

NATO STANDARD

AJMedP-7

**ALLIED JOINT CHEMICAL,
BIOLOGICAL, RADIOLOGICAL
AND NUCLEAR (CBRN) MEDICAL
SUPPORT DOCTRINE**

Edition B, version 1

JANUARY 2022



NORTH ATLANTIC TREATY ORGANIZATION

ALLIED JOINT MEDICAL PUBLICATION

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NATO LETTER OF PROMULGATION

21 January 2022

1. The enclosed Allied Joint Medical Publication AJMedP-7, Edition B, Version 1, ALLIED JOINT CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR (CBRN) MEDICAL SUPPORT DOCTRINE, which has been approved by the nations in the Military Committee Medical Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 2596.
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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
CAN	Canada does not currently have a Med-DOIIT (Medical Deployable Outbreak and Incident Investigation Teams) capability. A specialist assessment will be conducted by GDMO with sub-specialised training in CBRN
ESP	<ul style="list-style-type: none"> - Spain reserves the decision to accept the use of unauthorised or foreing pharmaceuticals and medical materiel in the medical treatment facilities under its responsibility, being the use subject to the authorization by national health authorities. - The Spanish Air Force does not have a collective Protection (COLPRO) capability in a CBRN environment for Health Treatment Formations.
GRC	AIR: A number of improvements in medical operation planning, training and HAF CBRN doctrine (currently Operation Branch is responsible for CBRN Operations) need to proceed in order to implement.
PRT	The Air Force has the AIRMEDEVAC capability of victimizing BCL-4 biological agents. Investment in adequate training and equipment and creation of procedures for future implementation is required. With this investment it is estimated at least 4 to 5 years for the development of this capacity.
USA	Paragraph 5.7.3: Casualty decontamination is a unit responsibility. For US medical units, to avoid contamination of the MTF, patient decontamination is performed before admission into a medical treatment facility by augmentees, under the supervision of medical and CBRN trained personnel. In addition, U.S. medical logistics functions do not include conducting casualty decontamination or collecting medical specimens unless it is to package them for shipment after specimen collection by authorized personnel to conduct lab analysis.
<p>Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.</p>	

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CHAPTER 1 - INTRODUCTION

1.1. INTRODUCTION

1. Chemical, biological, radiological and nuclear (CBRN) medical support is a function that encompasses the full range of medical planning and provision of medical and health services to maintain the force strength during the threat or occurrence or in the aftermath of a CBRN incident. CBRN medical support is a key force enabler and contributes to force protection, readiness, and sustainability by the prevention of diseases, health promotion, rapid evacuation and treatment of the sick, wounded, or injured, and the recovery and return to duty of as many individuals as possible.

2. CBRN medical support is a healthcare capability consisting of five main functions:

- a. Provision of CBRN medical advice;
- b. Medical contribution to CBRN defence, including medical countermeasures (MedCMs);
- c. CBRN protection of medical treatment facilities (MTFs), personnel, and patients;
- d. CBRN casualty care; and
- e. Bio-responsiveness.

3. CBRN medical support can be applied at all levels of the NATO Command Structure, of a deployed medical organisation, and across the range of military operations. The main objectives of CBRN medical support (and CBRN MedCMs) on any operation are to:

- a. Protect against and mitigate the adverse health effects of exposure to CBRN substances¹; and
- b. Maintain the commander's freedom of action and operational effectiveness.

4. CBRN medical support contributes to force health protection and CBRN defence using an all-hazards (CBRNE3T) approach and differs from CBRN defence, which focuses solely on CBRN and weapons of mass destruction (WMD). The main focus of this document is the medical support of the CBRN portion of the all-hazards spectrum. CBRNE3T hazards (see Chapter 2) are listed as:

- a. CBRN;
- b. Explosives (and other battle injuries);
- c. Environmental hazards (including heat and cold);

¹ A CBRN substance is a chemical or biological agent, a toxic industrial material (TIM), or a radioactive material in any physical state or form.

- d. Endemic disease; and
- e. Traumatic (including non-battle injuries that complement the battle injuries).

1.2. PURPOSE

1. The aim of this Allied Publication (AP) is to describe the overarching concepts and doctrine for CBRN medical support, including medical support to operations in CBRN environments, and to link key doctrinal publications, including Joint Medical and CBRN capstone doctrine, other Allied Joint Medical Publications (AJMedPs), and the subordinate CBRN medical publications (Allied Medical Publications-7 (AMedP-7) series).

1.3. SCOPE

1. AJMedP-7 is the primary Allied CBRN medical support doctrine and has been developed to provide the framework for the medical aspects of CBRN defence. This publication is applicable to entire NATO Command Structure (NCS) and NATO Force Structure (NFS) and supports NATO operations independent of the CBRN threat.

2. This document provides a list of CBRN-specific medical planning considerations to supplement existing planning guidance and Allied doctrine. It also describes the planning considerations and capabilities for medical support on any mission where medical services may provide the earliest recognition of CBRN use and the mitigation of its effects (e.g., low-threat missions). However, CBRN operational-level medical support planning is described in detail in AMedP-7.6, *Commander's Guide on Medical Support to Chemical, Biological, Radiological, and Nuclear (CBRN) Defensive Operations*.

3. Subordinate to AJMedP-7, the AMedP-7 series is intended to provide greater detail on the different aspects of joint CBRN medical support, including support to a broad population at risk (PAR). Each AMedP is written to target a specific audience or discipline.

4. AJMedP-7 and the AMedP-7 series also contribute to counter-terrorism operations supporting the NATO Defence Against Terrorism (DAT) Programme and Civil-Military Cooperation (CIMIC), including CBRN mass casualty (MASCAL) preparedness and management.

1.4. LEVEL OF CBRN MEDICAL SUPPORT APPLICATION

1. Each of the functions of CBRN medical support can be applied at one or more of four contextual levels (see Table 1-1):

- a. Strategic, including a comprehensive (civil-military) approach;
- b. Operational, usually deployed and requiring Host Nation (HN) consideration;
- c. Tactical, usually in response to a CBRN incident; and
- d. Clinical, the medical (casualty-patient) response level.

Table 1-1. CBRN Medical Support Elements and Levels of Support

CBRN Medical Support Functions	Strat	Op	Tact	Clin
Provision of CBRN medical advice	✓	✓	✓	✓
Medical contribution to CBRN defence/protection	✓	✓	✓	
CBRN protection of MTF and personnel			✓	✓
CBRN casualty care			✓	✓
Bio-responsiveness	✓	✓	✓	✓

1.5. POTENTIAL CBRN OPERATIONAL ENVIRONMENTS AND MISSIONS

1. This publication is applicable to a range of NATO operations and missions including:
 - a. Article 5 Collective Defence;
 - b. Non-Article 5 Crisis Response Operations (NA5CRO) including
 - Peace Support Operations (PSOs).
 - Non-Combatant Evacuation Operations (NEOs).²
 - Humanitarian Assistance (HA) Operations,³ including Disaster Relief;
 - c. Support of Consequence Management (CM);⁴ and
 - d. Stabilisation and Reconstruction.
2. CBRN environments can be a component of any of the operations listed above and could include these four missions:
 - a. Any NATO mission with an increased CBRN threat;
 - b. WMD/CBRN attribution mission, including support to forensics;
 - c. WMD disablement; and
 - d. CIMIC for CBRN MASCAL response.

² An operation conducted to relocate designated non-combatants threatened in a foreign country to a place of safety.

³ As part of an operation, the use of available military resources to assist or complement the efforts of responsible civil actors in the operational area or specialized civil humanitarian organisations in fulfilling their primary responsibility to alleviate human suffering.

⁴ Actions taken to maintain or restore essential services and to lessen the effects of natural or man-made disasters.

3. Any NATO Bio-responsiveness operation at the tactical, operational, and strategic level is intended to control outbreaks of disease due to deliberate, accidental, natural, or unknown causes.⁵

- a. Enhanced outbreak investigation and/or response;
- b. Operational bio-response surge; and
- c. Strategic bio-response surge.

4. CBRN medical support can be applied to conventional, non-conventional, and hybrid operational environments, which encompass land operations, maritime operations, air operations, and special operations.

1.6. ASSUMPTIONS

1. The following assumptions are made throughout this publication:

- a. CBRN medical support is applicable to any operation.
- b. CBRN medical support is an important part of risk mitigation for a CBRN incident.
- c. The cause of any CBRN incident can be a deliberate, accidental, or natural, or unknown event.
- d. Land is the default operational environment.
- e. The PAR, or a portion thereof, may be unprotected and vulnerable to a CBRN incident.
- f. Medical is the default discipline for the detection and recognition of a biological incident/occurrence.

1.7. POPULATIONS AT RISK

1. To define the CBRN medical requirements and consider interoperability, it is important to understand the PAR. Depending on the operation or mission as listed above, the PAR may be diverse. The PAR that needs to be considered includes:

- a. The deployed NATO force, including military and civilians;
- b. Partner nations (military and civilian);
- c. HN security forces;

⁵ NATO Bio-responsiveness as defined by Smart Defence (SD 1.1045) is applicable to a number of operational and strategic scenarios, including deliberate release/biological attack.

- d. HN civilian population⁶;
- e. Personnel from international organisations (IOs), government organisations (GOs), and non-governmental organisations (NGOs);
- f. Embedded media; and
- g. Persons deprived of liberty.

1.8. DEFINITIONS

1. The following definitions are provided for clarity and to provide context within the scope of this publication:

- a. **CBRN substance.** A chemical or biological agent, a TIM, or a radioactive material in any physical state or form.⁷
- b. **CBRN medical countermeasures (CBRN MedCMs).** Medical interventions designed to diminish the susceptibility of personnel to the lethal and damaging effects of chemical, biological, and radiological hazards and to treat injuries arising from exposure to such hazards.
- c. **CBRN casualty care.** The application of conventional medical support capabilities and CBRN MedCMs to manage any CBRN or conventional casualty in a CBRN environment, including first aid and casualty decontamination through to rehabilitation to save life, restore health, and mitigate the effects of exposure to a CBRN substance.⁸
- d. **CBRN (operational) environment.** An environment where there are chemical, biological, radiological or nuclear threats or hazards.⁹
- e. **CBRN incident.** An occurrence due to the suspected or confirmed presence of CBRN substances, either arising from the intention to use them by an aggressor or following their intentional or accidental release.¹⁰
- f. **Individual Protective Equipment (IPE).** In chemical, biological, radiological and nuclear defence, the personal equipment intended to physically protect an individual from the effects of chemical, biological, radiological and nuclear substances.¹¹
- g. **Personal Protective Equipment (PPE).** Clothing or equipment that is worn or used in order to provide protection against hazardous substances and

⁶ The civilian population is likely to be eligible to life, limb, and eye-saving treatment depending on the Rules of Eligibility (AJP-4.10). The eligibility requires consideration for the provision of CBRN casualty care to an unprotected (vulnerable) population with extremes of age.

⁷ NATO, "NATOTerm," <https://nso.nato.int/natoterm>.

⁸ This is a newly proposed term and not a NATO standardized term.

⁹ NATO, "NATOTerm," <https://nso.nato.int/natoterm>.

¹⁰ Ibid.

¹¹ Ibid.

environments. (Note: IPE is a sub-group of PPE specific to the CBRN environment.)

1.9. HIERARCHY AND RELATED PUBLICATIONS

1. AJMedP-7 is directly subordinate to the keystone medical doctrine Allied Joint Publication-4.10 (AJP-4.10), *Allied Joint Doctrine for Medical Support*, and its overarching policy¹², which provides medical support doctrine for NATO multinational joint operations and is an essential introduction for medical planning staffs. It is the seventh joint medical publication and is aligned with its sibling publications:

- a. AJMedP-1, *Allied Joint Medical Planning Doctrine*;
- b. AJMedP-2, *Allied Joint Doctrine for Medical Evacuation*;
- c. AJMedP-3, *Allied Joint Doctrine for Medical Intelligence*;
- d. AJMedP-4, *Allied Joint Medical Force Health Protection Doctrine*;
- e. AJMedP-5, *Medical Communications and Information Systems (MedCIS)*;
- f. AJMedP-6, *Allied Joint Civil-Military Medical Interface Doctrine*;
- g. AJMedP-8, *Allied Joint Doctrine for Military Health Care (MHC)*; and
- h. AJMedP-9, *Multinational Medical Support*.

2. NATO's *Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats* (2009) provides strategic direction and guidance for military and civil CBRN defence. AJMedP-7 aligns with AJP-3.8, *Allied Joint Doctrine for Comprehensive Chemical, Biological, Radiological and Nuclear Defence*, and its overarching operational policy¹³ based on the strategic policy. AJP-3.8 is supported by Allied Tactical Publication (ATP)-3.8.1 Volumes I–III, which expand on the fundamental CBRN defence principles.

3. As an AJMedP, this publication introduces information amplified in the subordinate CBRN medical AMedPs:

- a. AMedP-7.1, *Medical Management of CBRN Casualties*, provides guidance to medical personnel on the management of casualties in a CBRN environment. It applies to any medical support operation and supports the NATO 'defence against terrorism' (DAT) programme even if the CBRN threat is low. It guides CBRN casualty management from point of exposure (PoE) through to a role 3 Medical Treatment Facility (MTF). It focuses on the delivery of medical countermeasure (MedCM) and casualty care, post-incident response.

¹² MC 0326, *NATO Principles and Policies of Medical Support*.

¹³ MC 0511, *Military Committee Guidance for Military Operations in a CBRN Environment*.

AMedP-7.1 is intended to be used as a template to support national CBRN medical training programmes in conjunction with AMedP-7.3.

- b. AMedP-7.2, *CBRN First Aid Handbook*, provides a standardized approach to the early management of any casualty in a CBRN threat-environment by non-medical personnel from point of exposure (or recognition) until handover to medical personnel at a casualty collection or exchange point. It describes the provision of first aid in a CBRN-threat environment by non-medical personnel or medical personnel in a non-permissive environment (hot zone). This AMedP also provides an outline of the training requirement and first aid materiel for use in a CBRN environment including casualty protective equipment (CPE) for the initial response and unit level casualty evacuation (CASEVAC).
 - c. AMedP-7.3, *Training of Medical Personnel for Chemical, Biological, Radiological, and Nuclear (CBRN) Defence*, describes the training requirements for deployed medical personnel providing CBRN medical support during NATO operations. This publication is aligned with AMedP-7.1.
 - d. AMedP-7.4, *Medical Deployable Outbreak & Incident Investigation Teams (Med-DOITT)*, describes the concept and minimum requirements to establish and deploy a national or multinational Medical Deployable Outbreak & Incident Investigation Team (Med-DOITT). A Med-DOITT may be configured into three types of specialist teams: Rapidly Deployable Outbreak Investigation Team (RDOIT), Chemical Incident Investigation Team (Med-CIIT), and Radiological (and Nuclear) Incident Investigation Team (Med-RIIT). A Standards Related Document (SRD) for each team provides more detailed planning and operational guidance, including on medical support to CBRN forensics.¹⁴
 - e. AMedP-7.5, *NATO Planning Guide for the Estimation of CBRN Casualties*, provides a methodology for estimating casualties that occur following a CBRN incident. This publication supports the operational casualty estimate and related medical planning and is supplemented by SRD AMedP-7.5-1, *Technical Reference Manual NATO Planning Guide for the Estimation of CBRN Casualties*.
 - f. AMedP-7.6, *Commander's Guide on Medical Support to Chemical, Biological, Radiological, and Nuclear (CBRN) Defensive Operations*, informs commanders and provides 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).
4. This publication is supported by two SRDs¹⁵:
- a. *CBRN Medical Evaluation Guide*. This document supports the Medical Evaluation series (AMedP-1.6 to 1.8).
 - b. *Concept for CBRN Medical Strategic and Operational Stockpiles*. This document describes a proposed concept for the establishment, deployment,

¹⁴ The SRD for each Med-DOITT specialist team is currently in preparation.

¹⁵ Both SRDs are currently in preparation. Inclusion of this paragraph in this document is contingent upon the publication of the two SRDs.

and accessing of medical stockpiles of CBRN MedCMs, equipment, and individual protective equipment (IPE) for CBRN incidents and defensive operations and other health emergencies (e.g., bio-responsiveness).

5. AJMedPs, AMedPs, SRDs, and other publications relevant to this AJMedP are listed in the Reference section (Annex H). Subordinate APs are intended to be consulted for more detailed guidance in their respective subject areas.

6. A summary of the hierarchy of publications is in Figure 1-1.

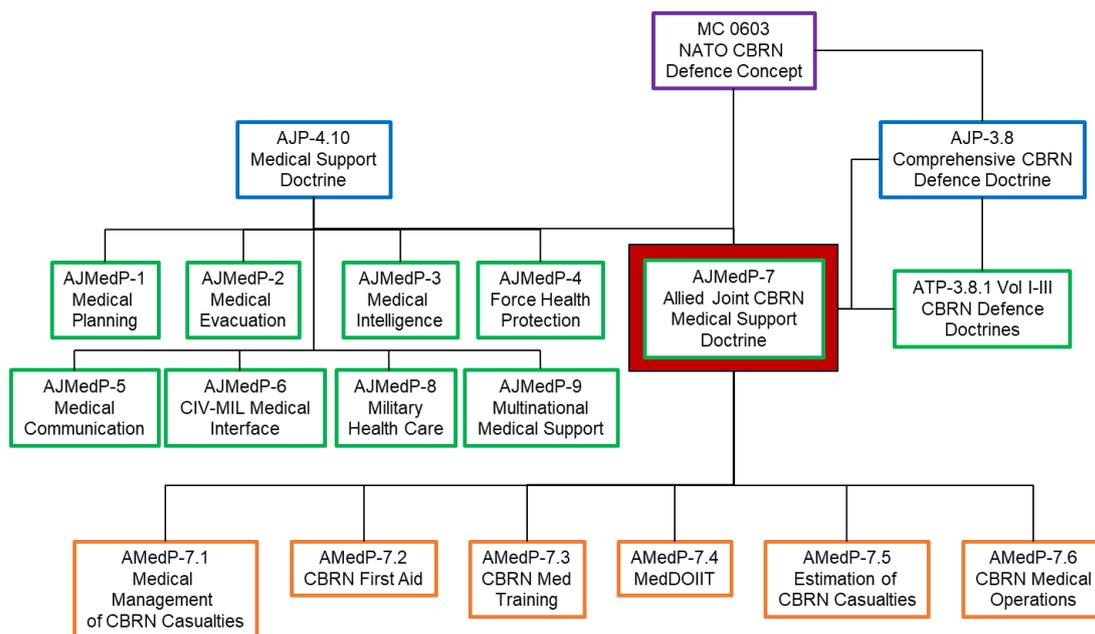


Figure 1-1. CBRN Medical Hierarchy of Allied Publications and Policies

CHAPTER 2 - CBRN HAZARDS, THREATS AND RISK

2.1. INTRODUCTION

1. CBRN hazards result either from intentional adversary use of CBRN weapons or from the accidental release of CBRN substances into the environment or population. CBRN threats exist in operating areas where adversaries have the intent and the capability to employ CBRN weapons or where there is some likelihood of accidental release. Whether suspected or confirmed or accidental or intentional, the incidents arising from such hazards can pose serious challenges to Allied military operations across the spectrum of conflict. Commanders and their forces must plan, execute, and support prevention, protection, and recovery measures—NATO's three-pillar approach to CBRN defence (prevent, protect and recover)¹⁶—by eliminating threats, reducing vulnerabilities, and managing consequences.

2. CBRN risks are driven by a combination of threat, vulnerability, and impact, as shown in Figure 2-1. These factors are synergistic. For example, the human impact of a CBRN hazard will be reduced if innate vulnerabilities are reduced through the use of MedCMs. Processing capabilities that reduce impact can, in turn, reduce threats by affecting an adversary's perceived benefit in using CBRN weapons.

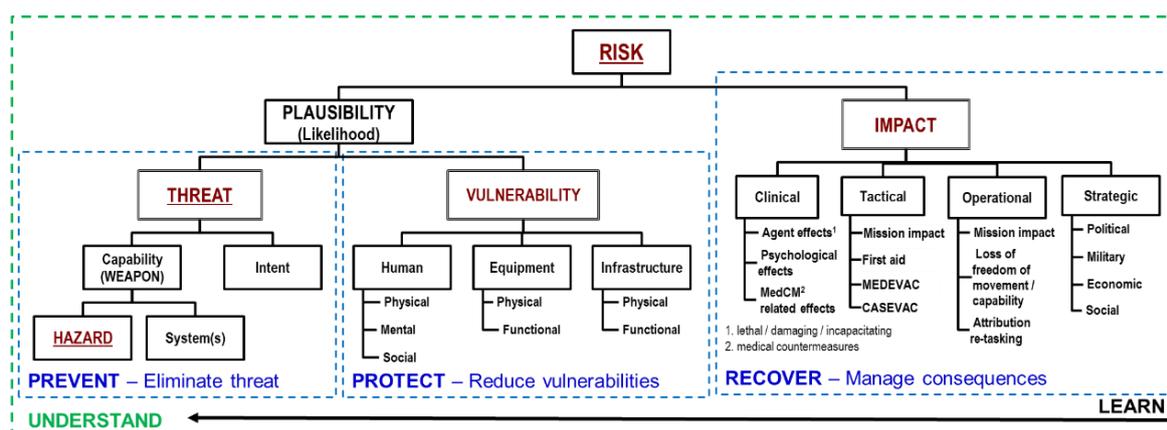


Figure 2-1. CBRN Hazards, Threats, and Risk

3. When intelligence and risk assessments predict that a CBRN threat is plausible, the commander should take actions to deter, stop, or defend against the potential use of CBRN weapons by an adversary and to limit the possibilities of accidental release to the extent possible. The commander and his staff must work in close coordination with intelligence, CBRN defence, and medical staff officers to adopt and implement measures to strengthen CBRN defence and reduce the force's vulnerability to the CBRN threats. With an effective plan in place, the impact of a CBRN incident can be reduced, and the military operation can be sustained.

4. When planning to manage and treat CBRN casualties, medical staff and planners should account for operational factors that can influence the use of CBRN medical capabilities. Appropriate medical support planning to account for the operational factors could reduce

¹⁶ MC 0603, NATO Comprehensive CBRN Defence Concept.

vulnerabilities and effectively manage the consequences resulting from the employment of CBRN hazards. The operational factors include:

- a. The scale of the operation (e.g., scale of the mission and forces);
- b. The type and scale of CBRN incidents for which a risk has been assessed;
- c. The operational environment (e.g., weather and terrain, endemic diseases);
- d. The permissiveness of the environment;
- e. The technological and tactical sophistication of the adversary; and
- f. HN factors such as resilience of infrastructure, Allied reliance on civilian capabilities or personnel for mission execution, and opportunities and requirements for civilian/military cooperation.

5. CBRN medical support is a key contributor to CBRN risk mitigation and a major component of CBRN defence. Chapters 3 and 4 of this publication describe in detail the tasks and functions associated with these contributions.

2.2. TYPES OF CBRN HAZARDS

1. The medical impacts of CBRN incidents are a function of the type of incident. The mnemonic CBRNE3T summarizes the range of potential hazards that can affect the health of the force or the PAR (see Table 2-1).¹⁷ The CBRNE3T all-hazard spectrum is derived from AJP-4.10, *Allied Joint Doctrine for Medical Support*, and reflects the spectrum of operational threats and hazards from the CBRN threat of a state attack (e.g., Article 5 CBRN Defensive Operation) and additional hazards presented by radiological material, explosives, environmental (including industrial) hazards, and endemic disease. All these hazards could generate CBRN casualties, or initially appear to generate CBRN casualties, and may prompt a CBRN medical response.

¹⁷ CBRNE3T all hazards approach includes chemical, biological, radiological, nuclear and explosives threats and environmental and endemic hazards and trauma.

Table 2-1. CBRNE3T – All Hazards Approach¹⁸

C	Chemical	Chemical threats, such as conventional chemical agent threats plus toxic industrial chemicals, riot control agents, and chemical hazards derived from pharmaceuticals.
B	Biological	Biological threats, such as live organisms, toxins, and biological hazards deliberately employed to harm the PAR.
R	Radiological	Radiological threats, such as material or events that release ionizing (alpha, beta, gamma radiation and neutrons) and non-ionizing radiation (including directed energy).
N	Nuclear	Nuclear threats, such as weapons or events that result in nuclear fission/fusion reactions.
E	Explosive	Explosive (and ballistic) threats, which cover all consequences of explosive activity on human bodies, including gunshot wounds, indirect fire, improvised explosive devices (IEDs), shells, and bombs.
E	Environmental	Environmental threats, such as environmental conditions likely to cause harm (e.g., heat, cold, and altitude).
E	Endemic	Endemic threats, such as infectious diseases and biological agents of operational significance that are not deliberately released but pose a hazard to the health of the PAR.
T	Traumatic	Traumatic threats, which cover the trauma element of non-battle injuries (NBIs) to complement the explosive (and ballistic) threats that cause battle-injuries.

2.2.1. Chemical Definitions and Considerations

1. **Chemical agent.** A chemical substance that is intended for use in military operations to kill, seriously injure, or incapacitate personnel through its physiological effects.
2. The main chemical effect groupings are:
 - a. Nerve agents (organophosphorous).
 - b. Blister agents (vesicants).
 - c. Pulmonary agents (lung-damaging agents).¹⁹
 - d. Chemical asphyxiants (including cyanogen agents).²⁰
 - e. Incapacitating agents (mental incapacitants and physical incapacitants²¹).
3. Some chemical agents (and toxins) based on their legal status may be grouped into other classifications including toxic chemicals and their precursors for chemical weapon use (as defined by the Chemical Weapons Convention (CWC)), toxic industrial chemicals (TIC), riot control agents (RCA)²² and pharmaceutical-based agents (PBA).²³
4. Medical considerations related to chemical agents include:

¹⁸ The definition for each hazard is from AJP-4.10, *Allied Joint Doctrine for Medical Support*.

¹⁹ Although “choking agent” is “admitted” in NATOTerm, it is not recommended for medical effects classification because choking is not the primary feature of these agents.

²⁰ Although “blood agent” is “preferred” in NATOTerm, it is not recommended for medical effects classification because it is toxicologically inaccurate.

²¹ Physical incapacitants with immediate onset and short duration may include RCA.

²² Any chemical not listed in a [CWC] Schedule, which can produce rapidly in human sensory irritation or disabling physical effects which disappear within a short time following termination of exposure.

²³ A full description of each legal class of chemical agent is outside the scope of this AP; there remains overlap with some of the chemical effect groupings and legal classification.

- a. Time to onset of symptoms.
 - Depending on the agent and route of exposure, symptoms may appear almost immediately after exposure, or they may be delayed. Repeated low-level (subclinical) exposures could have cumulative effects.
 - The need for medical care is immediate and would potentially require an adequately sized and readily accessible antidote supply. Procedures for obtaining these antidotes should be established.
 - Medical personnel may have a narrow window of time to prepare for expected casualties.
- b. Risk of secondary exposure.
 - Personnel may be exposed to chemical agents from residual contamination in the initial hazard area or from transfer of agents via personnel and equipment.
 - Plans to move chemical casualties must account for the possible spread of contamination and mitigate it to the extent possible.

2.2.2. Biological Definitions and Considerations

1. **Biological agent.** A microorganism or toxin that causes disease in humans, plants, or animals or that causes the deterioration of materiel.
2. **Biological warfare agent.** A biological agent confirmed to have been modified, processed, or weaponized to be deliberately used to produce disease or death in humans, animals, and plants or to cause materiel deterioration. The biological agent may be a live microorganism (bacterial, virus, fungus, or parasite) or a toxin. *Bacillus anthracis* and *Francisella tularensis* are examples of known biological warfare agents.
3. **Endemic disease.** A disease caused by a biological agent that may be present in the deployed operational environment and has an operational impact due to requirements for vaccination or antibiotics (e.g., Yellow Fever, typhoid, malaria), training (e.g., medical), or contingency planning (e.g., surge capacity and isolation) and may require medical evacuation (MEDEVAC) in the event of single or multiple cases. Other examples include norovirus, *Salmonella sp.* outbreaks and seasonal influenza.
4. **Emerging infectious disease.** A disease caused by a biological agent that has recently appeared in a population for the first time or that may have existed previously but is rapidly increasing in incidence or geographic range.²⁴ A re-emerging infectious disease is a previously known disease that has appeared in a new clinical form and/or is increasing in prevalence in an area where it was previously absent or controlled.²⁵ Emerging and re-emerging infectious diseases may present a threat or operational hazard in the future due to natural evolution or deliberate manipulation. Examples include avian influenza and

²⁴ World Health Organization, *A Brief Guide to Emerging Infectious Diseases and Zoonoses* (New Delhi: WHO-SEARO, 2014).

²⁵ Ibid.

“Disease X,” a civilian health planning tool developed by the World Health Organization (WHO) to prepare for the next significant disease outbreak.²⁶

5. **Imported disease.** A disease that may be brought into the operational environment from the home nation or in transit and has an operational (and likely strategic) impact. One recent example of imported disease is the cholera outbreak in Haiti during the earthquake emergency response efforts in 2010.

6. **Bio-mimicker.** A non-biological CBRN substance or condition that may present, as an individual case, cluster or outbreak, with features consistent with exposure to a biological agent. This may include substances that cause symptoms or signs such as fever, rashes or cough, or present after a longer than expected latency period.

7. **Biological agent of operational significance.** A biological agent that may have an operational impact. This could be a biological warfare agent, an environmental or endemic disease, an emerging disease, an imported disease, or a bio-mimicker. Some biological agents are already identified as operationally significant based on intelligence, threat / hazard assessment and previous operational lessons, but others not yet identified may still have an operational impact. Some biological agents (and other substances) have not been identified but can still be considered.

8. **Biological agent of strategic (military or political) significance.** A biological agent of operational significance that also meets other criteria as described in Section 3.7.2.

9. Medical considerations related to biological agents include:

- a. Time to onset of symptoms. The time between exposure to a biological hazard and the onset of illness ranges from several hours to days or even weeks or months.²⁷
- b. Geographic size of affected area. The size of the affected area depends on the means of dissemination (for intentional or accidental releases), agent properties (including transmissibility), meteorology, topography, and population demographics. For more detailed information, see ATP-3.8.1 Vol I.
- c. Opportunities for use of medical countermeasures. When available, medical countermeasures can be used prophylactically to significantly reduce susceptibility to pathogens and minimize casualties among an exposed population. Medical countermeasures used for this purpose can be administered prior to exposure, in response to health risk assessments and medical intelligence, or shortly after exposure, when triggered by prompt environmental detection or rapid diagnosis of illness of sentinel cases. Medical countermeasures also include therapeutics, which can reduce the length or severity of illness. For contagious diseases, medical countermeasures of all types can limit secondary spread by reducing both the size of the susceptible population and the duration or degree of disease transmission.

²⁶ EcoHealth Alliance, Disease X: The Next Pandemic,”
<https://www.ecohealthalliance.org/2018/03/disease-x>.

²⁷ For live biological agents this may also be called the incubation period.

- d. Casualty streams and medical workload. For some agents, a peak in casualties would take place within a few days and could quickly overburden medical personnel and facilities. For others, peak incidence may occur much later, allowing more time for deliberate medical force augmentation. Commanders and medical staff can generally assume that the first few cases of illness—particularly those caused by biological warfare agents and/or contagious agents—are initial indicators of future cases.
- e. Residual hazards. Aerosol releases of biological warfare agents can create a residual hazard in the environment or on equipment and clothing. Reaerosolisation or contact with contaminated surfaces could generate follow-on casualties, exacerbating the burden on medical resources and extending this burden in time. The likelihood of residual and reaerosolisation hazards is dependent on the environmental survivability of the agent. Continued research is still required to predict the effects of residual hazards, and, therefore, estimating the related risks is difficult.
- f. Contagious diseases.
 - Naturally or deliberately-induced contagious disease casualties create additional risks to medical providers and may be associated with special requirements for notification and control, pursuant to national and international law.
 - MTFs may have to relocate or operate in areas that are not contaminated or with restrictions that limit movement of personnel and materiel into and out of the facility.
 - Movement of contagious casualties within an HN or across international boundaries may be subject to restrictions. Casualty transport may also require the use of outbreak control measures and materiel (e.g., enhanced IPE/PPE, low-density bio-containment assets, or restriction of movement (RoM)).

2.2.3. Radiological Definitions and Considerations

1. **Radiological dispersal device (RDD).** An improvised device designed to spread radiological substances.²⁸
2. **Radiological exposure device (RED).** Radioactive material or an object containing radioactive material intended to expose people to significant doses of ionizing radiation without their knowledge.
3. Medical considerations related to radiological material include:
 - a. Time to onset of symptoms. Penetrating radiation exposure symptoms are dependent on the dose rate and total dose. The onset of symptoms from exposure to acute doses of radiation may be delayed for hours, days, or even weeks.

²⁸ NATO, "NATOTerm," <https://nso.nato.int/natoterm>.

- b. Casualty streams and medical workload. Health-impacting levels of radiation exposure will usually not coincide with immediate physical debilitation or obvious symptoms. Numbers of radiation casualties may increase over time based on initial and cumulative radiation exposures.
- c. The explosive charge used in an RDD may cause injuries associated with blast. These injuries may result in conventional casualties with external and potentially internal contamination with wounds embedded with radioactive material (e.g., combined casualty). This situation may complicate MEDEVAC. However, traumatic injuries take priority since they are more likely to be life threatening than the radiological component.
- d. Risk of secondary exposure. As in chemical incidents, contamination of casualties may occur from residual contamination in the initial hazard area or from transfer of the radioactive material via personnel and equipment movement. High dose rate fragments may potentially be a significant secondary exposure risk due to gamma radiation, especially to responders and surgical teams. **Note.** Casualties that have only been irradiated do not pose a risk to responders.

2.2.4. Nuclear Definitions and Considerations

1. **Nuclear weapons.** A complete assembly (i.e. implosion type, gun type, or thermonuclear type), in its intended ultimate configuration which, upon completion of the prescribed arming, fusing and firing sequence, is capable of producing the intended nuclear reaction and release energy.²⁹ The medical considerations described in Section 2.2.3 also apply for Nuclear weapons.
2. **Fallout.** Fallout is the radioactive particles that are carried into the atmosphere and gradually fall back as dust or in precipitation after a nuclear explosion in which the fireball touches the ground.
3. Medical considerations related to adversary use of nuclear weapons include:
 - a. Types of casualties. Nuclear casualties may present with a combination of injuries due to burns, blast, penetrating and blunt object impacts, and radiation requiring immediate treatment.
 - b. Casualty streams and medical workload. Nuclear weapons will produce large numbers of prompt and delayed casualties. Casualties due to radiation alone may be immediate or delayed for an extended period of time, depending on the total dose. Casualties may seek medical attention immediately, hours, days, or weeks after the initial exposure. Extended medical monitoring may be required for exposed personnel not showing immediate symptoms. The possibility of internal contamination must also be examined.
 - c. Casualties from fallout. While the magnitude of radiation in fallout is variable, it may result in significant levels of cumulative radiation doses where short exposures to high-intensity fallout occur and where there are longer durations of exposure to lower levels of radiation. The size and location of a fallout hazard

²⁹ Ibid.

is driven by the size and altitude of the nuclear detonation, meteorology, and topography.

2.2.5. Non-CBRN Weapons

1. The CBRNE3T all-hazard spectrum includes environmental (industrial) hazards, endemic diseases (discussed in Section 2.2.2), explosives, and trauma that could occur with or without a CBRN incident but could generate CBRN-like casualties and prompt a CBRN medical response.

2. **Toxic industrial materials (TIMs).** Any toxic industrial materiel manufactured, stored, transported, or used in industrial or commercial processes, to include toxic industrial chemicals, toxic industrial radiologicals, and toxic industrial biologicals.³⁰ Although TIMs are typically safely retained within manufacturing, storage, and transport facilities, such facilities may be proximate to military operations and vulnerable to accidental or intentional release of toxic substances as a consequence of friendly action, adversary action, or accidents. Exposure to TIM can have short- and long-term health effects, the nature and severity of which depend on the type of material, the quantity released, route of exposures, and the proximity to the release site. The detection and monitoring of TIM is usually a force health protection function including environmental health rather than CBRN.

3. **Explosives.** Military explosives and industrial and homemade explosive substances are an important component of the spectrum since their deliberate or accidental use may be a method for the release of a CBRN substance or TIM. The use of an explosive in conjunction with the release of a CBRN substance or TIM is capable of producing non-conventional (non-trauma) effects or greater injury among the casualties. Explosives may allow for the opportunistic absorption of a CBRN substance through wounds, with additional casualty hazard of wound contamination. Traditionally, chemical warfare agents on the battlefield are dispersed by explosive munitions.

4. **Trauma.** As with explosive (blast) injuries, medical personnel should be able to manage any life-threatening penetrating or blunt trauma and perform life-saving interventions in a CBRN environment. Mitigating trauma may be necessary in the presence of a CBRN substance or in a high-threat environment that has a requirement to wear protective equipment.

2.3. MEDICAL CHALLENGES OF THE CBRN ENVIRONMENT

1. The conduct of operations in a CBRN environment³¹ poses unique challenges to medical support forces worldwide. CBRN incidents can quickly change the character of an operation or campaign and could alter the execution of plans significantly. Medical staffs must overcome certain challenges in a CBRN environment to reduce the force and mission vulnerability to CBRN threats. They should consider the following challenges in a CBRN environment:

³⁰ NATO, *Allied Joint Doctrine for Comprehensive Chemical, Biological, Radiological, and Nuclear Defence*, AJP-3.8, Edition B, Version 1, October 2018.

³¹ For more detailed information on the conduct of operations in a CBRN environment, see ATP-3.8.1. Vol 1.

- a. CBRN incidents may produce a large number of casualties.
- b. The types of casualties from a CBRN incident are not those normally managed in a military medical support system.
- c. Casualties in a CBRN environment may be contaminated or contagious and may constitute a significant hazard to medical personnel and facilities charged with caring for them unless appropriate precautions are implemented.
- d. MTFs and evacuation assets may have to operate in areas that are contaminated or that impose restrictions to limit movement of personnel and materiel.
- e. Medical support will need to continue for conventional casualties and for CBRN casualties.

2. If a CBRN threat is identified, the medical staff will be responsible for the development, coordination, and execution of timely and appropriate medical COAs to mitigate the potential effects of CBRN hazards while remaining compliant with the given operational priorities and established international and national guidelines. Medical planning staffs face significant challenges in defining requirements for adequate force health protection and medical management of casualties in a CBRN environment. *Close coordination between all staff elements—particularly medical and CBRN defence planning staffs—is needed for effective planning.*

3. CBRN casualty care can therefore be considered as: (1) the management of any casualty, including trauma, in a CBRN environment; and (2) the management of CBRN casualties from point of exposure through to rehabilitation.

2.4. SCALE OF CBRN INCIDENTS

1. The medical impact of CBRN incidents is a function of the type and scale of the incident. CBRN incidents can vary greatly in magnitude, resulting in different degrees of operational disruption and different implications for casualty management.

- a. Medium-impact incidents. At the low end of the spectrum, CBRN incidents can generate a small number of casualties that require unusual but manageable medical care. The impact will be at the tactical level of CBRN medical support. These incidents are episodic in nature and typically can be managed within the regular medical planning process for conventional casualties. An example of an incident of this type is the puncturing of a toxic chemical tank by an IED.
- b. High-impact incidents. Allied military forces may be required to conduct operations in a combat environment where the use of CBRN weapons is expected to occur with some level of frequency and intensity. The impact on the deployed operation will be at the operational level and may require HN considerations. In such cases, medical planners must plan to manage CBRN casualties as a routine part of medical support operations, accounting for CBRN-specific casualty management requirements and specialized CBRN capabilities if needed.

- c. Catastrophic incidents. CBRN incidents can result in disasters at a national or international level. Planning for these incidents should assume that these situations will be large-scale, MASCAL events, complicated by potential CBRN contamination. Resources and capabilities for response will be severely constrained and will require significant strategic-level augmentation from Allied nations and the international community.

2.5. CBRN MEDICAL SUPPORT ACROSS THE SPECTRUM OF OPERATIONS

1. The medical impact of CBRN incidents is also a function of the type of operation in which a CBRN incident may occur. CBRN incidents can occur during any type of operation across the spectrum of conflict and during any phase.

2. **International disaster relief operations.** CBRN incidents may have significant health and environmental consequences for the nations and populations affected. Because Allied nations, individually and collectively, maintain the world's highest standard of CBRN medical capabilities, they would almost certainly be requested to provide support to the responding national and international civilian authorities and organisations. Guidance for NATO medical support to disaster relief operations is found in MC 343, *NATO Military Assistance to International Disaster Relief Operations*, and AJMedP-6, *Allied Joint Civil-Military Medical Interface Doctrine*. This guidance is broadly applicable to the use of specialized CBRN medical capabilities.

3. **Stabilisation and reconstruction.** In a post-conflict environment, the primary mission of military forces is to provide the security needed to support functional civilian authority, promote restoration of public services, and reconstitute infrastructure. Military units will likely be redeploying to their home nations, and the residual NATO force will shrink over time. If a CBRN incident occurs, the primary mission of NATO medical forces will be management of military casualties. Key issues include:

- a. Transport of CBRN casualties due to the degradation of road and rail networks and/or limited availability of rotary wing aircraft certified to evacuate casualties in containment.
- b. Competition with civilian authorities and humanitarian organisations for use of ports and airfields when deploying specialized CBRN medical units or evacuating casualties to their home nation.
- c. Transition of the medical mission to a disaster relief operation if civilian authorities are unable to provide sufficient health services to the general population.

4. **Peace support operations (PSOs).** These operations are intended to promote the cessation of conflict and create the conditions for stabilisation and reconstruction. While facing many of the same issues as stabilization operations, PSOs include conflict prevention, peace enforcement, peacekeeping, peacemaking, and peacebuilding. If a CBRN incident occurs, the issues listed above would need to be considered. In addition:

- a. Areas of non-permissiveness may limit freedom of movement and further restrict access to transportation nodes.

- b. The number of CBRN casualties may be higher since NATO's military footprint may be larger than in a post-conflict environment and the PAR may therefore be greater.

5. **Major combat operations.** The risk of CBRN incidents may be significantly greater in large-scale major combat than in other types of operations, and the challenges of CBRN medical support may be greater in type and scale. Key issues include:

- a. Timely communication of medical information and maintenance of CBRN medical situational awareness at all levels of command due to degraded communications infrastructure, communications security issues, interoperability issues and national differences in medical reporting practices and procedures, and the fog of war.
- b. Sustainment of capabilities to provide trauma care in a CBRN environment, including the establishment of collective protection (COLPRO), use of IPE, and agility in regulating patients.
- c. The need to deploy and use low-density, specialized CBRN medical capabilities—including evacuation assets—across a large geographic area.
- d. Disruption of evacuation and supply routes due to infrastructure damage or contamination. When faced with a peer or near-peer adversary, the potential lack of tactical or strategic air superiority will further complicate all operations.
- e. Greater likelihood of CBRN MASCAL incidents because of ongoing engagement of medical forces in trauma care and because of the enhanced risk of adversary use of CBRN weapons.

6. At the same time, there are unique opportunities to enhance CBRN medical response in major combat operations that can be exploited during the planning process:

- a. Mechanisms for strategic resupply and augmentation of NATO forces should be set in place to expedite national provision of additional CBRN medical capabilities if needed.
- b. Based on the assessed risks, CBRN medical subject matter expertise in various nations should be ready to provide advice and assistance to commanders and staffs.
- c. The establishment of MED-DOIIT with support CONOPS for JMEDI staff including comprehensive bio-response plan in preparation for a deliberate or natural outbreak. This not only will mitigate the health impact but allow the Commander to maintain operational effectiveness.

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CHAPTER 3 - STRATEGIC MEDICAL CONTRIBUTION TO CBRN DEFENCE

3.1. INTRODUCTION

1. In 2009, NATO published its *Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats*. This publication and further guidance highlight three pillars for CBRN defence—*prevent, protect, and recover*—as well as *understanding* the CBRN threat. Medical support contributes to each of these areas; the level of contribution depends on the baseline CBRN threat, and depends on an understanding of the medical and human factors impact of each threat. The contributions and interactions are summarised in Table 3-1.

Table 3-1. Relationship between the Policy Pillars and CBRN Medical Support³²

NATO WMD/CBRN POLICY PILLARS		
PREVENT	PROTECT	RECOVER
AIMS		
<ul style="list-style-type: none"> Prevent the acquisition of CBRN substances Deter the use of CBRN substances Prevent intentional use or accidental release of CBRN substances Support the reduction of extant CBRN substances 	<ul style="list-style-type: none"> Reduce extant CBRN substances Disrupt CBRN substances Support the prevention of follow-on incidents Mitigate the immediate effects of CBRN substances on personnel and Allied capability 	<ul style="list-style-type: none"> Prevent follow-on attacks Manage the effects of a CBRN incident Restore operational effectiveness
CROSS-CUTTING FUNCTIONS		
<ul style="list-style-type: none"> CBRN threat, vulnerability, impact and risk assessment Education and training 	<ul style="list-style-type: none"> Lessons learned process Strategic communication 	
CBRN MEDICAL SUPPORT		
PREVENT	PROTECT	RECOVER
<ul style="list-style-type: none"> Medical support to WMD disablement / elimination missions Medical support to CBRN attribution missions Comprehensive CBRN medical support capability (deterrence) 	<ul style="list-style-type: none"> Case reporting Health surveillance Pre-exposure CBRN MedCM CBRN medical sense (detect) 	<ul style="list-style-type: none"> CBRN medical sense (diagnosis) Post-exposure CBRN MedCM CBRN medical incident response CBRN casualty care CBRN medical incident recovery Medical support to CBRN forensics
CROSS-CUTTING FUNCTIONS		
<ul style="list-style-type: none"> CBRN medical intelligence / operational medical information CBRN operational medical risk assessment (health consequence) Strategic communications (health) 	<ul style="list-style-type: none"> CBRN medical lessons CBRN medical research CBRN medical education and training 	

³² The aims listed under the NATO WMD/CBRN policy pillars (top half of the figure) were taken directly from NATO, *Allied Joint Doctrine for Comprehensive Chemical, Biological, Radiological, and Nuclear Defence*, AJP-3.8, Edition B, Version 1 (October 2018).

3.2. MEDICAL CONTRIBUTION TO CBRN PREVENTION

1. CBRN prevention is focused on reducing or eliminating the CBRN threat and therefore the possibility of a CBRN incident. The medical contribution to CBRN prevention is primarily as an enabling capability. The medical contribution includes:

- a. **Medical support to WMD disablement/elimination missions.** Any mission with a CBRN hazard will require CBRN medical support, including advice to mission planning, identification of any MedCM requirement, and direct medical support, equipment, and personnel in the case of any CBRN exposure or conventional casualty care.
- b. **Medical support to CBRN attribution missions.** In addition to the support described previously for WMD disablement/elimination missions, attribution missions may have specific medical tasks:
 - Medical support to CBRN exploitation and reconnaissance (forensics) teams;
 - Assessment of suspected exposed patients and review of their health records;
 - Medical (clinical) sampling of suspected exposed persons and patients' and
 - Medical (forensic) examination of suspected CBRN fatalities.³³
- c. **Comprehensive CBRN medical support capability (deterrence).** Any demonstration of effective military and/or civilian healthcare of CBRN patients may have a deterrent effect on future CBRN incidents. However, as seen in the management of trauma patients, effective medical management of one type of threat may result in the emergence of an evolved or new threat.

3.3. MEDICAL CONTRIBUTION TO CBRN PROTECTION

1. The medical contribution to CBRN protection, which focuses on reducing human vulnerabilities to a CBRN incident, includes:

- a. **Case reporting/health surveillance.** Early recognition of a CBRN incident through the medical chain, especially of a biological agent, enables an early incident response and implementation of post-exposure prophylaxis (PEP) (e.g., antibiotics). If implementation is within a window of opportunity, this early recognition may provide protection and may protect others if the CBRN substance is contagious but individuals have not yet been exposed.
- b. **Pre-exposure CBRN MedCMs.** Pre-exposure MedCMs provide protection (complete or partial) against the health effects of a CBRN substance. However, they require planning and implementation before the CBRN incident happens.

³³ The level of involvement of medical personnel supporting CBRN forensics (or any death on operations) will depend on national professional regulations and legal framework.

The advantage of pre-exposure MedCMs is that no recognition of the event is necessary, and subsequent incident response will be reduced and possibly not necessary. The disadvantage is the time required to achieve full protection, which, in the case of a vaccine, may require several vaccinations. Complacency may also cause non-compliance for MedCMs that are required to be taken regularly.

- c. **CBRN medical sense (detection).** Medical sense (detection) is the medical contribution to CBRN detection that includes disease/health surveillance. Using detection capabilities to discover the presence of a CBRN hazard at the earliest possible opportunity enables a timely and appropriate incident response.

3.4. MEDICAL CONTRIBUTION TO CBRN RECOVERY

1. Following a CBRN incident and its recognition, the medical contribution to CBRN recovery is focused on mitigating the health consequences of CBRN exposure. This includes:

- a. **CBRN medical sense (diagnosis).** Medical sense (diagnosis) is the medical contribution to CBRN diagnosis and includes medical screening and clinical diagnosis (e.g., casualty assessment and clinical investigations, including those of laboratories).
- b. **Post-exposure CBRN MedCMs.** Post-exposure MedCMs include prophylaxis and treatment. This is described in more detail in AMedP-7.1 Chapter 3, *Medical Countermeasures*.
- c. **CBRN medical incident response.** This response is a structured approach to the medical management of a CBRN incident that is illustrated in Part 2 of AMedP-7.1.
- d. **CBRN casualty care.** CBRN casualty care includes:
 - The management of any casualty (conventional and CBRN) in a CBRN environment;
 - The treatment of CBRN casualties (intoxicated, infected, irradiated, and/or combined with trauma) from point of exposure through to rehabilitation, including the use of specific CBRN MedCMs;
 - The diagnosis of CBRN casualties, including point-of-care testing (POCT), diagnostic imaging, clinical laboratories, and decision support tools;
 - The provision of casualty hazard management of contaminated or contagious patients; and

- MEDEVAC, including casualty evacuation (CASEVAC)³⁴, and forward, tactical, and strategic MEDEVAC³⁵.
- e. **CBRN medical incident recovery.** Medical incident recovery is the final stage of the CBRN medical incident response and is the transition back to normal operations.³⁶ CBRN medical incident recovery includes:
- Patient rehabilitation;
 - Restoration of contaminated medical facilities and equipment;
 - Management of human remains;
 - Medical support to CBRN forensics (exploitation);
 - Medical materiel resupply; and
 - CBRN clinical waste management.
- f. **Medical support to CBRN forensics.** Depending on the Nation, forensics may or may not be a medical responsibility. Even when it is not a medical responsibility, medical capabilities contribute to the investigation of suspected or confirmed CBRN incidents.³⁷ The medical support to CBRN forensics includes the clinical assessment and investigation of a CBRN incident along with intelligence and disease surveillance information.

3.5. MEDICAL CONTRIBUTION TO CBRN CROSS-CUTTING FUNCTIONS

1. The medical contribution to the cross-cutting functions of the CBRN threat includes:
- a. **CBRN medical intelligence.** CBRN medical intelligence is the interpretation of intelligence to enable an understanding of the impact of a CBRN incident on the human domain, including health and human factors such as:
- Operational effectiveness;
 - Human interoperability, interaction, integration, and performance;
 - Operational medical support, including impact on conventional support and CBRN medical risk mitigation;
 - Physical, mental, and social well-being of the force; and

³⁴ CASEVAC is considered a unit responsibility rather than MEDEVAC but is included for completeness. The non-medically supervised process of moving a person who is wounded, injured or ill.

³⁵ The medically supervised process of moving any person who is wounded, injured or ill to and/or between medical treatment facilities as an integral part of the treatment continuum.

³⁶ More details can be found in Chapter 16 of AMedP-7.1 and in AMedP-7.6.

³⁷ SRD AMedP-7.4-4 (in preparation) provides more guidance in this area of medical support to forensics.

- Civilian-military interoperability and strategic health resilience.
- b. **Disease and health surveillance.** Health surveillance is the continuous, systematic collection, analysis, interpretation, and dissemination of health-related data.³⁸ This is the understanding of other operational threats/hazards that may be used or exploited offensively (hybrid warfare) or may mimic a CBRN incident. Health surveillance supported by case reporting and weekly³⁹ health reports provides the strategic, operational, and medical commanders with situational awareness of the health of the force and with early indications of any surges or new patterns of disease whether of deliberate, accidental, natural, or unknown causes. For biological causes, it may be the first or only indication of an incident.
 - c. **CBRN operational medical risk assessments.** Any operational risk assessment requires an identification and assessment of hazards. In a CBRN environment it also requires an understanding of the human vulnerabilities and the health consequences coupled with the CBRN threat. This is not limited to just the CBRN threat, but also to potential protective measures (e.g., MedCMs or the health impact of physical protection, including heat illness).
 - d. **Medical input to Strategic Communications.** Either during the implementation of pre-incident protective measures or during a CBRN incident, an amount of communication will be required not only at an operational level, but also at public and political levels. Any potential health considerations that are communicated must be credible, consistent, and coherent. Any perceived limitations in the information provided may cause a loss of confidence and concerns about long-term consequences and may have an adverse impact on operational effectiveness.
 - e. **Medical lessons learned process.** Following any operation or mission, collecting observations and identifying lessons is vital. Any CBRN incident is highly likely to be scrutinized at a strategic level, including public, media, political, legal, and academic. Lessons may also influence future capabilities and research, and these lessons should be shared at a strategic and cross-government levels, especially where they may save lives or reduce health impacts. Lessons should also be shared down the chain of command and incorporated into conventional and CBRN medical education and training (E&T).
 - f. **CBRN medical research.** In response to a new threat or a lesson identified with a knowledge gap, science questions may be asked or research projects may be required. These questions and projects must be informed by the medical community when there is a health implication or potential medical solution. The NATO mechanism for this coordination is the liaison between the Committee of Chiefs of Military Medical Services in NATO (COMEDS) and its CBRN Medical Working Group (CBRN Med WG) and NATO's Science and Technology Organisation (STO) and its Human Factors and Medicine (HFM) Panel.

³⁸ NATO, "NATOTerm," <https://nso.nato.int/natoterm>.

³⁹ In some cases, health reports may be generated more than once a week to maintain situational awareness.

- g. **CBRN E&T.** This is a principal contribution to any NATO capability. It is a strategic consideration because E&T includes long-term education from basic training and professional development through to pre-deployment training and mission-specific training. CBRN medical E&T is particularly important since this subject is not usually taught within civilian health sectors. It also contributes to the three pillars of CBRN defence (prevent, protect, and recover). Further details are described in Chapter 7 of this publication.
- h. **Unique CBRN medical information.** This is the process of collecting, recording, preserving, and protecting medical information on unit locations and meteorological data that may be critical to CBRN medical actions.

3.6. DEFENCE AGAINST TERRORISM (DAT) PROGRAMME

Terrorism poses a direct threat to the security of the citizens of NATO countries and to international stability and prosperity more broadly, and will remain a threat for the foreseeable future. ... the Alliance strives at all times to remain aware of the evolving threat from terrorism; to ensure it has adequate capabilities to prevent, protect against, and respond to terrorist threats.... Building on our Defence against Terrorism Programme of Work, we will continue to improve our capabilities and technologies, including to defend against Improvised Explosive Devices and CBRN threats. We will keep terrorism and related threats high on NATO's security agenda. (NATO Summit, Cardiff 2014)

1. The NATO DAT Programme of Work (DAT POW) sits within the Emerging Security Challenges (ESC) Division and supports NATO civil-military capabilities in preventing non-conventional attacks, such as suicide attacks with improvised explosive devices (IEDs), and mitigate other challenges, such as attacks on critical infrastructure. Of the three umbrellas⁴⁰ of the DAT programme of work, those relevant to CBRN medical support include:

- a. **Incident management.** This umbrella covers training and development initiatives to improve development organisation and coordination capabilities in the event of an attack.
- b. **Force protection/survivability.** This umbrella covers training and development initiatives “to minimize to vulnerability of personnel, facilities, equipment and operations to any threat and in all situations”.

2. Linkages between CBRN medical support and DAT include the development of comprehensive CBRN medical incident and casualty management guidance. AJMedP-7 is a core publication supported by AMedP-7.1, 7.2, and 7.3 and underpinned by civil-military CBRN MASCAL guidance.⁴¹

⁴⁰ Incident management, Force Protection/Survivability, Network Engagement.

⁴¹ *Non-binding Guidelines for Civil-Military Medical Cooperation in Response to CBRN Mass Casualty Incidents*, COMEDS, CEPC.

3.7. NATO OPERATIONAL AND STRATEGIC BIO-RESPONSIVENESS

1. NATO's bio-responsiveness has been subject to a NATO Smart Defence project and has enabled the development of an overarching concept and concept of operations (CONOPS). Bio-response can be applied to several scenarios including a CBRN incident with operational and strategic significance.

2. The Programme of Work (POW) for Bio-Medical Panel (BioMed-P) is informed by the following scenarios and agent categories:

- Scenarios
 - Biological agents of operational significance
 - Biological agents of strategic significance
 - Biological agents of agricultural significance
- Agent Categories:
 - Biological warfare agents
 - Endemic diseases
 - Emerging diseases
 - Imported diseases
 - Bio-mimickers

3.7.1. Biological Agents of Operational Significance

1. Biological agents of operational significance are biological agents that may have an operational impact. Some biological agents are already identified as operationally significant based on intelligence, threat / hazard assessment and previous operational lessons, but others not yet identified may still have an operational impact. Some biological agents (and other substances) have not been identified but can still be considered. The types of biological agents of operational significance are described in the previous chapter.

2. **Assumptions.** The assumptions for outbreaks of operational significance are that:

- a. The PAR is the deployed military and civilian population;
- b. The outbreak may be due to a deliberate, accidental, natural, or unknown cause; and
- c. The outbreak will be managed at an operational level or by a single nation.

3.7.2. Biological Agents of Strategic Significance

1. Biological agents of strategic significance are biological agents of operational significance, as described above, that also meet other criteria:

- a. Article 5 attack with a biological agent;
- b. A formal civilian request has been made to NATO, usually directly to the Secretary General, North Atlantic Council or Military Committee;
- c. The bio-response requires more resources than available to the deployed NATO force or single nation; or
- d. The environment is non-permissive for an effective civilian response and requires either a military medical response or organisation, or military resources to provide security and stabilisation.

3. **Assumptions.** The assumptions and considerations for outbreaks of strategic significance are that:

- a. The PAR is both military and civilian;
- b. The outbreak may be due to a deliberate, accidental, natural, or unknown cause;
- c. The outbreak extends beyond the initial (joint) operations area;
- d. The area may be non-permissive for an effective civil response due to enemy combatants or lack of security;
- e. The outbreak may require mutual aid including access to strategic or specialist MEDEVAC assets, MedCM, personal protective equipment, medical equipment and personnel (medical or enabling e.g., engineers, security).

3.7.3. Biological Agents of Agricultural Significance

1. Biological agents of agricultural significance are biological agents that may have an impact at a strategic, national or international level because of the impact on the local population and host nation security, sustainment of the deployed operation/mission or potential bio-security of transiting personnel, service animals, and materiel, especially transportation and logistics assets. The impact is more likely to be geo-political and economic but may cause a delay in the regeneration of military capabilities.

2. **Assumptions.** The assumptions are:

- a. The PAR is more likely to be civilian due to the secondary consequences;
- b. The cause may be deliberate, accidental, natural, or unknown; and
- c. The impact may be strategic, national or international.

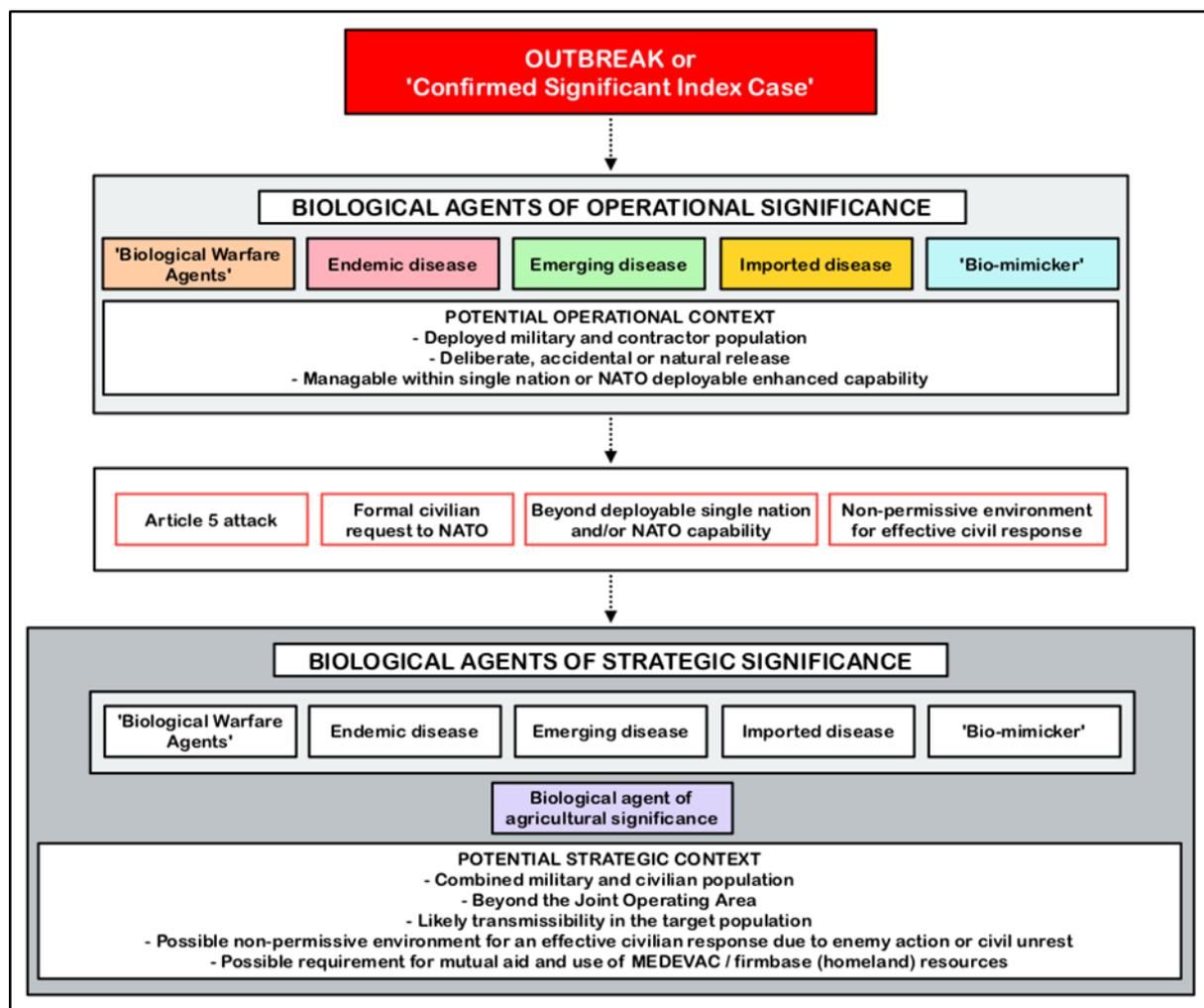


Figure 3-1. Biological Agents of Operational, Strategic and Agricultural Significance

3.8. COMPREHENSIVE APPROACH TO CBRN SUPPORT AND HEALTH RESILIENCE

1. A comprehensive approach to CBRN medical support and wider health resilience including bio-responsiveness requires strategic level cooperation and collaboration. Key areas for this are:

- a. CBRN medical and bio-security research;
- b. Sharing of best practice and lessons;
- c. Mutual aid in the case of CBRN (and conventional) mass casualty incidents;⁴²
- d. Mutual aid in the case of a strategic biological incident / outbreak;

⁴² The Warsaw Summit (2016) identified mass casualty management as one of the seven baselines for national and alliance resilience.

- e. Burden sharing for high-cost and high-risk programmes and projects; and
- f. CBRN medical and health resilience strategic stockpile.

3.8.1. Concept for NATO CBRN Medical and Health Resilience Strategic Stockpile

1. Several scenarios including collective defence, crisis response and national resilience require NATO to have the ability to deploy and surge at short notice. Some military and medical materiel are costly and have significant procurement timelines. Any use of a national stockpile may require the nation to carry a significant risk until a resupply of national reserves is complete. During an operation, the threat state may change significantly and require a more defensive posture to CBRN or the deployment of mitigating assets and materiel.

2. The ability for NATO to access specialist items in bulk at short notice or over a sustained period is vital. Scenarios include:

- a. Initial deployment with specialist MedCM and equipment;
- b. Urgent (re)supply during an incident (sustaining ongoing care of patients);⁴³
- c. Resupply of the deployed operation during or following an incident;
- d. Resupply of an Allied nation following a military deployment; and
- e. Resupply of an Allied or Partner nation after an attack on the nation.

3. For CBRN medical stockpiling, the strategic stockpile may be physical (held centrally) or virtual (held in national stockpiles but accessible subject to availability in the case of concurrent national emergency). The concept for the Strategic Stockpile is shown in Figure 3-2.

4. The main contents for a CBRN medical and health resilience stockpile would be:

- a. CBRN MedCM and other pharmaceuticals;
- b. Medical personnel protective equipment based on standard and enhanced/specialist requirements; and
- c. Medical equipment, such as ventilators, either for deployment or resupply.

5. The Concept for NATO CBRN Medical and Health Resilience Strategic Stockpile will be described in SRD AJMedP-7-2.

⁴³ This describes the supply of MedCM and equipment to sustain the response beyond the first 48-96 hours in the event of a delay in strategic MEDEVAC or treatment in place.

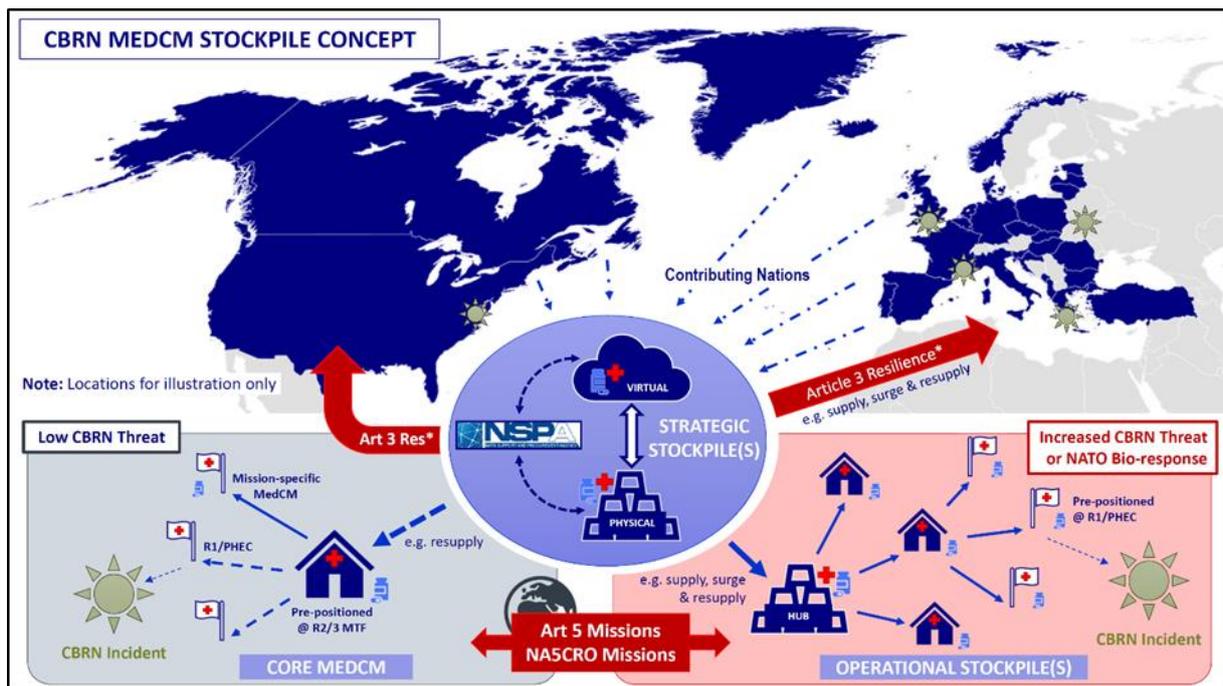


Figure 3-2. Concept for NATO CBRN Medical and Health Resilience Stockpile

3.9. SHARED UNDERSTANDING OF THE CBRN THREAT AND OTHER OPERATIONAL HAZARDS

1. The development of force health protection and CBRN medical support capabilities is significantly linked with CBRN defence capabilities but requires a broader range of capabilities due to the wide range of endemic and environmental hazards as well as CBRN substances, as defined in AJP-3.8. This is underpinned by the 'all-hazards' CBRNE3T approach to medical planning and support, as described in Chapter 2 and AJP-4.10.

2. The priorities for any medical capability development include a comprehensive suite of capabilities including the recognition of any index event or outbreak, whether an overt CBRN incident or covert release and subsequent health presentation, such as an index case or outbreak of disease. In some circumstances, an event with features of a CBRN incident may be due to endemic or environmental causes, rather than the result of a deliberate release. An alternative scenario is that an endemic disease or other type of environmental hazard may be exploited and used as a weapon but masked in a way to be mistaken as non-deliberate. This is an example of 'hybrid warfare' and highlights the importance of sharing intelligence, medical intelligence and medical information as well as operational situational awareness of suspicious activity and unusual patterns of disease.

3. Following recognition of an event, the subsequent response is staged and includes:
- Incident response including casualty care and outbreak investigation; and
 - Incident recovery including patient rehabilitation, fatality management and forensics.

4. In the cases of an unsuccessful or covert release, or other events such as individual poisonings or assassinations, the existence or true motive for the occurrence may be missed or misinterpreted (e.g., misdiagnosed or unrecognised).
5. The complex relationship between CBRN incidents and other incidents including outbreaks, and the importance of recognition, whether by observation, detection or medical sense (diagnosis, health/disease/health surveillance and clinical laboratories) is illustrated in Figure 3-3.

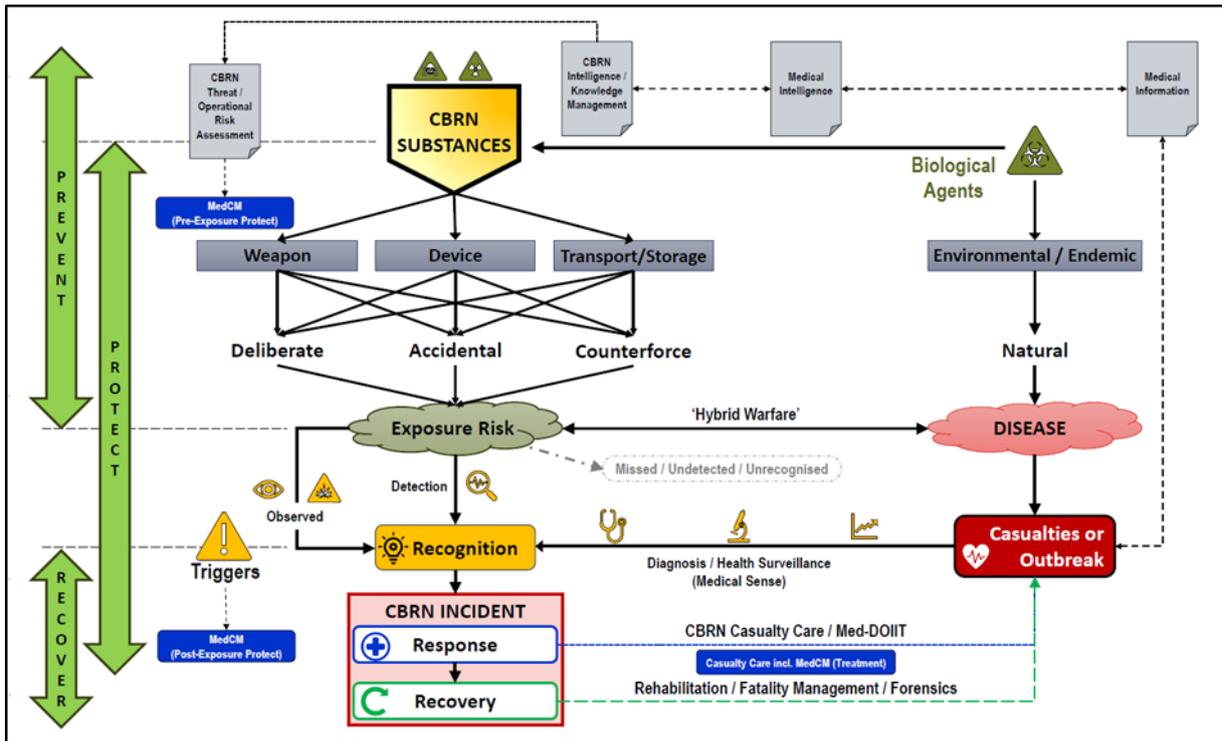


Figure 3-3. CBRN and Medical Information Sharing and Recognition Interoperability

CHAPTER 4 - MEDICAL CONTRIBUTION TO CBRN DEFENCE

4.1. INTRODUCTION

1. CBRN medical support contributes to all five components of CBRN defence as defined in AJP-3.8, *Allied Joint Doctrine for Comprehensive Chemical, Biological, Radiological and Nuclear Defence*:

- a. Detection, identification, and monitoring (DIM);
- b. Knowledge management (KM);
- c. Physical protection (PP);
- d. Hazard management (HM); and
- e. Medical Countermeasures (MedCM) and Casualty Care.

2. These five components enable NATO forces to maintain freedom of action in a CBRN environment and accomplish the mission. The Medical Advisor (MEDAD) will work with the CBRN staff and other appropriate personnel to advise the commander on medical support to the CBRN defence mission. The medical contributions to the five components of CBRN defence is shown in Figure 4-1 and described in more detail below. Two of the components of CBRN defence (Detect and Knowledge Management) support operational epidemiology and are discussed in Section 4.7.

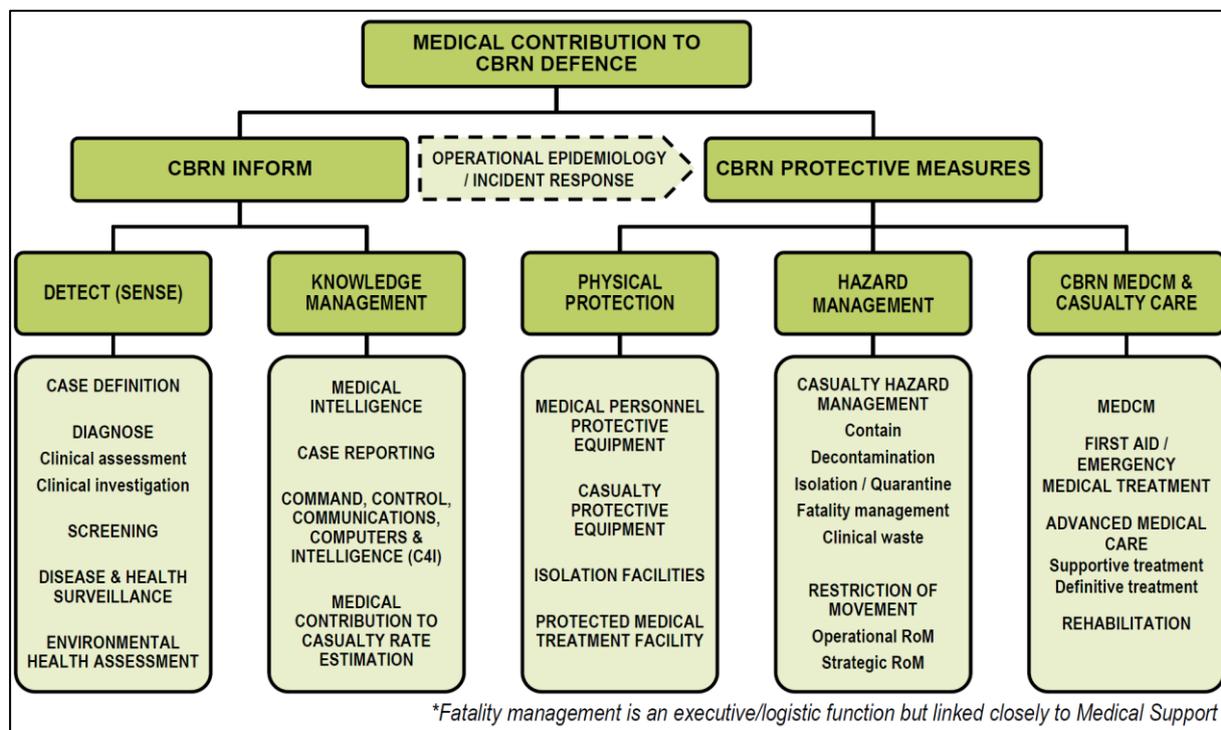


Figure 4-1. Medical Aspects of CBRN Defence-Enabling Components

4.2. DETECTION, IDENTIFICATION AND MONITORING (DIM)

1. DIM is defined as the discovery, by any means, of the presence of a CBRN substance. Identification is the recognition of a specific CBRN substance arising from a CBRN incident. There are three levels of identification with varying degrees of reliability: provisional, confirmed, and unambiguous.⁴⁴ Monitoring is the continuous or periodic process of determining the presence or absence of a CBRN hazard and can be conducted on personnel, equipment, terrain, or facilities.

2. **CBRN medical sense.** The employment of DIM equipment will be based on the CBRN threat and the operational risk. In the absence of equipment that can detect the specific hazard, medical personnel may be the first to recognise a CBRN incident and initiate a response. This recognition may be accomplished through the screening or diagnosis of an individual case, analysis of disease rates as part of health (or disease) surveillance, or use of environmental health surveys. Even in an increased threat state, the diagnosis of a biological casualty by the medical chain may be the only indication of a biological attack. Figure 4-2 provides a summary of CBRN medical sense and its interaction with CBRN defensive components.

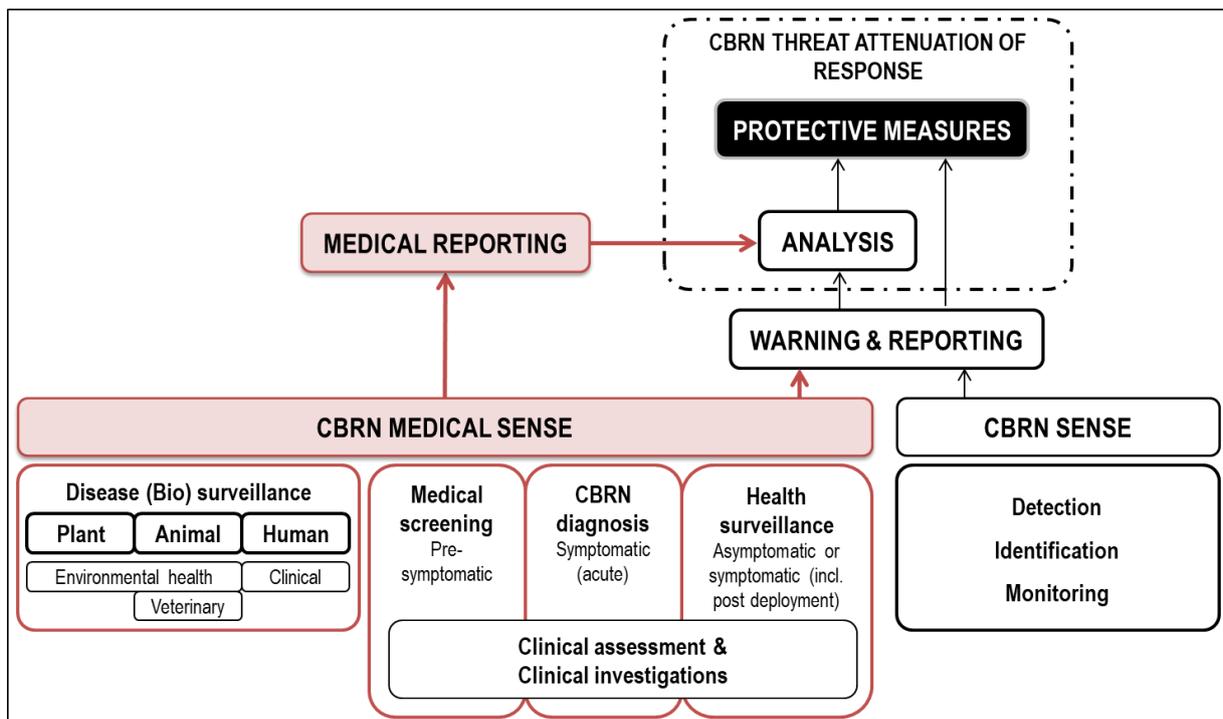


Figure 4-2. CBRN Medical Sense Concept

3. DIM may be non-medical or through medical sense. Medical sense includes:
- Case definition, either clinically based on a combination of symptoms and signs (syndrome) or by laboratory diagnosis;

⁴⁴ NATO, *Allied Joint Doctrine for Comprehensive Chemical, Biological, Radiological, and Nuclear Defence*, AJP-3.8, Edition B, Version 1, October 2018.

- b. Medical screening following exposure but before symptoms appear;
- c. Diagnosis, based on clinical assessment or clinical investigations, including diagnostic imaging, POCT, and laboratories;
- d. Recognising changes in disease patterns as part of disease and health surveillance; and
- e. Environmental health monitoring for non-CBRN environmental and industrial hazards (EIHs).

4.3. KNOWLEDGE MANAGEMENT (KM)

1. The purpose of KM is to collect and manage CBRN-related intelligence from one or several sources and to disseminate raw and/or analysed information to warn or inform the forces of a potential or ongoing CBRN incident. Effective CBRN defence depends on timely, complete, and accurate situational awareness. The medical contribution to KM includes:

- a. Medical Intelligence (and information);
- b. Medical command, control, communication, and information systems to support case reporting, health surveillance, and operational epidemiology; and
- c. CBRN casualty rate estimation.

2. KM is supported by medical reporting embedded in the medical organisation. Increased reporting frequency and detail (medical vigilance) can be started to support the early recognition and assessment of a CBRN incident based on an abnormal pattern of disease, trigger event, or index case. Biological incidents are more likely to be recognised by these methods due to their slowly evolving nature and impact on disease rates. Additional uses of information include the collection, processing, and use of medical intelligence and information (MI2) and the CBRN casualty rate estimation to support CBRN medical risk assessment and planning.

3. 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, the content and urgency of the medical information required to support command decisions must be identified, and standard operating procedures (SOPs) for acquiring that information must be established. Because of the unique nature of CBRN incidents, all medical information and advice must be coordinated to avoid confusion, inconsistency, or inefficiency in resource use.

4. If a CBRN incident occurs, the demand for information on associated health effects, health risks, and mitigating actions will be high. Because NATO medical operational experience with CBRN incidents has been rare, CBRN medical advice is limited and, in general, is concentrated within specialized units or facilities. Medical planners should ensure that access to this expertise is available during the conduct of operations as part of the deployed medical force or via an established medical reachback process. Any medical advice must be credible, contextual, consistent, and coherent.

4.4. PHYSICAL PROTECTION

1. Physical protection includes IPE, COLPRO and medical PPE. MEDADs will provide command with advice on the environmental hazards of wearing equipment (e.g., heat illness and dehydration) and on optimal PPE against specific threats and hazards. This advice may change the requirement to wear full IPE, also known as the CBRN ensemble. For biological incidents, medical staff can also provide advice on the requirement for isolation and quarantine areas and advice on casualty hazard management.
2. Additional medical contributions or considerations include:
 - a. The physical protection requirements for isolation facilities within MTFs and as separate isolation units or hospitals.
 - b. Providing CBRN physical protection of:
 - Medical facilities (including impact of protection on manoeuvrability);
 - Medical personnel (medical PPE); and
 - Casualties either in transit or within facilities in the absence of or inability to wear IPE (casualty protective equipment (CPE)).

4.5. HAZARD MANAGEMENT

1. Hazard management refers to those measures taken collectively to limit the operational impact of CBRN incidents. Hazard management uses the principles of hazard avoidance to limit the spread of contamination, including the environment, personnel, and equipment.
2. **Casualty hazard management.** Hazard management includes casualty hazard management, which applies to the management of patients and fatalities. Casualty hazard management⁴⁵ includes:
 - a. Containment;
 - b. Decontamination of contaminated casualties;
 - c. Isolation of suspected or confirmed contagious patients;
 - d. Quarantine of well at-risk persons;
 - e. RoM of individuals or units to maintain operational effectiveness;
 - f. Clinical waste management; and/or
 - g. Fatality management.

⁴⁵ Full details are found in AMedP-7.1 Chapter 6, *Casualty Hazard Management*.

3. **Decontamination.** While all units are responsible for the decontamination of their personnel, medical forces are responsible for casualty hazard management. Medical units must anticipate the use of decontamination resources and plan for resupply as needed.
4. **Isolation.** When a risk of exposure to contagious biological agents has been assessed, casualty care may require cohort isolation wards or separate treatment facilities, depending on the estimated number of casualties and/or the transmissibility of the disease.
5. **Recovery.** Medical plans must also include the management of contaminated waste and consideration for CBRN fatality management, although this is a logistic function that requires input from the medical staff.

4.6. MedCMs AND CASUALTY CARE

1. CBRN MedCM and CBRN casualty care (both defined in Section 1.8) considerations are mandated to be considered by command regardless of the CBRN threat. MedCM include, among others, pharmaceuticals or vaccines designed to diminish the susceptibility of personnel to the lethal and damaging effects of CBRN substances, and to treat any effects arising from exposure to such hazards. MedCM must be issued to personnel under national guidelines but declared to Allied nations to ensure effective medical interoperability and reduced risk of adverse drug effects. MedCM are divided into pre-exposure and post-exposure. CBRN medical support is the final risk mitigation. However, in the absence of CBRN medical support, operational and legal requirements necessitate other CBRN defensive components (e.g., deployed CBRN casualty care for risk mitigation). On any mission, MedCMs and casualty care allow the commander to accept a certain level of risk and thereby maintain freedom of action and operational effectiveness.
2. CBRN casualty care is described in more detail in the next chapter as part of deployed military health care (MHC), and AMedP-7.1, *Medical Management of CBRN Casualties*, is the definitive reference for the management of CBRN casualties and conventional casualties in a CBRN environment.
3. There are four concepts of use for CBRN MedCM that includes pre-exposure prophylaxis, pre-treatment, post-exposure prophylaxis, and immediate therapy. Continuing medical therapy refers to treatment that is given within the medical chain and is not one of the four concepts of use for CBRN MedCM.
 - a. **Pre-exposure CBRN MedCM.**
 - Pre-exposure MedCMs do not rely on detection to trigger implementation, and implementation is based upon the CBRN threat and risk and on acceptability.
 - Pre-exposure prophylaxis (PrEP). PrEP describes the administration of MedCMs before the detection of an exposure to prevent the effects of a CBRN substance. These countermeasures may be given days, weeks, or even months in advance. An example would be vaccines to protect against biological agents.

- Pre-treatment (PT). PTs are therapy enhancers that are administered before exposure to enhance the efficacy of subsequent post-exposure therapy. An example is pyridostigmine for nerve agent exposure.

b. Post-exposure CBRN MedCM.

- Post-exposure prophylaxis (PEP). PEP is a MedCM used after an exposure has been detected to mitigate the effects of the CBRN substance.
- Immediate therapy (self-administered or buddy aid). Immediate therapy is a MedCM used to treat the initial effects of a CBRN substance based upon symptoms and signs. Immediate therapies (e.g., nerve agent antidote autoinjectors) can be administered by non-medical (self or first aid) and by pre-hospital medical personnel.
- Continuing Medical therapy (medically administered treatment). Medical therapy is treatment specifically used to manage CBRN patients within a medical chain. Treatment may be dependent on a diagnostic capability able to diagnosis a condition or monitor treatment efficacy.

4. CBRN MedCMs are described in more detail in AMedP-7.1 Chapter 3, *Medical Countermeasures*, and the planning considerations for CBRN MedCMs, use in a CBRN environment are found in AMedP-7.6, *Commander's Guide on Medical Support to Chemical, Biological, Radiological, and Nuclear (CBRN) Defensive Operations*.

4.7. OPERATIONAL EPIDEMIOLOGY

1. Operational epidemiology is not one of the five components of CBRN defence. It is the investigation of the cause of a disease outbreak and the application of DIM, medical sense, and KM to mitigate the outbreak.

2. DIM, through medical and non-medical sense and supported by KM (descriptive epidemiology), informs command of the likely cause of the disease outbreak. By understanding the potential cause, protective measures such as physical protection, hazard management, MedCMs, and casualty care can be implemented (applied epidemiology) and operational effectiveness can be maintained. If a CBRN incident is suspected, operational epidemiology will inform any following investigation or attribution mission.

3. The medical goals of the management of an outbreak or an incident with unknown cause are:

- Identify the source of the disease;
- Identify, treat, and report cases;
- Identify control measures to prevent further cases; and
- Reduce the spread of the outbreak until it stabilises and stops.

4. More details can be found in AMedP-7.1 Chapter 17, *Operational Epidemiology*.

CHAPTER 5 - MEDICAL SUPPORT IN A CBRN ENVIRONMENT

5.1. INTRODUCTION

1. CBRN medical support encompasses medical planning and the provision of medical and health services to maintain the strength of the force during the threat or occurrence of a CBRN incident. The level of CBRN medical support on operations will depend on the operations and missions and the perceived CBRN threat. All medical support should consider the risk from CBRN threats, whether deliberate, accidental, or due to natural or industrial hazards.

2. The Medical Support Organisation described in AJP-4.10, *Allied Joint Doctrine for Medical Support*, outlines the six components⁴⁶ to enable medical support on a conventional operation or mission. The following outlines the adapted medical organisation in a CBRN environment:

- a. CBRN Medical Command, Control, Communications, and Information Management (see Section 5.2).⁴⁷
- b. Force Health Protection (FHP) (including the medical element of operational CBRN defence) (see Section 5.3).
- c. Military Health Care (MHC)⁴⁸:
 - CBRN First Aid (see Section 5.5);
 - Pre-Hospital Emergency Care (PHEC) (see Section 5.6);
 - Casualty Decontamination (see Section 5.7);
 - Primary Health Care (PHC) (see Section 5.8);
 - Secondary Health Care (SHC) (see Section 5.9); and
 - CBRN Clinical Diagnostics (See Section 5.10).
- d. Medical Evacuation (MEDEVAC) (See Section 5.11).
- e. Medical Logistics (See Section 5.12).

⁴⁶ Command and control (C2), Communications and Information Management, Force Health Protection (FHP), Military Healthcare, Medical Evacuation, and Medical Logistics.

⁴⁷ C2 and Communication and Information Management are combined for the adapted framework due to their synergistic relationship in support of the situational awareness and decision support.

⁴⁸ The CBRN medical support elements of MHC are focused on the emergency or urgent care of casualties. Other elements of MHC including mental health will be described in Section 5.16. MHC is the subject of AJMedP-8, *Allied Joint Medical Doctrine for Military Health Care* (STANAG 2598) and its subordinate publications.

5.1.1. Readiness of CBRN Medical Support Capabilities and Tasks

1. The levels of CBRN medical capability will depend on the level of threat and/or risk. The levels include:

- a. **Core Capabilities or Tasks.** Core capabilities support initial medical planning on any mission and the provision of life-saving medical care in the event of a CBRN incident. Contingency planning should be routine even if the CBRN threat is low. Core CBRN medical requirements include:
 - (1) Operational CBRN medical risk assessment;
 - (2) Medical planning including outbreak and CBRN considerations;
 - (3) Outbreak and CBRN medical contingency plans (proportionate to the operational medical risk);
 - (4) Case reporting / recording and health surveillance; and
 - (5) Emergency management of CBRN casualties or unusual illness.
- b. **Enhanced Capabilities or Tasks.** Enhanced capabilities are deployed as a result of CBRN operational and medical planning based on threat, vulnerability and risk assessments. Enhanced capabilities may still have a defined capacity and therefore a surge capacity may be required in the event of the MASCAL incident. These will be described in detail as an SRD to this document.
- c. **Responsive (Standby) Capabilities.** Responsive capabilities are bespoke medical capabilities that may either be an Alliance capability or held at readiness or standby in the event of a trigger event. While the capabilities may not be deployed, the process of accessing these capabilities is part of core planning. Examples include:
 - (1) Access to Reach Back support including advice and clinical laboratories;
 - (2) Access to a MED-DOIT;
 - (3) Access to a (Strategic) Air Transportable Isolator (ATI); and
 - (4) Access to strategic stockpiles.
- d. **Surge Capacity.** A surge capacity is not a capability itself but is a task that may be expected of the medical logistic chain in order to surge specific CBRN and conventional medical capabilities. A surge capacity may be optimised by the establishment of an operational stockpile or emergency access to a strategic stockpile including MedCM, medical equipment and personal protective equipment.

5.2. CBRN MEDICAL COMMAND, CONTROL, COMMUNICATIONS, and INFORMATION MANAGEMENT

1. CBRN situational awareness and command and control (C2) play vital roles in supporting medical operations in a CBRN environment. Situational awareness that includes timely processed CBRN information and CBRN-related intelligence is a precondition for success while operating in a potential CBRN environment or under CBRN threat. Effective situational awareness and C2 are needed to assess CBRN incidents quickly and correctly and to provide the information needed to generate appropriate medical resources. This information, in turn, supports sustained operational effectiveness of units, installations, medical facilities, and the populace after an incident occurs.

2. Efficient communications and information management are essential to provide medical support effectively and to enable medical planning, deployment health surveillance and force health protection, patient tracking, patient transfer regulation, medical incident response, and coordination and supply of all medical capabilities. Effective communication and information management of medical data and information are fundamental aspects of medical support, especially in a CBRN environment. Timely warnings of potential exposure to CBRN substances allow the Commander to develop and exercise effective COAs and balance the CBRN risk to assets within the Joint Operations Area (JOA). Detailed guidance on medical communication and information management can be found in AJMedP-5, *Allied Joint Doctrine for Medical Communications and Information Systems (MedCIS)*.

3. Especially important is a clear and commonly shared intelligence or assessment of natural or anthropic CBRN threats within the JOA; environmental or industrial health issues; adversary CBRN capabilities; the effects and potential impact of CBRN incidents; national, multinational, and HN medical support capabilities; and limitations or vulnerabilities in mitigating CBRN effects. Medical intelligence preparation of the operational environment assists medical planners in analysing enemy, environmental, and medical threats in the JOA.

4. In the planning process, the medical staff has specific responsibilities that support effective situational awareness in a CBRN environment.

- a. **Medical intelligence.** Evaluate the available medical intelligence, coordinate with CBRN defence and intelligence staff elements, and advise the commander and his staff on the potential CBRN-related health implications of the operating environment.
- b. **Risk assessment.** Prepare the medical risk assessment, including the risk of CBRN hazards, to support the overall operational risk assessment.
- c. **Communication.** Participate in and monitor the warning and reporting of potential and actual CBRN incidents and hazards into C2 systems and provide commanders with medical advice on how to minimize the health effects of CBRN exposure to deployed forces.

5.2.1. CBRN Medical Intelligence and Information (MI2)

1. As described in AJMedP-3, *Allied Joint Doctrine for Medical Intelligence*, medical intelligence is the product of the processing of medical, bio-scientific, epidemiological, environmental, and other information related to human or animal health. Medical intelligence is a functional discipline of intelligence and a major component of CBRN KM. Effective

preventive and curative medical support for the forces requires comprehensive, timely, easily accessible, reliable, accurate, and up-to-date medical intelligence products and the integration of these products into overall theatre intelligence assessments and estimates.

2. AMedP-3.2, *Medical Information Collection and Reporting*, describes medical information as any information on medical or environmental threats or medical care facilities or capabilities that has been gathered through non-intelligence channels and that has not been analysed for intelligence content. Such information is an essential component of operational medical planning and should be shared freely among members of the Alliance.

3. Medical intelligence and medical information are essential at the strategic and operational level of planning. Medical intelligence is an integral part of the Joint Intelligence Preparation of the Operational Environment (JIPOE) that aims (among other things) to gather and analyse information to address the full spectrum of CBRN threats, hazards, and risks across the three pillars of CBRN defence. Medical intelligence and medical information support the FHP programme and the planning of proper countermeasures by FHP experts to protect and maintain the health of deploying forces through all phases of operation.

4. In the context of CBRN defence, medical intelligence and medical information provide:

- a. Analysis of endemic diseases (chronic endemic diseases and possible endemic outbreaks by frequency, type, and severity).
- b. Analysis of potential environmental health hazards, which can be naturally occurring, including those related to air, water, soil quality and entomology, or man-made, including industrial sites, toxic waste sites, and major transportation routes for a specific geographic location that could be an ongoing hazard to deployed forces or could become a health hazard if accidentally or intentionally destroyed.
- c. Medical CBRN threat analysis and vulnerability analysis, which is a continual process of evaluating and compiling available information to identify and prioritize threats. Threat analysis includes the evaluation of each identified CBRN threat and its potential impact on force health and operational capability, supported by CBRN casualty estimation.
- d. Early detection of probable/possible/suspected public health events of operational/international concern;
- e. Modelling and simulation of environmental and epidemiological impact of CBRN incidents, in support of hazard prediction and risk assessment.

5. Since the effects of chemical, biological, and radiological (CBR) substance may first occur in the local population, medical intelligence has to maintain a continuous awareness of the local civilian disease trends and unique cases to quickly detect public health events of operational concern potentially linked to CBR casualties. Throughout the operation, deployed forces will be required to notify unit medical staff of any intelligence that may affect medical readiness.

5.2.2. CBRN Medical Support Planning

1. The commander must consider the possibility that CBRN incidents will occur and develop appropriate CBRN defensive measures against the effects of these incidents when planning and conducting operations. Planning for medical support to NATO operations in a CBRN environment requires considerable flexibility. Although this medical planning does not reflect or exclude any particular nation's approach to planning, it does constitute a basic planning framework as a prerequisite for a common understanding in a joint and combined CBRN defence environment. The stages of medical planning will depend on the NATO, national, and civilian-military planning framework. For NATO operations, the lead standardisation document is AJMedP-1, *Allied Joint Medical Planning Doctrine*, and subordinate planning guidance.

2. The basic CBRN defence planning process remains the same across the range of military operations and occurs within and among all levels. Nevertheless, specific CBRN defence planning considerations may vary considerably among strategic-, operational-, and tactical-level operations due to differences in missions, perceived CBRN threats, available resources, and size of the operational areas and area of interest. The threatened or actual employment of CBRN weapons and/or the potential for accidental releases can cause large-scale shifts in strategic and operational objectives, phases, and COAs. Planning at all levels should ensure the integration of CBRN considerations into the overall planning and decision-making processes. A key task for all commanders is the establishment of protection against CBRN incident in the operational area and in other areas that provide forces and sustaining capabilities. These goals include rapid and uninterrupted force preparation and deployment and comprehensive force protection.

3. Medical capabilities must be commensurate with the force strength and the assessed risk to the deployed forces. In a CBRN environment, medical support requirements may be greater in magnitude and different in kind than those needed to support conventional combat missions. This problem may be compounded by the combination of CBRN and conventional injuries, which may not be readily discerned or easily segregated. Planning for medical support in a CBRN environment must account for available medical protection and unique prophylaxis, diagnostic, and treatment needs associated with the specific and plausible CBRN hazards indicated by medical and threat intelligence and risk assessments. It must also ensure that a surge capability is available to meet the numbers and types of casualties expected in operations where CBRN contingencies may exist.

4. Commanders at all levels are faced with the possibility that operations may have to be conducted in a CBRN environment, for either short or extended periods of time. MEDADs are responsible for guiding and integrating all medical support capabilities available to the commander to support mission accomplishment. Medical support operations of short duration in a CBRN environment may require the use of field expedients, while those of longer duration may require field expedients and may demand significant augmentation of resources.

5. Based on the operation or mission requirement and Command direction and guidance, the Operational Plan (OPLAN) will have several CBRN medical related documents and associated documents including:

- a. Medical Support Plan / Annex to the OPLAN
- b. CBRN Annex to the OPLAN

- c. (Medical) Force Health Protection Annex or Instruction
- d. Major Medical Incident (MMI) and/or Mass Casualty (MASCAL) (Red) Plan
- e. Outbreak Plan
- f. CBRN Medical (Green) Plan (either as an Annex to the MMI Plan or standalone plan depending on the CBRN threat or risk).

5.2.3. Medical Advisor (MEDAD) in a CBRN Environment

1. The MEDAD⁴⁹ in a CBRN environment will have additional responsibility or a standalone role depending on the CBRN threat, mission analysis, and medical organisation. The MEDAD in a CBRN environment may require additional training to fulfil CBRN medical tasks and requirements. The CBRN-trained MEDAD may provide medical advice to the CBRN community and support the commander directly on CBRN medical support planning and delivery. All medical advice to command must be through the MEDAD and coherent with the medical concept of operations (CONOPS).

2. On some missions, the CBRN-trained MEDAD may be a reachback capability. For example, the team leader of an activated and deployed Med-DOIIT may also act as a CBRN-trained MEDAD, although the advice may be more focused on a specific threat or hazard or may be incident specific.

5.2.4. CBRN Casualty Estimation

1. Based on available medical intelligence and health risk assessments, other intelligence material and operational plans, staffs will generate estimates of casualties that could result from CBRN incidents within the JOA. CBRN casualties will present to the medical system differently than conventional trauma casualties and will result in different medical requirements. The process for estimating CBRN casualties is different than that for estimating conventional combat casualties. AMedP-7.5, *NATO Planning Guide for the Estimation of CBRN Casualties*, provides a methodology for estimating casualties following CBRN incidents.

2. CBRN casualty estimates facilitate the pre-incident medical support planning process. The methodology allows planning staff to estimate the number, type, severity, and timing of casualties uniquely occurring from CBRN incidents. The CBRN casualty estimates are input for COA development/evaluation, resource planning, assessments of CBRN defence requirements, determination of theatre holding policy, and evacuation planning in CBRN environments. The casualty estimation process is a planning start point in the absence of actual NATO operational experiences in CBRN environments. Operational CBRN experiences will induce changes and modifications to casualty estimation and other medical processes as actual CBRN experiences and lessons learned are obtained.

3. The AMedP-7.5 CBRN casualty estimation methodology is complex, and its implementation requires a wide range of expertise and user inputs. The medical staff should have the personnel capable of executing the methodology, the availability and capacity of hardware, and the availability of the software to be used by the medical and operational

⁴⁹ The MEDAD is the senior medical staff officer in a formation headquarters responsible for ensuring that the commander and his staff are properly aware of the health and medical implications of their actions and any related issues connected to an operation.

planning staff that may be tasked with executing the estimate. If there is no on-site capability, the medical staff must identify available reachback capabilities and coordinate access to them.

4. The casualty estimation process described in AMedP-7.5 allows planners to establish the severity of illness or injury that individuals must reach before being defined as casualties. This feature is intended to provide planners with the flexibility to consider the urgency of the mission when determining the point at which individuals will be removed from combat and entered into the medical system.

5. The main user inputs to the CBRN casualty estimation process are 1) a description of the attacked force, including the number and distribution of personnel and its CBRN defence posture (e.g., physical protection, prophylaxis) and 2) the magnitude of the hazard at the locations of the force personnel (typically derived from a separate hazard model based on the characteristics of the postulated CBRN incident, including the type of CBRN substance involved, method of delivery, and quantity of CBRN substance released).

5.2.5. Non-medical Information Required by CBRN Medical

1. Certain information not normally collected in a standardized manner may be needed to support components of CBRN medical defence, CBRN medical-related command decisions, and CBRN medical COA development and execution. This information includes:

- a. Daily unit locations and personnel rosters; and
- b. Available meteorological data collected and retained in a format that allows correlation to personnel location information.

2. Information on unit locations and meteorological data may be crucial to many during-incident and post-incident CBRN medical actions (e.g., PEP and treatment, forensic investigations, and long-term personnel monitoring). Collecting, recording, preserving, and protecting this information should be standardized by the medical team and other staff elements if a system to do so is not already in place.

5.3. FORCE HEALTH PROTECTION (FHP)

1. AJMedP-4, *Allied Joint Medical Force Health Protection Doctrine*, defines FHP as the sum of all medical efforts to promote or conserve physical and mental well-being; reduce or eliminate the incidence and impact of disease, injury, and death; and enhance operational readiness and combat effectiveness of the forces. The primary aim of FHP is to reduce the burden of disease and non-battle injuries (DNBI) through timely and appropriate application of health protection measures. Maximizing operational and individual health readiness requires application of FHP through the entire deployment cycle.

2. FHP is integrated into the larger force protection process described in AJP-3.14, *Allied Joint Doctrine for Force Protection*. The FHP component of the medical planning process provides a framework for CBRN medical force protection on operations with a low CBRN threat and no specific CBRN medical plan (see AJMedP-1 Annex B, *Medical Estimate Template*).

5.3.1. Deployment Health Surveillance

1. Deployment health surveillance is the continuous, systematic collection, analysis, and interpretation of health-related data and the dissemination of findings with respect to deployed NATO forces. Deployment health surveillance is an important component of monitoring and maintaining the health of deployed personnel where there is a threat of the use of CBRN substances and is dependent upon MI2 to provide the baseline risks that need to be surveyed routinely during a mission.

2. AMedP-4.1, *Deployment Health Surveillance*, establishes agreed-upon principles, roles and responsibilities, and reporting standards for deployment health surveillance in NATO operations. It provides guidelines for the surveillance of the health of NATO forces, including:

- a. Identifying the PAR;
- b. Assessing the health of this population through all phases of deployment;
- c. Identifying and assessing potential health hazards;
- d. Providing advice to commanders regarding health control options;
- e. Implementing health control measures;
- f. Communicating hazards and control efforts to affected personnel;
- g. Monitoring controls; and
- h. Managing health surveillance data.

3. Since the first indication of adversary use of chemical, biological, or radiological weapons may be the appearance of unusual numbers or types of casualties, the deployment health surveillance system has a critical role in providing the earliest possible indication of attack. Relevant epidemiological data include recorded symptoms, syndromes, diagnostic test results, known environmental exposures, and demographic information. As noted in AMedP-4.1, the recorded data must be classified according to agreed-upon NATO and National definitions while maintaining an appropriate level of information sharing to enable adequate situational awareness.

4. As a detection and early warning tool, deployment health surveillance provides commanders with analytically based alerts that support mitigating COAs, including the use of MedCMs, operational disease controls, and further epidemiological investigations. Health surveillance assessments that indicate a possible CBRN incident directly fulfil the CBRN Defence Commanders Critical Information Requirements (CCIRs) for reporting and coordination amongst the Joint Force Command (JFC) and staff, including Joint Medical (JMed).

5. NATO is developing or has implemented the following capabilities to enhance Allied deployment health surveillance and improve its ability to serve as an early warning of CBRN incidents:

- a. The NATO Medical Information and Coordination System (MEDICS) aims to enable and improve multinational medical support solutions in NATO operations and provide tracking and regulation of all patients, including military, civilian, NATO, and non-NATO nationalities. The full implementation of the MEDICS will provide requisite staff and technology to monitor public health phenomena across all phases of an operation.
- b. The NATO FHP Branch, subordinate to the NATO Centre of Excellence for Military Medicine (MILMED COE), serves as a central hub for near- to real-time health surveillance by electronically collecting medical information from MTFs within the JOA. The FHP Branch will rapidly investigate and respond to suspected or actual outbreaks and illness clusters and will then coordinate specific risk management countermeasures that could be critical to mitigate a widespread degradation of mission readiness. The FHP Branch aims to build a comprehensive health surveillance capability for NATO congruent with NATO MEDICS.
- c. EpiNATO-2 is a NATO-sponsored deployment health surveillance system to detect and report disease and injury cases, clusters, or outbreaks. It is used in all NATO operations and exercises and is managed by the medical staff of deployed forces at all levels. The FHP Branch is tasked with collecting and evaluating the EpiNATO-2 reports periodically produced by MTFs.

6. In addition to providing early warning of exposure to CBRN substances, deployment health surveillance supports post-incident actions, such as ongoing monitoring of personnel known or suspected of being exposed to CBRN substances, and provides aftercare if needed.

5.3.2. Medical Deployable Outbreak and Incident Investigation Teams (Med-DOITs)

1. Med-DOITs are deployable medical assessment and advisory teams established to conduct investigations of reported disease outbreaks or chemical or radiological incidents. A Med-DOIT may be one of three types of specialist teams with common core functions; the type of team activated will depend on the type of event or outbreak. The three types of specialist teams are RDOIT, Med-CIIT, and Med-RIIT.

2. As part of their main mission, Med-DOITs are intended to be able to:
 - a. Provide reachback advice on activation before deployment;
 - b. Provide operational advice to the medical and operational commander;
 - c. Support clinicians with advice on patient management; and
 - d. Maintain operational effectiveness.

3. The timely deployment of Med-DOIT capabilities supports rapid CBRN substance identification and casualty management, which includes the investigation of the cause of the outbreak or incident including any potential deliberate release. Med-DOITs may therefore work closely with CBRN specialist teams.

4. AMedP-7.4, *Medical Deployable Outbreak & Incident Investigation Teams*, provides the standard for the establishment and deployment of these teams, with supporting guidance specific to each type of specialist team detailed in SRDs.

5.3.3. Physical Protection for Medical Facilities, Personnel, and Patients

1. Physical protection is a component of CBRN defence and is an important contributor to any medical mission. The main physical protective capability on any medical mission is medical PPE. CBRN IPE will usually only be employed on operations with high CBRN threat or specialist missions/taskings. The use of PPE/IPE will be based on a risk-benefit assessment that weighs the protection provided against the potential impact on manual dexterity and physical degradation, including heat stress. In addition to the protection of medical personnel, the patients needing MEDEVAC in a CBRN environment require consideration of their protection, especially if they are unable to wear standard IPE. CBRN CPE may include modified respiratory protection or a full-body ensemble or enclosed stretcher.

2. CBRN COLPRO offers protection to personnel, equipment, and patients while providing a CBRN “hazard-free” environment⁵⁰ for delivering medical care. The COLPRO of MTFs is only likely to be considered when there is a significant CBRN threat. COLPRO allows unencumbered clinical activity, including surgery, to continue but is reliant on effective contamination controls, including entry and exit procedures and supporting IPE areas. The use of COLPRO in MTFs will likely reduce the rate of entry for casualties into an MTF due to the contamination control requirements at the entry point to ensure that the MTF remains uncontaminated and functional. Conversely, medical treatment can be provided more easily when the patient and medical provider are not in IPE.

5.3.4. Mental Health Support

1. A CBRN incident is likely to have a psychological impact, and individuals might experience combat and operational stress. AMedP-8.6, *Forward Mental Healthcare*, provides general principles governing mental health support, and 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 publications emphasize the importance of leadership, command emphasis, and training to protect the mental health of the force.

2. Prevention of psychological casualties and control of combat and operational stress is a command and leader responsibility. Medical support and other personnel at all levels play important supporting roles. A coordinated programme must be planned for the prevention, treatment, and return to duty of combat stress reaction casualties. Active education, training, and prevention programmes assist with controlling stress and preparing unit leaders and medical support personnel to identify and manage stress reactions in units. The use of combat and operational stress control teams is essential in preparing for and responding to CBRN incidents.

3. In addition, CBRN incidents may generate confusion, panic, and hysteria. Commanders should coordinate with public affairs personnel to quickly and effectively

⁵⁰ While the phrase “toxic-free area” is used to describe the internal environment of COLPRO, this level of assurance is unlikely for an MTF due to the presence of a number of medical hazards and the potential for some residual contamination in wounds. It is recommended that “toxic-free area” not be used to describe the inside of a COLPRO MTF.

communicate CBRN risk and response information to personnel to avoid confusion and hysteria.

4. Casualties who exhibit no symptoms but have a heightened level of anxiety (the “worried well”) may also present at MTFs. The worried well may far outnumber symptomatic casualties. In CBRN incidents, this problem can be compounded by the delay between exposure and onset typical of many CBRN hazards and the difficulty in determining who among the PAR has been exposed.

5. In addition, uninfected and unexposed casualties may exhibit physical symptoms that are psychogenic only (the “worried sick”).

6. Medical planning staff should consider potential strategies and associated requirements to reduce the impact of the worried well/worried sick on treatment facilities. Strategies for managing the worried well/worried sick might include triage, medical evaluation, counselling, psychological care, public information, and media relations.

5.4. PRINCIPLES OF CBRN CASUALTY MANAGEMENT

1. CBRN casualty care includes:

- a. The management of any casualty in a CBRN environment; and
- b. The management of CBRN casualties from point of exposure through to rehabilitation. This includes casualty hazard management and CBRN diagnostics.

The general principles of casualty management are adapted for CBRN casualties with additional CBRN medical countermeasures, diagnostics and casualty hazard management. Conventional medical capabilities and MTFs may not have all the necessary personnel, equipment, pharmaceuticals, and materiel needed to manage CBRN casualties. Account of requirements for CBRN casualty management must be made during medical planning, given the particular threat. AMedP-7.1, *Medical Management of CBRN Casualties*, provides guidance to medical personnel on the management of casualties in a CBRN environment. It applies to any medical support operation even if the CBRN threat is low.

2. The principles of CBRN casualty management are shown in Figure 5-1 and include recognition, first aid, emergency medical treatment including decontamination, and advanced medical care.

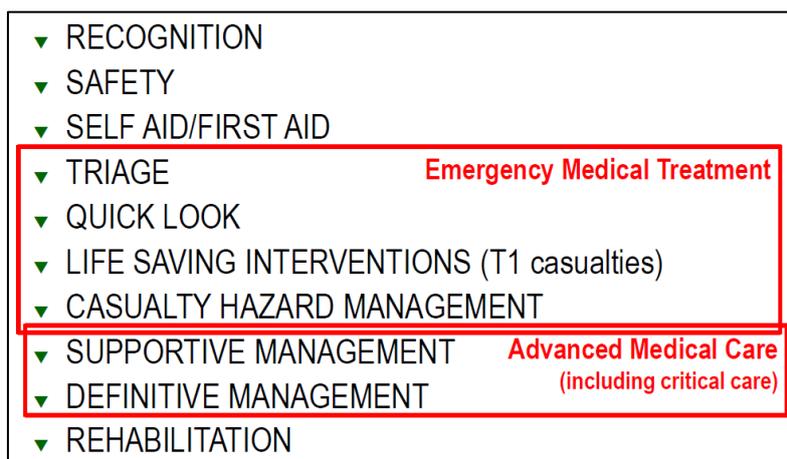


Figure 5-1. Principles of CBRN Casualty Management

5.4.1. Timelines

1. A critical key factor for CBRN medical planning is time. MC 0326, *NATO Principles and Policies of Medical Support*, and AJP-4.10, *Allied Joint Doctrine for Medical Support*, establish the 10-1-2 timeline as a clinical standard for treating injured and wounded personnel. Under this standard:

- a. Immediate life-saving first response measures to control bleeding and maintain airway are applied within *10 minutes* of wounding;
- b. Medical care, including advanced resuscitation and PHEC, is provided within *1 hour* of wounding; and
- c. Damage-control surgery and resuscitative care (hospital level care) are begun as soon as possible but no later than *2 hours* after wounding.

2. When planning for CBRN contingencies, the 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 JOA. In addition, the potential requirement to decontaminate patients and the potential restriction of forward and tactical MEDEVAC may alter the 2-hour timeline for damage control surgery (DCS). Information on CBRN illnesses and injuries can be found in AMedP-7.1.

5.4.2. CBRN Major Medical Incident Management

1. One of the medical challenges of the CBRN environment is that incidents involving CBRN substances may produce a range of casualty numbers and severity. However, the criteria and mechanisms for declaring a major medical incident (bottom-up declaration) and MASCAL (top-down declaration) remain the same.⁵¹ A major medical incident and MASCAL plan is required on most operations. An increased CBRN threat may require a specific CBRN medical incident or contingency plan or, as a minimum, an annex in conventional plans. A biological incident, whether deliberate or natural, can be mitigated early

⁵¹ Refer to AMedP-1.10, Medical Aspects in the Management of a Major Incident/Mass Casualty Situation.

with a comprehensive outbreak plan and with a CONOPS to support operational and strategic surge if the outbreak becomes an outbreak of operational or strategic significance, including a bio-attack or a public health emergency of international concern. Both scenarios may require a comprehensive bio-response with surge capacity and the deployment of specialist capabilities (e.g., a Med-DOIT) (see Section 5.3.2).

2. Annex C of this publication provides a summary of the principles for CBRN medical incident management including triage. This is aligned to AMedP-1.10, *Medical Aspects in the Management of a Major Incident/Mass Casualty Situation*.

3. Further details are found in Part 2 of AMedP-7.1, *The Medical Management of CBRN Casualties*.

5.5. CBRN FIRST AID

1. AMedP-7.2, *CBRN First Aid Handbook*, provides a standardized approach to the early management of any casualty in a CBRN threat-environment by non-medical personnel from point of exposure (or recognition) until handover to medical personnel at a casualty collection or exchange point. The focus for CBRN first aid is the management of a trauma or chemical casualty due to immediate or short-onset effects. The recognition and reporting of biological and radiological casualties should be included in enhanced first aid training. The publication is applicable not only to operations in a CBRN environment but also in response to terrorist/insurgency events as part of the wider DAT programme in a civilian or military environment. It also provides an outline of the training requirement and first aid materiel for use in a CBRN environment including CPE for initial response and unite level CASEVAC.

2. CBRN first aid is expected to be delivered in the first 10 minutes and continued for up to 60 minutes until handover to medical personnel using a standardised format. The priorities for CBRN first aid management are <C>AaBCDE,⁵² as described in AMedP-7.1.

5.6. PRE-HOSPITAL EMERGENCY CARE (PHEC)

1. PHEC is the delivery of emergency and resuscitative medical care from point of wounding or exposure through to admission into secondary health care. In a CBRN environment, PHEC is vital for the delivery of CBRN emergency medical treatment as described in Section 4.7 of AMedP-7.1. The level of care will depend on the conventional baseline clinical competencies of medical personnel enhanced by CBRN medical training as outlined in AMedP-7.3, *Training of Medical Personnel for Chemical, Biological, Radiological, and Nuclear (CBRN) Defence*.

2. Casualty decontamination, described in the next section, is complimentary to the delivery of the medical treatment and will enable timely MEDEVAC and admission into an appropriate MTF. PHEC is considered a standard capability for the emergency care of CBRN casualties and is closely linked with casualty decontamination and MEDEVAC. Enabling capabilities include access to CBRN antidotes, clinical guidelines, and training. In the

⁵² <C> = management of catastrophic haemorrhage, A = airway management; a = antidote; B = breathing support and oxygen delivery, C = circulatory support, D = decontamination (and disability), E = evacuation to the next level of care.

absence of pre-defined casualty decontamination teams, PHEC may be required to perform or complete casualty decontamination before MEDEVAC.

5.7. CASUALTY DECONTAMINATION

1. Casualty decontamination is an element of casualty hazard management that includes the containment, decontamination, and/or isolation of CBRN-contaminated or CBRN-contagious casualties. The aim of casualty decontamination is to:

- a. Reduce further exposure to the casualty;
- b. Reduce the residual contamination burden to a reasonably practicable level to enable the provision of life-saving intervention; and
- c. Prevent the secondary contamination of personnel, MEDEVAC platforms, and MTFs.

2. The requirement and level of casualty decontamination will depend on the toxicity and physical properties of the CBRN substance. The method of decontamination will depend on the status and severity of the patient (e.g., walking, stretcher, or life-threatening condition present) and on the available decontamination materiel, type of CBRN substance, infrastructure, and personnel. Any casualty decontamination capability is defined by the number of stretcher /litter and walking decontamination lanes (e.g., a basic casualty decontamination capability is a 1:1 (one stretcher and one walking lane)). The capacity can be defined by the flow rate and/or total numbers.

3. In most nations, casualty (patient) decontamination is a medical responsibility but may require non-medical assets and facilities to deliver this capability. Casualty hazard management and decontamination is described in detail in AMedP-7.1 Chapter 6, *Casualty Hazard Management*.

5.8. PRIMARY HEALTH CARE (PHC)

1. The provision of integrated, accessible health care services by clinical personnel trained for comprehensive first contact and the continuing care of individuals experiencing signs and symptoms of ill health or having health concerns. PHC provides health promotion, disease prevention, patient education and counselling, and the diagnosis and treatment of acute and chronic illness. PHC may also include a limited patient holding and medical supply capability. PHC indirectly contributes to FHP and CBRN medical support through:

- a. The recording and reporting of cases including EpiNATO reports/health surveillance;
- b. The provision of MedCMs and vaccinations, as required;
- c. The potential provision of medical personnel to high-risk missions, including CBRN; and
- d. CBRN medical education of non-medical units within the Role 1 PAR.

5.9. SECONDARY HEALTH CARE (SHC)

1. The provision of specialized clinical care requiring training and equipment levels beyond that which could normally be provided at the level of primary care. Deployed SHC capabilities continue the continuum of care with increasing medical capabilities, including critical care, and may enable injured or ill personnel to return to duty. AMedP-7.1 provides details on CBRN advanced medical care. Key functions of SHC include:

- a. Damage Control Resuscitation and Surgery (DCR/S);
- b. Management of non-trauma (surgical) patients, including those exposed to CBRN substances and endemic disease;
- c. Diagnostics, including diagnostic imaging and laboratory services;
- d. Management of contagious patients requiring isolation; and
- e. Patient stabilization, including critical care and preparation for strategic MEDEVAC.

2. The levels of SHC will depend on the mission analysis, casualty rate estimation, theatre holding policy, and medical plan. The presence of a significant CBRN threat may also affect the laydown of the medical facilities, including Role 2 and Role 3 MTFs.

- a. Role 2 Forward (R2F) – Highly mobile and deployable SHC for remote, austere, or unsecure tactical environment that enables forward projected resuscitative and surgical treatment to control bleeding, maintain circulation, restore perfusion, and preserve life, limb, and function.
- b. Role 2 Basic (R2B) – SHC capabilities to enable life-, limb-, and function-preserving resuscitative and surgical interventions. R2B may operate highly mobile afloat or land-based units and comprise triage, essential diagnostics, damage control resuscitation and DCS, short-term post-operative critical care, limited patient holding, and medical supply. R2B capabilities can also be deployed to augment or to enhance other medical capabilities in theatre, which may include CBRN casualty care and the provision of emergency medical treatment and interim critical care but limited holding capacity.
- c. Role 2 Enhanced (R2E) – Enhanced SHC capabilities may include enhanced diagnostics and specialist hospital care essential to stabilise and prepare patients for strategic evacuation. In addition to the capabilities of an R2B, this capability includes, but is not limited to, surgery, x-ray, enhanced diagnostics, blood bank, pharmacy, and sterilization. CBRN medical support is a complimentary capability. All R2E should have an appropriate suite of antidotes and antimicrobials for CBRN and other toxic emergencies.
- d. Role 3 – The Role 3 SHC capability includes R2E and computed tomography (CT) and oxygen production. Role 3 capabilities may reduce the need for a repatriation of patients and enable a higher standard of care before strategic evacuation. Both R2E and Role 3, with increased holding capacity, may be required for the management of an outbreak of a contagious infectious disease before clearance is given to either return to duty or strategic MEDEVAC.

5.10. CBRN CLINICAL DIAGNOSTICS

1. Laboratory capabilities, as part of the DIM domain, are fundamental to support the rapid and accurate diagnosis of exposure to a CBRN substance in medical samples (and potentially environmental samples) and to the diagnosis of biological disease. For a CBRN incident, any clinical sample could also be used for forensics, and a chain of custody should be supported with appropriate documentation in accordance with national legal frameworks.
2. The role of clinical diagnostics in the context of CBRN is:
 - a. Initial recognition of a CBRN casualty.
 - b. Confirm a suspected diagnosis.
 - c. Triage patients based on clinical effects (e.g. biodosimetry).
 - d. Monitor treatment efficacy.
 - e. Support CBRN forensics (sample handling or assessment).
3. Clinical diagnostics may be provided as:
 - a. Point of care testing as far forward as practicable.
 - b. Clinical laboratory.
 - c. Access to reach back and reference laboratories.

5.10.1. Medical (Clinical) Laboratory Support

1. Clinical laboratory capabilities of varying sophistication are available throughout the medical support system from simple POCT at Role1 through to specialist field laboratory capabilities at R2E facilities and additional responsive capabilities, (e.g., MED-DOIIT). Fixed laboratory capabilities at higher levels can support confirmatory evaluations and more extensive assessment of medical samples and are usually considered at Role 3.
2. Laboratory facilities collect and analyse medical samples in support of diagnosis and treatment of illness in casualties at these facilities or at Role 1 with suitable sample handling. These facilities may not have the resources or governance to assess samples of other types or in support of other missions. The contingent use of medical laboratory capabilities in support of CBRN substance detection and identification should be coordinated during the pre-deployment phase of operations and must be within the medical legal framework of the participating nations.
3. National reference laboratories capable of advanced and forensic analysis may serve as a reachback and fusion capability for NATO investigation and sample teams, allowing unambiguous identification of CBRN hazards. Planning for medical support in a CBRN environment should include advance coordination of deployed sampling capabilities with National or NATO reference laboratories capable of providing advanced and forensic-level analysis.

5.10.2. Handling and Transportation of Samples

1. The handling and transportation of diagnostic samples is a standard capability of any clinical laboratory. Samples outside the scope of the clinical laboratory's capability will be required to be transported to another deployed laboratory, to a reachback laboratory in a contributing nation, or to a reference laboratory, especially if suspicious.
2. Any diagnostic clinical sample can be shipped within an international regulatory framework as described in AMedP-7.1 Annex 29B, usually as Category B (UN3373) rather than a confirmed CBRN substance (International Air Transport Association (IATA)).

5.10.3. Non-Medical Laboratory Support

1. STANAG 4632, *Deployable NBC Analytical Laboratory*, establishes capability standards for the NATO Deployable NBC Analytical Laboratory (NBC-AL) and provides guidance on its essential functions, capabilities, and equipment. The NBC-AL is designed to provide environmental sampling and identification of CBRN substance within a JOA.
2. Methodologies for environmental sampling and identification of CBR agents are addressed by AEP-66, *NATO Handbook for the Sampling and Identification of Biological, Chemical, and Radiological Warfare Agents (SIBCRA)*.

5.11. MEDICAL EVACUATION (MEDEVAC) IN A CBRN ENVIRONMENT

1. AJMedP-2, *Allied Joint Doctrine for Medical Evacuation*, describes a medical evacuation system to enable nations to maintain their national evacuation procedures as far as possible and to plan for reliable, cost-effective MEDEVAC by facilitating bi- or multi-lateral agreements and promoting common planning, programming and training. AMedP-7.1 Chapter 15 provides more clinically relevant transport information including the concept of CBR CPE.
2. All the key considerations discussed previously in planning for medical support to operations in CBRN environments are significant from the perspective of MEDEVAC. The number of casualties who must be managed may far exceed conventional planning estimates, and they may present within a narrow time window. Moreover, the use of MEDEVAC assets may be significantly slowed in a CBRN environment, which may reduce the overall capacity of the system. Casualties may be contaminated or contagious, which may require decontamination or specialized equipment and procedures for contamination control. MEDEVAC operations may need to be conducted in contaminated areas, which may generate requirements for individual protection and COLPRO and decontamination for personnel, equipment, and vehicles.

5.11.1. Medical Evacuation (MEDEVAC) Policy and Operations in a CBRN Environment

1. Movement of casualties is not just transportation to a suitable MTF. It is part of a continuum of casualty treatment and care and is therefore, a medical responsibility. The Patient Evacuation Coordination Cell (PECC) provides theatre-level MEDEVAC and regulating functions for all patients in conjunction with force components and theatre logistics and movement control agencies. The PECC must ensure that each casualty is brought to an MTF that is capable of managing his/her illness or injury. At no point in the chain of evacuation must the level of care be reduced below that received at the previous MTF.

2. If the CBRN incident causes a MASCAL situation, lateral and skip movement of casualties may be required to maintain the required level of care and maximize the efficiency of MTF operations in the JOA. The anticipated progression of CBRN injuries and illnesses may dictate non-linear movement of casualties through the evacuation chain, where one or more emergency response capabilities may be bypassed due to patients' needs and the availability, capacity, and workloads of MTFs.
3. Successful patient treatment and transport coordination require a robust MedCIS, specifically in medical information management, which requires up-to-date and accurate information about individual casualties and the availability of treatment and evacuation assets. AJMedP-5, *Allied Joint Doctrine for Medical Communications and Information Systems (MedCIS)*, provides guidance on information management. Medical information management concerning MEDEVAC includes patient tracking and patient flow management (also known as patient regulating). The PECC is responsible for patient tracking and regulation. Patient tracking is the precise and continuous monitoring of the location and the intended destination of the patient in the medical treatment and evacuation chain throughout the theatre medical system and beyond until national repatriation occurs. Patient regulating is the active process of directing, controlling, and coordinating the transfer of patients within and outside a JOA from the point of wounding or onset of disease through the continuum of care to facilitate the most effective use of medical treatment and evacuation resources and to ensure that the casualty receives appropriate care in a timely manner. Patient tracking and patient regulating are especially relevant in a multinational environment, where casualties of different nations are required to be returned to the national medical chains at the most appropriate point in their clinical management.
4. Patient regulating in a CBRN environment may require changes to ongoing MEDEVAC operations. The presence of contaminated areas, in particular, may affect the movement of casualties. Every effort should be made to limit the number of assets and people that become contaminated due to their movement. Some MEDEVAC assets may be dedicated for use within designated contaminated areas, with the remainder dedicated to transporting casualties between MTFs in clean areas.
5. The decontamination of casualties before evacuation will help limit the spread of contaminants throughout the MEDEVAC chain. In cases where decontamination of casualties cannot be done, transport should be limited to movement that is essential to provide casualty care. All units should be aware of residual contamination and plan for its mitigation including through the use of well-ventilated MEDEVAC platforms, IPE, and sacrificial layers.
6. Close coordination between all staff elements, particularly medical, CBRN defence, and logistical, is needed for effective planning. Planning for MEDEVAC in a CBRN environment requires information from CBRN defence control centres for the anticipated type, duration, size, and location of hazard areas. Commanders must weigh the risk and consequences of CBRN exposure in making decisions regarding the conduct of MEDEVAC operations in contaminated areas. AMedP-7.5, *NATO Planning Guide for the Estimation of CBRN Casualties*, can be used to assess the impact of exposure to specific CBRN substance on the probability and severity of injury over time.
7. Other components of the medical information management process may require modification to maintain the balance between MEDEVAC assets and the treatment capability available at each Role. Deployed MTFs may need to be resituated to facilitate contamination avoidance and provide more efficient transport routes from designated CBRN contamination

zones. Reallocation and movement of medical personnel and equipment among MTFs may further improve the efficiency of medical operations challenged by large numbers of casualties and large areas of contamination.

8. The theatre patient holding policy is a command decision that indicates the maximum length of time in days that a casualty will be allowed to remain in theatre for treatment, recovery, and return to duty. The theatre patient holding policy is primarily influenced by the availability of assets, constraints on movement, particular operational imperatives, distances, weather, and topography. The policy can also be affected by factors such as welfare considerations, public expectations, national policy, and the cost of strategic evacuation. The theatre patient holding policy is the key to balancing the treatment capability available at each Role against the MEDEVAC assets with regard to capabilities and capacities required to provide casualties with the best possible medical care.

9. In the aftermath of a CBRN incident, the theatre patient holding policy may need to be extended in response to the number and type of resulting casualties. For planning purposes, this added time may be from 48 hours to 96 hours but is location and operation specific. Adjustments to the theatre patient holding policy also allow for the planning of additional medical logistics.

10. In some cases, large numbers of casualties may have injuries or illnesses of moderate severity and would be expected to return to duty soon after the established maximum length of stay. In such cases, extending the duration of the theatre patient holding policy or making targeted exceptions to policy to avoid the need to evacuate the patients would make sense. In others, economies of scale in the provision of treatment may best be achieved if casualties requiring highly specialized care are treated at a common location. These locations may be within the JOA.

11. Contagious disease patients may be subject to RoM, including International Health Regulations (IHR) restrictions, and remain in theatre for an extended period. Some highly infectious and unwell patients may be better managed in the JOA since the transport may cause harm and the policy of “treat-in-place” is adopted.

5.12. MEDICAL LOGISTICS AND SUSTAINMENT IN A CBRN ENVIRONMENT

1. The medical logistics system needs to ensure the sustainability of medical support under all operational conditions. All the key challenges discussed previously in planning for medical support in a CBRN environment contribute to the difficulties in sustaining medical operations. Planning for and organizing medical support under plausible CBRN environments can help ameliorate these difficulties and promote sustainment of medical operations. Planning for the sustainment of medical operations in a CBRN environment must consider the location and operation of MTFs, the logistical support of those MTFs, and the effective use of preventive medicine capabilities. AJP-4, *Allied Joint Doctrine for Logistics*, provides joint commanders and their staff with a common framework to command, coordinate and synchronize all Alliance joint logistic and medical operations. It provides them with the principles and general guidance to plan and conduct joint logistic and medical support to campaigns and operations.

5.12.1. Facilities Management

1. MTF commanders will prepare measures to sustain critical operations and recover essential operations following a CBRN incident. Commanders must identify sites where

mitigation might nullify or degrade the impact of a CBRN incident and should identify the missions and facilities that are most critical to recover first if an incident occurs. Measures to sustain critical operations and recover essential operations should reduce the potential degradation caused by a CBRN incident. Critical missions must be sustained, and recovery of essential military operations should be swift.

2. CBRN defence SOPs must be prepared during pre-deployment. Once deployed, the joint force must exercise, train, validate, and adjust, if necessary, these SOPs to meet the conditions encountered in theatre. Evaluations must also be made to ensure that general operating procedures are viable in a CBRN environment. Procedures must be established and practiced to ensure that casualties are decontaminated before entering MTFs where possible, to augment existing MTFs in response to increased and uneven medical workload across the JOA, and to assist medical administration and management during an incident.

3. The proper planning, location, and management of facility operations will facilitate the continuity of medical support that will be required for conventional and CBRN casualties. Whenever possible, an MTF should be located such that it is maximally protected from a CBRN incident. However, no matter where the MTF is located, treatment providers must still have physical protection available and should be prepared to implement contamination avoidance measures as needed.

4. Medical support operations at MTFs should avoid diversion of medical specialists to non-medical tasks. Whenever possible, in line with JFC priorities and assets, augmentation should be made available from non-medical sources of support to perform tasks such as decontamination, physical security, and maintenance of contamination-free areas and collective protective shelters.

5. Depending on the type of CBRN incident and the intensity of ongoing conventional combat, medical support operations in a CBRN environment may be faced with the additional challenge of degraded infrastructure. Roads may be impassable, and clean water and power may be unavailable outside of the MTF. Planners must consider the potential for the loss of infrastructure and logistical support and prepare for the sustainment of medical support and ensure continuity of care during a CBRN incident.

5.12.2. CBRN Medical Logistics

1. The commander is responsible for providing MTFs with adequate logistic support in theatre, including damage control, relocation, and resupply, in line with JFC priorities and assets. The proper planning and management of medical supplies, waste, and contamination will facilitate the continuity of the medical support that will be required for conventional and CBRN casualties. This planning should be based on the assessed CBRN risk and plausible CBRN environments to ensure that medical support is tailored to meet mission requirements.

2. In compliance with the given operational priorities and established international and national guidelines, procedures must be established and practiced to:

- a. Ensure the timely and appropriate distribution and administration of prophylactic or preventive medical PT measures to counter the effects of possible CBRN hazards;
- b. Ensure that casualties are decontaminated before entering MTFs where possible;

- c. Collect medical specimens, as required, for laboratory analysis and identification; and
 - d. Distribute medical supplies.
3. The logistics staff plays an important part in ensuring that medical facilities are able to carry out their primary tasks. Their responsibility is to provide many of the critical needs of a medical facility, which may include:
- a. Power, fuel, rations, water, laundry, maintenance of vehicles, medical non-expendable items (e.g., ventilators, stretchers), medical supplies, and general supply items lost due to contamination, and accommodation;
 - b. Vehicles for the movement of MTFs, if required;
 - c. HN support or local contracting for the supply of services to medical facilities; and
 - d. Civil labour to support the critical needs of medical facilities.
4. MTFs and logistic units must be prepared to manage medical support items that are provided by well-meaning individuals and organisations that may not be appropriate for CM.

5.12.3. Management of Human Remains

1. The JFC has the responsibility to search for, recover, tentatively identify, and evacuate human remains from the area of operations. This is a logistical—not a medical—mission. To complete this task, the JFC may establish a mortuary affairs contaminated remains mitigation site (MACRMS). The MACRMS is an operational element under the oversight of the mortuary affairs office and is manned by specialized mortuary affairs personnel.
2. Human remains that have been properly decontaminated and rendered safe can be transported in accordance with national policy and procedures. However, contaminated human remains should remain in theatre and not be repatriated until the methods for returning contaminated human remains safely have been established by the JFC. AMedP-7.1 Chapter 16 and Annex 16A provide some guidance for operational CBRN fatality management including hazard management and support to conventional and CBRN forensics.

5.13. CBRN EMERGENCY MEDICAL SYSTEM (EMS) CONCEPT

1. The concept of a CBRN EMS is an optimised and coherent operational patient care pathway for a CBRN environment and CBRN casualties. The trigger for this system would be an increased and sustained CBRN threat and formal transition to a CBRN defensive operation. The scale of the system will depend on the mission and the PAR. This may be a support to the JCBRND-TF or the whole JOA including MEDEVAC to Role 4 and CIMIC. The system is based on the conventional system but is evaluated within the context of the CBRN environment and requires multinational planning and coordination.
2. Evaluation of a CBRN EMS will require a large-scale exercise and ensure adequate patient handover between the non-medical and medical responders, between MTF and MEDEVAC personnel and between the civ-mil health sectors including HN and Role 4. Any

exercise is vital to assess potential choke points and potential mitigation especially during a mass casualty incident.

3. Annex D lists the functions and elements of the CBRN EMS concept, and more detail is provided in SRD AJMedP-7-1.

5.14. NATO BIO-RESPONSIVENESS

1. Military personnel can be exposed to a contagious disease during military operations from a naturally occurring disease or from the deliberate or accidental use of contagious biological warfare agents. Regardless of origin, a contagious disease outbreak must be managed and controlled to maintain operational effectiveness and limit casualties. NATO Smart Defence Project 1.1045: Bio-responsiveness (SD 1.1045) seeks to increase NATO's ability to respond to biological outbreaks by pooling existing National and Alliance capabilities in five broad categories: outbreak investigation, diagnostics, evacuation, isolation, and patient management. The SD 1.1045 project team has developed a CONOPS for bio-response to provide a commander and the MEDAD with guidance to plan for and manage an infectious disease outbreak of military significance in the JOA.⁵³

2. Contagious disease control is accomplished by mitigating individual susceptibility through the use of MedCMs and by preventing the exposure of susceptible personnel to the disease. Medical support staff will provide recommendations for commanders on the implementation and sustainment of physical control measures designed to prevent exposure. These measures collectively are termed RoM and should be consistent with the limitations imposed by the HN law, treaty obligations, or agreements/arrangements between the parties.

3. RoM is a hazard management intervention for controlling the spread of a contagious disease by restricting contact between healthy individuals and those who have, or are suspected of having, contracted the disease. The two types of medical RoM include isolation and quarantine. Isolation is the separation of ill or contaminated persons to prevent the spread of infection or contamination, while 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 the individual is free of infection.

4. Within the operational theatre, personnel who are under RoM do not necessarily need to be removed from the operation. Wherever possible, the decision to remove should be implemented in such a way as to allow them to continue their mission. Any decision-making process resulting in the implementation of RoM should also include the criteria for ceasing RoM. These exit criteria will be based on the typical incubation period following exposure for the disease caused by the agent.

5. When outbreaks of contagious disease occur among deployed military personnel, whether natural or induced, there is a risk of parallel outbreaks occurring among civilians or other military forces operating within the JOA and spreading outside the boundaries of the HN. In such circumstances, the commander, with the assistance of the MEDAD, should coordinate notification of infectious disease information with appropriate national organisations and the WHO, in accordance with IHR. In such circumstances, the commander may also be asked to support national and international efforts to contain the outbreak and protect public health.

⁵³ Report of the Project Team for Smart Defence Project 1.1045 Vol 2: Concept of Operations (CONOPS) for Bio-Response (January 2020).

Further information and command guidance on the implementation and easing of RoM can be found in AMedP-7.6, *Commander's Guide on Medical Support to Chemical, Biological, Radiological, and Nuclear (CBRN) Defensive Operations*.

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CHAPTER 6 - CIVILIAN-MILITARY CBRN MEDICAL COLLECTIVE DEFENCE AND HEALTH RESILIENCE

“Civilian and military cooperation for the preparedness and response to a CBRN mass casualty incident will strengthen collective defence and health resilience across national and Alliance health sectors in accordance with Article 3 of the NATO Treaty and consistent with the Oslo Guidelines for the use of military and civil defence assets in disaster relief.”

[Non-binding Guidelines for Civil-Military Medical Cooperation in Response to Chemical, Biological, Radiological and Nuclear (CBRN) Mass Casualty Incidents]

6.1. INTRODUCTION

1. Civil-Military Co-operation (CIMIC) is defined as the co-ordination and co-operation between the military and civil actors, including national population and local authorities, as well as international, national and non-governmental organizations and agencies. The type of interaction, liaison and support will vary depending on the initial requirement (civil support to military and military support to civil actors) and the type and context of any operation or incident response. This will also determine the population at risk and any potentially eligibility for medical support and treatment of casualties.

2. Key CIMIC considerations for strategic and operational CBRN medical support planning and preparedness are:

- a. Host Nation and NATO healthcare interactions on CBRN defensive operations.
- b. The civilian health support to the reception and rehabilitation of military CBRN casualties on deployed operations.
- c. Military assistance to civilian authorities in response to a CBRN incident.
- d. The training of military reservists in CBRN medical support and distributed training through a common civil-military CBRN medical competency framework.
- e. The establishment and access to a CBRN medical stockpile of MedCM, PPE and equipment.
- f. CIMIC for CBRN mass casualties.
- g. NATO Bio-Responsiveness.

3. Commanders and their staffs must plan and continually reinforce a good working relationship with non-military actors to ensure that communication and information systems are as interoperable as possible. Effective information sharing with non-military actors is mainly based on the willingness and ability to exchange information. AJP-3.19, *Allied Joint Doctrine for Civil-Military Cooperation*, summarizes the CIMIC principles and general guidance necessary to plan and conduct CIMIC in joint operations. AJMedP-6, *Allied Joint Civil-Military*

Medical Interface Doctrine, provides the framework for medical support at the civil-military interface.

6.2. FRAMEWORK FOR CIVIL-MILITARY MEDICAL MANAGEMENT IN CBRN INCIDENTS

1. The framework for cooperation is provided in the Non-binding Guidelines for Civil-Military Medical Cooperation in Response to CBRN MASCAL Incidents. This is adapted from the conventional MASCAL guidance described in AMedP-1.10, *Medical Aspects in the Management of a Major Incident/Mass Casualty Situation*. The medical response to a CBRN incident at the tactical level is similar to a response to an incident involving conventional means, with the exception of additional hazard and safety considerations. CBRN medical incident management is a structured approach illustrated in Part 2 of AMedP-7.1, *Medical Management of CBRN Casualties*. CBRN medical incident management includes safety, cordons, control and communications, assessment, triage, treatment, transport, exploitation, and recovery. Each healthcare sector must be aware of the other's procedures and must establish a mutually agreed incident command process for combined response to a CBRN incident.

2. The success of medical CIMIC in a CBRN environment requires a close relationship between the medical and CIMIC (J9) staff to ensure effective coordination of civilian and military healthcare activities and medical capabilities between military and non-military actors (e.g., NGOs, IOs, and governmental health agencies). Based on the commander's intent, the medical, CIMIC, and CBRN defence staff should engage with non-military actors to encourage collaborative analysis, integrated planning, and interaction in the JOA to ensure that the political and military plans are harmonized.

3. CBRN specific considerations include the HN's experience in management of CBRN casualties which may be greater or less than the Allied medical system. Key areas include:

- a. Handover of patients between NATO and HN facilities.
- b. Interoperability including pharmaceuticals.
- c. Availability of CBRN medical stockpiles.
- d. Maintaining the flow of patients to an appropriate HN medical facilities.
- e. Mutual aid in the event of CBRN MASCAL or public health emergency.

6.3. CIVILIAN HEALTH CARE SUPPORT TO DEPLOYED OPERATIONS

1. Any significant NATO military mission will require home nation support. For most NATO nations this will include the civil health sector as a Role 4 and rehabilitation national capability. The emphasis however is usually on trauma patients. The planning of any medical support includes the theatre holding policy and strategic MEDEVAC and Role 4 support. CBRN medical planning is based on the same planning framework with some extra considerations.

2. Role 4 capabilities for CBRN patient may include:
 - a. Strategic MEDEVAC including highly transmissible infectious disease patients and surge capacity.
 - b. Management of highly transmissible infectious disease in specialist facilities.
 - c. Critical care surge capacity in the event of long-term complications.
 - d. Access to specialist burns care (e.g. chemical and radiation burns).
 - e. Access to long term psychological support.
 - f. Long term health surveillance including follow up after leaving the military (e.g. veterans' affairs).
 - g. Coherent strategic communications.

6.4. MILITARY ASSISTANCE TO CIVILIAN AUTHORITIES

1. The request from national authorities for national military assistance following a CBRN incident is outside the scope of this publication. However, many of the concepts and capabilities described in the AJMedP-7 series will be applicable to civil incident response and recovery and provides both resilience and potential cost-effectiveness to the development of niche capabilities.

6.5. THE TRAINING OF MILITARY RESERVISTS IN CBRN MEDICAL SUPPORT

1. The development of a common CBRN medical competency enables the training of military medical personnel and first responders (AMedP-7.3 and 7.2 respectively). The training of military medical reservists ensures that experience and best practice developed in the military healthcare systems are disseminated into civilian healthcare systems with minimal adaptation.

6.6. CBRN MEDICAL STOCKPILES

1. The establishment of strategic (national) stockpiles enables both the military and civilian CBRN medical support capability. The stockpile inventory may vary but is likely to include:
- a. CBRN MedCM.
 - b. Medical PPE.
 - c. Medical equipment.

2. Within the CIMIC context, access to strategic medical stockpiles enables nations to:
 - a. Deploy on civilian or military missions with CBRN medical logistic requirements.
 - b. Improve national resilience for a CBRN incident or public health emergency.
 - c. Support other nations in the event of a CBRN incident or public health emergency (mutual aid) either during the response phase or providing logistical resupply.
3. Further details on operational and strategic CBRN medical stockpiles will be found in the supporting SRD (AJMedP-7-2) to this publication.

6.7. CBRN MASS CASUALTIES PLANNING ASSUMPTIONS

1. Any mass casualty incident may require civil-military cooperation. Initial work established a benchmark for conventional catastrophic mass casualty events. The benchmark number of casualties was 1000 with a breakdown of 20% fatalities, 30% seriously injured and 50% treated and discharged to go home; summarised as 20:30:50. This ratio may vary depending of the type of attack and mechanism of injury (blast vs penetrating vs blunt trauma). More recent terrorist attacks have seen a ratio of 25:50:25.⁵⁴
2. For CBRN incidents the scenarios are more complex and varied, both in number of casualties and ratios with agent-specific morbidity and prolonged end-of-life care. This is a significant challenge for planning and preparation for a high impact CBRN event. CBRN fatalities will also be a challenge for healthcare and mortuary facilities both in terms of managing any post-mortem hazards while also supporting a criminal investigation which may require a post-mortem examination.
3. In order to enable planning and preparedness, the following planning assumptions are made:
 - a. The number of casualties may be an order of magnitude above or below the benchmark for conventional mass casualties and the associated severity of cases may be reversed (smaller numbers of critical patients and larger numbers of incapacitated patients).
 - b. The lower casualty estimation is 100 casualties but assuming a significant mortality and morbidity rate. This may therefore result in all patients requiring a high level of critical care including ventilation (respiratory) support and other organ-replacement therapy such as renal dialysis i.e. 100 critical care patients with no fatalities.
 - c. The upper indicative casualty estimation is 10,000 which may have a broad casualty ratio from 50:0:50 (high lethality and short onset but patients who

⁵⁴ The benchmark of 1,000 casualties is based on statistics on casualties from terrorist attacks over the past 60 years, with 1,000 casualties considered a realistic challenge. See *Guidance to National Authorities for Planning for Incidents Involving Catastrophic Mass Casualties*, CEPC, NATO.

survive do not require critical care) to 0:0:100 (debilitating but non-fatal biological outbreak).

- d. Chemical incidents are likely to have a rapid onset and short duration (hours to days) potentially with a trigger event, while biological incidents are more likely to be relatively slowly emerging and long duration (days to months). The nature of a radiation incident is more likely to follow that of a biological incident but may have a trigger event such as the detection of a radiation source or deliberate notification; this may alert medical staff to look for symptoms and signs that may be normally missed.
- e. Following a CBRN incident, it is likely that individuals may seek healthcare advice and reassurance due to a perceived/suspected exposure with or without any specific symptoms. These low risk persons sometimes referred to as the 'worried well' will have justifiable reasons for accessing healthcare systems. However, the effect, if not managed correctly, may have a disproportionate effect on the wider delivery of healthcare to CBRN casualties and continuity of healthcare delivery. The current assumption based on previous incidents is that the ratio of casualties to low risk persons following a chemical incident is 1:4 while following a radiological or biological incident this may rise to 1:20.

6.8. NATO BIO-RESPONSIVENESS

1. Chapter 3 describes the strategic importance for a framework for a national and international bio-response. The relationship between civil and military healthcare organisations is vital but may be varied depending on the scenario and context of the required response and lead health organisation.

2. Potential scenarios include:

- a. Military assistance to a civil bio-response in a non-permissive environment.
- b. Civil request to the military for support to a bio-response mission.
- c. Civil support to a military mission with biological casualties.
- d. An Article 5 response to a biological attack on a NATO nation requiring political, military and civil response.

3. IOs and NGOs may also be involved, and coherent strategic communications is fundamental to an effective response. National and international stockpiling may also be required.

6.9. CBRN MEDICAL SUPPORT PLANNING AND RESPONSE CYCLE

1. Civilian and military medical planners are required to plan for CBRN incidents at the tactical, operational, and strategic levels.⁵⁵ Both healthcare sectors should have an awareness of each other's capabilities, differences (medically, legally, and culturally), and planning assumptions and should incorporate opportunities for mutual aid. Contingency and emergency plans should be supported by agreements such as intergovernmental agreements or a memorandum of understanding (MOU). Both sectors should also be aware of other non-governmental local and international agency capabilities.

2. The CBRN Medical Support Planning and Response Cycle (Figure 6-1) highlights four phases and two triggers to support civil-military cooperation. The cycle is intended to maximise the cooperation before a CBRN mass casualty incident occurs. Historically and doctrinally, military assistance is seen as a last resort. This means that often the incident has occurred, and the initial civilian response phase has been found to be sub-optimal or overwhelmed. In the case of military healthcare assistance this may cause a delay in patient care or missed an opportunity to enable an optimal civil healthcare response.

3. The four phases are:

- a. Planning.
- b. Preparedness (and Protection as appropriate).
- c. Incident response following a triggering event or request for assistance; and
- d. Incident recovery (including the sharing of any lessons and best practice).

4. Each phase's supporting activity can be aligned to capabilities, tasks and enabling activities described in this publication and sub-ordinate publications in the AMedP-7 series.

⁵⁵ NATO *Non-binding Guidelines for Civil-Military Medical Cooperation in Response to Chemical, Biological, Radiological and Nuclear (CBRN) Mass Casualty Incidents*, pp. 1–22. Document in preparation.

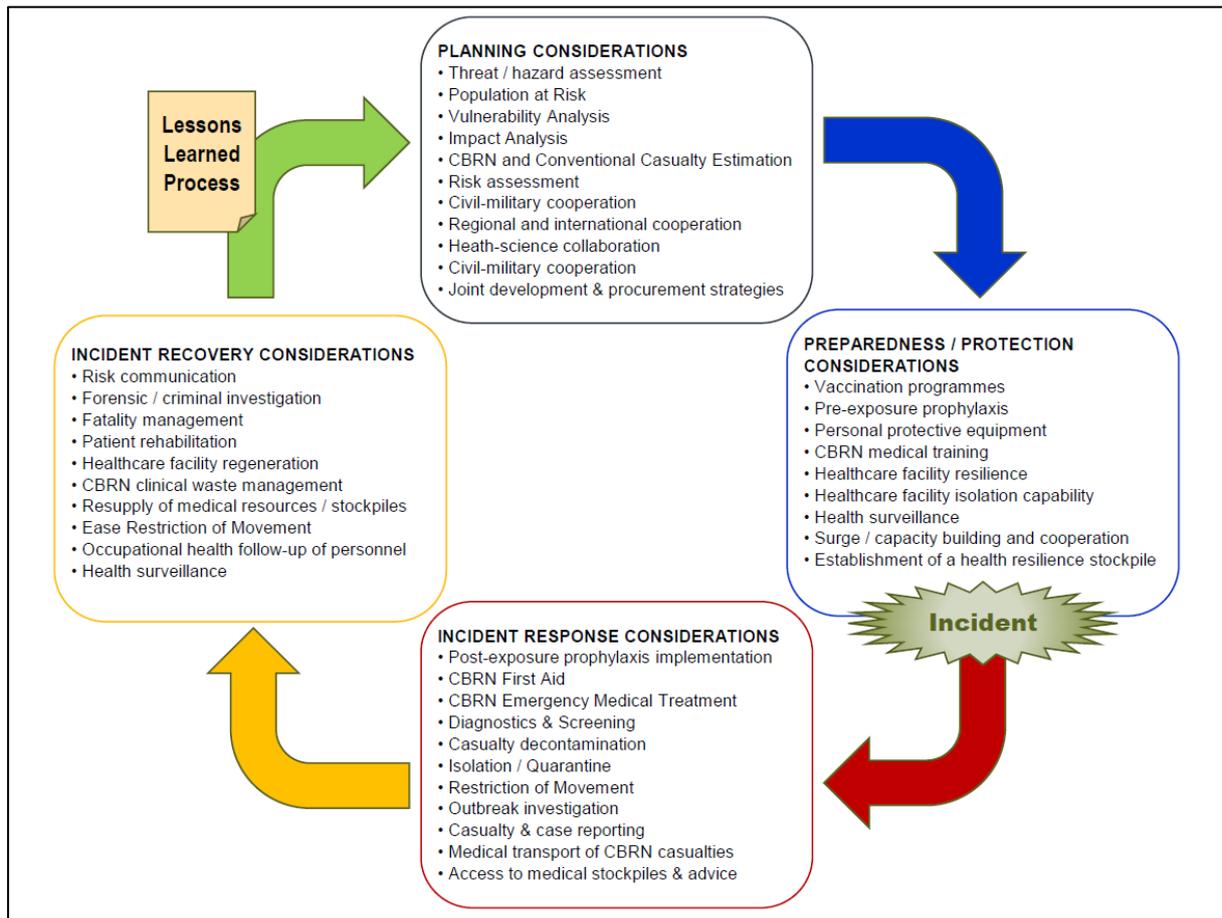


Figure 6-1. CBRN Medical Support Planning and Response Cycle

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CHAPTER 7 - EDUCATION, TRAINING, EXERCISES, AND EVALUATION FOR CBRN MEDICAL SUPPORT

7.1. INTRODUCTION

1. Medical support in CBRN environments is extremely complex and has been rarely required. Medical personnel are unlikely to have significant real-life CBRN experience or familiarity with the tasks involved. Consequently, the prospect of providing CBRN medical support is often viewed with justifiable trepidation. To reduce the stress of CBRN incidents and improve operational effectiveness, medical personnel should undergo rigorous and frequent CBRN defence E&T programmes. Such training should educate medical personnel on appropriate response actions, including the use of IPE/PPE, recognition of individual and equipment contamination, execution of decontamination processes and procedures, and the conduct of operations in a collectively protected environment. It can also reinforce awareness of the symptoms of CBRN exposure.

2. CBRN medical E&T should span the range of potential tasks at all levels of operations and should include individual training, collective training and exercises, and command post exercises. To the extent possible, exercises should include non-medical units or staff elements with which medical units and personnel need to coordinate during the execution of their tasks.

7.2. INDIVIDUAL TRAINING

1. AMedP-7.3, *Training of Medical Personnel for Chemical, Biological, Radiological, and Nuclear (CBRN) Defence*, provides medical personnel training standards for CBRN medical support. AMedP-7.3 identifies three CBRN medical operational roles—direct CBRN casualty care, medical technical support, and provision of CBRN medical advice and planning support—and defines a framework for comprehensive CBRN medical training across those three roles. Training can be delivered at various points during the careers of medical personnel, including new-entry training, special-to-role training, and pre-deployment training.

2. There are five key CBRN casualty care tasks, each supported by one of the five parts of AMedP-7.1:

- a. Manage any casualty in a CBRN environment;
- b. Manage the medical aspects of a CBRN incident;
- c. Manage a chemical casualty;
- d. Manage a biological casualty, including sepsis; and
- e. Manage a radiological casualty, including nuclear.

3. In addition to specific CBRN medical training requirements, AMedP-7.3 recommends that deployed medical personnel on any NATO operation should be CBRN aware and should be able to recognize an incident and respond accordingly.

4. AMedP-7.2, *CBRN First Aid Handbook*, provides a standardised approach to the early management of any casualty in a CBRN environment by non-medical personnel, from point of exposure through handover to medical personnel. Annex A of AMedP-7.2 provides basic and enhanced CBRN first aid training requirements, including lists of tasks and training objectives for both levels of competency.

7.3. COLLECTIVE TRAINING

1. Medical support in CBRN environments will typically involve specialist medical capabilities that are integrated within the deployed military medical force structure. Often within the Alliance, a comprehensive deployed CBRN medical support capability would require units and personnel from multiple nations. Multinational collective training and exercises are therefore key to promoting interoperability between units and personnel that would not otherwise train together. Multinational CBRN medical exercises have great value as a means of promoting interoperability through doctrine alignment and sharing/ comparisons of tactics, techniques and procedures.

2. In a CBRN environment, the CBRN medical operations and CBRN defence operations should be fully integrated to support development of a common operational picture and to take advantage of potential synergies in mitigating the risk to operations from CBRN threats and incidents. Medical support in CBRN environments should be integrated into exercises of CBRN defence operations and pre-deployment training, and CBRN defence operations should be integrated into medical exercises to familiarize non-medical units and personnel with medical support capabilities and procedures.

7.3.1. CBRN Medical Training Panel (CBRNMedTP)

1. The CBRNMedTP is organized within the CBRN Med WG to promote individual and collective CBRN medical training. In its terms of reference, the role of the CBRNMedTP is:

- a. To promote relevant multinational individual and collective CBRN medical training and associated activities (e.g., exercises).
- b. To coordinate the development, production, and review of all new and existing CBRN medical standardisation documents dealing with E&T to enable optimal medical support to operations according to NATO's levels of ambition.
- c. To provide members to the medical liaison team of the Joint CBRN Defence Capability Development Group (JCBRND-CDG)/Training and Exercise Panel (TEP). The CBRNMedTP is the permanent representation of MCMedSB/CBRN Med WG to the TEP. It is led by the chairman of the CBRNMedTP (and/or the co-chair). It is constituted by the CBRNMedTP secretary and representatives from nations designated for their expertise in the matters discussed (subject matter experts) that is applicable to all exercises. It reports on its progress to the MCMedSB/CBRN Med WG at least once a year. Its Programme of Work (POW) is determined by the CBRNMedTP and approved by the MCMedSB/CBRN Med WG. Specific requests for support are to be directed to the CBRNMedTP chair and MCMedSB/CBRN Med WG chair.
- d. To liaise with the Military Medical Training Working Group (MMT WG) concerning CBRN medical education, training and exercises.

2. Organisationally, the CBRNMedTP falls under the CBRN Med WG but maintains strong links with the TEP and its subordinate working teams. These relationships are illustrated in Figure 7-1. This structure allows the CBRNMedTP to support the individual and collective training initiatives of the CBRN defence community within NATO, while promoting CBRN medical training within the broader medical community. Outside of this organisational structure, the CBRNMedTP can offer subject matter expertise to support planning and execution of CBRN medical play within larger exercises (e.g., the Vigorous Warrior series of medical exercises).

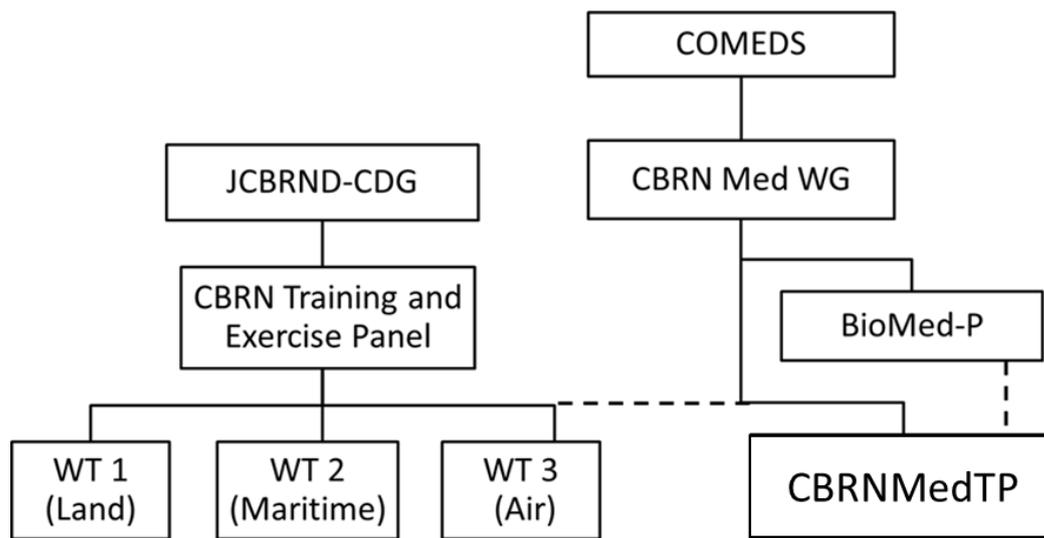


Figure 7-1. CBRNMedTP Organisational Links

7.3.2. Exercise Clean Care

1. The Exercise Clean Care series is the primary collective training initiative of the CBRN Med WG and the CBRNMedTP. Clean Care is a medical exercise in a CBRN environment, with the participation of CBRN defence capabilities. The aims of the exercise are to exercise NATO interoperability with CBRN defence and medical at a tactical level and provide management of any casualty in a CBRN environment from point of exposure through to a Role 2 MTF in the land, air, and maritime environment.

2. The Exercise Clean Care is a biennial exercise that is planned and executed in accordance with NATO Bilateral Strategic Command (Bi-SC) Collective Training and Exercise Directive 075-03. The Chair of the CBRN Med WG serves as the Officer Scheduling the Exercise, and the Chair of the CBRNMedTP serves as the Officer Conducting the Exercise. All Exercise Clean Care exercises share a set of common objectives:

- a. Exercise multinational CBRN defence and medical units together to assess, develop, and improve CBRN medical capability and interoperability;
- b. Exercise enhanced CBRN first aid including trauma in the hot zone by non-medical responders;
- c. Exercise the management of CBRN and combined casualties by medical personnel; and

- d. Exercise civil-military medical cooperation in response to CBRN terrorism and/or biological outbreaks.

Other exercise objectives can be added for a specific exercise at the direction of the CBRN Med WG or the CBRNMedTP. The Exercise Clean Care exercise also includes a large experimentation component that is intended to explore solutions to identify capability gaps or promote development of CBRN medical doctrine or procedures.

3. Generic exercise objectives for Exercise Clean Care are provided as Annex F.

7.3.3. Handbook for NATO Exercises with CBRN Medical Training⁵⁶

1. AMedP-7.3-1, *Handbook for NATO Exercises with CBRN Medical Training*, is an SRD developed by the CBRNMedTP to guide the planning and execution of CBRN medical play in exercises. The handbook provides exercise planners with necessary information on CBRN patient play, including expected numbers and/or types of casualties, patient cards describing clinical presentation of casualties over time, and requirements for casualty moulage. It also describes the capabilities of specialized CBRN medical assets to promote the integration of these assets into the training audience.

7.4. CBRN MEDICAL SUPPORT EVALUATION

1. Medical support to Allied forces must meet a standard of care acceptable to all nations. At the same time, differences in national standards and legal constraints pose challenges for multinational medical cooperation and interoperability. To meet these challenges and to support modular contributions from nations, AMedP-1.6, *Medical Evaluation Manual*, describes responsibilities and procedures for evaluation of medical units assigned to NATO missions and for the medical system as a whole. The work of evaluators is further supported by AMedP-1.7, *Capability Matrix*, and AMedP-1.8, *Skills Matrix*.

2. CBRN medical support is one of the medical modules defined in AMedP-1.7. Its standard capability description states:

The module must be able to manage CBRN patients including recognition, safety drills including IPE selection, triage, casualty management including assessment, treatment and casualty hazard management (contain, decontamination, isolation and/or quarantine). It is able to respond to MASCAL.

3. The questions used to assess the degree to which a CBRN medical support module meets its core capability are defined in AMedP-1.6, Annex AC, *Chemical, Biological, Radiation and Nuclear (CBRN) Medical Support Module*. These questions are derived from components of the core capability and consider the ability of personnel, materiel, and procedures to:

- a. Manage safely trauma and CBRN patients including use of PPE;
- b. Manage contamination or contagious hazards (casualty hazard management);

⁵⁶ The SRD is currently in preparation. Inclusion of this section in this document is contingent upon the publication of the SRD.

- c. Manage the medical aspects of a CBRN incident;
- d. Manage chemical patients;
- e. Manage biological patients including sepsis;
- f. Manage radiological patients including combined injuries;
- g. Supervise stock levels including MedCMs;
- h. Manage specific equipment and personnel;
- i. Perform logistic and administrative functions;
- j. Manage a CBRN fatality; and
- k. Respond to MASCAL.

7.5. CBRN MEDICAL LESSONS LEARNED

1. The NATO Lessons Learned process is a formal process for collecting and analysing observations from participants in any Allied military activity, collating those observations into lessons identified (LIs), tasking various bodies within the Alliance to resolve those LIs, and institutionalizing the solution as a lesson learned. Overall, the NATO Lessons Learned process is led by the Allied Command Transformation (ACT) and supported by the Joint Analysis and Lessons Learned Centre (JALLC). Because of the limited medical subject matter expertise within the JALLC, however, responsibility for the medical lessons learned process in NATO has devolved to the Lessons Learned Branch of MILMED COE.

2. The MILMED COE collects and analyses medical observations, including CBRN medical observations, and develops medical LIs. These LIs are validated by the Medical Lessons Core Team, consisting of the MEDADs of ACT, Allied Command Operations (ACO), and the International Military Staff and the COMEDS Liaison Officer, the Director of the MILMED COE, and the Chair of the MILMED COE Lessons Learned Branch. Once validated, the Medical Lessons Core Team assigns the LIs to various Allied medical organisations—including the CBRN Med WG—for resolution.

3. In addition to supporting MILMED COE in the formal medical lessons learned process, the CBRN Med WG has begun to use lessons learned to support the evolution and refinement of its doctrine and standards. As shown in Figure 7-2, the concept is a cyclical process wherein exercises such as Clean Care generate CBRN medical observations that are input into the MILMED COE Lessons Learned process and output from the Medical Lessons Core Team as tasking to the CBRN Med WG. From this tasking, the WG can establish experimental objectives for CBRN medical training and exercise generally and in support of doctrine and standards development. This concept relies heavily on the relatively small and cohesive CBRN medical community within the Alliance and on engagement with higher level organisations outside the working group.

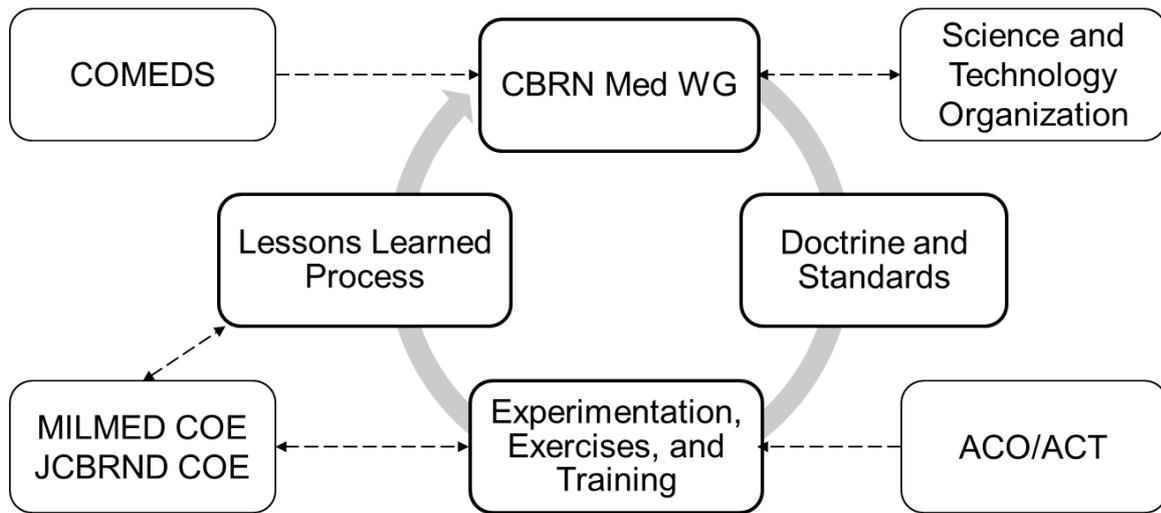


Figure 7-2. Inputs to CBRN Medical Doctrine and Standards Development

ANNEX A CBRN MEDICAL SUPPORT CAPABILITIES

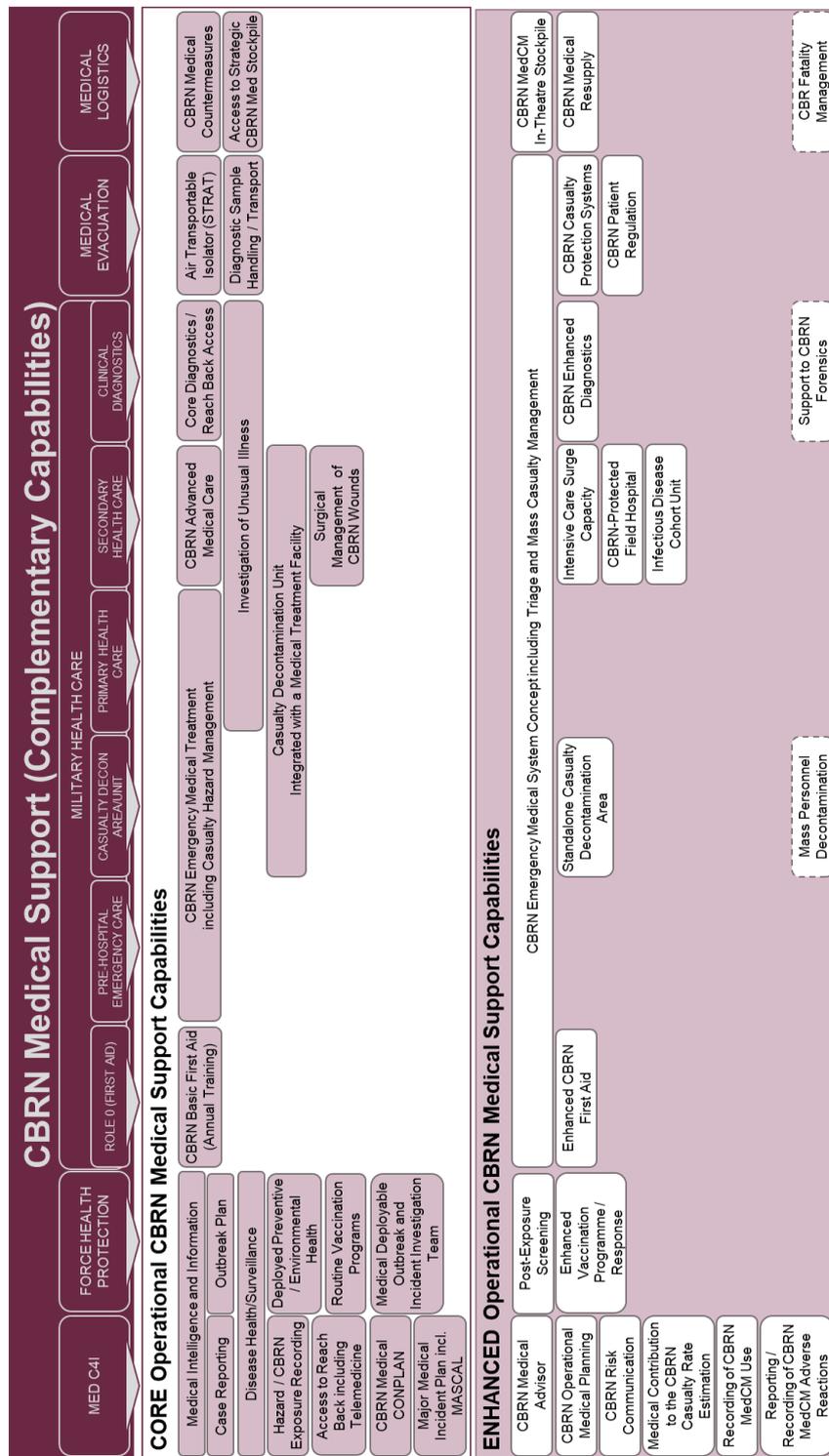


Figure A-1. Summary of CBRN Medical Core & Enhanced Capabilities/Tasks

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**ANNEX B MEDICAL SUPPORT GUIDANCE FOR OPERATIONS
IN A CBRN ENVIRONMENT**

1. AMedP-7.6, *Commander's Guide on Medical Support to CBRN Defensive Operations* provides guidance for operational and medical commanders and planners for medical support planning on operations with an increased CBRN threat.

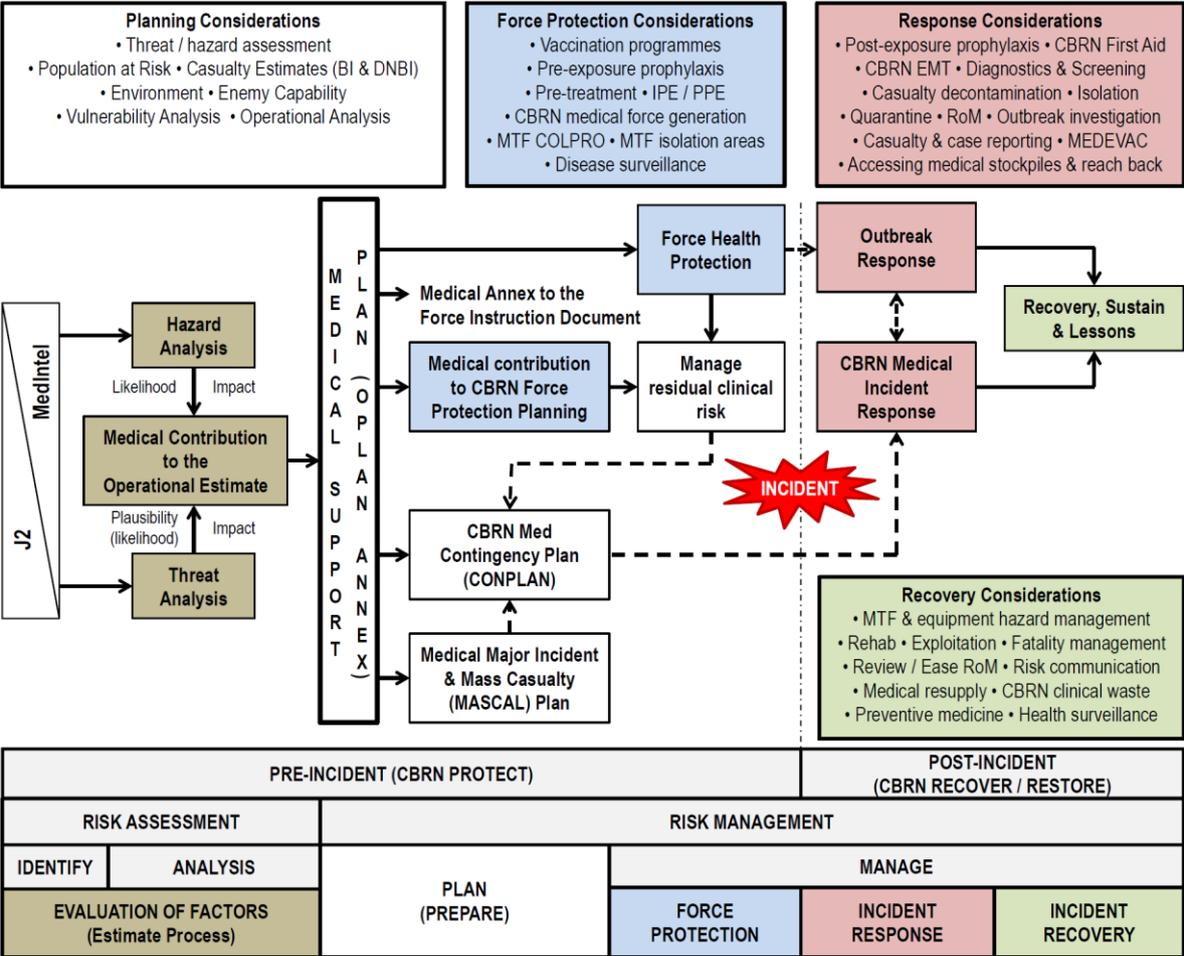
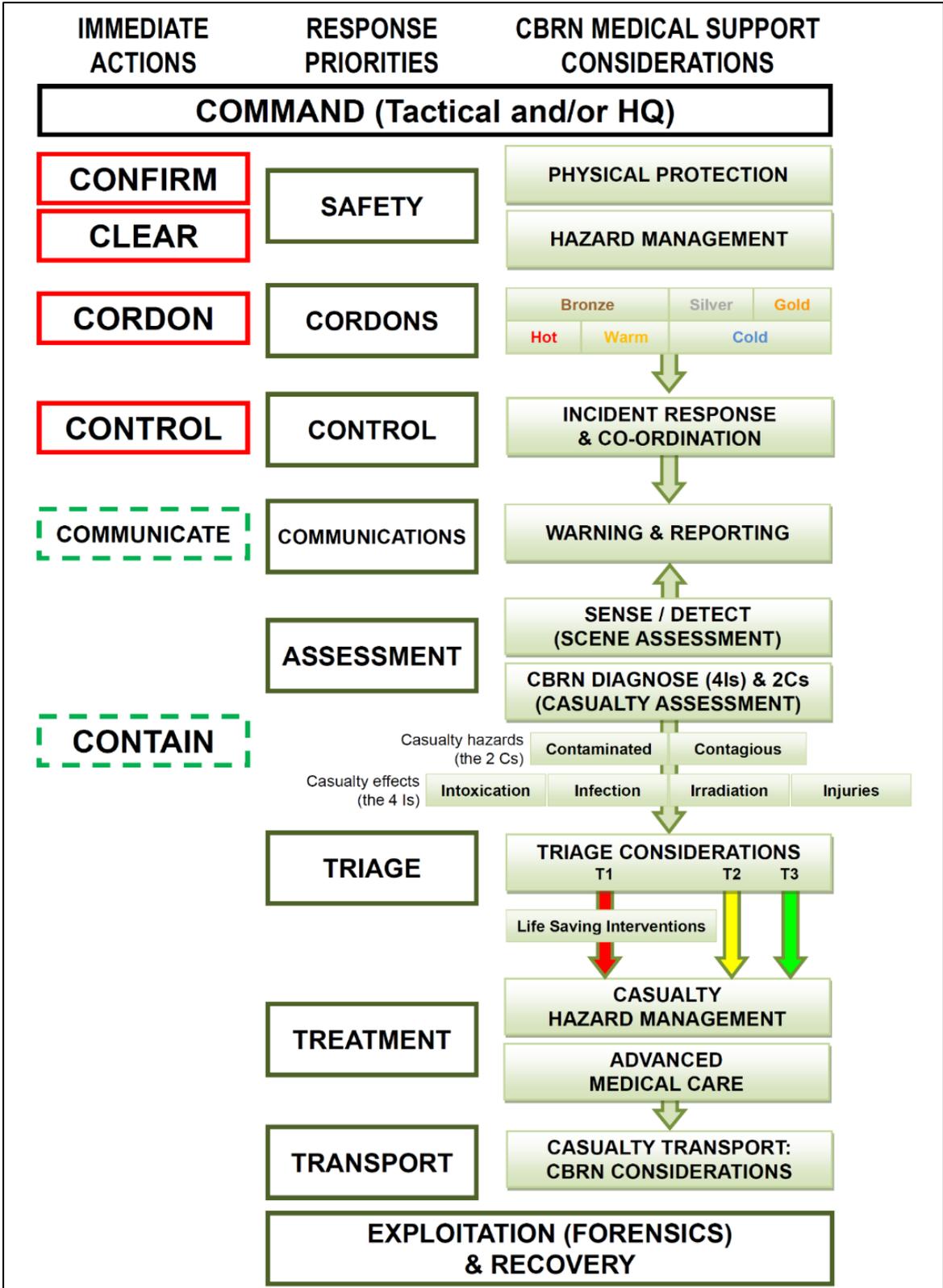


Figure B-1. Summary of CBRN Medical Planning Considerations

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ANNEX C PRINCIPLES OF CBRN MEDICAL INCIDENT MANAGEMENT



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ANNEX D CBRN EMERGENCY MEDICAL SYSTEM CONCEPT

1. The function of the CBRN EMS is to support:
 - a. The Commanders freedom of action and operational effectiveness.
 - b. The early recognition of CBRN casualties.
 - c. The optimisation of CBRN casualty care with a continuum of MHC and casualty decontamination.
 - d. The provision of a surge capacity across the JOA.
 - e. The mitigation of any surge with an adaptive patient regulation system.
 - f. The maintenance of the safety and integrity of MTF and MEDEVAC platforms.
 - g. The extension of the theatre holding policy.
 - h. Health resilience across the Alliance.
2. Elements of the CBRN EMS include:
 - a. Enhanced CBRN first aid provision within Units operating in an increased CBRN-threat environment.
 - b. Forward deployment of medical personnel (and facilities) in order to meet the CBRN medical timelines.
 - c. Integration and interoperability of core and enhanced CBRN medical capabilities.
 - d. Extended holding policy across the threat due to potential MEDEVAC choke points.
 - e. CBRN MEDEVAC system.
 - f. Handling and processing of CBRN diagnostic samples and analysis.
 - g. Access to operational and strategic CBRN medical stockpiles.
 - h. Triage and Mass Casualty Management.

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ANNEX E JOINT CBRN MEDICAL COLLECTIVE TRAINING OBJECTIVES

JCTO	Supporting/Enabling Tasks	Conditions	Standard
Provide operational CBRN medical support in a high-threat conventional and/or non-conventional CBRN environment.	1. Provide CBRN medical advice 1a. Provide CBRN medical advice to Comd and ComdMed. 1b. Perform operational CBRN medical risk assessment. 1c. Perform CBRN casualty rate estimation. 1c. Draft CBRN medical contingency plan. 1d. Access reachback advice.	C1-Response Cells JMED: HICON and LOCON with experienced personnel. CBRN MEDAD across MTFs. Specialist MEDEVAC assets as required.	1. Reference documents: MC 326 NATO Medical Support Policy; AJP-4.10 Allied Medical Support Doctrine; AJMedP-7 Allied Joint CBRN Medical Support Doctrine; AMedP-7.1 Medical Management of CBRN Casualties; AMedP-7.6 Commanders Guide to Medical Support on CBRN Defensive Operations; ATP-70 CBRN COLPRO; ATP-45 CBRN Warning and Reporting. 2. Performance criteria: CBRN medical operational risk assessment. CBRN CRE and medical estimate. Comprehensive CBRN medical plan. Demonstrate effective triage, casualty decontamination and CBRN casualty care including management of trauma casualty in CBRN environment. Demonstrate MTF COLPRO. Demonstrate CASEVAC/MEDEVAC in CBRN environment. Demonstrate MEDEVAC of contagious patient. Demonstrate outbreak investigation and response (operational epidemiology). 3. Special requirements: CBRN hazard simulation. Option for live agent training.
	2. Provide medical support to CBRN force protection* 2a. Advise on CBRN MedCMs. 2b. Provide medical support to CBRN defensive operations. 2c. Medical support to CBRN fatality management & forensics.	C2-CP CBRN MEDAD, access to reachback.	
	3. Plan and provide CBRN casualty care 3a. Manage any casualty in a CBRN environment. 3b. Manage the medical aspects of a CBRN incident. 3c. Manage a chemical casualty. 3d. Manage a biological casualty. 3e. Manage a radiological casualty.	C3-Observer Trainer CBRN med case managers and observer-trainers.	
	4. Protect medical resources against CBR hazards 4a. Protect medical treatment facilities (MTFs) against CBR hazards. 4b. Protect medical personnel against CBR hazards. 4c. Protect patients against CBR hazards.	C4-Scenario <i>Low CBRN Threat:</i> Terrorist/insurgent attack; legacy munition; hybrid attack. <i>Increased CBRN Threat:</i> J2; med spt to WMD disablement mission; overt chemical, biological and radiological attack; covert biological attack; CBRN MASCAL. <i>Outbreak:</i> Index patient trigger; health surveillance trigger; MED-DOIT activation. <i>Unusual patient.</i>	
	5. Prepare and respond to an outbreak (bio-response) 5a. Draft outbreak plan. 5b. Manage unusual patient. 5c. Perform operational epidemiology. 5d. Implement isolation and quarantine. 5e. Implement RoM.	C5-MEL/MIL <i>CBRN:</i> J2 injects; patient trigger; overt chemical / biological / radiological incident trigger; DIM trigger; covert biological trigger; conventional incident trigger; CBRN MASCAL. <i>Outbreak:</i> Index patient trigger; health surveillance trigger; unusual patient. <i>Reports:</i> CBRN incident reports (ATP-45); METHANE reports.	
		C6-CIS CBRN CRE Tool. CBRN Medical Decision Tools. NATO report formats to be used including AT-MIST-D casualty handover format.	
		C7-CAX/LIVEX CAX. Simulated casualty report and health surveillance. Plume modelling. LIVEX. Casualty and hazard simulation. Casualty decontamination facilities and RLS including shelter, cooling and warming TA and casualty players.	
		C8-Battle Rhythm <i>Start-up:</i> CBRN Threat Assessment; Health Brief. <i>Reports:</i> CBRN threat reports and updates; EpiNATO (AMedP-4.1); case reports; media/news injects. <i>VTC:</i> Reachback advice, case conference. <i>Meetings:</i> CBRN Medical Advisory Group; MED-DOIT updates.	
Notes: Subject matter expert points of contact: CBRN Med WG (COMEDS), BioMed-P (COMEDS); <i>Linked to:</i> CBRN JCTO and Medical Support JCTO * Level of medical support will depend on situation and CBRN threat.			

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ANNEX F EXERCISE OBJECTIVES FOR EXERCISE CLEAN CARE

<p>Aim</p>	<p>To exercise NATO interoperability between CBRN defence and medical capabilities, at a tactical level, to provide CBRN medical support including the management of any casualty in a CBRN environment from point of exposure through to a Role 2 Medical Treatment Facility in the land, air and maritime environment.</p>
<p>Generic Exercise Objectives</p>	<p>Exercise multinational CBRN defence and medical units together to assess, develop and improve CBRN medical capability and interoperability.</p> <p>Exercise civil-military medical cooperation in response to a CBRN terrorism and bio-response.</p> <p>Exercise enhanced CBRN first aid including trauma in the hot zone by non-medical responders.</p> <p>Exercise the management of CBR and combined casualties by medical personnel.</p> <p>Capture training media to support future training opportunities to increase resilience to a CBRN incident or outbreak.</p>
<p>Generic Experimentation Objectives</p>	<p>Trial different forms of CBRN casualty simulation to support future training and exercises.</p> <p>Trial Casualty Protective / MEDEVAC equipment and interoperability between NATO nations and civil health organizations.</p> <p>Observe and capture lessons from the management of fatalities in a CBRN environment at different points in the operational patient care pathway including CBRN forensics.</p> <p>Review extant publications in the AMedP-7 series.</p>
<p>Generic Training Objectives (Ref: AMedP-7.3 (medical personnel) and AMedP-7.2 (first aid))</p>	<p>Manage any casualty in a CBRN environment.</p> <p>Manage the medical aspect of a CBRN incident.</p> <p>Manage a chemical casualty.</p> <p>Manage a biological casualty including sepsis.</p> <p>Manage a radiological casualty.</p> <p>Exercise civil-military medical coordination.</p>

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ANNEX G LEXICON

PART 1 – ACRONYMS AND ABBREVIATIONS

ACO	Allied Command Operations
ACT	Allied Command Transformation
AEP	Allied Engineering Publication
AJMedP	Allied Joint Medical Publication
AJP	Allied Joint Publication
AMedP	Allied Medical Publications
AP	Allied Publication
ATP	Allied Tactical Publication
Bi-SC	Bilateral Strategic Command
C2	command and control
C4I	command, control, communications, computers, and intelligence
CASEVAC	casualty evacuation
CAX	Computer Assisted Exercise
CBR	chemical, biological, and radiological
CBRN Med	CBRN Medical
CBRN	chemical, biological, radiological and nuclear
CBRNE3T	All Hazards Environment
CCIR	Commanders Critical Information Requirement
CEPC	Civil Emergency Planning Committee
CIMIC	civil-military cooperation
CM	Consequence Management
COA	course of action
COE	Centre of Excellence
COLPRO	collective protection
COMEDS	Committee of Chiefs of Military Medical Services in NATO
CONOPS	concept of operations
CPE	casualty protective equipment
CT	computed tomography
DAT	Defence Against Terrorism
DCR/S	Damage Control Resuscitation and Surgery
DCS	damage control surgery
DHSC	Deployment Health Surveillance Capability
DIM	detection, identification, and monitoring
E&T	education and training
EIH	environmental and industrial hazard
ESC	Emerging Security Challenges
FHP	Force Health Protection
GO	government organisation
HA	Humanitarian Assistance
HFM	Human Factors and Medicine
HICON	higher control
HN	Host Nation
IATA	International Air Transport Association
IED	improvised explosive device
IHR	International Health Regulations

IO	international organisation
IPE	individual protective equipment
JALLC	Joint Analysis and Lessons Learned Centre
JCBRND-CDG	Joint CBRN Defence Capability Development Group
JCTO	Joint Collective Training Objective
JFC	Joint Force Command
JIPOE	Joint Intelligence Preparation of the Operational Environment
JMed	Joint Medical
JOA	Joint Operations Area
KM	knowledge management
LI	lesson identified
LIVEX	Live Exercises
LOCON	lower control
MACRMS	mortuary affairs contaminated remains mitigation site
MASCAL	mass casualty
MC	Military Committee
MCMedSB	Military Committee Medical Standardization Board
MEDAD	Medical Advisor
Med-CIIT	Chemical Incident Investigation Team
MedCIS	Medical Communications and Information Systems
MedCM	medical countermeasure
Med-DOIT	Medical Deployable Outbreak & Incident Investigation Team
MEDEVAC	medical evacuation
MEDICS	Medical Information and Coordination System
Med-RIIT	Radiological (and Nuclear) Incident Investigation Team
MHC	military health care
MI2	medical intelligence and information
MILMED COE	NATO Centre of Excellence for Military Medicine
MIST	Mechanism, Injuries, Signs/Symptoms, Treatment
MOU	memorandum of understanding
MRITT	Medical Radiological Incident Investigation Team
MTF	medical treatment facility
CBRNMedTP	CBRN Medical Training Panel
NA5CRO	Non-Article 5 Crisis Response Operations
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NBC-AL	NBC Analytical Laboratory
NBI	non-battle injury
NEO	Non-Combatant Evacuation Operation
NGO	non-governmental organization
OTAN	Organisation du Traité de l'Atlantique Nord
PAR	population at risk
PECC	Patient Evacuation Coordination Cell
PEP	post-exposure prophylaxis
PFP	Partnership for Peace
PHC	Primary Health Care
PHEC	Pre-Hospital Emergency Care
POCT	point-of-care testing
PPE	personal protective equipment

PrEP	pre-exposure prophylaxis
PSO	Peace Support Operation
PT	pre-treatment
R2B	Role 2 Basic
R2E	Role 2 Enhanced
R2F	Role 2 Forward
RDD	radiological dispersal device
RDOIT	Rapidly Deployable Outbreak Investigation Team
RLS	Real-Life Support
RoM	restriction of movement
SD	Smart Defence
SIBCRA	Sampling and Identification of Biological, Chemical and Radiological Agents
SOP	standing operating procedure
SRD	Standards Related Document
STANAG	Standardization Agreement
STO	Science and Technology Organisation
TA	Training Audience
TIM	toxic industrial material
TT	Training Team
VTC	Video Tele-Conference
WG	Working Group
WHO	World Health Organization
WMD	weapons of mass destruction

PART 2: TERMS AND DEFINITIONS

See:

AAP-6 NATO Glossary of Terms and Definitions

AAP-15 NATO Glossary of Abbreviations Used in NATO Documents and Publications

AMedP-13(A) NATO Glossary of Medical Terms and Definitions

NATOTerm NATO Terminology Management System

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ANNEX H REFERENCES

		NATO's Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats
	MC 0603	NATO Comprehensive CBRN Defence Concept
STANAG 2437	AJP-01	Allied Joint Doctrine
STANAG 2182	AJP-4	Allied Joint Doctrine for Logistics
STANAG 2228	AJP-4.10	Allied Joint Medical Support Doctrine
STANAG 2451	AJP-3.8	Allied Joint Doctrine for CBRN Defence
STANAG 2528	AJP-3.14	Allied Joint Doctrine for Force Protection
STANAG 2509	AJP-3.19	Allied Joint Doctrine for Civil-Military Cooperation
STANAG 2542	AJMedP-1	Allied Joint Medical Planning Doctrine
STANAG 2546	AJMedP-2	Allied Joint Doctrine for Medical Evacuation
STANAG 2547	AJMedP-3	Allied Joint Doctrine for Medical Intelligence
STANAG 2561	AJMedP-4	Allied Joint Medical Force Health Protection Doctrine
STANAG 2562	AJMedP-5	Allied Joint Doctrine for Medical Communications and Information Systems
STANAG 2563	AJMedP-6	Allied Joint Civil-Military Interface Doctrine
STANAG 2598	AJMedP-8	Allied Joint Doctrine for Military Health Care (MHC)
STANAG 6505	AJMedP-9	Multinational Medical Support
STANAG 2879	AMedP-1.10	Medical Aspects in the Management of a Major Incident/Mass Casualty Situation
STANAG 2560	AMedP-1.6	Medical Evaluation Manual
STANAG 2560	AMedP-1.7	Capability Matrix
STANAG 2560	AMedP-1.8	Skills Matrix
STANAG 2481	AMedP-3.2	Medical Information Collection and Reporting
STANAG 2535	AMedP-4.1	Deployment Health Surveillance
STANAG 2136	AMedP-4.9	Requirements for Water Portability During Field Operations and in Emergency Situations
STANAG 2461	AMedP-7.1	Medical Management of CBRN Casualties
STANAG 2358	AMedP-7.2	<i>CBRN First Aid Handbook</i>

STANAG 2954	AMedP-7.3	Training of Medical Personnel for CBRN Defence
STANAG 2551	AMedP-7.4	Medical Deployable Outbreak & Incident Investigation Teams (Med-DOIT)
STANAG 2553	AMedP-7.5	NATO Planning Guide for the Estimation of CBRN Casualties
STANAG 2873	AMedP-7.6	Commander's Guide on Medical Support to CBRN Defensive Operations
STANAG 2564	AMedP-8.6	Forward Mental Healthcare
STANAG 4701	AEP-66	NATO Handbook for SIBCRA
STANAG 2521	ATP-3.8.1. Vol I	CBRN Defence on Operations
STANAG 2522	ATP-3.8.1. Vol II	Specialist CBRN Defence Capabilities
STANAG 2520	ATP-3.8.1. Vol III	CBRN Defence Standards for Education, Training, and Evaluation
STANAG 3680	AAP-06	NATO Glossary of Terms and Definitions
	AAP-15	NATO Glossary of Abbreviations Used in NATO Documents and Publications
		NATOTerm, The Official NATO Terminology Database

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