is cumulative with respect to lifetime exposure. As in chemical incidents, follow-on casualties may occur from residual contamination in the initial hazard area or from pick-up and transfer of radioactive material.
- d. Nuclear casualties are casualties caused by a nuclear detonation. Prompt nuclear casualties will be present with a combination of thermal, overpressure, trauma, and radiation injuries that require immediate medical care. Casualties resulting solely from exposure to ionizing radiation—including those resulting from fallout—may not develop symptoms for several hours.
- e. TIC and TIM casualties result from the inhalation, ocular, and/or skin exposure to TICs and TIMs. Clinical signs and symptoms will vary by the specific material and route of exposure and may include systemic intoxication and/or local effects (e.g., chemical burns). These signs and symptoms can manifest either promptly following exposure or after a delay of several hours. TICs and TIMs are toxic chemicals or other substances used for industrial, commercial, medical, or other non-military purposes. When military operations are conducted in areas that contain facilities for manufacturing, storing, and transporting these chemicals and materials, military personnel are vulnerable to accidental or deliberate exposure as a consequence of friendly action, adversary action, or accidents. Exposure to TICs and TIMs can have short-term and long-term health effects, the nature

and severity of which depend on the type of material and the quantity released.

AMedP-7.1 contains extensive information on the characteristics of CBRN substances, the types of CBRN casualties, their clinical signs and symptoms, and possible medical countermeasures and treatment options. It also provides guidance on the medical management of CBRN casualties of various types.

3. In many cases, CBRN casualties may also be suffering significant conventional injuries. Trauma management in a CBRN environment is challenging and may be limited to first aid at the point of wounding, depending on the prevailing CBRN hazard. AMedP-7.1 provides extensive guidance on the provision of first aid in a CBRN environment, emergency medical treatment for CBRN casualties, and advanced medical care.

4. CBRN incidents may be associated with significant numbers of psychological casualties, either directly, as a response to the effects of CBRN agents or indirectly, as a psychological response to the incident itself, or the use of protective measures, such as wearing protective equipment.

5. Management of the atypical illnesses and injuries sustained by CBRN casualties may require a different mix of medical personnel, equipment, pharmaceuticals or other consumables, and laboratory support than what is needed for conventional casualty management. Further, the rates at which these resources are used over time may also be different.

6. Since WWI, large-scale CBRN incidents have been rare, and Allied military medical personnel generally have no experience in caring for the casualties that would result from these incidents. Consequently, there could be delays in recognizing that such an incident has occurred, delays in diagnosis of CBRN injuries or illness in casualties, and inefficiencies in the application of medical resources. To minimize the negative impact that this lack of familiarity would cause, CBRN medical support operations must place increased emphasis on training and education; contingency planning and response preparation in advance of an incident; situational awareness; and command, control, and communications.

1.4.2. Contaminated or Contagious Casualties

1. The potential hazard posed by contaminated or contagious casualties is a unique and important feature of CBRN incidents. Rapid assessment and mitigation of contamination and the risk of contagion are critical for sustainment of casualty management and should be a command priority. Otherwise, such casualties may constitute a significant risk to the medical personnel on duty. In addition, contaminated or contagious patients can indirectly create added risks via the contamination of equipment and facilities or create an expanding operational burden because of the need to institute decontamination or infection-control procedures throughout all levels of care. Casualty hazard management includes containment and

decontamination of personnel exposed to chemical or radiological contamination and the implementation of Restrictions of Movement (ROM), including containment, isolation, and quarantine of contagious disease casualties or personnel suspected of being exposed to contagious disease. Operational-level medical staff should be notified urgently of CBRN incidents to enable the timely implementation of appropriate mitigating measures.

2. To be most effective and timely, casualty decontamination should be conducted as close to the site of exposure as is operationally feasible. AMedP-7.1 describes procedures for CBRN casualty hazard management. Commanders must ensure that medical personnel are trained and equipped to manage contaminated or contagious casualties in the prescribed manner and to protect themselves and their environment from further contamination.

3. Unless specific assets have been designated for this purpose, operational units should employ organic assets to transport their own chemical casualties after emergency decontamination. Commanders must ensure that these contamination-reduction operations are reported and coordinated and that the suspected presence of CBRN is ascertained and communicated among the affected units. Regardless of how the responsibility for casualty decontamination is assigned, standard operating procedures (SOPs) should be developed for recording and transmitting the decontamination status of a casualty from the point of wounding through admittance to an MTF. Despite doctrine, the Combined Joint Operations Area (CJOA) medical advisor/director must ensure that the medical system is prepared for the transport and arrival of contaminated casualties and has a standard protocol for identifying and decontaminating these casualties.

4. Many physical protection methods, such as the use of individual protective equipment (IPE), have the associated risks of heat stress, dehydration, and accidents due to impeded vision or movement. Medical Advisors must be prepared to communicate these risks and the procedures for mitigating these risks. For radiological and chemical agents, Medical Advisors should coordinate with CBRN defence staff to provide advice on the effective application of IPE, use of shelter-in-place, and other hazard-avoidance measures.

5. In the event of a CBRN incident involving a contagious biological agent, Medical Advisors should coordinate with operational staff to provide advice and support on the implementation of medical countermeasures and restrictions of movement—alone or in combination—in a manner that controls the spread of disease while minimizing the adverse effects on operations.

1.4.3. Casualty Numbers

1. CBRN incidents may generate large numbers of casualties, in excess of those normally managed within the military medical support system. In combination with unusual or unique requirements for treatment, large numbers of CBRN casualties will

greatly strain medical resources, especially patient holding capacity, low-density equipment, and personnel. CBRN incidents are very likely to result in a mass casualty (MASCAL) situation at the tactical unit level and at MTFs. Depending on the type and scale, CBRN incidents have the potential to generate significant shortfalls in medical resources at all levels of care. In addition, the serious health risks associated with exposure to CBRN agents may drive large numbers of unexposed individuals to seek prophylactic medical care.

2. Medical COAs in CBRN contingencies should address changes in demand for material and treatment resources and identify those resources most likely to be exhausted at various levels and at various types of facilities. CBRN medical COAs should include plans for augmentation of resources through resupply, reallocation, and unit/personnel augmentation from within or from outside the CJOA. Medical staff should also identify and work with other staff elements to coordinate any requirements for non-medical forces to sustain medical operations, such as security forces to enforce ROM or additional decontamination resources. Depending on the type and scale of incident, commanders should consider specific MASCAL COAs, such as in-unit care in improvised facilities with medical augmentation or mass care in improvised facilities, to provide adequate care when MTFs would otherwise be overwhelmed.

3. The estimation of the numbers, types, and flow of casualties expected from a CBRN incident is a key component of CBRN medical planning because it provides commanders, Medical Advisors, Medical Directors, and operational staff the information needed to anticipate and mitigate shortfalls in medical resources. CBRN casualty estimates are also used to evaluate COAs that use medical and/or non-medical CBRN defensive capabilities. The development of CBRN casualty estimates will require significant interaction between medical staff and other staff elements to acquire needed inputs. STANAG 2553 (AMedP-7.5), *NATO Planning Guide for the Estimation of CBRN Casualties*, provides a methodology for estimating casualties that occur over time following a CBRN incident.

1.4.4. Presentation of CBRN Casualties

1. CBRN casualties can occur with little or no warning. Many types of CBRN incidents will generate prompt casualties, and even when a delay occurs between exposure and symptom onset, a common initial time of exposure will likely result in a clustering of symptom onset times among exposed personnel.

2. The abrupt presentation of CBRN casualties, the prospectively large number of casualties, and unique CBRN medical care requirements increase the likelihood of a MASCAL situation. Resource management will be an even greater challenge in such circumstances, particularly at the tactical level. Medical COAs must ensure that local needs can be met wherever a CBRN incident occurs within the CJOA.

3. The occurrence of CBRN casualties may be the first indicator of a covert CBRN attack. This situation places medical units in the unusual role of serving as the commander's detection asset for attacks of this type. Medical units and medical support capabilities must have processes in place for acquiring and communicating information on CBRN casualties to the appropriate organizations within an operationally relevant timeframe. This information will allow the commander to assess whether an attack has occurred and to direct the implementation of mitigating medical and non-medical COAs in response.

1.4.5. MTFs within Contaminated Areas

1. MTFs may have to operate in areas that are contaminated or that have restrictions that limit movement of personnel and materiel into and out of the MTF. Such operations may require medical personnel to make extensive use of individual and/or collective protection (COLPRO).

2. To ensure that medical operations can be sustained in a contaminated area, medical personnel must be trained and equipped to operate while using IPE and/or to prevent contamination of collectively protected facilities. Contiguous hazard areas must be avoided when moving casualties to and from MTFs, and evacuation and supply routes and modes of transport need to be coordinated accordingly. Medical, CBRN, and operational staff should coordinate on tasking CBRN defence units or other units as needed to identify contaminated routes and other hazard locations.

3. If a CBRN incident occurs at or near an MTF, the residual hazard may be so extensive that it prevents continued operations at that facility. The facility must then be moved, or its functions must be assumed by other MTFs in the area. When planning for operations where there is a risk of a CBRN incident, planners may wish to consider the potential need for facility movement when selecting initial MTF deployment sites. They may also need to develop plans for lateral movement of casualties if a given MTF becomes unavailable during an operation. Planners should also consider the rapid deployment of Allied units as replacements for MTFs in the CJOA.

1.4.6. Conventional Casualties in a CBRN Environment

1. If a CBRN incident occurs during an operation, medical support will be needed for conventional casualties and for CBRN casualties. The medical load from the combination of conventional and CBRN casualties will exacerbate the demand on medical resources and increase the likelihood of a MASCAL event.

2. Planning for sustained medical operations in a CBRN environment must consider conventional medical care requirements when augmenting or reallocating personnel, equipment, and consumables. Depending on the scale of the ongoing operation and the scale of the CBRN incident, triage criteria and methods may need

to be adjusted and/or alternative medical management strategies may need to be adopted to balance the competition for scarce high-value resources.

3. Health risk assessments for forces operating in a CBRN environment or responding to a CBRN incident must consider secondary CBRN hazards, thermal stress, drinking water quality, and hydration.

4. Current doctrine and procedures should ensure that no known or suspected contaminated personnel or casualties enter an MTF. Even so, medical facilities may wish to consider segregating conventional and CBRN casualties when possible to facilitate the efficient use of treatment resources and to minimize the risks associated with any residual wound contamination. Segregation may also reduce the risk of lateral transfer or contamination, although for highly transmissible biological agents, this risk may remain unacceptably high. In such cases, specific facilities could be designated as “contagion” facilities for the sole purpose of managing contagious casualties.

1.5. CBRN MEDICAL COMMAND AND CONTROL

1. NATO’s medical command and control structure is defined in AJP-4.10. As noted therein, while the provision of medical care is, in principle, a national responsibility, NATO commanders must ensure that the medical support provided is in accordance with the medical principles, policies, and directives established in Military Committee (MC) 326/3, *NATO Principles and Policies of Medical Support*. To that end, commanders, with the advice and assistance of their staff, determine medical support requirements for the mission and coordinate medical planning and support within the CJOA.

2. Commanders are typically granted coordinating authority over medical assets deployed to support the assigned mission. This responsibility includes the authority to redistribute medical assets within the force as needed. Redistribution of medical assets may be a key component of the medical response to a CBRN incident, with casualties occurring in unusual numbers, at unusual times, and with unusual injuries.

3. Nations can contribute specialized medical teams to Alliance missions, such as the Medical Radiation Incident Investigation Team (MRIIT) and the Rapidly Deployable Outbreak Investigation Team (RDOIT). The composition and capabilities of the MRIIT and RDOIT are described in AMedP-7.4 and AMedP-7.7, respectively. These specialized medical units are medical assets and fall under the medical chain of command.

4. Medical staff must define and coordinate the necessary organizational and logistic support for specialized medical teams in advance of their deployment. In addition, medical staff must define the content and format of the information collected by these teams and the processes for its communication and analysis.

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CHAPTER 2 THE ALLIANCE CONCEPT OF MEDICAL SUPPORT TO CBRN DEFENSIVE OPERATIONS

1. CBRN defensive operations are an essential part of NATO's CBRN defence concept, as described in MC 0603, *NATO Comprehensive CBRN Defence Concept*, and elucidated in AJP-3.8. AJP-3.8 defines CBRN defence as "those plans and activities intended to mitigate or neutralize adverse effects on operations and personnel resulting from: the use or threatened use of CBRN weapons and devices; the emergence of secondary hazards arising from counter-force targeting; or the release, or risk of release, of TIM into the environment." The focus of CBRN defensive operations is on detecting CBRN incidents and managing their consequences so such incidents have minimal impact on operations and the health of the force.
2. MC 0603 and AJP-3.8 identify five enabling components of CBRN defence: 1) detection, identification, and monitoring; 2) information management; 3) physical protection; 4) medical countermeasures and casualty care; and 5) hazard management. Together these components, when implemented, can deter CBRN incidents, protect NATO forces from the effects of CBRN incidents, and recover combat capability. These five components enable NATO forces to accomplish the mission and maintain freedom of action in a CBRN environment.
3. The medical countermeasures and casualty care component of CBRN defence is a contribution uniquely associated with medical services. As shown in Figure 2-1, however, all other enabling components of CBRN defence have medical aspects or areas in which medical expertise and capabilities may be sought. Commanders will seek the advice of their Medical Advisor, in conjunction with the CBRN staff and other appropriate personnel/entities, and will advise on CBRN defence. Medical Directors will be charged with developing and executing medical COAs in support of operational COAs.
4. The following sections provide definitions of these five enabling components, describe the medical aspects of each, and identify those medical issues and tasks that require command decisions or direction. Figure 2-1 serves as the organizing construct for the remainder of this document, as Chapters 3 through 7 consider the medical aspects of each component in detail. Chapter 8 discusses CBRN medical logistics support, which is required for all components.

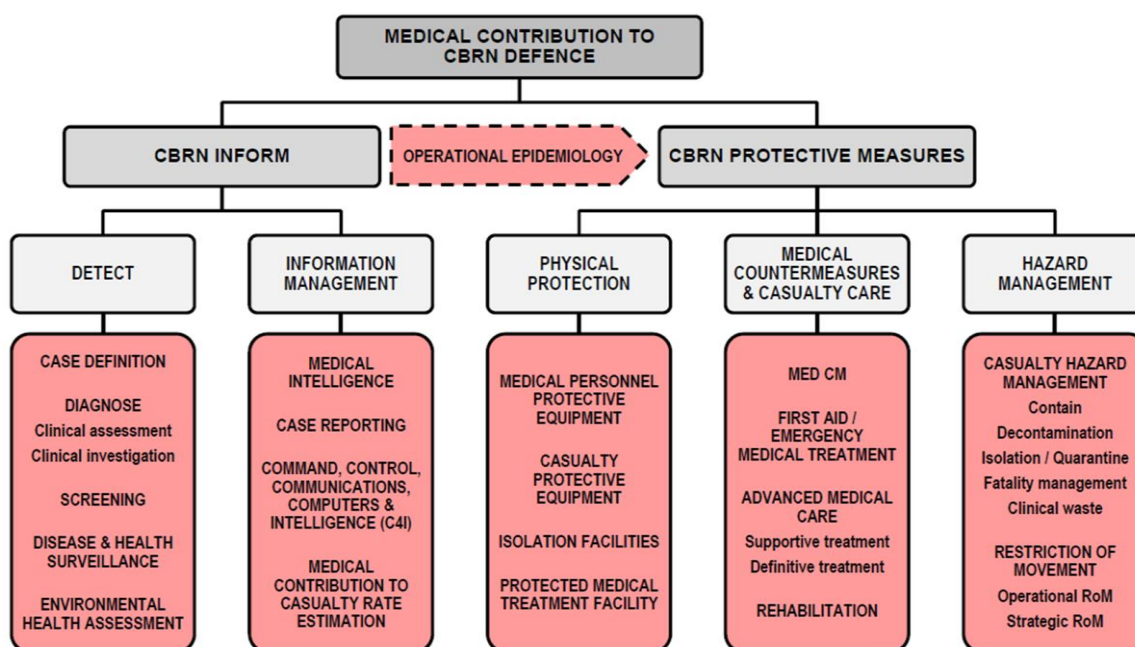


Figure 2-1: Medical Aspects of CBRN Defence-Enabling Components

2.1. MEDICAL ASPECTS OF CBRN DEFENCE-ENABLING COMPONENTS

2.1.1. Detection and Medical Operations

1. AJP-3.8 defines detection as the discovery, by any means, of the presence of CBRN agents. The goal of detection capabilities is to detect hazards at the earliest possible opportunity and to provide timely alerts to commanders and forces so that appropriate avoidance and response actions can be initiated.
2. The CBRN defence forces use point and stand-off detection systems to monitor the environment for indications of a CBRN hazard. Commanders can seek medical advice to clarify the meaning and implications of information provided by these systems or from other indicators of CBRN attack. For example, detection systems may not be able to differentiate biological organisms naturally present in the environment from those that have been deliberately introduced into an environment or population. Medical staff expertise related to the relevant characteristics of the organism itself and of the manifestation of associated disease—naturally occurring and induced—will provide crucial information to commanders charged with making a determination that an attack has occurred.
3. Detection of a CBRN hazard within a CJOA can have a significant impact on the conduct of operations and requires commanders to initiate a number of mitigating actions, balancing the often-competing requirements to minimize near-term operational risk, to protect the health of the force, and to accomplish the mission. In a CBRN environment, response options will typically include medical elements, will

require the use of medical units, and/or will have a medical impact on soldiers. Medical advisors and their staff must be prepared to articulate quickly and clearly the range of potential CBRN response options, communicate their costs and benefits, and identify the requirements for implementation.

4. Medical forces have a primary role in the detection component of CBRN defence through health and disease surveillance, especially for biological agents. If point and stand-off detection systems fail to detect an extant CBRN hazard, manifestation of illness within humans, military animals, local flora/fauna, livestock, or crops may provide the first indication that a hazard exists. Successful detection by this means requires standardized, widespread, and systematic health monitoring of personnel. It also requires the communication of disease and health surveillance data and the integration of those data with information generated from environmental sampling and analysis and diagnostic testing and from medical intelligence collection activities. The MEDCC should have situational awareness across the CJOA and serve as the watch centre for this information.

5. When a CBRN incident is suspected, commanders may direct medical personnel or specialized medical capabilities (e.g., RDOIT or MRIIT) to support targeted surveillance, reconnaissance, and survey actions. Medical advice and support may also be needed to support investigations that use intelligence collection assets or CBRN defence units for such missions.

2.1.2. Information Management and Medical Operations

1. CJFCs are responsible for information management, defined in STANAG 2525 (AJP-6), *Allied Joint Doctrine for Communications and Information Systems*, as “the organization and control of information to support coalition missions, consultation, decision-making processes, and operational requirements.” In addition, commanders are responsible for ensuring that communications and information systems are planned, coordinated, adequate, and effective throughout the deployed force. Each staff element plans and executes the collection and analysis of information in its functional area, shares information with other elements, and provides inputs to the common operational picture. Medical Directors and their staff are consequently responsible for managing CBRN medical information and for supporting the integration of medical information with CBRN defence information management and across the force.

2. Effective CBRN defence depends on timely, complete, and accurate situational awareness. The role of medical information in CBRN situational awareness is crucial and may be more urgent and high profile than in conventional operations. If a CBRN incident occurs, Medical Advisors, using the MEDCC, must identify the content and urgency of the medical information required to support command decisions. Medical Directors are then responsible for establishing any SOPs for CBRN case reporting, in addition to standard medical case reporting. Because of the unique nature of CBRN

incidents, all medical information and advice must be coordinated through the Medical Advisor to avoid confusion, inconsistency, or inefficiency in resource use.

3. In any operation where initial health risk assessments include potential CBRN exposure, Medical Advisors inform the commander on the health risks associated with the assessed CBRN threat. This advice should include the outputs of CBRN casualty estimation and an assessment of the implications of the expected number, type, and flow of casualties. Medical Advisors should also understand and communicate the potential operational implications of variations in national policies on the use of medical countermeasures, including immunization against specific biological agents and the use of pre- and post-exposure chemoprophylaxis or pretreatments.
4. Medical staff that plans the deployment of medical capabilities for targeted surveillance missions must define Allied standards for the content and format of the information collected and the processes for the communication and analysis of this information. Such missions may involve collecting, handling, transporting, and analysing environmental and/or clinical samples for medical treatment or forensic attribution. Medical staff must ensure that the procedures for medical CBRN sampling and analysis by designated units are authorized by the legal framework of the participating nations and standardized or coordinated, as necessary, with other responsible organizations and nations across the CJOA. The staff must also be aware of non-medical CBRN sampling procedures and assets.
5. Because NATO medical operational experience with CBRN incidents is rare, CBRN medical subject-matter expertise is limited and, in general, is concentrated within specialized units or facilities. Medical Advisors must establish a process for accessing appropriate reach-back capabilities. These capabilities could range from specific treatment questions to the use of national gold-standard laboratory sample analysis capabilities. Since reach-back capabilities are likely to use medical information or samples collected from military personnel, Medical Advisors must also resolve any differences in national standards for the protection and management of this information.
6. In the event of a CBRN incident, the demand for information on associated health effects, health risks, and mitigating actions will be high. Medical Advisors should coordinate with public affairs staff to ensure that accurate information is disseminated to Allied forces and member states, host nations, and relevant international organizations and NGOs working within the CJOA. Such information must consider individual privacy and operational security. Medical Advisors must also support commanders in fulfilling obligations for information sharing (e.g., infectious disease reporting requirements established by the 2005 International Health Regulations (IHR(2005))).
7. CBRN information management within the Alliance specifically includes CBRN warning and reporting functions and responsibilities, which are distinct from the normal chain of command. As described in Allied Tactical Publication 45 (ATP-45),

Warning and Reporting and Hazard Prediction of Chemical, Biological, Radiological, and Nuclear Incidents:

The CBRN warning and reporting functions and responsibilities should not be confused with the normal chain of command. The exchange of CBRN information will, of course, follow the chain of command, but neighbouring units are to make arrangements for mutual exchange of CBRN information through lateral lines of communication, and directives to this effect should be contained in command SOPs.

8. In anticipation of a CBRN incident, Medical Directors must ensure that all MTFs and other medical units/facilities are integrated into the CBRN warning and reporting system. Coordination with CBRN staff will also be needed to ensure the timely communication of CBRN information laterally between operational units and MTFs.

2.1.3. Physical Protection and Medical Operations

1. Physical protection generally consists of IPE, COLPRO, and equipment and materiel protection. Individual protection and COLPRO are intended to protect individuals from exposure to a variety of CBRN agents or effects and to allow them to continue to perform tasks in a CBRN environment. Equipment and materiel protection minimizes the contamination of critical equipment and materiel and the associated need for decontamination. For medical personnel, physical protection also includes personal protective equipment (PPE), or standard precautions, which serves as the basic level of infection control to reduce the risk of infection in a medical setting. Finally, CBRN casualty protective equipment (CPE) may be used during the transport of casualties in a CBRN environment to protect them from exposure to contamination and to allow provision of medical care with minimal risk to responder personnel or the environment.
2. Commanders must balance the need to protect against CBRN exposure against the degradation of operational capability due to use of physical protection. While assuming a Mission Oriented Protective Posture (MOPP) level is normally a tactical decision, large-area attacks such as biological or fallout zones may require broad use of IPE. The Medical Advisor, in coordination with CBRN, meteorology, and operations staffs, will be responsible for providing advice on managing the adverse physiological effects (e.g., heat stress and dehydration) of wearing IPE in such situations.
3. Medical personnel must be trained and equipped to use IPE when operating in a hazard area or when receiving CBRN casualties at MTFs. AMedP-7.1 describes procedures for maintaining the safety of medical personnel during CBRN casualty management situations at or near the point of wounding, including performing first aid and emergency medical treatment. Although providing IPE is a national responsibility, the need for resupply of IPE for medical personnel, and for CBRN casualties if necessary, must be anticipated during medical COA development and monitored during execution.

4. Many MTFs have COLPRO available, allowing tasks to be performed unencumbered. Whenever medical operations are conducted in a CBRN environment, all medical treatment should be administered within a collectively protected environment if possible. Medical Advisors should direct medical units to expect and plan for personnel from other member states to enter and exit collectively protected facilities, to be prepared for different doffing processes, and to be prepared to replace IPE for individuals.

2.1.4. Medical Countermeasures and Casualty Care in a CBRN Environment

1. The medical countermeasures and casualty care component of medical CBRN defence includes the use of pre- and post-exposure prophylaxis; delivery of first aid, emergency medical care, and advanced medical care; patient regulating; laboratory support; and sustainment of operations and facilities. While this component is the unique responsibility of medical staff, units, and personnel, it will require information from and coordination with CBRN defence capabilities and support from operational units.

2. During COA development, the medical staff, in consultation with other staff elements and particularly with J-2/G-2 medical intelligence, should assess the requirements for medical countermeasures and plan for the stockpiling, distribution, and resupply of these countermeasures within the CJOA. This assessment must consider the impact due to variation in national policies on immunization against specific biological agents of concern and/or pretreatments against chemical agents. It should also account for corresponding national differences in requirements, capabilities, and guidelines for post-exposure prophylaxis and treatment. The Medical Advisor should establish standards for the use of medical countermeasures among the force-contributing nations, even if those standards will only be in force temporarily for a specific mission.

3. Medical Advisors must be prepared to support command decisions on the implementation of medical countermeasures. Medical advice should include criteria for the implementation of medical countermeasures, timing and procedures for implementation, and information on potential adverse reactions and/or operational degradation.

4. As noted in Chapter 1, a CBRN environment presents unique challenges for casualty management. When planning for the movement of casualties to and between MTFs and for the delivery of medical resources to casualties, medical staff should assess the extent to which CBRN agent threat-specific medical response requirements can be met with the patient-regulating process planned for conventional casualty management. Development of CBRN medical COAs may include planning for rapid augmentation of resources from within or outside of the CJOA and/or the movement of medical resources forward or laterally.

5. While local CBRN MASCAL situations can be managed through changes to the patient-regulating system, larger scale incidents may require broader changes in the concept of medical support. Potential changes depend on the nature of the CBRN incident and could include an alteration in triage strategies, the use of in-unit or stadium-type care, and the establishment of special treatment facilities. To support the chosen COA, plans for CBRN incidents that have the potential for large-scale mass casualties should incorporate such strategies as appropriate, including plans for communication, resource allocation, and coordination with the affected units. These plans should be coordinated extensively at the operational level. Medical Advisors should provide commanders the criteria for implementation of such measures and an assessment of their costs and benefits.

6. Sustainment of medical operations and continuity of care during operations in a CBRN environment will be challenging. The tempo of medical operations is likely to be very high, with an associated strain on the availability of scarce resources. Medical responses to CBRN incidents must include a coordinated resupply of medical materiel, the maintenance and repair of medical facilities and equipment, and appropriate rates of replacement of medical personnel. Medical staff should coordinate closely with other staff elements to ensure that the requirements for the sustainment of medical operations—particularly those operations critical to mission success in a CBRN environment—receive the appropriate priority.

2.1.5. Hazard Management and Medical Operations

1. Hazard management refers to those measures taken collectively to limit the operational impact of CBRN incidents. As noted in AJP-3.8, hazard management is based on avoidance, control of spread, exposure control, and decontamination.

2. While units are responsible for the decontamination of their personnel, medical forces are responsible for casualty hazard management. AMedP-7.1 describes the requirements and procedures for the decontamination of casualties. Commanders must ensure that medical personnel have been trained to conduct individual and casualty decontamination. In addition, a CJFC standard procedure for recording, communicating, and tracking the decontamination status of casualties must be established and implemented across the CJOA. This record will accompany the patient from point of exposure through the medical systems to his or her home nation, which will avoid confusion regarding a patient's decontamination status and thus support confidence in and efficiency of the decontamination efforts.

3. Medical units must anticipate the use of decontamination resources and plan for resupply as needed. Medical plans must also include the management of contaminated waste at MTFs across the CJOA. Again, the Medical Advisor must be cognizant of national differences.

4. Casualty evacuation in a CBRN environment inherently risks the contamination of transportation assets. Within the operational and medical COAs, planning should

consider the effects of CBRN incidents and associated hazards on evacuation route selection, asset selection, and strategies (e.g., designation of clean and dirty routes and/or vehicles) to minimize the contamination of casualty evacuation assets, to minimize the risk of cross-contamination, and to reduce the burden of decontamination. Planning a medical evacuation (MEDEVAC) for a contaminated environment requires information from CBRN defence control centres for the anticipated type, duration, size, and location of hazard areas.

5. When there is an assessed risk of exposure to radiological or contagious biological agents, the CJFC should consider establishing cohort isolation wards or separate MTFs for the care of casualties, depending on the estimated number of casualties and/or the transmissibility of the disease. For the COA, plans should establish the conditions in which such facilities could be warranted and provide criteria for site selection, the level of care required, laboratory support requirements, medical logistics support, general logistics support, security, and transportation.

6. Movement of contagious disease casualties within and out of a CJOA poses numerous challenges for maintaining appropriate levels of care while minimizing the risk to medical and transportation personnel. For any operation in which contagious disease is a known risk, Medical Advisors, in coordination with other staff elements, will need to identify available transportation capabilities and develop plans for the use of these capabilities, including the resolution of any issues related to overflight, refuelling, landing in, or returning from contiguous nations. These plans will also be influenced by the contagious disease management capabilities and policies for the nations involved in or affected by the operation. If military personnel are exposed to contagious biological agents because of adversary use, the number and near-simultaneous presentation of primary casualties may, in any event, quickly overwhelm available evacuation capabilities. CBRN medical COAs must therefore incorporate alternatives to standard casualty movement.

7. In the event of contagious disease casualties, Medical Advisors will be responsible for advising the commander on the implementation of measures, collectively known as ROM, intended to impede the spread of disease by preventing contact between healthy populations and those personnel who are or could be infectious. Because the operational impact could be significant, this advice needs to be as comprehensive as possible to support command decisions regarding the use of ROM. It should include an assessment of the merits of ROM, the scope and anticipated duration, and specific procedures and resources needed for implementation. In some cases, ROM may include limits on the interaction between Allied personnel and the local population. Medical advice on ROM will vary depending on the source of the disease outbreak—whether natural or deliberate—and the characteristics of the disease itself.

2.2. MEDICAL SUPPORT DURING OPERATIONS IN A CBRN ENVIRONMENT/INCIDENT

1. AJP 3.8 highlights three distinct phases of a CBRN incident as it relates to CBRN defence:
 - a. Pre-incident. During this phase, threat and hazard assessments are generated and appropriate response measures and available equipment are planned, assessed for sufficiency, prepared, tested, and, if necessary for some measures, implemented.
 - b. During-incident. These activities are the implementation of contingent measures in immediate response to a CBRN incident and focus primarily on preventing exposure of military assets, including personnel, equipment, and materiel.
 - c. Post-incident. These activities follow a CBRN incident and are essential to protect assets, restore operational capabilities, and regain operating tempo.
2. Medical Advisors, Medical Directors, and medical staff have responsibilities in all phases of CBRN defence operations for providing advice to commanders, for coordinating with CBRN defence staff, and for developing and implementing CBRN medical COAs.

2.2.1. Planning for Medical Support Pre-incident

1. Pre-incident medical support planning must address all components of CBRN defence. The specific nature of this planning will be contingent upon the commander's chosen COA, including the results from the operational risk assessment and the CBRN risk assessment. Planning should address medical and required non-medical support and resources, including the following:
 - a. Establishment of priority medical intelligence requirements.
 - b. CBRN-related health risk assessment.
 - c. CBRN casualty estimation.
 - d. Deployment health surveillance.
 - e. Disease surveillance.
 - f. Use of medical surveillance and reconnaissance assets.
 - g. Operational exposure guidance for radiological and toxic chemical hazards.
 - h. Environmental health site assessment.

- i. Drinking water surveillance.
- j. Food and water vulnerability assessment.
- k. Communications and network support.
- l. Medical-specific reporting procedures and formats.
- m. Specific medical countermeasures.
- n. Psychological casualty prevention and mitigation.
- o. MTF site selection.
- p. Evacuation asset availability, including that appropriate for contaminated or contagious patients.
- q. Availability of individual protection and COLPRO.
- r. Casualty triage and decontamination planning.
- s. ROM and quarantine.
- t. Specialized training requirements.
- u. Language and translation capabilities and requirements.
- v. Public affairs.
- w. Disposition and repatriation of contaminated remains.
- x. Civil/military interaction.
- y. Coordination, collaboration, and communication with NGOs.
- z. Collection and preservation of information/evidence for post-operation analysis.
- aa. Integration of medical COAs with operational COAs.

2. Planning and execution of medical COAs and integration with operational COAs can be facilitated by the development of a decision authorities matrix that identifies 1) the types of decisions that may need to be made within each component in response to a CBRN incident, 2) the authorities responsible for making these decisions, and 3) the conditions under which these decisions should be made.

2.2.2. Medical Support During-incident

1. The immediate response to a CBRN incident is generally in the immediate vicinity of the hazard. For affected units, this response includes the implementation of individual protection and, where available, COLPRO necessary for the protection of the joint force. CBRN incidents may involve localized, persistent, or non-persistent contamination and broad area, possibly transient, downwind hazards that develop following the incident. Units will execute CBRN countermeasures as trained and will initiate the movement of casualties.
2. During a CBRN incident, the primary task for Medical Advisors/Medical Directors will be the collection, assessment, and dissemination of information that supports medical operations/units and other elements of the force, as appropriate. The impact of casualties on the medical system is generally post-incident.

2.2.3. Executing Medical Support Post-incident

1. CBRN post-incident measures include mitigation, response, and recovery procedures; CBRN warning and reporting; information management; hazard management; and medical countermeasures and casualty care. These measures are executed based on COAs developed in pre-incident planning. Because many unknown and uncontrolled variables influence operations, planned COAs and procedures will need to be adapted for execution.
2. Post-incident, the Medical Advisor must collect and disseminate information and maintain situational awareness of the medical and operational situation. The information/awareness process should have been planned pre-incident and not cause a further burden on MTFs and the units executing operations. Medical staff will use this information as the basis for updating COAs. Medical Directors must ensure the successful execution of CBRN response measures, as outlined in these revised COAs.
3. Based on the information collected during- and post-incident, the specific plans, plan elements, or other actions may need to be reassessed for timelessness, priority, and sufficiency. These plans, plan elements, and other actions include the following:
 - a. Deployment health surveillance.
 - b. Use of operational epidemiology assets.
 - c. Collection and analysis of dosimetry data across the CJOA.
 - d. Use of reach-back and forensic capabilities.
 - e. Availability and use of medical laboratory assets.
 - f. Post-exposure medical countermeasures.

- g. MASCAL management.
- h. Force-level hazard management and exposure management, including ROM.
- i. Consumption and resupply of IPE for medical personnel.
- j. Decontamination requirements.
- k. Treatment of civilians.
- l. Health risk from untreated civilian casualties in the operational area.
- m. Environmental health site assessment.
- n. Drinking water surveillance.
- o. Sustainment of medical operations.
- p. Management of contaminated human or animal remains and contaminated waste management (if a medical responsibility).
- q. Theatre evacuation.
- r. Public information.
- s. Use of non-medical personnel to augment and support processes such as contamination control, casualty decontamination, and ROM.
- t. Actions to prevent or reduce the numbers of stress-related casualties.

4. In the aftermath of a CBRN incident, medical support and public health service facilities may be strained beyond their capacities. Demands for medical support to military and civilian populations could be intense. Medical Advisors must support the development of command directives on the availability and use of military medical and public health service resources to assist civilian populations. These directives must be communicated clearly and, in the aftermath of CBRN incidents, the Allied force medical personnel and facilities across the CJOA must adhere to them.

2.3. MEDICAL SUPPORT TO CBRN DEFENCE AGAINST TERRORISM

1. MC 472, *NATO Military Concept for Defence Against Terrorism*, is the approved Alliance concept for dealing with the ongoing threat of large-scale terrorist attacks—including those that involve the use of CBRN—against member states. The Defence Against Terrorism concept defines consequence management as, collectively, “the reactive measures used to mitigate the destructive effects of attacks, incidents, or natural disasters,” and further specifies a wide range of military support capabilities that the Alliance, if called upon, could provide to mitigate the effects of an attack.

2. Any NATO military medical response to a CBRN terrorist attack includes all the pre-, during-, and post-incident considerations outlined previously, but this response must be closely coordinated with national civil authorities who retain responsibility for consequence management.

2.4. EDUCATION AND TRAINING FOR CBRN MEDICAL SUPPORT

1. Since medical support in CBRN environments is particularly complex, medical personnel should receive rigorous and frequent CBRN defence education through training programs. Such training will reduce the stress of CBRN incidents, improve operational effectiveness and interoperability, and reinforce awareness of symptoms and treatment options for CBRN exposure. This awareness is particularly important in cases where the manifestation of chemical, biological, or radiological symptoms provides the first indication of a CBRN incident.
2. STANAG 2954 (AMedP-7.3), *Training of Medical Personnel for CBRN Defence*, provides medical personnel training standards for CBRN medical support. Participating member states agree to use this document as the basis for training medical personnel deployed as part of a NATO operation. Its annexes provide recommendations for core training and special role training for clinical and technical specialists and medical advisors. AMedP-7.3 recommends that individual refresher training and collective training be done at least every five years.
3. NATO conducts multinational CBRN medical field exercises and field exercises of CBRN defence operations that include medical support on a regular basis. These exercises have great value in promoting interoperability through doctrine alignment and sharing/comparing tactics, techniques, and procedures.

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CHAPTER 3 DETECTION AND MEDICAL OPERATIONS

1. Detection of CBRN hazards is multifaceted. It includes technical (non-medical) detection via tactical detection systems, laboratory analysis of environmental samples, and use of various devices to determine the presence of a hazard. It also includes medical detections via clinical diagnosis, clinical sampling and laboratory diagnosis, and operational epidemiology. Regardless of source, detection of a CBRN hazard requires commanders to initiate a number of mitigating actions, balancing requirements to minimize near-term operational risk, to protect the health of the force and to accomplish the mission. In a CBRN environment, response options will typically include medical elements, will require the use of medical units, and/or will have a medical impact on soldiers. Medical advisors and their staff must be prepared to articulate quickly and clearly the range of potential CBRN response options, communicate their costs and benefits, and identify the requirements for implementation.
2. If CBRN hazards are not detected by tactical detection systems, the manifestation of illness and injury in humans (observed and communicated by medical personnel) may provide the first indication that an incident has occurred. The medical component of detection includes establishing background levels of illness and injury within the force; monitoring the health of the force to detect changes potentially resulting from CBRN exposure; and investigating unusual or unexplained changes to determine the source, nature, and scope of these changes. For medical operations, while the primary focus of detection is on incidents that involve biological agents, incidents that cause chemical or radiological injuries may also go undetected until casualties are presented to the medical system.
3. Incidents involving biological agents are particularly challenging, as the ability to detect these agents before onset of symptoms is limited, and delays in implementing appropriate medical countermeasures across the population at risk can lead to unsatisfactory or even catastrophic operational and medical outcomes. Defence against, and response to, biological exposure requires integrated actions across all elements of the force. In anticipation of biological incidents, operational and medical staffs should establish a process for the detection and characterization of biological agents, both before and after the onset of symptoms in exposed personnel, that triggers rapid implementation of agent-specific COAs.
4. This chapter describes the medical information required to support development of a common operating picture that will foster detection of CBRN hazards, both before and after the onset of symptoms in exposed personnel, and enable informed medical advice and command decision-making. It also provides guidance on those aspects of Allied medical operations that support the detection component of CBRN defence: capabilities and processes, including health risk assessment, health and environmental surveillance, disease surveillance, operational epidemiology, medical advice and support for tactical detection, and

medical advice and support for detection via medical operations. It also discusses laboratory support for detection and the use of medical information and assets to support forensic investigations.

3.1. SITUATIONAL AWARENESS, DETECTION, AND MEDICAL ADVICE

1. Maintaining situational awareness of the evolving CBRN threat environment during the course of an operation is critical to effective collection, assessment, and interpretation of detection information, and it enables informed medical advice and command decision-making. Beyond detecting the actual presence of a CBRN hazard, the CBRN and medical staffs must—to the extent possible—understand the characteristics of the hazard, the means by which it was generated, and the circumstances in which it occurred to provide commanders with the best possible advice and input to course-of-action analysis. To this end, operational level staff must routinely update and communicate a common operating picture, with close coordination and awareness among all staff elements.

2. Some of the information requirements to support situational awareness in a CBRN threat environment will be common across all CBRN agents or effects. Required information should be collected on a regular basis, at least daily but more frequently in high-threat environments, and should be immediately available at the operational level. This information includes the following:

- a. Traditional vulnerability analysis. Staff must understand the vulnerability of all units assigned to the CJOA to CBRN agents and effects, during all phases of deployment. This analysis should encompass all air, ground, maritime, and special operations forces, and should include an assessment of each unit's CBRN capabilities.
- b. Current and planned force dispositions. This includes the commander's plans and intent, awareness of operational priorities, and identification of critical installations or other assets based on the operating plan.
- c. Situational analysis and shared operational information, such as tracks of non-Allied aircraft, ballistic missile impacts and/or intercept points, and patterns of vehicular traffic.
- d. Troop location information. Troop-contributing nations must collect data on the location of their national personnel within the CJOA on at least a daily basis and must be able to provide this information to the operational staff rapidly and in a common format when requested.
- e. Medical countermeasure capability. The common operating picture should include information on the immunization status of personnel from all troop-contributing nations, as well as individual nations' plans and capabilities for pre- and post-exposure prophylaxis and treatment for identified CBRN threat agents.

- f. Access to and interoperability among medical and non-medical information systems at all levels of command.
- g. The process for collecting, assessing, and communicating meteorological data throughout the CJOA, including the location and frequency of reporting.
- h. Capabilities for assessment of the interaction between meteorology and terrain data to show wind fields as they might transport atmospheric hazards over time. The data required to conduct this assessment should be collected regularly, although the assessment itself may be executed after hazards are suspected or detected. This process may require specialized reach-back capabilities and if so, staff should prepare for rapid execution of these capabilities on demand.
- i. Collection of any additional information needed to generate CBRN casualty estimates, as defined in AMedP-7.5.
- j. Identification of staff personnel with appropriate skills and/or identification of a near real-time reach-back capability to collect relevant information and conduct necessary assessments.

3.1.1. Situational Awareness of Biological Agent Threats and Hazards

1. In operations with biological agent threats, information in addition to that listed above should be collected and incorporated into the common operating picture. This information includes the following:
 - a. All available intelligence on adversary development, acquisition, and production of biological agents; means of delivery; and employment doctrine.
 - b. Medical capabilities for detection of exposure or disease through occupational, environmental, and disease surveillance, with associated timelines and confidence assessment.
 - c. Technical detection capabilities across the CJOA, including deployment locations, principles of operation, specificity, and sensitivity, with associated timelines and confidence assessment.
2. Situational awareness that encompasses the information, capabilities, and assets collectively identified above will allow operational and medical staffs to develop a plan and process to detect biological attacks. Once a biological hazard is detected, the common operating picture must also include the following:
 - a. Characteristics of the biological agent and associated disease, including transmissibility, time to onset, morbidity and mortality, and specific prophylaxis and treatment requirements.

- b. All available information on the characteristics of the incident, including approximate time of exposure, portions of the force or operating areas potentially exposed, and host nation or other civilian population exposure.
3. Development of a common operating picture that incorporates this information will require significant coordination among staffs, units, and national forces. In a biological agent threat environment, a process such as this is necessary for commanders and staff to effectively develop and execute COAs to meet or adjust operational objectives, respond to biological incidents, and protect the force.

3.1.2. Situational Awareness of Radiological Hazards Generated by Radiological Dispersion Devices, Nuclear Detonations, and Fallout

1. Operations with threats of radiological hazards from radiation dispersion devices, radiation exposure devices, nuclear detonations, and fallout also require that information in addition to that listed above be collected and incorporated into the common operating picture. This information includes:
- a. All available intelligence on adversary access to weapons grade plutonium, highly enriched uranium, or large quantities of radioactive materials, as well as adversary development, acquisition, and production of radiological or nuclear weapons, associated yields, means of delivery, and employment doctrine.
 - b. Medical capabilities for detection and treatment for exposure to radiological agents and ionizing radiation.
 - c. Radiological reconnaissance capabilities across the CJOA, including deployment locations and concepts of operation.
 - d. Availability of specialized capabilities for estimating nuclear yields.
 - e. Use of external and internal dosimetry throughout the deployed force, to include in vivo and in vitro radiological bioassay, along with associated procedures for monitoring, recording, and reporting radiation dose in terms of corresponding exposure locations, monitoring periods, and data quality requirements.
 - f. Operational exposure guidelines for personnel at risk of radiation exposure. The selection and use of guidelines will be influenced by the type of mission (e.g., Article 5, crisis response, humanitarian) and the standards adopted by participating nations, including non-Allied partners and host nations. Medical Advisors should be prepared to provide advice on the health implications of adopting specific guidelines.
 - g. Host nation industrial and medical radioactive sources, with associated isotopes and potential for unconventional deployment or accidental release.

2. Situational awareness that encompasses the information, capabilities, and assets collectively identified above will allow operational and medical staff to develop a plan and process to detect radiological material and characterize the effects of a radiological or nuclear incident both before and after the onset of symptoms. While much of the relevant information would be collected from non-medical assets, the resulting situational awareness is vital for providing medical advice and developing medical COAs. Once a radiological hazard is detected, the common operating picture must also include the following:

- a. All available information on the nuclear weapon or radiological device, including ground zero, height of burst, yield, and area coverage of effects.
- b. All available information on the portions of the force or areas potentially exposed and the time of exposure; observed clinical signs, symptoms, and mortality in the exposed population; and host nation or other civilian population exposure.
- c. Locations of units in the hazard area and units that may have transited the hazard area, along with their current location and route of march.

3. Development of a common operating picture that incorporates this information will require significant coordination among staffs, units, and national forces. In a radiological or nuclear threat environment, a process such as this is necessary for commanders and staff to effectively develop and execute COAs to meet or adjust operational goals, respond to radiological and nuclear incidents, and protect the force.

3.2. MEDICAL CAPABILITIES AND PROCESSES SUPPORTING DETECTION

3.2.1. Health Risk Assessment

1. Risk assessment and management, including health risk assessment, is an integral component of the military planning and decision-making process, through all phases of an operation. During operational planning, Medical Advisors and medical staff coordinate with other staff elements to systematically identify, locate, assess, and document occupational, environmental, and infectious disease hazards within the CJOA and communicate the health threats posed by those hazards to the commander. During deployments, responsibility for ongoing health risk assessment is assigned at the tactical level to preventive medicine personnel.

2. Health risk assessment must encompass any identified CBRN threats or potential CBRN hazards within the CJOA and support the development of COAs that accurately consider the risk to the force. In addition, health risk assessment serves two important CBRN detection functions during deployment: first, it heightens the index of suspicion among medical personnel when considering clinical diagnosis of ill or injured personnel, facilitating early detection of CBRN hazards; and second, it

establishes the background of expected health risks, against which anomalous cases of human illness or injury or unusual hazards in the environment could be detected.

3.2.2. Occupational and Environmental Health Surveillance

1. At the outset of deployments and throughout their course, preventive medicine, environmental health, and veterinary personnel are responsible for initial and routine collection and evaluation of environmental samples, including air, water, soil, unidentified materials from industrial operations, and local flora and fauna. Battle damage sites may be surveyed for radiation if there is reason to believe they may be contaminated. Procedures for sample collection and analysis are dictated by the perceived level of risk: in potentially high-risk situations, assessments are conducted using readily available site field-sampling techniques followed by confirmatory sampling and laboratory analysis; in moderate- or low-risk situations, sampling may be more limited and analysis conducted off site using rear-area laboratory support as available.
2. High-risk occupational and environmental health hazards include the accidental or deliberate release of bulk stored hazardous chemicals; soil contaminated with heavy metals, pesticides, and other TIMs; hazardous waste; and disease-transmitting vectors.
3. Occupational and environmental health surveillance supports CBRN detection in a number of ways. Initial and routine surveillance establishes the background presence of naturally occurring or accidental hazards, against which the presence of adversary-induced hazards can be measured. Routine environmental sampling may provide early indications of adversary use of CBRN or may even provide indications that an adversary is developing the capability to do so. Finally, a thorough understanding of the environmental background is critically important to reducing false-alarm rates and generating confidence in positive results from CBRN detection equipment.

3.2.3. Deployment Health Surveillance

1. STANAG 2535 (AMedP-4.1), *Deployment Health Surveillance*, establishes agreed-on principles, roles and responsibilities, and reporting standards for deployment health surveillance in NATO operations. AMedP-4.1 defines deployment health surveillance as “the continuous, systematic collection, analysis, interpretation, and dissemination of health-related data with respect to deployed NATO forces,” with the primary objective of rapidly detecting public health incidents or outbreaks that could jeopardize NATO capacities or missions. Should the presentation of casualties be the first indication of CBRN incidents, deployment health surveillance is the primary means by which detection would occur.
2. All MTFs are required to report health-related data to the Deployment Health Surveillance Capability (DHSC). The NATO Strategic Chain of Command will specify

the requirements for this reporting for each deployment. At the operational level, the Medical Director and his staff are responsible for report system management, which includes ensuring MTFs meet reporting deadlines and transmit data in a uniform format. The Medical Director is further responsible for coordinating field management of national responses to public health events.

3. MTFs are required to collect health-related data daily and generate and submit reports on a weekly basis at a specified reporting time common to all MTFs within the CJOA. These reports include diagnosed cases of notifiable infectious diseases, as listed in AMedP-4.1. These diseases include those caused by many traditional biological warfare agents.

4. AMedP-4.1 acknowledges that its established weekly reporting requirement may not support the immediate investigation and action required by public health incidents or clusters that represent a potentially significant public health threat, as would likely be the case in CBRN incidents. Deployment health surveillance doctrine mandates that as soon as such threats become known, they must be reported immediately to the Medical Director through any appropriate means and not deferred until the mandated weekly report.

5. AMedP-7.1 provides a set of generic epidemiological curves intended to be broadly indicative of the pattern in which cases of disease could manifest over time, given a short or long mean onset time; a single point, multifocal point, or continuous source; or person-to-person transmission. These curves can be used to gain a general understanding of the casualties and potential operational disruption associated with biological agent incidents. The casualty-estimation methodology provided in AMedP-7.5 generates epidemiological curves, given estimates of individual exposure to specific CBRN agents and effects, and can support understanding of specific threats. Most of the biological-agent-induced diseases included in AMedP-7.1 and AMedP-7.5 have mean times to onset of less than a week, and the large majority of cases would occur within a week of initial exposure. Moreover, many of these diseases have a dose-dependent time to onset. For large-scale biological agent attacks in particular, exposures could be expected to be very high in areas near the release; this means the preponderance of cases would occur even earlier. Therefore, NATO's current health-related data reporting times are unlikely to support actions that can mitigate the consequences of biological agents, such as post-exposure prophylaxis.

6. Given that the time window for effectively mitigating biological agent attacks is challenging, Medical Directors and staff should consider establishing alternative mechanisms for monitoring and assessing relevant health surveillance data from MTFs across the CJOA once reports of biological agent disease have been generated by one or more individual MTFs. These mechanisms should be coordinated with and supported by the DHSC.

3.2.4. Operational Epidemiology

1. In a CBRN context, operational epidemiology is the investigation of known or suspected CBRN incidents 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 control measures to prevent additional cases. Operational epidemiology may also be an important component of forensic investigation of a CBRN incident known or suspected to be deliberately caused.
2. Operational epidemiology is most applicable in scenarios such as biological incidents, low-level chemical exposures, or acute radiological exposures, where the link between cause and effect may not be immediately apparent. For naturally occurring outbreaks of infectious disease, accidental exposures, and small-scale adversary use of biological agents, epidemiological investigations triggered by small numbers of anomalous cases of disease or injury may provide the mechanism by which CBRN incidents are detected. In large-scale attacks, the casualties will present to the medical system in large numbers clustered in time; epidemiological investigation will not be necessary to determine that an incident has occurred. In such cases, however, these investigations would serve as important tools for improving situational awareness and supporting operational and medical responses.
3. Information on which to base an epidemiological investigation can come from a number of different sources, depending on the nature of the incident. Astute clinicians may report unusual presentation of illness in individuals or patterns of disease among the population at risk may emerge through deployment health surveillance. Occupational and environmental surveillance may discover zoonotic diseases in the local animal population, disease-causing vectors, or the presence of chemical or radiological hazards in the environment. Laboratory diagnostic testing or analysis of environmental samples may have unusual or anomalous results.
4. AMedP-7.1 discusses principles of outbreak investigation and provides supporting information for unit medical personnel operating in the immediate vicinity. As outbreaks and incidents progress or expand in scope, commanders may wish to deploy additional resources in support of outbreak investigations, including the use of specialized investigation teams and reach-back capabilities. Commanders may call on one or more of NATO's medical and CBRN specialist response teams established for this purpose; these teams include the following:
 - a. Rapidly Deployable Outbreak Investigation Team (RDOIT).
 - b. Medical Radiological Incident Investigation Team (MRIIT).
 - c. Sampling and Identification of Biological, Chemical, and Radiological Agents (SIBCRA) teams. Note that SIBCRA teams are not medical assets but may include medical personnel.

These specialized investigation teams will require logistical and communications support and may require security in a semi-permissive or non-permissive

environment. The Medical Director, with other staff elements, should establish a liaison or coordinator to support the operational employment of these teams in the CJOA.

3.2.4.1. Rapidly Deployable Outbreak Investigation Team

1. The purpose of an RDOIT is to investigate outbreaks or incidents where the intentional use of biological agents cannot be excluded. STANAG 2529 (AMedP-7.7), *Rapidly Deployable Outbreak Investigation Team (RDOIT) for Suspected Use of Biological Warfare Agents*, provides the RDOIT operational concept. The companion Standards Related Document (AMedP-7.7-1), *RDOIT Planning Guidance Document*, provides guidance to nations on the implementation of the RDOIT concept.
2. RDOITs are national or international teams, constituted on a single-nation or multi-nation basis. They are intended to be small, rapidly deployable, highly specialized, and autonomous teams that provide rapid military scientific support directly to operational decision-makers in a disease outbreak of suspicious origin. Deployed RDOIT personnel and equipment should be tailored to the mission, and nation(s) are therefore encouraged to use a modular structure when establishing an RDOIT to allow flexibility in meeting initial and evolving operational requirements while minimizing the team's operational footprint. AMedP-7.7-1 provides a suggested modular composition for RDOITs.
3. RDOIT capabilities include the ability to provide provisional identification of the causative agent of an outbreak or biological incident; the ability to perform epidemiological investigation; the ability to collect environmental, clinical, and post-mortem samples; and the ability to provide subject-matter expertise and advice to commanders and medical staff. The RDOIT sample-collection capability is intended to follow the collection and chain-of-custody procedures necessary to support forensic investigations.
4. RDOITs are medical assets, capable of deploying within 48 hours of notification and having a three-day, mission-specific self-sustainability. RDOIT deployment is initiated upon the request of the CJFC or higher-level authority. Once deployed, RDOITs are under the operational control of the CJFC, and its activities are coordinated by the Medical Director.
5. RDOITs will be equipped with basic field analytical capabilities but must be supported by reach-back laboratories. During the pre-deployment phase, medical planning staff should ensure that reach-back laboratories are designated and that any necessary support agreements are in place to ensure that samples collected by the RDOIT are transported and analysed quickly and efficiently.
6. When planning and executing medical support in CBRN contingencies, Medical Directors and medical staff should be aware of the composition of the available RDOIT(s) and consider the circumstances under which an RDOIT deployment should be requested. The information provided by an RDOIT can be used to guide decisions

on administration of medical countermeasures and treatment, restrictions of movement, area avoidance, use of IPE, implementation of extraordinary public health measures, and infection-control measures in MTFs. The prospective utilization of and requirements for this information at the operational level of command should be considered when tasking the RDOIT and designating priorities for its investigation.

3.2.4.2. Medical Radiological Incident Investigation Team

1. The purpose of the MRIIT is to investigate and provide advice on the medical management of incidents in which radionuclides may have been released into the CJOA and might affect military personnel. STANAG 2551 (AMedP-7.4), *Regulations for Establishment and Employment of MRIIT (Medical Radiological Incident Investigation Teams)*, establishes NATO policy on the creation of MRIITs and describes their composition, mission, and capabilities.
2. MRIITs are national or international teams, constituted on a single-nation or multi-nation basis. The MRIIT will include a core team composed of a physician with radiation medicine or health physics expertise, a CBRN defence officer or analyst capable of performing radionuclide analysis, and a nurse or clinical laboratory technician with expertise in nuclear or radiation medicine. This core team can be augmented as necessary. As with the RDOIT, the MRIIT footprint should be as small as possible, and the composition of deployed teams should be tailored to the mission.
3. MRIIT capabilities include the ability to collect environmental, clinical, and post-mortem samples; the ability to quickly diagnose radiation exposure and estimate radiation dose; the ability to liaise between on-scene commanders and supporting MTFs; and the ability to provide subject-matter expertise and advice to commanders and medical staff on the use of protective equipment, decontamination, therapeutic interventions, and contamination control. The MRIIT sample-collection capability is intended to follow the collection and chain-of-custody procedures necessary to support forensic investigations.
4. MRIITs are capable of deploying within 48 hours of notification and have a three-day, mission-specific self-sustainability. MRIIT deployment is initiated upon the request of the CJFC or higher-level authority. Once deployed, MRIITs are under the operational control of the CJFC, and its activities are coordinated by the Medical Director.
5. Field identification of radionuclides and initial dose assessments performed by the MRIIT may need to be confirmed by tests performed in a reference laboratory. During the pre-deployment phase, medical planning staff should ensure that reach-back laboratories are designated and that any necessary support agreements are in place.
6. When planning and executing medical support in CBRN contingencies, Medical Directors and medical staff should be aware of the composition of the available MRIIT(s) and consider the circumstances under which an MRIIT deployment should

be requested. MRIIT investigations and advice can be used to support operational and tactical decisions on triage of exposed personnel, administration of prophylactic and therapeutic drugs, contamination avoidance, decontamination, and medical management of personnel exposed to radiation. The prospective utilization of and requirements for this information at the operational level of command should be considered when tasking the MRIIT and designating priorities for its investigation.

3.2.4.3. Sampling and Identification of Biological, Chemical and Radiological Agents

1. STANAG 4701 (AEP-66), *NATO Handbook for Sampling and Identification of Biological, Chemical and Radiological Agents (SIBCRA)*, provides procedural guidance for the sampling and identifying biological, chemical, and radiological agents in support of NATO operations. As described in AEP-66, SIBCRA has two purposes: to provide operational commanders with the information needed to support decisions to protect forces and minimize operational impact from CBRN agents and to confirm adversary use of these agents forensically.
2. There are two types of SIBCRA sampling teams. Specialist sampling teams should be trained in the general sampling procedures provided in AEP-66 and are responsible for collecting, documenting, packaging, and transporting environmental samples; if they have a medical specialist, they may also take clinical samples. Scientific advisors and forensic sampling teams are specialist sampling teams augmented by scientific advisors drawn from military and/or civilian national assets; these advisors are expected to have intimate knowledge of SIBCRA procedures and/or national or international forensic procedures and to be capable of performing sophisticated sampling procedures. In addition, laboratory analysis teams are field laboratory staff well trained in sample preparation and analysis techniques. AEP-66 provides suggested team composition and training.
3. The CJFC has overall responsibility for the SIBCRA process, including the activation and composition of SIBCRA teams and coordination of SIBCRA team support. Planning and execution of SIBCRA missions will generally be conducted by CBRN staff, with advice and support as needed from medical staff.
4. The information gathered through SIBCRA missions may trigger, augment, or support that gathered through medical surveillance activities and specialized medical investigations teams like the RDOIT and MRIIT. The Medical Director and medical staff should therefore consult closely with CBRN staff in providing support to and monitoring the progress of SIBCRA missions.

3.3. LABORATORY SUPPORT FOR DETECTION

1. Diagnostic testing and laboratory analysis of clinical and environmental samples each support detection in a number of ways. Diagnostic testing can confirm clinical diagnosis of biological agent infection/intoxication, or can rule out more

common sources of non-specific disease symptoms, such as seasonal influenza. Laboratory analysis of samples from a variety of environmental and industrial sources can detect the presence of chemical, biological, or radiological agents. Various indicators of CBRN attacks, discussed above, can trigger clinical and environmental sampling efforts, and analysis of collected samples can confirm the presence of a hazard and support situational awareness of its nature and source.

2. STANAG 2571 (AMedP-8.5), *Minimum Test Requirements for Laboratory Units of In Theatre Military Medical Treatment Facilities (MTFs)*, establishes the minimum requirements for laboratory services to personnel in theatre MTFs. This STANAG lists tests that should be available at Roles 1 through 3 to broadly support medical operations and medical treatment decisions at those facilities. The tests most relevant to CBRN detection are rapid antigen detection, limited parasitology, and microbiology bacteriology. AMedP-8.5 describes these tests as optional capabilities for Role 2 and Role 3 facilities. This means that confirmation of clinical diagnosis of more exotic biological agents may require sample transport and diagnostic testing at laboratories out of the CJOA.

3. STANAG 4632 (AEP-81), *Deployable NBC Analytical Laboratory*, establishes capability standards for the NATO Deployable NBC Analytical Laboratories (NBC-ALs). These laboratory facilities will deploy on five days' notice to move and provide expert sampling and analysis capabilities and scientific advice on CBRN threats and hazards across the CJOA. The NBC-AL is associated with NATO's CBRN Defence Battalion and comprises SIBCRA teams, radiological, biological and chemical laboratories, decontamination teams, explosive ordnance disposal/improvised explosive device disposal teams, and a command-and-control element.

4. Medical staff should plan to augment standard medical laboratory facilities and the CBRN-specific NBC-AL with national reach-back laboratory capabilities. The RDOIT and MRIIT standardization agreements direct medical staff to designate reach-back laboratories and ensure that any necessary support agreements are established during the pre-deployment phase. Medical staff should further consider the designation of reach-back laboratory support for any operation in which the MTF laboratories provided by contributing nations lack CBRN diagnostic capabilities or when MTF laboratories may be overburdened in CBRN incidents. Moreover, some CBRN detection strategies, such as randomized collection and analysis of clinical samples, may require augmenting available laboratory support.

5. As stated in STANAG 2521 (ATP-3.8.1), *CBRN Defence on Operations (Volume 1)*, any process of identifying CBRN agents through sample analysis will be associated with one of three confidence levels: provisional identification, confirmed identification, and unambiguous identification. Field analyses conducted by specialized sampling and investigation teams will provide provisional identification; in-theatre medical and non-medical laboratories with appropriate test capabilities can provide confirmed identification; and designated reference laboratories can provide unambiguous identification. In most cases, increasing confidence in agent identification will result from a multistep process that begins with field tests and ends

with reference laboratory analysis. Regardless of laboratory capability, medical staff should consider the extent to which confidence in laboratory results is supported by other information within the common operating picture.

6. Medical advisors must consider both the time required to acquire the results of diagnostic testing and laboratory analysis and the confidence associated with those results when recommending medical actions to mitigate the impact of a CBRN incident. They must consider the costs of implementing potentially unnecessary actions (adverse reactions, operational disruption, consumption of resources) on the basis of lower confidence information and weigh them against the costs of waiting to implement actions (increased numbers of casualties and fatalities, more severe disease) until high-confidence information can be obtained. All these costs will be a function of the specific nature of the CBRN incident and the responses available to mitigate its impact.

3.4. CBRN FORENSICS

1. CBRN forensics refers to the scientific methods and techniques used to analyse materials and data in support of a chemical, biological, radiological, and nuclear incident or threat investigation. Forensic investigations support legal and political actions and focus on evidence in support of legally justifiable retaliating or mitigating actions; as noted in AEP-66, the priority in forensic analysis is on achieving high or maximum confidence in results, with less regard for the effort or time required to do so. Forensic investigations are not detection capabilities per se; rather, they are triggered by detection of CBRN incidents and can contribute to enhanced situational awareness of the incident and its potential impact on operations and help tailor incident responses so they have the greatest benefit.

2. CBRN forensic investigations differ from other CBRN incident investigations in that they require a high-quality, demonstrable chain unequivocally linking the CBRN event with the results of the scientific analysis of collected evidence through all stages in the process, including sampling, sample transport, and identification. Procedures for establishing and maintaining this chain of evidence are described in AEP-66 for forensic SIBCRA missions. AMedP-7.4 and AMedP-7.7 both state that while the MRIIT and RDOIT are not primarily intended for forensic purposes, either team can—if supported by national regulations—be tasked to initiate chain-of-custody procedures for sample collection and handling. These procedures should be consistent with those established for SIBCRA forensic missions.

3. In coordination with CBRN defence staff, medical planning staff should ensure that designating reach-back laboratory capabilities include those needed for forensic analysis. In addition, the two staffs should collaborate to ensure they identify appropriate medical subject-matter experts and task them with supporting forensic investigations as necessary. Once a forensic investigation is initiated, medical staff should support development of sampling plans and strategies given the specific

nature of the incident and applicable national forensic requirements from the affected nation(s).

4. Medical Advisors and medical staff should be aware that the collection of clinical samples for purposes of attribution may raise ethical issues; these issues should be anticipated and resolved to the extent possible before forensic investigations are underway. For example, post-mortem sampling must be done in accordance with the regulatory requirements of the home nation for military fatalities and with those of the host nation for civilian fatalities. Collection of samples from well persons, including civilians, children, and captured persons, must be consistent with international conventions and in accordance with local regulations. In all cases, clinical sampling should be as minimally invasive as possible, consistent with the information required. Trained medical personnel must take any invasive clinical samples, and these personnel should collect non-invasive samples if possible. Finally, sample collection should be sensitive to cultural and religious considerations that may differ between Allied nations, non-NATO partner countries, and host nations.

CHAPTER 4 INFORMATION MANAGEMENT AND MEDICAL OPERATIONS

1. AJP-4.10; AJP-6; and STANAG 2562 (AJMedP-5), *Allied Joint Doctrine for Medical Communications and Information Systems (MedCIS)*, describe the requirements for, characteristics of, and the implementation/use of medical information within the overall information architecture. Standards for medical record keeping in Allied operations are defined in STANAG 2235 (AMedP-4.8), *Pre- and Post-Deployment Health Assessment*.
2. The role of medical information in CBRN situational awareness is crucial and may be more urgent and more high profile than the role that medical information typically plays in conventional operations. Operational and medical command decisions in preparation for, or in response to, a CBRN incident are dependent on information. Timely, accurate, and comprehensive medical information will be needed to assess the medical and operational impact of CBRN incidents, to determine the appropriate medical response to CBRN incidents, to evaluate COAs, and to provide the best possible advice to the commander.

4.1. UNIQUE CBRN MEDICAL INFORMATION REQUIREMENTS

1. Certain medical and non-medical information not normally collected in a standardized manner may be needed to support components of CBRN defence, CBRN medical defence, CBRN medical-related command decisions, and CBRN medical COA development and execution.
2. Many during- and post-incident CBRN medical actions, such as post-exposure prophylaxis and treatment, forensic investigations, and long-term personnel monitoring, require unit locations and personnel rosters recorded on a daily basis. All available meteorological data should be collected and retained in a format that allows correlation to personnel location information.
3. The Medical Director, with other staff elements, should standardise the collection, recording, preservation, and protection of this information if a system to do so is not already in place.

4.2 INFORMATION MANAGEMENT CONSIDERATIONS IN CBRN MEDICAL OPERATIONS

There are a number of information management considerations that should receive particular attention from the Medical Director and medical staff when providing medical advice to the commander and when planning and executing CBRN medical operations. These considerations include the following:

- a. Identification and resolution of differences in national standards for the protection and management of medical information.
- b. Emphasis on staff interactions with medical personnel at all levels.
- c. Integration of medical and non-medical CBRN information at all levels of command.
- d. Lateral lines of communication between medical and operational units at all levels, including establishment of critical linkages either through liaisons or electronically and designation of software and language requirements, file sharing protocols, and reporting formats.
- e. Management of patient privacy concerns.
- f. Availability, qualification/expertise, and designation and procedures for use of reach-back capabilities.
- g. Collaboration and information sharing outside NATO on CBRN medical issues, with the host nation, non-NATO allied nations, international organizations, and NGOs.
- h. Countermeasures to protect medical information against the effects of electromagnetic pulses in a nuclear threat environment.

4.3 PUBLIC AFFAIRS AND MEDIA RELATIONS

1. During and after a CBRN incident, there will be a high demand for medical information. This demand will be not only for the operational/medical implications of the incident but from the media, local governments, allied populations, etc. The MedCIS is the backbone source of information for the commander.
2. The Medical Director will be the source of command medical information and must ensure that information for release is standard, timely, correct, and only released through appropriate command representatives.
3. Culturally proficient and operationally aware public affairs personnel should be used to the greatest extent possible to prepare official statements in order to provide proper risk communication and avoid spreading alarm or unrest.

4.4. CBRN CASUALTY ESTIMATION

1. The standard NATO methodology for estimating CBRN casualties is described in AMedP-7.5. This methodology allows planning staff to estimate the number, type, severity, and timing of casualties uniquely occurring because of CBRN incidents near Allied military forces. CBRN casualty estimation in NATO is led by the J3/J5 operational planning staff, guided by CBRN subject-matter experts, including medical personnel. As with conventional casualty estimates, CBRN casualty estimates are used throughout the planning process to support a comprehensive analysis of the mission and production of operational plans that can be medically supported. This includes:

- a. Course-of-action analysis.
- b. Overall operational risk assessment.
- c. Determination of theatre holding and strategic evacuation policies.
- d. In-theatre evacuation policy and plans.
- e. Personnel and unit replacement plans.
- f. Assessment of CBRN defence requirements.

2. The number, flow, and nature of estimated CBRN casualties may be significantly different from that expected for conventional battle casualties. Estimates of CBRN casualties may therefore suggest a need to alter baseline medical support plans for casualty management and logistics support. Considerations for decision-making in these areas are discussed in Chapters 6 and 8 of this document.

3. As with the estimation of conventional battle casualties, the CBRN casualty estimates facilitate the pre-incident medical support planning process. The goal of this process is to ensure the sustainment of medical operations in a CBRN environment, which includes the following medical considerations:

- a. Proper location and management of MTFs.
- b. Structure of the medical force, including specialty personnel and medical materiel.
- c. Logistical support requirements.
- d. Requirements for the reallocation and redistribution of resources in CBRN contingencies.
- e. Development of a CBRN MASCAL plan.

4. The AMedP-7.5 CBRN casualty-estimation methodology is complex, and its implementation requires a wide range of expertise. Not only is there a need for personnel with mathematics and computer skills, CBRN casualty estimation must include data/data communication specialists and personnel with operational, intelligence, and CBRN skills. Medical Directors must therefore consider the capability of their medical staff element to execute the casualty calculation methodology. They must assess the expertise of personnel, the availability and capacity of hardware, and the availability of software in the medical staff or in other staff sections that may be tasked the execution. If there is no on-site capability, Medical Directors must identify available reach-back capabilities and coordinate access to them.

5. In addition, estimation of CBRN casualties requires coordination with and inputs from other staff sections and national elements. Many of these inputs will likely come from operational command/information systems, meteorological information systems, and intelligence systems. Example information requirements include the following:

- a. Level of fidelity desired.
- b. Threat assessment with agents (CBRN devices), delivery systems, stockpile, and employment doctrine.
- c. CBRN hazard modelling outputs compatible with the casualty-estimation methodology input requirements.
- d. CBRN protection capability and status of units/personnel in the population at risk formatted into the appropriate inputs for the estimation methodology.
- e. Command CBRN protection guidance/policy.
- f. Proposed force deployments, configurations, and timelines.

6. AMedP-7.5 allows users of the CBRN casualty-estimation methodology to define the severity of illness or injury at which individual military personnel would become casualties. While the default is to consider any symptomatic individual a casualty, there may be circumstances where commanders may determine that the urgency of a mission requires individuals in certain units or across the force to delay seeking medical care until the severity of their symptoms precludes execution of their mission. Decisions on the selection of casualty criteria should be made in consultation with other staff elements.

CHAPTER 5 PHYSICAL PROTECTION

5.1. INDIVIDUAL AND COLLECTIVE PROTECTION

1. In general, the responsibility for IPE and COLPRO is operational and logistical. Within NATO, doctrine on the need for, use of, and training for IPE and COLPRO is provided in STANAG 2521 (ATP-3.8.1 Volume 1), *CBRN Defence on Operations*; STANAG 2522 (ATP-3.8.1 Volume 2), *Specialist NBC Defence Capabilities*; and STANAG 2520 (ATP-3.8.1 Volume 3), *CBRN Defence Standards for Education, Training, and Evaluation*. Requirements for IPE for medical personnel are specifically addressed in STANAG 2954 (AMedP-7.3), *Training of Medical Personnel for Chemical, Biological, Radiological, and Nuclear (CBRN) Defence*.

2. Medical units and personnel deployed to the CJOA should be evaluated per STANAG 2560 (AMedP-1.6), *Medical Evaluation Manual*; (AMedP-1.7), *Capability Matrix*; and (AMedP-1.8), *Skills Matrix*. Nations are responsible for ensuring their forces are trained and equipped to use IPE/COLPRO and to perform tasks while using protective equipment in a CBRN environment.

5.2 OPERATIONAL MEDICAL CONSIDERATIONS RELATED TO PHYSICAL PROTECTION

This section outlines potential IPE/CPE subjects for the Medical Director and medical staff to consider when providing medical advice to the commander and when planning and executing CBRN medical operations.

5.2.1 Individual Protective Equipment

The physical and psychological impacts of IPE and degree of expected degradation are generally known. However, depending on the environment, threat, and mission, additional guidance or emphasis may be required. While IPE protects individuals from direct exposure to CBRN agents, different MOPPs may apply to different threats. Subjects for Medical Director consideration include the following:

- a. Assessment and communication of the risk trade-offs for CBRN protection and MOPP-related degradation and casualties.
 - o Force-wide policy for MOPP in conjunction with CBRN staff and other staffs and commands. If MOPP is the combat uniform, is there a greater chance of heat and/or psychological casualties? What procedures should be implemented to minimize effects: water intake, work-rest cycles, additional periodic checks by unit medics, etc.?

- Use of standard or modified MOPP levels appropriate to the specific hazard environment. For example, for some threats such as radiological and biological agents, it may be appropriate to limit IPE to masking. In addition, medical advice may be needed to establish specific procedures for the use of masks and/or other MOPP levels when warned of, or potentially exposed to, a biological agent. Criteria are also required for relaxation of IPE for biological and radiological hazards. Who should unmask when?
- b. Unique guidance on IPE issues for medical units. Are there factors that could cause different medical assets to have different MOPP policies and/or different material replacement demands?
- c. The medical and logistical impact of water demand associated with the increased emphasis on hydration.
- d. The impact of MOPP on personal hygiene, related health implications, and procedures for mitigation.
- e. The variations in the IPE capability of national forces and equipment, including any non-NATO allied forces participating in the operation. Some units may be relatively more vulnerable to casualties or suffer relatively greater degradation when operating in IPE. These units may have an associated requirement for increased medical support.
- f. The need to monitor IPE usage rates within the medical system and provide for resupply.

5.2.2 Collective Protection

1. Given the availability of medical COLPRO assets, Medical Directors and medical staff should establish priorities for assigning and positioning these assets. This prioritization should include consideration of increased vulnerabilities identified during the operational planning process, such as areas or forces that are more likely to be attacked with CBRN or have an increased vulnerability to the effects of CBRN attacks due to location.
2. Other COLPRO-related issues that Medical Directors and medical staff should consider include the following:
 - a. The coordination and/or standardization of procedures for entry into and exit from collectively protected medical facilities and vehicles.
 - b. The status of COLPRO use and related logistic demands across medical force structure during the conduct of an operation.

- c. Contingency planning for any MTFs that lose COLPRO capability for any reason during operations.

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CHAPTER 6 CBRN MEDICAL COUNTERMEASURES AND CASUALTY CARE

1. The medical countermeasures and casualty care component of medical CBRN defence comprises a broad range of medical capabilities that is discussed in a number of Allied doctrinal publications and standards:
 - a. MC 326-3 and AJP-4.10 provide overarching principles and policies for operational medical support and establish standards for medical care and timelines for the delivery of medical care.
 - b. AMedP-7.1 discusses principles of casualty management and provides guidance on the medical care required for casualties from CBRN agents and effects of various types. It also describes types of medical countermeasures and concepts for their use. AMedP-7.1 further provides a template for a CBRN casualty report form for use in field documentation of casualty signs and symptoms; this report is a variant of the standard NATO Medical Field Card provided in STANAG 2132 (AMedP-8.1), *Documentation Relative to Initial Medical Treatment and Evacuation*.
 - c. STANAG 2546 (AJMedP-2), *Allied Joint Doctrine for Medical Evacuation*, describes a concept for MEDEVAC that supports the integration of varied national MEDEVAC doctrine capabilities within multinational operations. STANAG 3204 (AAMedP-1.1), *Aeromedical Evacuation*, standardises the terminology, procedures, training, and equipment used in aeromedical evacuation in order to facilitate the transport of casualties from one Allied nation by aeromedical services of another Allied nation.
 - d. STANAG 2037 (AMedP-23), *National Military Strategies for Vaccination of NATO Forces*, provides information on national responsibilities for the vaccination of personnel, including vaccination against biological agents. It also provides a comparative table on vaccines used by NATO nations, the currency of which is maintained by the Custodian (Canada). The AMedP-23 table does not include national biological agent vaccination status, but medical staff could use this table as a template for recording this information.
 - e. STANAG 2879 (AMedP-1.10), *Medical Aspects in the Management of a Major Incident/Mass Casualty Situation*, assigns tactical- and operational-level responsibilities and provides guidance for planning and managing major incidents and MASCAL situations.
 - f. STANAG 2564 (AMedP-8.6), *Forward Mental Healthcare*, discusses general principles for mental health support to forward operating areas and for command-initiated psychological management of potentially traumatizing events.

- g. AMedP-8.5 establishes the minimum requirements for laboratory services to personnel in theatre MTFs. This STANAG lists tests that should be available at Roles 1 through 3 to broadly support medical operations and medical treatment decisions at those facilities.
2. For some types of CBRN threats, medical countermeasures provide the primary means of defence. Should counter-proliferation and active defence operations fail, the use of immunization and pre- and post-exposure prophylaxis may offer the best—or even the only—means of defending personnel from the effects of exposure and preventing casualties. For biological threats in particular, the primary objective of technical detection may be to trigger the implementation of medical countermeasures (“detect to treat”).
3. The risk that CBRN incidents pose to Allied military operations results from the potential for these incidents to generate direct casualties and from the operational disruption associated with the implementation of casualty-avoidance measures, such as the use of protective equipment. Both medical countermeasures and casualty care can limit the duration and severity of any personnel losses that occur during a CBRN incident and help reduce the need for and mitigate the effects of casualty-avoidance measures. While medical countermeasures and casualty care are always critical enablers of force protection and sustainability, they are even more crucial in CBRN incidents, where the primary risk is to the health of the force.

6.1 MEDICAL COUNTERMEASURES

1. Medical countermeasures are medical interventions, generally pharmaceuticals that mitigate the impact of human exposure to CBRN agents. Medical countermeasures can be used prophylactically, before the onset of signs and symptoms, to prevent illness or injury, or therapeutically, after the onset of signs and symptoms, to reduce the duration and severity of illness or injury.
2. AMedP-7.1 describes four concepts of use for medical countermeasures:
 - a. Pre-exposure prophylaxis—medical countermeasures administered before detection of an exposure to prevent the effects of a CBRN agent.
 - b. Pre-treatment—medical countermeasures administered before exposure to enhance the efficacy of post-exposure therapy.
 - c. Post-exposure prophylaxis—medical countermeasures administered after detection of an exposure to prevent the effects of a CBRN agent.
 - d. Immediate therapy—medical countermeasures used to treat the initial effects of a CBRN agent based upon symptoms and signs.
3. Nations are responsible for the selection, stockpiling, and use of medical countermeasures for both prophylaxis and therapy. Nations must ensure that a

sufficient supply of medical countermeasures is available to meet the needs of their deployed forces and designated rapid-response forces and that appropriate resupply mechanisms are in place to support force goals. Nations should further establish mechanisms for the distribution of their theatre stockpiles of medical countermeasures and be prepared to initiate resupply of theatre stockpiles immediately upon a command directive to begin the use of medical countermeasures.

4. Coordination of national medical countermeasure policies should be ongoing at the strategic level and is essential for successful execution of Allied operations in a CBRN environment. This coordination should encourage common selection and use of medical countermeasures among member nations to the extent possible given national legal or regulatory standards. It should also define approved configurations for stockpiling and distribution of medical countermeasures within the CJOA.

5. At the operational level, it is imperative that the Medical Director and medical staff understand the medical countermeasure policies and capabilities of troop-contributing nations to support operational planning for CBRN contingencies and to support development and execution of CBRN response decisions. In collaboration with other staff elements, this information can be used during operational planning to sync deployment of operational units, CBRN defence capabilities, and medical assets; to develop SOPs for the use of CBRN detection information in triggering responses, including command-directed use of medical countermeasures; and to anticipate medical system load, potential, and requirements for logistic support.

6. Command-directed use of medical countermeasures should be based on a defined, increasing index of suspicion and associated operational risk. Table 6-1 defines three levels of suspicion; identifies potential operational triggers for each level; and summarizes response actions that commanders and staffs should consider, including the directed use of medical countermeasures.²

Table 6-1: Recommendations for Command-Directed Use of Medical Countermeasures

Index of Suspicion	Trigger	Action
LOW	<p>Enemy possesses offensive CBRN capability (including contagious agents)</p> <p>Meteorological and terrain conditions favourable for a CBRN attack</p>	<p>Follow standard CBRN defence procedures</p> <p>If appropriate, ensure ROM is included in Status of Forces Agreements with host nation</p> <p>Stockpile medical countermeasures and seek appropriate authority to use them</p>

² Note to reviewers: This paragraph and Table 6-1 are adapted from STANAG 2242, *Policy for the Chemoprophylaxis and Immunotherapy of NATO Personnel against Biological Warfare Agents*. COMEDS directed the integration of the content of this STANAG into AMedP-7.1 and AMedP-7.6.

Index of Suspicion	Trigger	Action
		<p>Immunise personnel (if suitable vaccine available)</p> <p>Identify particularly vulnerable targets</p>
MEDIUM	<p><u>At least one of the following:</u></p> <p>Unusual enemy activity (e.g., movement, communications traffic) that indicates a CBRN attack</p> <p>Technical detection of a CBRN hazard</p> <p>Unusual patterns (numbers/temporal + special distribution) of illness/death among domestic livestock or wildlife</p> <p>Unusual or suspicious patterns (numbers/temporal + spatial distribution) of illness among personnel</p>	<p>Identify targets most likely to have been attacked and plan for ROM in surrounding areas as appropriate</p> <p>Alert home base to possible attack and obtain necessary authority to implement ROM</p> <p>Alert Allied and international organizations—DHSC, IAEA, World Health Organization (WHO), etc.—in accordance with relevant international agreements</p> <p>Warn/liase with host government civil authorities in theatre—if necessary, consider convening a military/civilian crisis management committee</p> <p>Plan for major risk-communication effort to personnel and media</p> <p>Step-up health surveillance for personnel at likely targets</p> <p>Implement SIBCRA and/or other outbreak investigation teams as appropriate</p> <p>Consider instructing personnel to take medical countermeasures</p> <p>Consider limited use of ROM (e.g., quarantine/health surveillance for those leaving theatre, restricting non-essential movement in and out of theatre or into likely targets identified previously)</p>
HIGH	<p><u>At least one or more of the following:</u></p> <p>Two or more triggers in the MEDIUM category</p> <p>Samples from battlefield confirm the presence of a contagious biological weapon agent</p> <p>Confirmed diagnosis of contagious disease among personnel caused by a likely biological weapon agent</p>	<p>Consider all the previous steps plus:</p> <p>Order affected personnel to take medical countermeasures</p> <p>Implement major risk-communication plan for personnel and media</p> <p>Consider full ROM for areas around likely targets</p> <p>Implement full isolation for confirmed cases and trace contacts and other personnel likely to have been exposed</p> <p>Initiate medical surveillance and contact tracing of personnel who have returned home from theatre</p>

7. When planning and executing command-directed use of medical countermeasures, Medical Advisors and medical staff should be prepared to provide advice to Commanders and other staff on:

- a. Identification of the population at greatest risk given potential CBRN exposure. Who among the deployed force should receive medical countermeasures and when? Are any subpopulations particularly vulnerable to the effects of a specific agent or medical countermeasure, and should they receive priority or exemption?
- b. Recommended medical countermeasures appropriate to the trigger and concept for use. This recommendation may be modified over time as situational awareness improves and information becomes available regarding the characteristics of the CBRN agent and clinical observations of personnel.
- c. Recommended criteria for the discontinuation of the use of medical countermeasures.

8. Medical Directors and medical staff should confirm that units follow standard procedures for recording the use of medical countermeasures, as described in AMedP-7.1. Close coordination between Medical Directors, medical staff, and medical units is needed to ensure that data on efficacy and adverse reactions are collected and promptly reported to the operational command level, in support of ongoing decision-support requirements. Medical Directors should also coordinate collection and dissemination of information to medical units on agent vulnerability to specific medical countermeasures as such information becomes available from reach-back or in-theatre laboratory analysis.

6.2. CBRN CASUALTY MANAGEMENT

1. AMedP-7.1 provides guidance on CBRN casualty management from point of exposure through Role 3 MTFs and focuses on the delivery of medical countermeasures and casualty care; post-incident response; and medical recognition, health surveillance, and operational epidemiology by deployed medical personnel.

2. AMedP-7.1 can be used as a reference for operational planning and medical logistic support; however, its primary intended audience is tactical-level medical personnel and first responders. A number of CBRN casualty management issues are beyond the scope of AMedP-7.1 and must be coordinated by Medical Advisors, Medical Directors, and medical staff at the operational level.

3. The development and execution of specific treatment protocols is a national responsibility. Approaches to CBRN casualty treatment are generally based on a common body of experience and published research and should not vary widely among member nations. Operational-level medical staff should be aware of any such

differences that do exist when considering the augmentation and reallocation of medical resources and medical regulating within the CJOA.

6.2.1. Treatment of CBRN Casualties

1. As part of operational planning, Medical Advisors and medical staff should be prepared to provide advice to commanders and other staffs on several treatment-related topics, including:

- a. The anticipated efficacy of treatment for CBRN casualties, including expected fatality rates, the expected potential for and timing of return to duty for survivors, and any anticipated sequelae that could affect individual performance.
- b. For incidents involving contagious biological agents, the availability of high-level containment care beds and facilities, both within theatre and out of theatre, including communication of any variation in national standards.
- c. Prioritization of pre- and post-exposure prophylaxis and/or therapy drugs in the event of limited availability, including where to position and when to augment theatre stockpiles.
- d. The availability of resources for the provision of medical care to non-Allied personnel and/or civilians.
- e. Requirements for host nation support in the execution of CBRN casualty-management COAs, including allocation, resupply, and augmentation of treatment resources and movement of patients and medical resources.
- f. Requirements for coordination and collaboration with international organizations and NGOs.

2. Treatment of CBRN casualties in many cases may require the application of agent-specific, specialized treatment resources, including specialized personnel, equipment, and materiel. Medical staff should be aware of any such treatment requirements for the specific CBRN threats identified within the CJOA. Medical staff should also determine the extent to which these resources are available within troop-contributing nations and identify alternative sources if necessary. They should further determine the potential for augmentation of these resources within member nations and establish contingency arrangements for resupply, including relief of personnel. Finally, medical staff should anticipate the need for the use of agent-specific subject-matter experts and establish reach-back capabilities if needed to allow such experts to be called upon.

3. Triage is a critical component of CBRN casualty management, as major CBRN incidents may generate a demand for medical resources in excess of those immediately available. In addition, situational awareness may be imperfect during the

early stages of a CBRN incident and there may be significant confusion regarding the nature of the hazard and the necessary medical response. A simple and generic system for triaging CBRN casualties is provided in AMedP-7.1 for use during the initial stages of a CBRN incident. As the incident progresses and situational awareness improves, more sophisticated or incident-specific approaches to triage may be beneficial. Medical staff should be aware of alternative approaches to triage of CBRN casualties and be able to assess their benefits quickly, using reach-back capabilities if needed. Theatre Medical Directors should coordinate the adoption of any such system of triage and standardize its use by medical personnel throughout the CJOA. Medical Directors should be aware that only they can authorise the use of triage category T4 (expectant) and only in a MASCAL situation (discussed further in section 6.3).

4. To support planning and allocation of resources for the treatment of CBRN casualties, Medical Directors and medical staff should be aware of the CBRN medical training status of deployed Allied personnel:

- a. All military personnel, medical and non-medical, must be trained in the provision of first aid, in accordance with STANAG 2122 (AMedP-7.3), *Requirement for Training in First-Aid, Emergency Care in Combat Situations, and Basic Force Health Protection for All Military Personnel*.
- b. STANAG 2358 (AMedP-7.2), *NATO CBRN First Aid Handbook*, further describes CBRN first aid and associated Alliance training requirements for both medical and non-medical personnel.
- c. STANAG 2954 (AMedP-7.3), *Training of Medical Personnel for Chemical, Biological, Radiological, and Nuclear (CBRN) Defence*, describes the requirements for training of all deployed medical and medical support personnel. AMedP-7.3 establishes role-appropriate levels of proficiency in five key tasks: manage any casualty in a CBRN environment, manage the medical aspects of a CBRN incident, manage a chemical casualty, manage a biological casualty including sepsis, and manage a radiological casualty including nuclear. Finally, AMedP-7.3 discusses requirements for additional “special-to-role” training to accomplish specific operational tasks beyond the scope of generalist and medical core training. These tasks include direct CBRN casualty care, medical technical support, and CBRN medical advice and planning support.

6.2.2. Allocation of Medical Resources

1. MC 326/3 and AJP-4.10 establish the 10-1-2 timeline as a clinical standard for treating injured and wounded personnel. Under this standard, immediate life-saving measures are applied within 10 minutes of wounding, emergency medical care is provided within 1 hour of wounding, and damage-control surgery is begun as soon as possible but no later than two hours after wounding. When planning for CBRN

contingencies, medical staff should adapt this standard to accommodate the presentation and progression of signs and symptoms associated with exposure to specific identified CBRN threats within the CJOA. Information on agent-specific illnesses and injuries can be found in AMedP-7.1.

2. Development of medical COAs that support the 10-1-2 timeline standard for provision of medical care to CBRN casualties is challenging. The colocation or proximity of casualties and hazard areas creates a significant risk to medical providers and limits the nature and extent of the first aid they can provide within 10 minutes of exposure, particularly for prompt nuclear and chemical injuries.³ Requirements for decontamination of CBRN casualties may similarly delay provision of emergency medical care. Both these challenges may be exacerbated significantly in CBRN incidents that generate large numbers of casualties and/or contaminate large geographic areas and infrastructure.

3. When planning the allocation of medical resources in CBRN contingencies, Medical Directors and medical staff should consider overall mission objectives, the potential scale of CBRN incidents given identified threats, and the potential for multiple CBRN incidents within a short period of time. To support the 10-1-2 timeline standard and accomplishment of mission objectives in a CBRN environment, medical COAs may need to rely heavily on highly mobile MTFs or mobile components of fixed MTFs, such as personnel, that can be deployed rapidly to locations near the hazard area to provide emergency medical care. Medical staff should identify any such units within troop-contributing nations and/or the host nation and coordinate a process for their prompt deployment when needed.

4. Medical Directors and medical staff should coordinate with other staff elements to identify potential targets for adversary use of CBRN or potential CBRN incident locations. Consideration of this information when allocating MTFs and other medical resources to locations within the CJOA can expedite the timely provision of first aid and emergency medical care to CBRN casualties. In addition, medical staff should coordinate with CBRN defence staff to identify and plan for the use of any non-medical capabilities, such as chemical defence units, that can facilitate medical operations. Finally, when allocating treatment resources, medical staff should be aware of any national differences on the assignment of responsibility for casualty decontamination to medical and non-medical personnel.

6.2.3. Medical Regulating

1. AJMedP-2 defines medical regulating as “the process of directing, controlling and coordinating the transfer of patients. This means regulating from point of wounding or onset of disease through successive MTFs, in order to facilitate the most

³ Guidance for first responders and medical personnel on the provision of first aid in a CBRN environment is provided in AMedP-7.1.

effective use of medical treatment and evacuation resources and to ensure that the patient receives appropriate care in a timely manner.”

2. Medical regulating is the responsibility of operational-level medical staff. Establishing and coordinating the execution of the medical regulation process requires medical staff to consider the availability of MEDEVAC assets at the tactical and strategic level, the capabilities and capacities of MTFs throughout the CJOA, and theatre holding policy. All these considerations may be different in CBRN contingencies than in conventional combat operations:

- a. The availability of MEDEVAC assets, particularly aeromedical evacuation assets, may be limited in some CBRN contingencies. As stated in AAMedP-1.1, patients normally will not be evacuated by air in a chemically contaminated state. SOPs for movement of chemically contaminated casualties include decontamination of casualties prior to evacuation and a preference for subsequent transport via ground MEDEVAC.
- b. Casualties with highly communicable infectious diseases may require extraordinary measures and specialized infection-control equipment to ensure patient and medical crew welfare and protection. MEDEVAC of these casualties may require large numbers of personnel or special configuration of transport vehicles and cannot be performed routinely.
- c. The network of deployed MTFs within the CJOA may not be optimally suited for medical regulating of CBRN patients, particularly in the event of a MASCAL situation. Some MTFs may not have the specialized personnel, equipment, or materiel needed to meet the treatment requirements of CBRN casualties; others may have insufficient capacity to meet demand. Moreover, some CBRN injuries and illnesses typically progress very rapidly from mild to life threatening; this progression may dictate nonlinear movement of casualties through the evacuation chain.

3. Medical staff should identify and consider various nonstandard means of medical regulating to meet the 10-1-2 timeline standard and to maximize the efficiency of MTFs in treating CBRN casualties. Examples include lateral or skip movement of casualties through the evacuation chain and movement of Role 1 or Role 2 MTFs to facilitate contamination avoidance and to provide more efficient transport routes from hazard areas.

4. Medical staff should coordinate with CBRN defence staff to establish evacuation routes from incident locations and hazard areas through Role 3 to minimize the number of assets and people that become contaminated as a consequence of movement. To that end, medical staff may wish to coordinate with CBRN staff in the allocation of some portion of MEDEVAC assets for use within designated contaminated areas, with the remainder dedicated to transporting casualties between MTFs in clean areas.

5. In the aftermath of a CBRN incident, Medical Advisors may wish to advise commanders to extend the established Theatre Holding Policy, which establishes the maximum length of time that a casualty is allowed to remain in the CJOA for treatment, recovery, and return to duty. In some cases, large numbers of casualties may have injuries or illnesses of moderate severity and are expected to return to duty soon after the established maximum length of stay. In others, economies of scale in the provision of treatment may be achieved if casualties requiring highly specialized care are treated at a common location; these locations may be within the CJOA. Finally, contagious disease patients may be subject to ROM and thus need to remain in theatre for an extended period of time. In addition, movement of contagious disease patients out of theatre may be affected by national policies and by WHO efforts to prevent spread of the disease across international borders, under the auspices of the IHRs.

6. During the operational planning process, Medical Advisors should facilitate coordination and cooperation between commanders and host nation authorities in establishing policies for the movement of contaminated or contagious casualties within the CJOA. While policies and procedures for the movement of these casualties out of theatre will be established at the strategic level, Medical Advisors should be aware of any such policies, as well as any negotiated overflight, landing, and refuelling rights.

6.3. CBRN MASS CASUALTY

1. Management of CBRN MASCAL situations is a command responsibility. AMedP-1.10 defines a MASCAL situation as one “in which an excessive disparity exists between the casualty load and the medical capabilities and capacities locally available for its management.” In MASCAL situations, the medical response strategy “may change from one based on the individual needs of each patient to the greatest good for the greatest number.” AMedP-1.10 provides standard principles for the planning and executing MASCAL medical responses, including:

- a. Development of unit MASCAL plans, including hazard assessment, resource identification, responsibilities, command and control, communications, and medical management at the tactical level.
- b. Training of military personnel, including non-medical personnel, and exercising of unit MASCAL plans.
- c. Incident management.
- d. Triage priorities.
- e. MEDEVAC priorities.
- f. Control and resupply of medical material and general equipment required for casualty care.

2. At the tactical level, Medical Incident Officers or Senior Medical Officers, identified in medical unit MASCAL plans, are responsible for declaring a MASCAL situation. Once a MASCAL situation has been formally declared, operational-level commanders, Medical Directors, and medical staff should monitor the execution of medical unit MASCAL plans and support the reallocation and resupply of medical resources, and the bringing to bear of non-medical resources, as required to alleviate the MASCAL situation as quickly as possible.
3. In MASCAL situations, the Theatre Medical Director may authorise the use of triage category 4 (expectant) as circumstances warrant. AMedP-1.10 defines triage category 4 (expectant) as “Patient subgroups who have received serious and often multiple injuries. One subgroup comprises hopeless cases regardless of resources and available competence, the other group those patients whose treatment would be time-consuming and complicated, with little chance of survival and consuming resources better used for less serious patients.” Use of this category permits medical personnel to allocate resources with the intent of providing the greatest good for the greatest number.
4. CBRN incidents are very likely to result in a MASCAL situation at the tactical unit level and at individual MTFs, due to both the number of casualties and unusual or unique requirements for treatment. Depending on the type and scale, CBRN incidents also have the potential to generate significant shortfalls in medical resources at all levels of care throughout the CJOA.
5. During the planning process, Medical Directors and medical staff should identify and consider opportunities for reallocation of resources available within the theatre and rapid augmentation of resources from sources outside the CJOA. They should give special attention to any low-density, high-demand capabilities that are specific to identified CBRN threats. CBRN MASCAL situations are a prototypical case for multinational medical response, as casualty management will almost certainly require collaboration among and contributions from multiple nations, regardless of the nationality of the casualties. Successful resolution of CBRN MASCAL situations will depend on a high degree of interoperability among medical units, as well as flexibility and creativity on the part of operational-level staff tasked with combining unit resources.
6. To resolve local resource shortfalls, Medical Directors may wish to consider nonstandard response strategies, including the movement of certain medical resources, such as personnel, forward to the CBRN incident location or the lateral movement of casualties to unburdened MTFs. The opportunities for executing responses of this type will be driven by the nature, progression, and severity of the specific CBRN illnesses and injuries sustained during the incident. Medical staff therefore must be familiar with the clinical manifestation of diseases and injuries associated with CBRN threats and hazards identified through the health-risk-assessment process.

7. Large-scale CBRN incidents may generate theatre-wide demands for medical care that simply cannot be met through normal medical operations, even with augmentation or reallocation of resources. These incidents pose a serious risk to the accomplishment of operational objectives and to the health of the deployed force. Indeed, in the aftermath of large-scale CBRN incidents, Alliance strategic and operational objectives may have to be modified or their timelines adjusted. Consequence management on a theatre-wide scale will involve focussed coordination and collaboration among all staff elements, with Medical Directors and medical staff playing a central role. Major issues, considerations, and potential strategies include the following:

- a. The standard of care that can be achieved given the situation and specific CBRN agent. Any changes to the NATO standard of medical care would likely be of short duration and directed from the strategic level with concurrence of the nations. Nonetheless, Medical Directors and medical staff should understand the implications of any such change for medical COAs and be prepared to communicate them to commanders and other staff elements.
- b. Criteria for the implementation and cessation of any extraordinary measures for resolving the MASCAL situation.
- c. Alternate triage strategies or expansion of triage category 4 to improve medical outcomes for the force as a whole.
- d. Opportunities for reduced dosing regimens for pharmaceuticals and rationing of equipment in short supply.
- e. Opportunities for the use of non-medical personnel in affected units for simple medical tasks, under the supervision of medical personnel.
- f. Implementation of concepts for MASCAL management, such as stadium or in-unit care, where medical care is provided en masse, outside of MTFs, and with extensive support from non-medical personnel.
- g. Identification of requirements for logistics support, security, contaminated waste management, mortuary support, and transportation associated with unusual medical COAs and the specific CBRN agent.

6.4. PSYCHOLOGICAL CASUALTIES

1. AMedP-8.6 identifies actual and perceived CBRN threats as one of the factors that increases operational stress and generates a need for mental health support during the conduct of operations. Operational stress management is a command responsibility, with support from military mental health services. STANAG 2565, *A Psychological Guide for Leaders across the Deployment Cycle*, provides guidance to military leaders at all levels for managing psychological support in military operations.

Both STANAGs emphasize the importance of leadership, command emphasis, and training to protect the mental health of the force.

2. AMedP-8.6 is intended to guide development of a specific mental health care plan during the planning phase of an operation. Estimates of mental health support requirements are a function of:

- a. Size of the deployment.
- b. Percent of the population at risk that is likely to present.
- c. Hardship of deployment, including environmental stressors, extent of hostilities, asymmetry of threat, rules of engagement, duration of deployment, and presence of CBRN threats.
- d. Impact of in-theatre mobility limitations on the number of required mental health care providers, given the need to provide proximate and immediate health care support.
- e. Any formal assessments of psychological threats.
- f. National guidelines for deployment and use of mental health assets.

3. When there is an identified CBRN threat in a CJOA, Medical Advisors and medical staff should be prepared to provide advice on the characteristics of threat-specific CBRN incidents and aspects of defensive measures that would exacerbate operational stress and influence the mental health support requirements identified above. Examples include the physiological stress associated with the use of IPE, the psychological effects of quarantine and isolation, and MASCAL situations as potentially traumatizing events. Identifying CBRN- and operation-specific stressors may require consulting with subject-matter experts in a reach-back capacity. Given these identified operational stressors, medical staff should further advise and coordinate with other staff elements to develop strategies to limit their impact on the mental health of the force.

4. Nations are responsible for providing mental health care to their military forces in accordance with national standards. Medical Directors and medical staff should be aware of any variation in national approaches to preventing and managing psychological casualties. As CBRN incidents evolve, this awareness will support the efficient allocation of operational-level mental health resources and limit the impact of psychological casualties on MTF operations when resources are constrained.

5. Some CBRN incidents will generate large numbers of casualties with physiological symptoms that, unlike trauma casualties, can be induced psychologically. During the initial triage process, it will be difficult to differentiate psychological casualties from direct CBRN casualties. Nonetheless, efficient and effective use of medical treatment and mental health resources requires that this be done. To the extent possible, Medical Directors should therefore provide guidance to

first responders, MTFs at all levels, and in-theatre mental health care personnel on methods to diagnose CBRN-related psychological casualties and differentiate them from direct CBRN casualties.

6.5. LABORATORY SUPPORT FOR CBRN CASUALTY MANAGEMENT

1. Clinical laboratory support is a critical component of medical treatment at all levels of care, providing confirmatory diagnosis and guiding medical treatment decisions. As discussed in Section 3.3, Alliance standards for in-theatre laboratory support at Roles 1 through 3 MTFs are provided in AMedP-8.5.

2. For biological agents, diagnostic testing can confirm clinical diagnosis of biological agent infection/intoxication or can rule out more common sources of non-specific disease symptoms. As discussed above, AMedP-8.5 describes many of the laboratory testing capabilities most relevant to CBRN agents and effects as optional for Role 2 and Role 3 facilities. In addition, strategies and capabilities for forward diagnostics may vary significantly between troop-contributing nations. Medical staff should be aware of national diagnostic capabilities at various roles and understand which if any have the capability to diagnose identified threat agents. For large-scale biological incidents, the overall effectiveness of medical response may crucially depend on early diagnosis and pathogen characterization; in any case where a biological incident is known or suspected, Medical Directors should actively monitor relevant forward diagnostic capabilities and be prepared to rapidly integrate the information they provide into medical response decisions.

5. In addition to providing confirmatory diagnosis of biological agent infection/intoxication, laboratories are needed to determine specific pathogen vulnerability to antibiotics or antiviral drugs and, for all CBRN casualties, to monitor the efficacy of treatment and supportive care. Medical staff should plan to augment in-theatre medical laboratory capabilities with reach-back laboratory capabilities as needed to support treatment decisions. Requirements for reach-back laboratory support may be increased if the safe handling and analysis of CBRN clinical samples is not always feasible within in-theatre medical laboratories.

CHAPTER 7 HAZARD MANAGEMENT AND MEDICAL OPERATIONS

1. The direct impact of CBRN incidents is a function of the environmental hazards they generate and the resulting health effects on exposed personnel. CBRN hazards, which are of agent-specific duration and severity, can pose an ongoing risk to operational units, first responders, and medical personnel in the area. In addition, casualties that are contaminated or suffering from contagious disease can themselves pose a secondary risk to others. While aerosolized pathogens and toxins are generally not considered a contamination hazard, care must be taken if biological agents are released in a confined space.
2. AJP-3.1 and ATP-3.8.1 are the primary Allied standards for the planning and conduct of military operations in a CBRN environment and for the use of CBRN passive defence and hazard-avoidance measures. AMedP-7.1 provides extensive guidance on hazard management during a medical response to a CBRN incident and on measures to limit the secondary health risks posed by and to CBRN casualties from contamination or contagious disease.

7.1. CASUALTY HAZARD MANAGEMENT

1. Although personnel decontamination is the responsibility of operational units, casualty hazard management is a medical responsibility, with support from other units. Hazard management for chemically or radiologically contaminated casualties includes containment and decontamination. A discussion of requirements for containment and casualty decontamination can be found in AMedP-7.1.
2. Medical staff must understand the differences in national assignment of responsibilities for chemical and radiological casualty decontamination and any variation in national training standards for medical personnel in individual and casualty decontamination. In the event of a CBRN incident, these differences should be managed at the operational level, in coordination with CBRN defence staff, to ensure there are neither gaps nor inefficient overlaps in resources dedicated to this task.
3. In addition, medical staff should coordinate with CBRN staff to ensure that SOPs exist or are developed for recording, tracking, and reporting the decontamination status of individual casualties. While this information may normally be included in an individual's medical record, a mechanism should exist for capturing and integrating information on any decontamination procedures conducted by operational personnel before entry into the medical system. In addition, in a CBRN incident, casualties may be managed by multiple nations at different points in time, with different types of units, and at different locations. It is therefore critical that decontamination status is communicated accurately and clearly throughout the

casualty-management process using procedures that have been standardized throughout the force.

4. Biological-agent-induced contagious disease casualties may require MTFs to adopt infection-control measures beyond standard barrier precautions; guidelines regarding isolation requirements and precautions can be found in AMedP-7.1. Medical Directors and medical staff should evaluate the need for any such measures during the planning phase, including assessing the associated requirement for specialized equipment or materiel. Medical staff should further determine national capabilities for stockpiling and disseminating needed equipment and consider this information when planning regulating of contagious disease patients in theatre.

5. In the event of a contagious disease outbreak within the CJOA, Medical Advisors should consider advising the CJFC of extraordinary, disease-specific personal hygiene measures within outbreak areas. During operational planning, medical staff should consult with infectious disease specialists and subject-matter experts to assess the nature and potential benefits of such measures for identified contagious disease threats, as well as the feasibility of implementing them in an operational setting. This assessment should result in both special personal hygiene guidelines for the force and advice to the commander regarding the circumstances in which they should be implemented. In the event of a contagious disease outbreak, the force health protection elements within the medical staff should work with operational and public affairs staff to promote the dissemination and adoption of these guidelines throughout the force.

6. CBRN incidents involving biological agents (contagious or not) can establish or perpetuate the presence of disease vectors and/or natural disease reservoirs in the environment. Either can perpetuate an ongoing disease outbreak or cause future disease outbreaks in the CJOA. Where there is an identified biological agent threat in theatre, medical staff should coordinate with other staff elements to develop a disease- and incident-specific plan for pest and vector control to limit the potential for any biological agent incident to generate a long-term residual hazard in the environment.

7.2. MEDICAL EVACUATION IN A CBRN ENVIRONMENT

1. AJMedP-2 and AAMedP-1.1 provide Allied doctrine on MEDEVAC generally and aeromedical evacuation specifically. Both publications identify evacuation of contaminated or contagious casualties as particular challenges, given the potential for large numbers of casualties and the need to protect evacuation vehicles and personnel from the health risks posed by both casualties and the environment. AMedP-7.1 discusses issues and constraints associated with transporting contaminated casualties from a CBRN incident site through hot, warm, and clean zones.

2. MEDEVAC is always a dynamic process but may be particularly so in a CBRN incident. Should the incident result in a MASCAL situation, lateral or skip movement of casualties may be required to maintain the required level of care and maximize the efficiency of MTF operations in the CJOA. The anticipated progression of CBRN injuries and illnesses may also dictate nonlinear movement of casualties through the evacuation chain.

3. The Medical Director has overall responsibility for coordination of MEDEVAC throughout the CJOA. Medical staff are responsible for planning and executing MEDEVAC operations, in close coordination with nations and operational and logistics staff. Typically, nations are responsible for the transport of casualties from the point of wounding to the initial MTF and for the subsequent evacuation of casualties from the CJOA to the home nation. Movement of casualties between different MTFs is, however, a National/Multinational/Force/Lead Nation responsibility.

4. When planning and executing MEDEVAC operations in a chemical or radiological environment, Medical Directors and medical staff should coordinate with CBRN staff, respective functional commands, operational staff, and nations to meet NATO treatment timelines and standards of care, while minimizing health risks to MEDEVAC personnel and limiting contamination of evacuation assets. Topics for consideration include the following:

- a. The risks and consequences of CBRN exposure to MEDEVAC personnel.
- b. Coordination and standardization of national policies, responsibilities, and procedures for decontamination of casualties before evacuation. Staffs should also be aware of any variation in national policies regarding the circumstances in which contaminated casualties may be transported and the assets that can be used for this purpose.
- c. Evacuation route selection. CBRN staff can identify contaminated areas and support the development of evacuation plans that move casualties as efficiently as possible while limiting the number of assets and people that become contaminated en route.
- d. Evacuation asset allocation. This includes consideration of the dedication of some portion of MEDEVAC vehicles for use within contaminated areas to minimize the overall number of vehicles that become contaminated. In such circumstances, medical staff should be prepared to advise commanders on measures to mitigate the risk from contaminated casualties, such as the use of casualty bags and wraps.

5. Both AJMedP-2 and AAMedP-1.1 discuss considerations related to the evacuation of contagious disease casualties. In addition, Medical Advisors and medical staff should be aware of, and provide input to, MEDEVAC decisions made at the strategic level. Key issues include the following:

- a. Identification and contingency planning for the use of MEDEVAC assets for

transport of contagious disease casualties out of theatre.

- b. Identification and contingency planning for the use of national facilities for the reception and management of contagious disease casualties.
- c. Resolution of issues related to overflight, refuelling, and landing within the host nation and en route to home nations.
- d. Coordination with the host nation and international organizations regarding the management of contagious disease casualties within the CJOA.

7.3. RESTRICTION OF MOVEMENT

1. AJP-4.10 states that Medical Advisors are responsible for providing advice to the commander on the requirements for ROM “whenever there is a suspected or confirmed outbreak of a contagious disease, environmental health or use of a contagious biological warfare agent.” The series of physical-control measures collectively known as ROM are intended to impede the spread of disease by preventing contact between healthy populations and those personnel who are or could be infectious. Because the operational impact could be significant, this advice needs to be as comprehensive as possible to support command decisions regarding the use of ROM. It should include an assessment of the merits of ROM, the scope and anticipated duration, and specific procedures and resources needed for implementation. In some cases, ROM may include limits on the interaction between Allied personnel and the local population.

2. ROM comprises several types of control measures:

- a. Isolation is the separation of an infected individual from a healthy population.
- b. Quarantine is the confinement and active, continued health surveillance of an individual who is suspected of having been exposed to an infectious agent, until it is determined that he or she is free of infection.
- c. Operational ROM is the in-theatre restriction of contact between healthy personnel and those who have, or are suspected of having, contracted a contagious disease in order to maintain operational military capability. Operational ROM typically will be implemented on a unit basis.
- d. Strategic ROM is the restriction of movement of personnel into and out of theatres to prevent the international spread of disease and protect home nations.

Isolation is done most appropriately in Role 3 MTFs, with requirements and precautions as outlined in AMedP-7.1. Since quarantine also requires active medical support, individuals in quarantine should be retained in locations proximate to MTFs, with movement restrictions and health surveillance and reporting times appropriate to

the disease of concern. AJP-4.10 notes that commanders considering the imposition of isolation and quarantine measures should seek legal advice.

3. In the event of an operationally significant outbreak of contagious disease in theatre, Medical Advisors should be prepared, at the direction of the commander, to assist the implementation of established ROM policies, plans, and procedures, and to provide further medical advice to refine the command response and maintain combat power. Issues may include:

- a. Disease-specific criteria for the implementation and cessation of ROM, driven by incubation period and transmissibility.
- b. Options for disease-specific measures to control the spread of disease, with an assessment of both effectiveness and potential for medically related operational degradation. Such measures include a combination of restrictions on the movement of individuals and/or affected units, enhanced public hygiene measures, and medical countermeasures to minimize the susceptibility of healthy personnel.
- c. Requirement and guidance for limits on interaction with host nation civilians.
- d. Requirements for health surveillance of individuals following departure from theatre.

4. Medical advice on ROM will vary depending on the source of the disease outbreak—whether natural or deliberate—and the characteristics of the disease itself. When there is credible evidence that biological weapons have been used in theatre, commanders, Medical Directors, and medical staff should assume that personnel have been exposed to a contagious disease until confirmed otherwise and should consider the following actions:

- a. In coordination with CBRN defence staff, establish the areas within which it is most likely that personnel have been exposed to the biological agent. These areas should be the focus of medical response, including disease-control measures.
- b. Review available force health protection options and implement those most appropriate given the suspected disease and affected population.
- c. Identify the agent used as quickly as possible, either by direct detection from biological agent detection systems or via laboratory analysis of environmental or clinical samples.
- d. After agent is identified, recommend disease-control measures, including ROM and extraordinary public health measures.
- e. Establish criteria for the cessation of disease-control measures, including ROM.

- f. Implement active health surveillance across the force and, if possible, the civilian population. This surveillance should include an assessment of the success of control measures and should be used to revise control measures as needed and as feasible to both ensure effectiveness and to limit operational impact.
5. Outbreaks detected through health surveillance, whether naturally occurring or caused by small biological agent attacks, may have large temporal and geographic distributions. Decisions to implement ROM may be difficult in these circumstances because the severity and extent of any disease outbreak may not be clear. If health surveillance indicates personnel are infected with a contagious disease, commanders, Medical Directors, and medical staffs should consider the following actions:
 - a. Designation of cohort wards or dedicated contagious disease treatment facilities (see Section 7.4 below).
 - b. Review available force health protection options and implement those most appropriate, given the suspected disease and affected population.
 - c. Establish presumptive case definitions to be used theatre-wide as initial diagnostic criteria, and establish laboratory support capabilities for definitive diagnosis as soon as possible.
 - d. Implement disease-control measures, including ROM. Because of the geographic and temporal distribution of cases, ROM may need to be dynamic, with affected units or populations expanded or reduced as the outbreak progresses. The operational impact of ROM may be limited if autonomous force elements are segregated and allowed to sustain their military functions.
 - e. Implement active health surveillance across the force and assess the success of control measures. Revise control measures as needed and as feasible to both ensure effectiveness and to limit operational impact.
 - f. Establish criteria for the cessation of disease-control measures, including ROM. This may take place progressively as units and populations are confirmed disease free.
6. Whenever a command decision is made to implement ROM of any type, Medical Directors and medical staff will need to coordinate with other staff elements in a number of areas, such as establishing SOPs for the movement of affected units and personnel within theatre; providing logistics support for affected units and personnel; and developing procedures for the use of cordons in ROM areas, including security measures and criteria for entering and leaving a cordoned area.
7. The use of isolation and quarantine at multiple locations in theatre will require additional operational-level medical staff support. Key considerations include the following:

- a. Standardization of procedures for health surveillance and reporting of individuals in quarantine and of attendant medical personnel.
- b. Establishment of standards for the delivery of medical care to individuals in isolation, if isolation occurs outside a Role 3 MTF.
- c. Standardization of procedures for the physical movement of casualties from quarantine to isolation.

8. Operationally significant contagious disease outbreaks are likely to meet the WHO reporting requirements for select infectious diseases, as governed by IHR (2005). While coordination with the WHO on reporting and managing the medical response to such outbreaks will take place at the strategic level, commanders should be aware that there may be procedural and reporting requirements at the operational level; for example, depending on the affected population and viability of the host nation government, the theatre Medical Advisor may be designated as the IHR focal point and assigned certain responsibilities. Guidance for Medical Advisors and commanders on NATO's IHR roles and responsibilities can be found in STANAG 2561 (AJMedP-4), *Allied Joint Medical Force Health Protection Doctrine*.

7.4. COHORT WARDS AND DEDICATED CONTAGIOUS DISEASE TREATMENT FACILITIES

1. STANAG 2552 (AMedP-1.3), *Guidelines for a Multinational Medical Unit*, defines the ability to implement infection-control measures for contagious disease patients as a minimum military requirement for Allied Role 3 MTFs. As detailed in AMedP-7.1, infection-control measures and associated infrastructure and PPE requirements are a function of the disease route of transmission, severity, and infectious dose. Contagious biological agents that pose the greatest health and operational risk will require infection-control measures well beyond standard precautions. This can include the establishment of isolation wards within Role 3 facilities for managing multiple patients with the same disease. During operational planning, Medical Directors and medical staff should assess the capabilities and capacities of in-theatre Role 3 facilities for managing contagious disease casualties. Given any identified contagious disease threats within the CJOA, medical staffs should coordinate the contingent delivery of any extraordinary laboratory or logistic support to these facilities.

2. Large-scale, biological-agent-induced contagious disease outbreaks may generate casualties in such numbers or of such severity that they exceed the capacity of in-theatre Role 3 MTFs and evacuation out of theatre is not feasible. When the threat of such outbreaks is present or realized, Medical Directors and medical staff should develop initial strategies for establishing dedicated facilities for treating casualties in theatre during pre-deployment planning. Key considerations include the following:

- a. The circumstances in which these facilities should be established, such as

a lack of sufficient theatre evacuation capability and/or out-of-theatre high-level containment care facilities or a need to isolate contagious casualties under ROM.

- b. The capability of troop-contributing nations to provide such facilities.
- c. Facility location(s) in theatre.
- d. Facility characteristics, including:
 - Required capabilities, such as embedded laboratory support and contaminated waste disposal.
 - Facility layout and patient routing.
 - Security requirements.
 - Entry/exit procedures.
 - Mortuary requirements.
- e. Assignment and rotation of medical personnel.
- f. Logistics support requirements.
- g. Coordination and collaboration with host nation, international organizations, and NGOs in the establishment of facilities and provision of medical care.

CHAPTER 8 CBRN MEDICAL LOGISTICS

The execution of medical COAs in a CBRN environment will have additional and/or unique logistical requirements. The demand for logistics support will increase and will vary by the specific or combined CBRN hazards expected and encountered. Medical, logistic, and operational staffs must anticipate these requirements and satisfy them as a critical priority. Within NATO, the requirements for medical logistics and the execution and integration of medical logistics within the overall Alliance logistics system are described in STANAG 2182 (AJP-4), *Allied Joint Logistics Doctrine*; STANAG 1406 (ALP-4.1), *Multinational Maritime Force Logistics*; STANAG 2406 (ALP-4.2), *Land Forces Logistic Doctrine*; STANAG 7166 (ALP-4.3), *Air Forces Logistic Doctrine and Procedures*; STANAG 7167 (ALP-4.3.1), *Supplement 1 to Air Forces Logistic Doctrine and Procedures*; AJP-4.10; and AJMedP-1.

8.1. MEDICAL TREATMENT FACILITIES

When planning and providing for logistic support to MTFs during CBRN medical operations, the Medical Director and medical staff must coordinate with other staff elements to select sites for MTF location and planning for their sustainment in a CBRN environment. Considerations include the following:

- a. Terrain and prevailing meteorology that might limit vulnerability from CBRN attacks or enhance accessibility to the MTF in a CBRN environment. For example, MTFs should not be sited in low ground or “bowl” areas where hazards tend to settle and persist.
- b. The impact of CBRN on the mobility of Role 1 and Role 2 assets. If relocation is necessary, will augmentation of some type be required?
- c. Unique resupply needs of MTFs operating in COLPRO. How will incoming materiel be checked and validated for the absence of hazard contamination and how will it be brought into the facility? Are there unique support and maintenance requirements for the physical plant and equipment due to COLPRO, such as additional power, replacement of filtrations systems, etc.?
- d. The management of hazardous waste. Although this is a standard medical logistic concern, the amount of hazardous or contaminated waste will significantly increase in a CBRN environment, especially as a result of decontamination activities. How will hazardous waste, including water used for decontamination, be managed at MTFs operating under COLPRO?

8.2. HOST NATION SUPPORT CAPABILITY

Pre-incident planning should address the nature and extent of host nation support anticipated for medical operations. Medical staff must clearly determine the medical CBRN capabilities of the host nation and other participating non-NATO nations and organizations. Can their capabilities be integrated with and improve the Joint Force capability? What are the circumstances under which these capabilities would be called upon? How viable and sustainable will they be in a CBRN environment? Alternately, the host nation may expect Alliance support for mitigating the effects of CBRN hazards, including medical support. What extra demands on the medical system and associated logistics burdens can be met? What is the command policy for providing CBRN medical countermeasures and/or treatment to host nation support personnel?

8.3. SUPPLY

1. Estimates of the amount of medical and non-medical material and equipment required to support and sustain medical units during CBRN defence operations should be based on estimated numbers, types, flow, and location of CBRN casualties. Medical staff must coordinate with other staff elements in estimating the new or additional material consumption by medical units in CBRN contingencies and plan for monitoring and resupply during CBRN medical operations. CBRN medical supply considerations include the following:

- a. The need for casualty decontamination facilities, either collocated with MTFs or as a central collection and decontamination point. Casualty decontamination resource demands must be anticipated in detail. For example, hazard detection and monitoring equipment requires batteries; is this demand anticipated? The Medical Director should establish a standard CBRN resource-estimation process for use by national medical units and coordinate with CBRN and logistic staff to standardize this process across the CJOA.
- b. Decontamination of MEDEVAC assets. How will these assets be assigned to clean and dirty routes, and how frequently will assets be decontaminated as a consequence? Will the strategy for use of MEDEVAC assets increase requirements for IPE and vehicle maintenance?
- c. Standard operational requirements for IPE for medical personnel operating in a CBRN environment.
- d. Requirements for medical countermeasures and therapy drugs.
- e. Low-density, high-demand medical equipment, such as ventilators.
- f. Increased demand within the medical structure for non-medical items such as water.

2. CBRN casualty management may incorporate nonstandard approaches to the delivery of medical care, such as pushing medical personnel and capabilities forward to high-demand areas, establishing dedicated CBRN casualty treatment facilities, and providing for in-unit or stadium care in large-scale MASCAL events. Planning for the implementation of these types of operations must include consideration of new or unusual medical logistics support requirements. Will specific MTFs or areas serve as a focal point for non-traditional medical operations? How will material needs be established, and how will material be delivered to units and locations outside of MTFs?
3. Any units or locations subject to ROM must be sustained. How will material be delivered? Personnel within those units or locations may be required to undergo frequent medical evaluation, with further isolation of any personnel who become ill. What procedures must be established to ensure the continuity of medical support? Will casualties from these units be evacuated or treated in place? What are the logistics support requirements in either case?
4. The NATO planning process routinely addresses multinational logistics issues such as interoperability and accessibility across nations. Determining availability of, and planning for, the stockpiling, use, and resupply of medical material must further account for differences in national laws and standards for the administration of medical countermeasures and therapeutic drugs, the use of medical equipment, and diagnostic and laboratory procedures.

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ANNEX A ACRONYMS AND ABBREVIATIONS
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AEP	Allied Engineering Publication
AJMedP	Allied Joint Medical Publication
AJP	Allied Joint Publication
AMedP	Allied Medical Publication
ATP	Allied Tactical Publication
CBRN	chemical, biological, radiological, and nuclear
CIS	Communications and Information Systems
CJFC	Combined Joint Force Commander
CJOA	Combined Joint Operations Area
COA	course of action
COLPRO	collective protection
CPE	casualty protective equipment
DHSC	Deployment Health Surveillance Capability
IHR	International Health Regulations
IPE	individual protective equipment
MASCAL	mass casualty
MC	Military Committee
MEDCC	Medical Coordination Cell
MedCIS	Medical Communications and Information Systems
MEDEVAC	medical evacuation
MOPP	Mission Oriented Protective Posture
MRIIT	Medical Radiation Incident Investigation Team

MTF	Medical Treatment Facility
NATO	North Atlantic Treaty Organization
NBC-AL	NBC Analytical Laboratory
NGO	non-governmental organisation
NSO	NATO Standardization Office
OTAN	Organisation du traité de l'Atlantique Nord
PFP	Partnership for Peace
PPE	personal protective equipment
RDOIT	Rapidly Deployable Outbreak Investigation Team
ROM	Restriction of Movement
SIBCRA	Sampling and Identification of Biological, Chemical, and Radiological Agents
SOP	standard operating procedure
STANAG	Standardization Agreement
TIC	toxic industrial chemical
TIM	toxic industrial material
TTF	Terminology Tracking Form
WHO	World Health Organization

ANNEX B	REFERENCES
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MC 0603	<i>NATO Comprehensive CBRN Defence Concept</i>
MC 326/3	<i>NATO Principles and Policies of Medical Support</i>
MC 472	<i>NATO Military Concept for Defence Against Terrorism</i>
STANAG 1406 (ALP-4.1)	<i>Multinational Maritime Force Logistics</i>
STANAG 1459 (AJP-3.1)	<i>Allied Joint Doctrine for Maritime Operations</i>
STANAG 2037 (AMedP-23)	<i>National Military Strategies for Vaccination of NATO Forces</i>
STANAG 2103 (ATP-45)	<i>Warning and Reporting and Hazard Prediction of Chemical, Biological, Radiological, and Nuclear Incidents</i>
STANAG 2122 (AMedP-79)	<i>Requirement for Training in First-Aid, Emergency Care in Combat Situations, and Basic Force Health Protection for All Military Personnel</i>
STANAG 2182 (AJP-4)	<i>Allied Joint Logistics Doctrine</i>
STANAG 2228 (AJP-4.10)	<i>Allied Joint Medical Support Doctrine</i>
STANAG 2235 (AMedP-4.8)	<i>Pre- and Post-Deployment Health Assessment</i>
STANAG 2242	<i>Policy for the Chemoprophylaxis and Immunotherapy of NATO Personnel against Biological Warfare Agents</i>
STANAG 2358 (AMedP-7.2)	<i>NATO CBRN First Aid Handbook (Study)</i>
STANAG 2406 (ALP-4.2)	<i>Land Forces Logistic Doctrine</i>
STANAG 2451 (AJP-3.8)	<i>Allied Joint Doctrine for Chemical, Biological, Radiological, and Nuclear Defence</i>

STANAG 2461 (AMedP-7.1)	<i>The Medical Management of CBRN Casualties</i>
STANAG 2521 (AJP-3.8.1, Volume I)	<i>CBRN Defence on Operations</i>
STANAG 2525 (AJP-6)	<i>Allied Joint Doctrine for Communication and Information Systems</i>
STANAG 2529 (AMedP-7.7)	<i>Rapidly Deployable Outbreak Investigation Team (RDOIT) for Suspected Use of Biological Warfare Agents</i>
STANAG 2535 (AMedP-4.1)	<i>Deployment Health Surveillance</i>
STANAG 2542 (AJMedP-1)	<i>Allied Joint Medical Planning Doctrine</i>
STANAG 2546 (AJMedP-2)	<i>Allied Joint Doctrine for Medical Evacuation</i>
STANAG 2551 (AMedP-7.4)	<i>Regulations for Establishment and Employment of MRIIT (Medical Radiological Incident Investigation Teams)</i>
STANAG 2552 (AMedP-1.3)	<i>Guidelines for a Multinational Medical Unit</i>
STANAG 2553 (AMedP-7.5)	<i>NATO Planning Guide for the Estimation of CBRN Casualties</i>

STANAG 2561 (AJMedP-4)	<i>Allied Joint Medical Force Health Protection Doctrine</i>
STANAG 2564 (AMedP-8.6)	<i>Forward Mental Healthcare</i>
STANAG 2565 (AMedP-8.10)	<i>A Psychological Guide for Leaders Across the Deployment Cycle</i>
STANAG 2571 (AMedP-8.5)	<i>Minimum Test Requirements for Laboratory Units of In- Theatre Military Medical Treatment Facilities</i>
STANAG 2596 (AJMedP-7)	<i>Allied Joint Medical Doctrine for Support to CBRN Defensive Operations</i>
STANAG 2879	<i>Principles of Medical Policy in the Management of a Mass Casualty Situation</i>
STANAG 2954 (AMedP-7.3)	<i>Training of Medical Personnel for CBRN Defence</i>
STANAG 3204 (AAMedP-1.1)	<i>Aeromedical Evacuation</i>
STANAG 4632	<i>Deployable NBC Analytical Laboratory</i>
STANAG 4701 (AEP-66)	<i>Handbook for the Sampling and Identification of Biological, Chemical, and Radiological Warfare Agents</i>
STANAG 7166 (ALP-4.3)	<i>Air Forces Logistic Doctrine and Procedures</i>
STANAG 7167 (ALP-4.3.1)	<i>Supplement 1 to Air Forces Logistic Doctrine and Procedures</i>

AMedP-7.6(A)(1)