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Tactical Doctrine

HEALTH SERVICE SUPPORT IN NUCLEAR, BIOLOGICAL, AND CHEMICAL ENVIRONMENTS

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PURPOSE: This tactics, techniques, and procedures (TTP) publication provides tactical deployed medical commanders (DMCs) guidance and procedures to plan, prepare, and employ their assigned assets in nuclear, biological, and chemical (NBC) environments. Founded in joint and Air Force counter NBC and health service support (HSS) operational level doctrine (Joint Publication [JP] 3-11, *Joint Doctrine for Operations in Nuclear, Biological, and Chemical Environments;* JP 4-02 [Final Draft], *Doctrine for Health Service Support in Joint Operations*; Air Force Doctrine Document [AFDD] 2-1.8, *Counter Nuclear, Biological, and Chemical Operations*; and AFDD 2-4.2, *Health Services*), this TTP provides procedures for HSS to US Air Force operational missions. It forms the bridge between operational doctrine, other Air Force Medical Service (AFMS) TTPs, AFMS unit type code (UTC) concepts of operations (CONOPS), and tactical policy and guidance as referenced throughout this publication.

APPLICATION: This publication applies to all Air Force military and civilian personnel (including Air Force Reserve Command [AFRC] and Air National Guard [ANG] units and members). The doctrine in this document is authoritative but not directive.

SCOPE: Each forward operating location (FOL) will be unique. Medical NBC defense operations will be deliberately planned in the base support plan (BSP), chapter 16, (refer to AFI 10-404, *Base Support and Expeditionary Site Planning*). This TTP provides a common operating picture to the Commander, Air Force Forces (COMAFFOR), planning staff on the notional laydown, time-phased employment, and utility of the various AFMS UTCs in NBC environments. This TTP is warfighting doctrine, written for air and space expeditionary task forces (AETF) in high intensity operations in high NBC threat operational areas, but it has applicability across the spectrum of military operations.

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Chapter 1

INTRODUCTION

1.1. Overview.

1.1.1. This TTP provides roles and responsibilities as well as planning and logistical considerations for the deployed medical commander (DMC). Although the focus of this document is on expeditionary medical operations in nuclear, biological, and chemical (NBC) threat environments, it is relevant to medical commanders at main operating bases in similar environments. Air Force Medical Service NBC defense operations are organized in terms of two force health protection concepts—casualty prevention and casualty care. Casualty prevention operations are further categorized under the NBC passive defense concepts of contamination avoidance, protection, and contamination control. Casualty care operations include patient decontamination, triage, clinical care of NBC casualties, patient movement on the airbase, aeromedical evacuation, and restriction of movement/quarantine. This TTP references other publications and resources for specific tactical details and defines education and training procedures for DMCs to ensure their personnel are trained and prepared to execute missions in NBC environments. See attachment 2 for a summary of the mission capability statements (MISCAPS) of NBC-related AFMS UTCs and attachment 5 for a reference bibliography.

1.1.2. *Air Force Health Service Support in Nuclear, Biological, and Chemical (NBC) Environments* reflects the US Air Force ground support operational environment. Air operations conducted in high NBC threat areas may launch from airfields that are likely primary targets of enemy NBC attack—air bases are lucrative targets. Air Force Medical Service assets support the passive defense (PD) component of Air Force operational counter NBC doctrine (refer to AFDD 2-1.8, *Counter Nuclear, Biological, Chemical Operations*), as well as the tactical surveillance and identification components of the cross-cutting element of command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR). Routine disease surveillance information may be the sentinel indication of biological agent use—early disease recognition enables intervention and minimizes combat capability degradation. The DMC has a need-to-know and must be cognizant of operational intelligence of the enemy NBC threat. The DMC and key staff need appropriate security clearances for access to this information and they need to be integrated into the AETF battlestaff and NBC Defense Cell.

1.1.3. Biological warfare attack may create a disease mass casualty situation in the AETF. The DMC has the core knowledge and competency for many biological warfare passive defense actions. The AFMS is fielding deployable and forward-deployed assets that employ biotechnology to rapidly and accurately identify specific pathogens of military concern. This capability coupled with health surveillance systems built on advanced information technology and management architecture—such as the Global Expeditionary Medical System (GEMS)—may provide early recognition of a covert biological warfare attack and rapid identification of the agents, vastly improving commander situational awareness and enabling

early intervention. Casualty prevention assets identify and quantify chemical and nuclear/radiological agent exposure and provide health-based operational risk assessments to commanders to minimize operational impact of the agents. Medical assets and information save lives and maximize combat effectiveness by providing critical components of the air base passive defense, tactical NBC surveillance and identification missions, and by treating and stabilizing NBC casualties.

1.2. Asymmetric Threat. Adversarial use of NBC weapons creates an asymmetric threat that will challenge the execution of air operations. This section provides a general overview of the types of NBC agents or materials, weapons, and their medical effects and implications. The DMC or senior medical officer (SMO) must have access to operational and tactical intelligence information, estimates, and resources impacting their specific area of operations in order to effectively carry out their responsibilities and adjust medical posture based upon the threat presented. It is imperative that all medical personnel know the command and control structure if and when an NBC attack occurs, in order to most effectively support force health protection. Refer to AFMAN 32-4017, *Civil Engineer Readiness Technician's Manual for Nuclear Biological and Chemical Defense* for further details.

1.3. Chemical and Biological (CB) Weapons. CB weapons are a relatively cheap force multiplier that many nations or non-state individuals or groups are in the process of obtaining or have already obtained. The production processes for chemical and biological weapons are very similar to those of industrial-use chemicals and pharmaceuticals. Therefore, any country with a developed chemical or pharmaceutical production capability has the inherent ability to produce CB agents/weapons. The capability to produce these agents does not necessarily equate with the ability to effectively deploy them.

1.4. Biological Warfare (BW) Agents.

1.4.1. BW weapons can be employed by an enemy to produce mass casualties and disrupt air operations. These actions have the potential to significantly burden or even overwhelm deployed medical assets. Primary targets are support facilities such as ports, airfields, and industrial sites where large numbers of susceptible personnel may be exposed. Vaccines do not exist for all potential BW agents. Widespread and sporadic BW attacks would force a protective posture, thereby degrading US operational effectiveness. Feasible threats include development of alternate BW agents such as hemorrhagic fever viruses for which there are no available vaccines or effective treatment, and altering properties of bacterial, viral, and toxin BW agents so that current treatment is ineffective. Effective NBC defense requires detection, identification, and warning; individual protection and collective protection; hardening; and decontamination capabilities; as well as real-time health surveillance and epidemiology, and rapid diagnostic capability to facilitate prompt medical treatment.

1.4.2. Due to proliferation of biological agent production capabilities and means of delivery, the possibility of a BW attack or exposure event poses a significant threat. Munitions that combine fragmentation or flechette effects can be used, inflicting conventional-type injuries combined with effects of biological agents. BW agent events can occur at times other than

deliberate hostile action, such as a BW facility accident, military strike on a BW installation, a covert/overt bioterrorism incident, covert contamination of food/water, or exposure downwind to an agent from a distant target. There may be a characteristic delay in symptoms that may mimic those related to endemic or common disease processes, which complicates warning and response. Early warning detection and rapid differential identification are crucial to casualty prevention and casualty care. Most infectious BW agents, such as *Bacillus anthracis*, the causative agent for anthrax, cause disease after two or more days in unprotected, directly exposed individuals. If not treated immediately, the inhalation form of the disease is usually fatal. Some agents, such as the organisms that cause smallpox and plague, are transmitted person to person and could initiate highly contagious spread beyond those directly exposed.

1.4.3. Biological weapons include both pathogens and toxins. Pathogens are defined as organisms that cause disease in man and include bacteria, rickettsia, viruses, and fungi. Bacterial agents that produce anthrax, plague, tularemia, and Q-fever may be grown and exploited for military purposes. These organisms can produce a wide range of results, with varying degrees of morbidity and time of onset. Routes of entry include: percutaneous, ingestion, inhalation, and parenteral, which impact dramatically on the effective dosage of the agent. Alternatively, organisms can be grown to produce toxins that are exploited in weapons, for example, *Clostridium botulinum*, which produces neurotoxins that cause botulism. It can cause debilitating or lethal effects within a few hours of exposure, but is not contagious.

1.4.4. Toxins are poisonous compounds produced by living organisms. They are usually proteins that act upon specific receptors in the body. Toxins can be either lethal or highly incapacitating, with some having potentially greater toxicity than well-known CW agents. Toxins are produced by a variety of organisms, including microbes, snakes, insects, spiders, sea creatures, and plants. Algal toxins (derived from algae) are suited for BW purposes because of their high toxicity, the lack of vaccines and medical treatment, and the lack of detection systems deployed against them.

1.4.5. For BW agent characteristics (e.g., transmission, incubation period, persistence, etc.), refer to *Medical Management of Biological Casualties Handbook* published by the US Army Medical Research Institute of Infectious Diseases (USAMRIID). The handbook can be downloaded from their website: http://www.usamriid.army.mil/education/bluebook.html.

1.5. Chemical Warfare (CW) Agents.

1.5.1. CW agents can be divided into four types: nerve, cyanide (blood), vesicant (blister), and pulmonary (choking) agents:

1.5.1.1. Nerve agents include the G series and V series. These agents affect the nervous system's ability to function correctly, thereby interrupting bodily functions such as breathing. Specifically, they inhibit acetylcholinesterase and the medical effects are a result of excess acetycholine.

1.5.1.2. Cyanides (blood agents) are absorbed into the body primarily by inhalation. They prevent the normal utilization of oxygen by the cells and cause rapid damage to body tissues. Blood agents such as hydrogen cyanide (AC) and cyanogen chloride (CK) are highly volatile and in the gaseous state dissipate rapidly in air.

1.5.1.3. Vesicants (blister agents) are used primarily to cause medical casualties. These agents may also be used to restrict use of terrain, to slow movements, and to hamper use of materiel and installations. Vesicants affect the eyes and lungs and blister the skin. Sulfur mustard, nitrogen mustard, and lewisite are examples of blister agents.

1.5.1.4. Pulmonary (choking) agents are the oldest chemical warfare agents and include phosgene and chlorine. Because they are gases, they are nonpersistent and dissipate rapidly in a breeze.

1.5.2. There are also a whole range of nonlethal agents that have been developed to include tear gas, vomiting agents, and incapacitating agents. These agents would generally be used in conjunction with lethal agents. For example, use of a vomiting agent to keep troops from donning protective masks would be deployed first, followed by a lethal CW agent.

1.5.3. The effective use of chemical weapons relies on many factors including an effective employment strategy, a delivery platform, and the agent itself. While many nations possess chemical agents or the capability to produce them, few have well defined employment strategy to use them in any manner other than as a weapon of mass terror. A nation must also have a method to deliver the agent. Most conventional munitions can be modified to deliver lethal and nonlethal chemical agents. Typical delivery methods include: aerial bombs, artillery rockets, artillery shells, mortar rounds, bomblets, mines, and missile warheads. Chemical agents can also be dispersed using air and ground-based aerosol generators or sprayers. The number of casualties depends on the number of people in the area, the length of warning, and the degree of protection, as well as the persistency and lethality of the agent used. Weather and terrain are also major factors as they affect chemical agent dispersal and dissipation.

1.6. Nuclear Weapons/Radiological Dispersal Devices (RDDs).

1.6.1. These weapons range greatly in size and energy yield and can be employed by a variety of means. A radiological dispersal device (RDD) is a device that contains explosives and radioactive material. The media often refers to this device as a “poor man’s nuclear weapon.” The device is intended to disperse radioactive material and does not require the use of sophisticated nuclear components. Deployment of a RDD could result in life threatening radiation injuries without the blast or heat effects that accompany a nuclear weapon.

1.6.2. Nuclear capability is possessed by a growing number of countries. While blast and thermal injury will account for most of the casualties, radiation effects will also be significant.

1.6.3. A nuclear incident has the potential to instantaneously produce a very large number of casualties, severely burdening the entire medical evacuation and treatment system. The difference between conventional weapons and nuclear weapons is the different types and extent of injuries produced. Many of the patients injured by nuclear weapons will require evacuation. A patient with multiple injuries will be at extremely high risk, frequently requiring ventilator respiratory support. Effectiveness of treatment is related to appropriate supply levels and numbers of medical personnel, advanced diagnostic capability, use of equipment and techniques within the current standard of care, specialty consultation, medical information access, communication and air evacuation, and ability to process tests and data rapidly. Electromagnetic pulse (EMP) released by the blast may disrupt communications, computers, and biomedical equipment and certainly could have medical impact.

1.6.4. In addition to the effects of blast, heat, and radiation on equipment, personnel, facilities, and communications, the psychological effects of such weapons are enormous. Potential for a mass casualty situation is significant.

1.7. Toxic Industrial Chemicals (TICs) and Toxic Industrial Materials (TIMs).

1.7.1. There is a growing concern that the wide availability of many TICs and TIMs makes them potential tools for attacks against our forces. While relatively benign and not usually considered a primary threat, these materials are generally available from commercial sources and can be easily obtained in large quantities. Their release could cause casualties or disrupt operations. Gases and vapors can pose serious atmospheric health or explosive hazards, whereas liquids and solids may be used to contaminate potable water or food supplies. Some materials may be made more toxic with relatively simple chemical modifications. Hostile forces could target industrial plants, agricultural warehouses, or treatment facilities located on or near a deployed site. TIC/TIM examples include: insecticides, herbicides, fertilizers, and the raw chemicals/solvents used to manufacture them (i.e., chlorine gas, acids, etc.); petrochemical facilities (explosive gases, flammable liquids); nuclear materials (research laboratories, nuclear medicine, nuclear power plants); and research laboratories (chemical and biological materials).

1.7.2. Depending on the type and quantity of TICs/TIMs, a deliberate release could present a short- or long-term hazard at the release site and for those within the downwind chemical plume. They would disperse similarly as chemical warfare agents. The vapors tend to remain concentrated downwind from the release point and in natural low-lying areas such as valleys, ravines, or man-made underground structures. High concentrations may remain in buildings, woods, or any area with low air circulation. They can be stable and persistent. Immediate evacuation outside the hazard's path is the best course of action in case of TIC/TIM release.

1.7.3. The protective mask, ensemble, and military standard collective protection (CP) filters may provide only limited protection. Shelter-in-place procedures may be ineffective for certain toxic gases. The greatest risk from a large-scale toxic chemical release occurs when personnel receive little or no warning, are unable to escape the immediate area, and are overcome. Refer to the following for planning and response guidelines: AFI 10-2501 [Draft], *Full Spectrum Threat Response Operations*; AFH 10-2502, *WMD Threat Planning and Response Handbook*; AFMAN 32-4002, *Hazardous Materials Emergency Planning and Response Program*; AFMAN 10-2602 [Draft], *Nuclear, Biological, Chemical, and Conventional (NBCC) Defense Operations and Standards*; AFMAN 32-4005, *Personnel Protection and Attack Actions*; National Institute for Occupational Safety and Health, *Pocket Guide to Chemical Hazards*; and US Department of Transportation, *North American Emergency Response Guidebook (ERG),* to preplan and predict downwind hazard distances for day or nighttime release. Refer to HQ AFCESA publication *Protective Actions For A Hazardous Material Release, A US Air Force Protection Actions Planning Guide For Individuals and Facility Managers* for shelter in-place guidelines and protective actions.

Chapter 2

COMMAND, CONTROL, AND COMMUNICATIONS

2.1. Command and Control. Command and control of Air Force medical assets is vested in the line of the Air Force (LAF). The information in this chapter is consistent with AFDD 2, *Organization and Employment of Aerospace Power*, and AFTTP 3-42.1 [Draft], *Medical Command and Control.*

2.2. Operational Command Relationships.

2.2.1. The air and space expeditionary task force (AETF) is the designated US Air Force organization to fulfill the joint task force (JTF) and joint forces air component commander (JFACC) campaign objectives. Within the AETF organizational structure, expeditionary wings, groups, and squadrons are established to provide administrative control (ADCON) of air force forces.

2.2.2. An AETF encompasses all US Air Force forces assigned or attached to the JTF and includes other forces dedicated to the JTF mission provided via reachback. The command element includes the AETF commander (the COMAFFOR), a staff, and a command and control (C2) function. The joint force commander (JFC) should delegate operational control (OPCON) of assigned/attached US Air Force forces to the COMAFFOR. The COMAFFOR typically does not delegate OPCON to subordinate commanders.

2.2.3. The supported air component will establish command relationships within an AETF in the tasking orders. Medical force packages deployed into the theater of operations should be activated by special order as an expeditionary medical squadron or group, unless attached to a larger medical unit (a small logistics team may be attached to an expeditionary medical operations squadron [EMOS]). Deployed medical forces should be under the operational control of the COMAFFOR, who also exercises specified ADCON over these forces when attached.

2.2.4. Medical force packages may be designated by tasking order as deployed in **direct support** to an expeditionary unit; or in **general support** to multiple units, or to the entire theater. As an example, an EMOS may be deployed to Base-X in direct support of the host wing and should be attached to that wing for ADCON purposes. A theater epidemiological team (TET), or other expeditionary medical support (EMEDS)-independent UTCs, may also be deployed to Base-X and be attached to the same wing for ADCON purposes but tasked in general support to the theater under operational control of the COMAFFOR.

2.3. Operational Communications.

2.3.1. The Annex K and Annex Q of the operation plan (OPLAN) detail the communications architecture between echelons of command and between supported and supporting units, and provide security procedures and frequencies. In cases where no OPLAN is published, the

tasking order should provide communications detail or it is determined in predeployment planning between the DMC and the supported Air Force forces (AFFOR) Surgeon (SG) for medical communications such as between DMC and the patient movement requirements center [PMRC] and within the deploying aerospace expeditionary force (AEF) for internal communications. It is critical to ensure that communications assets and systems are compatible with systems used in the theater of operations.

2.3.2. A wing staff is usually established at the air expeditionary wing (AEW) level to provide ADCON support to attached forces. This staff provides personnel, intelligence, operations, logistics, plans, and communications support. Upon beddown, it is important for the DMC to establish a support relationship with the wing staff. The medical logistics noncommissioned officer (NCO) needs to know how to access logistics support. The medical communications NCO needs access to communications and systems support. However, the AEW's staff likely has no medical representative to provide medical-unique support. Therefore, upon beddown it is critical for the DMC to reestablish communication with the AFFOR Surgeon's staff for medical-unique logistics support, medical intelligence, and functional guidance. This relationship should already exist from communications during predeployment planning.

2.3.3. In a high-threat NBC area, the communications architecture includes lines of communication among deployed combat units, medical units tasked with medical care, and specialized units providing NBC detection and warning functions, either in direct support to deployed unit, or in general support to several units or the theater. The DMC must understand this NBC-related communications architecture to effectively gain NBC threat intelligence and associated guidance, and to upchannel information and data for analysis by specialized teams tasked with NBC surveillance functions. Chapter 4, "Planning Considerations," addresses specialized NBC teams and their lines of communication.

Chapter 3

ROLES AND RESPONSIBILITIES

3.1. Deployed Medical Commander (DMC) or Senior Medical Officer (SMO). The DMC or SMO will face medical tasks unprecedented in modern American warfare in the event of an NBC attack on an air base. Mass casualty situations inherently exceed the capability of normal medical care and NBC events may further stress these systems to the point of breaking. Therefore, the DMC must aggressively plan and prepare prior to an event in order to provide appropriate force health protection to the wing mission and to prepare his/her unit's ability to operate in NBC environments. Ensuring AETF mission success is paramount—proper planning, aggressive casualty prevention programs integrated into the wing mission, triage and life saving activities will minimize the effect of adversary use of NBC weapons and contribute to AETF mission success. This chapter describes roles, responsibilities, and tasks for DMCs and senior personnel during predeployment, deployment, and postdeployment to NBC high threat areas. Predeployment is assumed to start upon receipt of a warning order or other notification of imminent deployment.

3.2. DMC Medical Planning.

3.2.1. The DMC's assets and capabilities must be fully integrated into the wing mission to ensure mission success. There will be a variety of in-place and/or deployed medical assets and capabilities. The DMC will use this TTP, other TTPs in the 3-42 series, AFMAN 10-2602 [Draft], *Nuclear, Biological, Chemical, and Conventional (NBCC) Defense Operations and Standards,* UTC CONOPS, local plans, line of the AF guidance, and their operational knowledge and experience to employ limited resources to support the wing mission and assure effective passive defense in an NBC attack. In most cases, NBC planning and response are coordinated through the AETF survival recovery center (SRC) by the Civil Engineer Readiness Officer and/or NCO. The DMC, as a member of the battlestaff, must ensure the AETF knows and understands the medical capabilities and constraints in NBC environments and the requirements of the deployed medical facility (DMF) to support the wing mission in NBC environments. The DMC should ensure a Bioenvironmental Engineer (BEE) or NCO (if available) is tasked to the SRC to serve as the health risk assessor and command advisor for nuclear, biological, and chemical attacks and recovery actions. The biological augmentation team (BAT) or theater epidemiology team (TET) can be consulted for preliminary biological agent identification and consultation. Additionally, the assigned public health officer is a resource for BW agent consultation regarding the medical effects, epidemiology, prevention and control, surveillance, vaccination, prophylaxis and treatment. When this specialty is not locally available, the DMC should contact the COMAFFOR for guidance and support. Refer to AFH 32-4014, Vol 1, *USAF Operations in a Chemical and Biological (CB) Warfare Environment, CB Planning and Analysis,* for specific guidance on how the wing NBC SRC is normally organized. (Note: AFH 32-4014 will be superseded by AFMAN 10-2602 [Draft], *Nuclear, Biological, Chemical, and Conventional (NBCC) Defense Operations and Standards.)*

3.2.2. DMCs must know and understand the operational concept and intent of their commanders and the COMAFFOR as expressed in the various OPLANs/operation orders (OPORDs) and annexes (Annex Q and other NBC relevant annexes). Communication between the DMC (through their chain of command) and the COMAFFOR's staff should ensure that the DMC fully understands and is able to support the mission with assigned resources. DMC reporting should include any limiting factors (LIMFACS) through medical reports (MEDREPs) and/or situation reports (SITREPs). The DMC must create and maintain a communications link with the AFFOR Surgeon and ensure health surveillance reporting requirements are implemented.

Chapter 4

PLANNING CONSIDERATIONS

4.1. Operational Planning. Operational doctrine for the employment of AFMS deployable assets is in development. The Air Force theater medical system operates within the AETF and JTF structures to support combatant commander objectives. When the threat of NBC use is high, a robust expeditionary NBC structure is required to support the mission. To assist operational planners and the AFFOR Surgeon as they develop contingency specific medical CONOPS in support of joint force commander (JFC) deliberate and crisis action plans, this document offers the following planning guidance for employment of AFMS assets in NBC environments. Planners must review and understand the MISCAPS and CONOPS of the various AFMS UTCs to fully understand how best to employ them. Attachment 2 is a summary of the UTC MISCAPS with NBC relevance.

4.2. Commander, AFFOR (COMAFFOR). COMAFFOR medical assets—both NBC specialty and general casualty care—are available to provide health service support in the theater of operations. Using his/her operational knowledge and experience, the COMAFFOR must balance available lift and time against the NBC and conventional threats to lay down medical assets at theater and wing levels to maximize health service support. Medical UTCs are modularized and employed incrementally using a tiered approach with a tailored response based upon mission requirements, medical threat, and population at risk (PAR). Increasing NBC and other medical threats should be considered when evaluating the proper order of buildup of capabilities. In operations where the planner cannot lay down a more robust medical NBC capability, they should use a hub and spoke concept and utilize opportune transportation to support far forward locations. This approach increases response time and NBC risk at each location and must be balanced against lift constraints and NBC threat in the theater and at each operating location.

4.3. Medical Unit Type Code (UTC) Laydown. Successful NBC attacks may produce mass casualty events. When the AFFOR theater medical concept of operations is developed, planners must consider the risk of NBC attack and the increased burden on medical infrastructure. The medical laydown and CONOPS for NBC environments should be seamless and consistent with non-NBC CONOPS to the extent possible. The same building block approach should be used, where medical NBC-specific assets are laid over conventional medical assets. The flow of these assets into the theater must be driven by the mission needs of the JFC and relative medical threats.

4.3.1. The operational planner should understand the capabilities and limiting factors (LIMFACS) of the UTCs when planning health service support (HSS) throughout the theater of operations in NBC environments (refer to UTC CONOPS, MISCAPS, and Allowance Standards). The medical UTCs and their potential application in NBC environments are listed in Table 4.1. Unless otherwise indicated, without CP, UTCs will be unable to treat casualties in chemical contaminated environments and may suffer operational degradation in radiological or biological environments.

Table 4.1. Recommended Medical Force Package

Asset	NBC Threat	"N" Only	"B" Only	"C" Only
EMEDS Basic		X[2]	X[2]	
EMEDS +10 beds		X[2]	X[2]	
EMEDS +25 beds		X[2]	X[2]	
CP EMEDS Basic	X[2]			X[2]
CP EMEDS +10 beds	X[2]			X[2]
CP EMEDS +25 beds	X[2]			X[2]
PAM Team	X[4]	X[4]	X[4]	X[4]
WMDT	X	X	X	X
SPEARR	X[4]	X[4]	X[4]	X[4]
CASF/MASF	X[1]	X[1]	X[1]	X[1]
CCATT	X[1]	X[1]	X[1]	X[1]
SME/IDMT	X[1]	X[1]	X[1]	X[1]
Combat Stress Team	X[3]	X[3]	X[3]	X[3]
BEE NBC Team	X	X	X	X
BAT Team	X		X	
Infectious Disease Team	X		X	
Theater Epi Team	X[3]	X[3]	X[3]	X[3]
AFRAT Team	X[3]	X[3]		

Note 1—Clinical capabilities from squadron medical elements (SMEs) and independent duty medical technicians (IDMTs) will provide only minimal ability to treat and care for NBC casualties, and these assets do not have CP systems. Without CP, their ability to treat casualties in NBC environments will be limited. CP begins at the EMEDS Basic level. The contingency aeromedical staging facility (CASF)/mobile aeromedical staging facility (MASF) do not currently have CP and any patients awaiting movement during an attack will require individual protective equipment (IPE) or protective patient wraps.

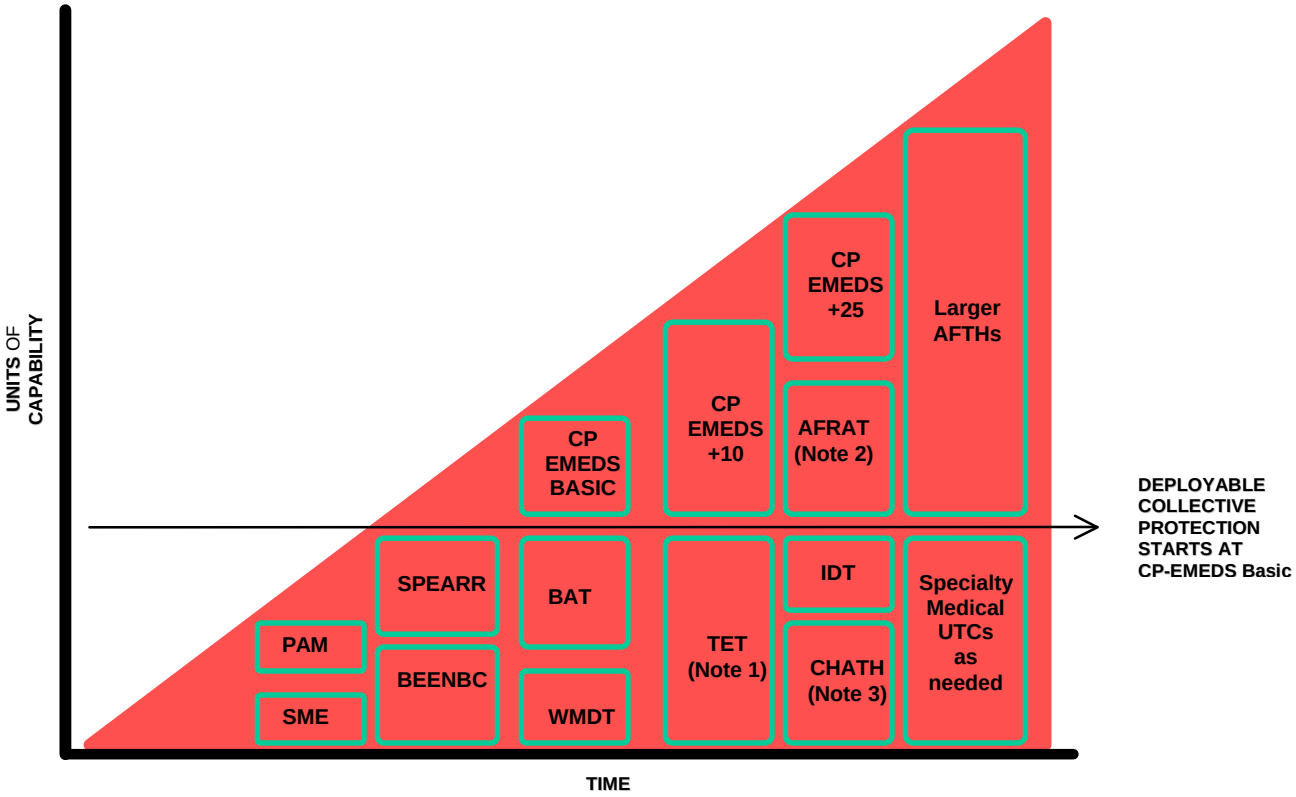
Note 2—The population at risk (PAR) will determine if Basic, +10, or +25 bed sizes are adequate. [Note the definition of PAR as it is used in this document; not to be confused with NBC defense personnel's use of the acronym to mean post-attack reconnaissance.]

Note 3—The combat stress team, the theater epidemiology team, and the Air Force radiation assessment team (AFRAT) are deployed in general support of the theater of operations rather than as direct support installation-level medical assets.

Note 4—The PAM and SPEARR teams are organic to the EMEDS packages and have limited NBC defense capabilities and resources. Although these teams may already be in place or may be deployed to a NBC environment, these assets should not be intentionally deployed alone.

4.3.2. Figure 4.1 reflects a notional time-phased incremental employment of many of the capabilities listed in Table 4.1. This figure is intended to guide the considerations and aid the operational art of the planner—the planner must balance available lift against threat of NBC use and population at risk.

Figure 4.1. Notional Time-Phased Incremental Employment of Medical Capabilities Under NBC Threat



Note 1—The TET is deployable to the theater level in support of the joint task force (JTF) surgeon (SG) or the air component SG.
Note 2—The AFRAT is deployable (in nuclear threat environments) to the theater level in support of the joint task force (JTF) surgeon (SG) or the air component SG.
Note 3—The CHATH will be deployed to support tent, expandable, modular, personnel (TEMPER)-tented medical configurations (primarily in PACAF) until they are replaced with Small Shelter System (i.e., EMEDS) tents in the inventory.

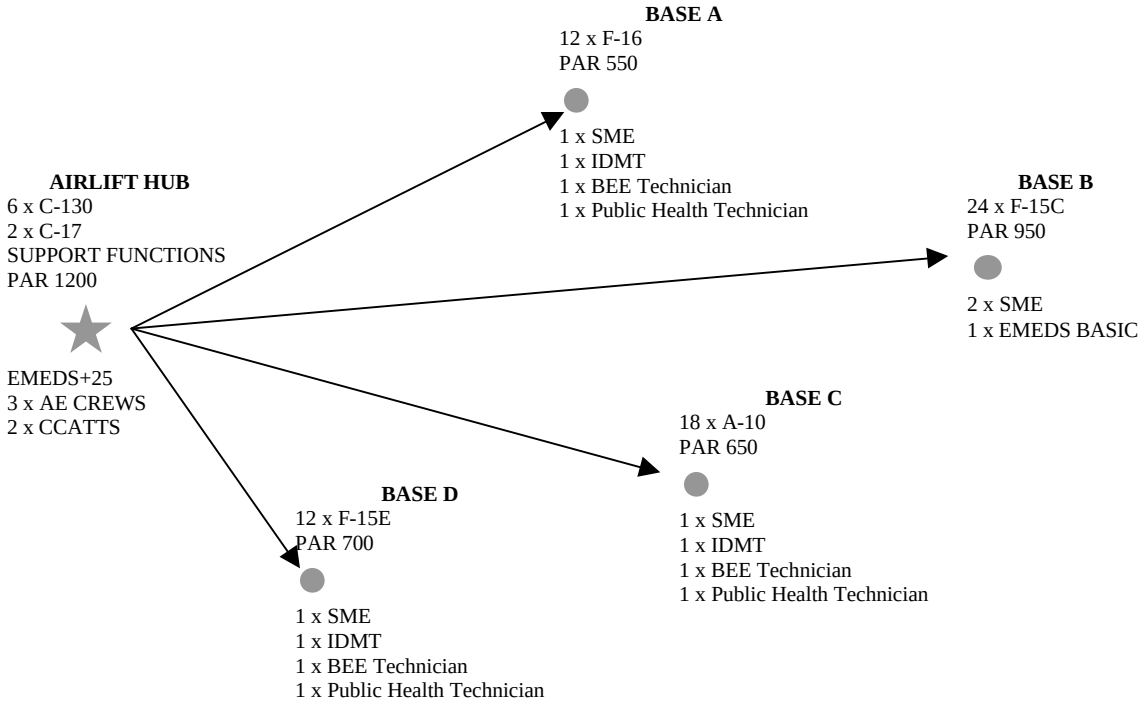
4.3.2.1. For instance, deployable CP systems will not be available until CP EMEDS Basic. Smaller medical units (i.e., ATC, PAM, GRL, SPEARR) and any aeromedical staging facility (ASF)/mobile aeromedical staging facility (MASF) will have limited clinical capabilities in contaminated environments. Commanders of these assets must plan and prepare to cease shirtsleeve clinical care and don individual protective equipment (IPE) (both medical personnel and patients) upon chemical or biological attack. Upon attack warning, medical personnel will place patients who cannot wear IPE

due to their injuries in NBC protective wraps (if available) and continue lifesaving care to the greatest extent possible.

4.3.2.2. Commanders of medical assets must preplan alternate facilities, as well as route/mode of evacuation for contaminated casualties, in the event their infrastructure is contaminated with persistent chemical agents. Casualty prevention-oriented UTCs should arrive prior to treatment-oriented UTCs, once basic medical care coverage (e.g., SME, PAM, IDMT, etc.) is in place on site. Prevention through disease surveillance and risk management may limit exposed populations. Wartime Medical Decontamination Teams (WMDTs), and/or local line/medical personnel and materiel of opportunity will be used to provide patient decontamination should the need occur. Two FFGLB teams may be required to sustain 24-hour patient decontamination capability.

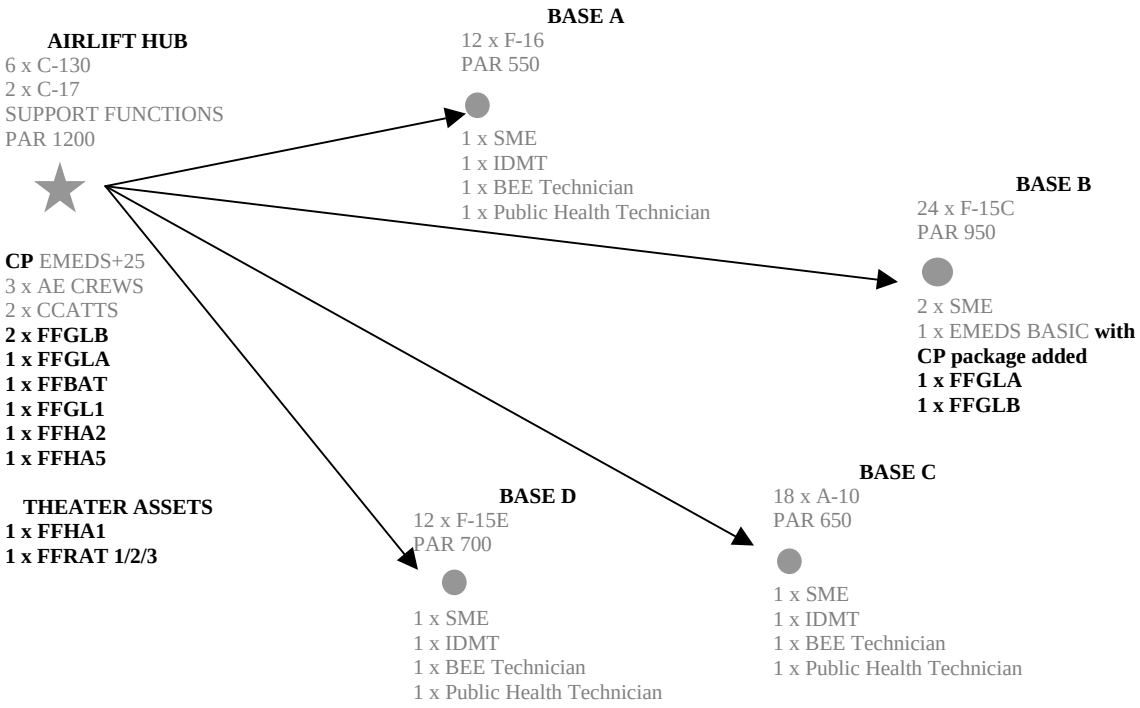
4.3.3. Figure 4.2 illustrates the beddown to support a medical CONOPS that uses squadron medical elements (SMEs) at forward operating bases. They are supported by mobile trauma stabilization and fixed-wing aeromedical evacuation (AE) from the Level 3 deployed medical facility at the intratheater airlift hub. Base B has organic EMEDS Basic support due to a larger PAR and distance from the airlift hub.

Figure 4.2. Notional Conventional Laydown of Medical Assets



4.3.4. The beddown in Figure 4.3 supports the same medical CONOPS as in Figure 4.2 but adds medical NBC capability to account for the high NBC threat. Two patient decontamination teams with one equipment set, one biological augmentation team, one bioenvironmental engineering NBC team, and one augmented infectious disease team (IDT) provide direct support to the CP EMEDS+25 at the airlift hub and provide general support to specific forward operating locations. One patient decontamination team with decontamination equipment (FFGLA) is attached to the EMEDS Basic at Base B, due to the distance from the airlift hub. Additionally, one theater epidemiology team and a radiological assessment team are attached to the wing at the airlift hub for ADCON, but are in general support to the theater under OPCON of the COMAFFOR (refer to paragraphs 2.2.2. and 2.2.3.).

Figure 4.3. Notional Laydown of Medical Assets Under NBC Threat



4.3.5. Figures 4.2 and 4.3 are meant to illustrate that AFMS NBC capability must be laid in on existing non-NBC UTCs. The notional laydown illustrated in these figures are intended for the PARs listed. PARs will be highly variable based on site-specific environments. The medical capability at each location must be appropriately matched to the PAR.

4.4. Casualty Estimates. The joint tool approved for calculating medical requirements is the medical analysis tool (MAT). MAT does not now include the capability to generate medical requirements for NBC casualties. The Joint Readiness Clinical Advisory Board (JRCAB) is

developing Task, Time, and Treater files for use in the MAT for various NBC casualty profiles. These files can be used to determine Class VIII equipment and supply requirements. The Services are responsible for generating casualty estimates and tracking casualty rates for contingency operations. In the Air Force, this is the responsibility of the planning and operations communities.

4.5. Protective Measures with Treatment Areas. The senior Air Force commander may delegate the authority to determine Mission Oriented Protective Posture (MOPP) levels and other protective measures within medical areas or sectors to the DMC or SMO. To implement this action, the medical facility must have the capability to provide NBC detection and identification capabilities similar to that provided by Civil Engineer NBC Reconnaissance Teams. This authority, if exercised, must be personally delegated by the senior Air Force commander. The medical staff must also verify with the NBC defense cell that medical areas are not within the downwind vapor plume of an agent disposition area. Medical personnel will conduct detection, monitoring, and contamination assessment within these designated areas. See AFMAN 10-2602 [Draft], *Nuclear, Biological, Chemical, and Conventional (NBCC) Defense Operations and Standards* for additional information on protective measures and MOPP. (Refer to paragraph 5.4.8 for details).

4.6. Tactical Planning.

4.6.1. Predeployment Planning Considerations and Responsibilities (In-Garrison). Most of these actions should have been accomplished prior to receiving the warning order—the intent of this section is to serve as a reminder to the DMC to ensure his forces are prepared to deploy, quickly reach initial operational capability (IOC), and conduct their mission. The deploying medical commander is responsible for preparing medical forces to deploy and providing force health protection guidance to the deploying wing commander for use in the development of wing deployment plans.

4.6.1.1. Medical Deployment Plans. Request and review the COMAFFOR's supporting plan to the combatant commander's operation plan, the NBC passive defense plans, the OPLAN Annex Q, the deliberate plans from the beddown base (Base X Disaster Preparedness Plan 32-1 [refer to AFI 32-4001, *Disaster Preparedness Planning and Operations* to be superseded by AFI 10-2501 (Draft), *Full Spectrum Threat Response (FSTR) Planning and Operations*], the medical contingency response plan (MCRP) [refer to AFI 41-106, *Medical Readiness Planning and Training*] or equivalent, and the Base X Support Plan [refer to AFI 10-404, *Base Support and Expeditionary Site Planning*]).

4.6.1.2. Predeployment Plan. This plan defines how the medical force will arrive at the beddown location, detailing tasks required to set-up and achieve IOC status. Based on tasking order direction and the NBC threat assessment, the DMC considers NBC passive defense measures in generating the beddown plan. In the chronology of beddown actions, the deploying DMC should determine when detection, surveillance, protective, and decontamination capabilities need to be operational, driving beddown task priorities

and assignments. Specifically, when multiple medical UTCs deploy as a force package, the DMC must determine the balance between casualty care and NBC detection/defense capabilities when tasking work details to orchestrate set-up. Key tasks to be prioritized by threat and command direction:

4.6.1.2.1. Establish chemical detection and reporting capability for the DMF within medical areas or sectors.

4.6.1.2.2. Establish NBC sampling capability.

4.6.1.2.3. Establish pathogen identification capability.

4.6.1.2.4. Establish radiation detection capability to ensure DMF is equipped to detect radiation if unit is deployed in a location where a nuclear/radiological threat is expected.

4.6.1.2.5. Initiate medical surveillance to support early biological agent detection and disease and nonbattle injury (DNBI) reporting.

4.6.1.2.6. Establish communication links with medical intelligence and NBC reporting systems.

4.6.1.2.7. Establish medical collection protection capability where available.

4.6.1.2.8. Establish patient decontamination capability.

4.6.1.2.9. Determine PAR and any NBC casualty estimates.

4.6.1.2.10. Tailor personnel and equipment to meet JFC and COMAFFOR required capabilities.

4.6.1.2.11. Ensure appropriate deploying unit NBC training has occurred.

4.6.1.2.12. NBC and Conventional Defense Training (NBCCDT) and self-aid/buddy care (SABC)—ensure all personnel can don/doff mission-oriented protection posture (MOPP) gear and conduct mission essential tasks at appropriate MOPP levels. Refer to AFMAN 10-100, *Airman's Manual*, and AFMAN 32-4005, *Personnel Protection and Attack Actions* (to be superceded by AFMAN 10-2601 [Draft], *Counter NBC Operations and Standards*), for specific actions.

4.6.1.2.13. UTC specific—ensure mission specific UTC training has been accomplished (refer to AFI 41-106, *Medical Readiness Planning and Training*).

4.6.1.2.14. Identify NBC-related shortfalls/LIMFACS to wing and major command (MAJCOM).

4.6.1.3. Civil Engineer (CE) Support. Medical and CE personnel work together to provide the base with a fully integrated NBC defense capability. The specific roles and responsibilities of medical and CE UTCs are described in Attachment 6, *NBC Defense–Related Task Summary*. The DMC should coordinate with CE Readiness when integrating NBC considerations into the beddown plan. This coordination prevents duplication of effort and closes capability gaps. CE support may reduce the time required to establish medical care capability by allowing the DMC to emphasize casualty care set-up first.

4.6.1.4. Load Plan. Based on beddown plan priorities and the time-phased flow of medical materiel and personnel, the DMC coordinates with the wing's logistics planner to generate a load plan. The plan enables beddown in an NBC area by deliberately flowing NBC passive defense capabilities into the beddown location at the most appropriate time in the wing's overall materiel and personnel flow schedule.

4.6.1.5. Wing Deployment Plans. The DMC uses NBC threat assessments to formulate force health protection recommendations to the deploying wing commander. Some force health protection actions may be clearly specified in the JFC's tasking order. Considerations include prophylaxis and vaccinations, medical screening criteria, and medical threat briefings to establish individual risk management procedures. Key tasks:

4.6.1.5.1. Provide guidance to deploying forces on appropriate NBC force health protection (FHP) actions.

4.6.1.5.2. Ensure vaccinations are administered and chemical prophylaxes are issued.

4.6.1.5.3. Ensure NBC related combat stress issues are addressed/considered.

4.6.1.5.4. Ensure deploying forces are current in self-aid and buddy care (SABC).

4.6.1.5.5. Receive joint operations area specific threat brief from wing intelligence.

4.6.1.5.6. Ensure deploying forces are trained and equipped to meet those threats.

4.6.1.5.7. Ensure senior medical staff fully understands medical effects and ramifications of the enemy order of battle and operational environment.

4.6.1.5.8. Conduct predeployment health assessments of deploying forces (DD Form 2795) in accordance with (IAW) combatant commander and MAJCOM requirements (refer to CJCS Memo MCM 0006-02, *Updated Procedures for Deployment Health Surveillance and Readiness*).

4.6.1.5.9. Provide medical intelligence analysis and briefings to commanders and deploying forces.

4.6.2. Deployment Considerations and Responsibilities. Upon beddown, the DMC generates or refines the existing Medical Contingency Response Plan (MCRP) to tailor execution details to the specific mission, NBC threat, location, and conditions consistent with Base X Support Plan. Also, the DMC provides medical representation to wing battlestaff and survival recovery center (SRC) and NBC Defense Cell tasked with generating or refining the wing's NBC contingency plans. Refinement of the wing's plans will cause further refinement of the supporting MCRP.

4.6.2.1. Key DMC actions upon beddown of deployed medical assets and capabilities:

4.6.2.1.1. Conduct a vulnerability analysis. Consider intelligence information and enemy threat assessments, meteorological data, terrain information, and the tactical order of battle of the beddown air base. Coordinate with wing operations and CE Readiness to determine casualty estimates. Additional information is addressed in chapter 5, "Casualty Prevention."

4.6.2.1.2. Determine specific actions, procedures, and materiel to maximize NBC contamination avoidance.

4.6.2.1.3. Evaluate the location of the DMF relevant to base operations in NBC environment—CW sectoring, NBC detection and reporting network, patient movement, and patient decontamination are relevant issues for the DMC and staff to consider.

4.6.2.1.4. Implement or change deliberate planning factors (Base X Support Plan, Base OPLAN 10-2, or equivalent). Develop medical NBC related plans (MCRP or equivalent) supporting the wing NBC passive defense plans and consider mutual support arrangements with other coalition and host-nation medical facilities.

4.6.2.1.5. Integrate into wing NBC threat working group and the survival recovery center (SRC)—assign medical representatives to battlestaff and SRC.

4.6.2.1.6. Receive and assess local NBC threat and intelligence briefings—posture DMF to meet the threat.

4.6.2.1.7. Establish communication and procedures with the patient movement requirements center (PMRC) for patient movement of NBC casualties.

4.6.2.2. Review **casualty prevention** responsibilities (see chapter 5, "Casualty Prevention," for detailed procedures):

4.6.2.2.1. Employ and conduct medical/environmental surveillance and disease-early warning. Employ the GEMS or other surveillance system as approved for use by the

supported combatant commander. Ensure/establish mechanism for reporting medical information that may indicate covert BW agent attack to commanders and the SRC.

4.6.2.2.2. Conduct health-based NBC risk assessments and advise commander. Continuously review and update these assessments as necessary.

4.6.2.2.3. Conduct sampling and analyses to identify, evaluate, record, and report NBC agent and occupational and environmental exposures.

4.6.2.2.4. Conduct a food and water vulnerability assessment. Take appropriate countermeasures to protect the food and water supply from possible sabotage or inadvertent contamination.

4.6.2.2.5. Provide vaccines, prophylaxes and postexposure countermeasures consistent with theater directives.

4.6.2.2.6. Conduct baseline vector surveillance to identify local vectors of disease and potential breeding sites.

4.6.2.2.7. Capture medical and environmental exposure data. Ensure procedures are maintained for appropriate reporting and archiving of health surveillance data and reports. Document notable exposures in individual health records.

4.6.2.2.8. Conduct or arrange for BW agent presumptive identification and diagnosis.

4.6.2.2.9. Implement the transportation mechanism for shipping samples to laboratories for definitive analyses that cannot be accomplished by local assets.

4.6.2.2.10. CP of medical materiel and assets. Operate deployed CP EMEDS+10/25. Plan for alternate DMF in the event the existing facility is contaminated and rendered unusable.

4.6.2.3. Review **casualty care** responsibilities (see chapter 6, "Casualty Care and Management," for detailed procedures):

4.6.2.3.1. Provide casualty management consistent with deployed level of casualty care, logistical tail, and available CP.

4.6.2.3.2. Establish patient decontamination policy. Decontamination of casualties minimizes the detrimental effects of contamination, protects those who move and treat them, and prevents contamination of the medical facility. Units and individuals have primary responsibility for decontamination during the self-aid and buddy care process (i.e., M-291 kits). This should be done as soon as contamination is found and prior to moving them to the medical facility—quick action saves lives. Upon completion of SABC efforts and first responder actions, contaminated casualties

should be moved into the medical treatment system as soon as possible, even if decontamination is not complete. The medical facility will plan for and provide patient decontamination. The wartime patient decontamination team (UTC FFGLA/FFGLB) provides this capability. Medical units without a WMDT may need to establish decontamination capability using line and/or medical personnel and materiel of opportunity.

4.6.2.3.3. Establish ground movement policy for NBC casualties on the air base.

4.6.2.3.4. Recommend restriction of movement and quarantine procedures for infectious biological warfare agent casualties as well as for relevant vectors and fomites.

4.6.2.3.5. Ensure availability of vehicles and establish routes for movement of contaminated casualties to the DMF.

4.6.2.3.6. Establish contaminated casualty flow routes within the DMF area.

4.6.3. Postdeployment Considerations and Responsibilities.

4.6.3.1. Prior to redeployment, ensure postdeployment health assessments (DD Form 2796) are completed. Particular emphasis on actual or perceived environmental exposures to NBC agents or materials should be highlighted.

4.6.3.2. Prior to redeployment, ensure environmental surveillance data addressing perceived environmental exposures has been properly documented and stored through systems such as GEMS and Command Core.

4.6.3.3. Continue medical treatment of casualties per established treatment protocols. Thorough and accurate documentation of exposures and any treatments received is of paramount importance.

4.6.3.4. Monitor redeploying Service members for the duration of the latency period of the biological threat agents of concern as indicated by intelligence assessments.

4.6.3.5. Write and transmit lessons learned IAW Service requirements and the Joint Uniform Lessons Learned System (JULLS).

Chapter 5

CASUALTY PREVENTION

5.1. Overview.

5.1.1. Casualty prevention is an NBC passive defense force multiplier focusing on threats posed by enemy forces and complex endemic and environmental health threats. Failure to counter these threats jeopardizes mission accomplishment.

5.1.1.1. Enemy Threat. The enemy threat depends on the enemy's willingness and ability to use conventional and nonconventional weapons systems; munitions; and nuclear, biological, and chemical agents (NBC). Aggressive application of countermeasures enhances the force's ability to minimize combat injuries, combat and operational stress reactions, and exposure to NBC agents or materials.

5.1.1.2. Health Threat. The health threat depends on a complex set of environmental and occupational factors that combine to produce disease and nonbattle injury (DNBI).

5.1.2. Casualty prevention is an integral part of counter NBC defense operations through passive defense and tactical surveillance. Information provided by ongoing health surveillance and DNBI reporting is critical to counter NBC defense operations. **Passive defense protects personnel from the effects of an NBC attack and improves the capability of personnel to survive and sustain operations in an NBC environment.** The three passive defense measures are **contamination avoidance**, **protection**, and **contamination control**. This chapter provides information to the DMC or SMO on casualty prevention responsibilities and actions during predeployment, deployment, and postdeployment.

5.1.3. Passive defense includes force health protection measures, a process that begins before deployment, and encompasses the entire deployment scenario including contamination avoidance, protection, and contamination control. Preparations for operations in potential NBC environments begin early in predeployment and include threat assessments, medical screening, preexposure immunizations, pretreatments, prophylaxis, quantitative fit testing (QNFT) and risk-based training on the ability to survive and operate (ATSO) in NBC environments.

5.1.4. During deployment the casualty prevention aspects of passive defense must be aggressively pursued and institutionalized throughout the base and deployed medical facility operation to maximize combat effectiveness. Health surveillance may provide the first indication of biological warfare attack. Chemoprophylaxis may be the sole defense sustaining an affected force and could very well be the critical combat force multiplier. Casualty prevention seeks to provide the line commander the best available health-based risk assessment of the tactical situation—improving his/her situational awareness and enabling the warfighter.

5.2. Predeployment Actions.

5.2.1. Medical Estimate of Situation.

5.2.1.1. Casualty prevention initiatives using passive defense measures are planned for early in the predeployment planning process. The Public Health Officer (PHO)/NCO or designated Medical Intelligence Officer (MIO), in conjunction with the medical NBC defense officer and the NBC casualty management officer, evaluates the supported operation/mission and all aspects of the deployed location (additional information on roles and responsibilities are found in AFI 41-106, *Medical Readiness Planning and Training*). The theater air component provides the medical estimate of the situation to deploying bases, usually through reporting instructions to the personnel readiness unit (PRU) or Wing Plans (XP). The PHO/MIO at the deployed base uses this information to generate detailed medical threat information with their associated countermeasures and provides this information to deploying forces to minimize battle and DNBI. Refer to Annex Q of pertinent deliberate/crisis OPLAN or OPORD. The DMC must review the medical estimate prior to deployment to adequately plan for the deployed medical threat.

5.2.1.2. Medical threat is the composite of all ongoing or potential enemy actions and environmental conditions that will reduce combat effectiveness through wounding, injuring, disease, and/or degrading performance. Weapons or environmental conditions that will generate wounded, injured, and sick personnel, beyond the capability of the medical system to provide timely medical care from available resources, are considered major medical threats. Weapons or environmental conditions that produce qualitatively different wound or disease processes are also major medical threats. Elements of medical threat are used to define the vulnerability of and the risk to deployed forces. Medical threats from both environmental and adversary sources are shown below in Table 5.1.

Table 5.1. Medical Threats from Environmental and Adversary Sources

Environmental Sources	Adversary Sources
Naturally occurring diseases	Small arms and fragmentation ordnance and munitions
Hazardous plants and animals	Biological warfare agents
Other environmental hazards (dust, water, TICs/TIMs, air pollution)	Chemical warfare agents
Sustained operations/combat stress	Flame and incendiary
Climate: Heat and Cold Stress	Nuclear warfare
	Blast effect munitions
	Radiological dispersal devices
	Directed-energy devices

5.2.2. Casualty Prevention Measures. The DMC must ensure that all of the following predeployment actions are accomplished prior to deployment:

5.2.2.1. Immunizations. Immunizations are provided IAW AFJI 48-110, *Immunizations and Chemoprophylaxis*. DOD is working to position sufficient quantities of vaccine to protect the force from suspected BW agents. When vaccines are available to protect against a validated BW threat, it is DOD policy (DODD 6205.3, *DOD Immunization Program for Biological Warfare Defense*) that personnel will be immunized with sufficient time to develop immunity before deployment to threat areas. [Ensure investigational new drug (IND) protocols are followed, if applicable.]

5.2.2.2. Chemoprophylaxis. Chemoprophylaxis for some biological and chemical agents is available and will be issued at the time of deployment IAW theater policy or issued from bulk storage at forward deployed locations (see chapter 7, "Logistics"). Theater deployers must be trained prior to deployment on the proper use of these preventive measures. Examples include nerve agent pretreatment, nerve agent antidote kits, and antibiotics. [Ensure IND protocols are followed, if applicable.]

5.2.2.3. Medical Threat Briefing. The MIO will brief deploying troops on the deployed medical threat including: environmental hazards, endemic diseases, hazardous insects, plants, and animals, NBC threat, and appropriate countermeasures. MIO guidance is found in AFI 41-106, *Medical Readiness Planning and Training*. Medical intelligence is available from many sources. The primary source is the Armed Forces Medical Intelligence Center (AFMIC); however, the MIO should also acquire and be cognizant of current operational intelligence of the NBC threat at the deployment location. The medical threat briefing should be provided sufficiently early (ideally at the concept briefing, and directly to the troops) to permit deploying troops to pack needed clothing and supplies and to take appropriate actions prior to deployments.

5.2.2.4. Medical NBC Defense Officer Briefing. The Bioenvironmental Engineer (BEE) (or NCO) in the SRC or Command Post should provide information on medical aspects of the NBC threat and related passive defense measures at the deployment location. The quantitative fit training (QNFT) of protective masks provides training to personnel deploying to medium and high NBC threat environments on the fit-factor protective levels and the best way to don their individual mask which gives them confidence that it fits properly. Refer to AFMAN 32-4006, *Nuclear, Biological, and Chemical (NBC) Mask Fit Liquid Hazard Simulant Training* for procedural guidance for administering quantitative fit training (QNFT) using the M-41 Protection Assessment Test System (PATS). Also important is the availability and capabilities of radiological, chemical and biological agent detectors in theater.

5.2.2.5. Predeployment Medical Questionnaire. All deploying troops must be administered a predeployment medical questionnaire IAW CJCS Memo MCM 0006-02,

Updated Procedures for Deployment Health Surveillance and Readiness, to establish their predeployment health status baseline.

5.3. Deployment Actions. The DMC/SMO should be intimately knowledgeable with the capabilities of the various medical UTCs assigned to the DMF and the local medical capabilities at the deployed location and the reachback capability provided by medical assets assigned to support the theater. Reference Attachment 2 for a description of the NBC related UTC MISCAPS. The DMC has specific passive defense responsibilities to ensure casualty prevention during all phases of deployment. The deployment phase consists of pre-attack, trans-attack, and post-attack postures.

5.4. Deployment Phase: Pre-attack Casualty Prevention Measures.

5.4.1. Site Selection: The DMC in conjunction with the Civil Engineer commander ensures optimal site selection and deployment of medical assets. The DMC should consult the preventive medicine assets (i.e., PHO/PH technician, BEE, IDMT, flight surgeon, SME, etc.) as these people have the expertise and training in site selection. The DMC must employ operational risk management techniques to balance the mission needs of patient movement against the threat of attack and contamination avoidance. For example, move the CP EMEDS to a position that enables the deployed medical facility to stage patients for AE while negating potential casualty movement bottlenecks at non-CP MASFs. Refer to AFPAM 10-219 Vol 5, *Bare Base Conceptual Planning Guide*, for specific considerations related to site selection.

5.4.2. Health Surveillance and DNBI Reporting: The single most effective tool for identifying and targeting health hazards is a robust health surveillance and DNBI monitoring and reporting system. The assigned medical team must develop a DNBI monitoring and reporting system that supports local as well as higher headquarters' (AFFOR Surgeon) requirements. The team must educate all providers on the importance of accurate reporting and follow-up. This process is critical to health risk assessment and may produce the first indication of biological agent attack, particularly if no BW agent point detection systems are deployed.

5.4.2.1. The assigned medical personnel, IDMT, SME, or Prevention and Aerospace Medicine (PAM) team immediately upon arrival establishes a medical surveillance/reporting function to support early recognition and reporting of infectious disease events, including BW agents, and DNBI incidence. A system available for this process is the Global Expeditionary Medical System (GEMS). (See Figure 5.1.) GEMS helps ensure medical surveillance, disease early warning, and reporting of medical information that may indicate covert BW agent attack to the wing commander, SRC, and theater surgeon.

Figure 5.1. The Global Expeditionary Medical System

The Global Expeditionary Medical System (GEMS)

GEMS is a suite of tools to provide Air Force-wide medical force protection through standardized medical surveillance, analysis, and C2. GEMS components include:

-- A Patient Encounter Module (PEM) provides a standard electronic medical record for worldwide patient expeditionary surveillance and rearward connectivity.

-- A Theater Epidemiology Module (TEM) aggregates field medical data, monitors deployed troops for BW/epidemic events, and provides theater medical C2 capability.

-- Algorithms produce disease epidemiology reports as indicators of potential BW attack. Personnel may modify these algorithms to meet local requirements.

-- A Theater Occupational Module (TOM) designed to monitor and track complex endemic and environmental concerns in the deployed setting.

-- Force-wide, command-level, data analysis of deployed medical occurrences is archived at Brooks AFB, Texas.

5.4.2.2. PAM team personnel should establish a surveillance plan to capture exposure data for occupational and environmental health hazards to deployed personnel using applicable reporting modules such as the Theater Occupational Model (TOM) module of GEMS. This mechanism can also be employed to track personnel NBC exposures. As in the occupational setting, most exposures will not result in a clinical outcome if personal protective and collective protective measures are employed or the exposure is at a level below that causing recognizable acute symptoms. This fact makes retrospective analysis of NBC attacks or other environmental exposures for long-term health effects difficult if not impossible as no record of exposure exists in the clinical encounter based medical record.

5.4.3. Vulnerability Assessments and Surveillance Plans.

5.4.3.1. Medical NBC Vulnerability Assessments. Deployed forces must have clean air and water, and safe food in order to carry out their assigned missions. Air, water, and food are highly vulnerable to both intentional and unintentional contamination from human activities, including contamination with NBC agents and toxic industrial chemicals/materials (TICs/TIMs).

5.4.3.1.1. The vulnerability assessment begins with the site survey and continues throughout the deployment phase to redeployment. Careful documentation and resolution of vulnerabilities are critical to protecting the health of the deployed force and resolving postdeployment health concerns.

5.4.3.1.2. The vulnerability assessment must address intentional and unintentional man-made, as well as natural, exposures. PAM teams conduct, maintain and continuously update the vulnerability assessment. Additionally, the PAM team conducts ongoing assessments of food, water, air, and other potential occupational/environmental exposures that could impact the health of the deployed population. With this information, a local commander can have an impact on the four phases of food and water systems—procurement sources, transportation/distribution systems, preparation, and storage.

5.4.3.1.3. The DMC should conduct a risk-based assessment consisting of identifying potential threats and performing an ongoing analysis of vulnerabilities in the deployment area. A medical force health protection assessment fuses intelligence from human (HUMINT), signals (SIGINT), imagery (IMINT), and measurement and signature (MASINT) sources. Counterintelligence, environmental, medical, information, and threat data, and additional information sources assist in developing a cohesive threat picture helpful to force protection decision makers.

5.4.3.2. Food and Water Vulnerability. Commanders should assess the specific threat of conventional as well as intentional contamination to their food and water using available intelligence sources. This assessment should be a part of a focused analysis of the unit's vulnerability and potential mitigation measures. The assessment should be conducted initially and the results reviewed as frequently as the unit's mission and theater of operations dictate. The results of this assessment should be used to determine emergency food and water supplies needed by the installation.

5.4.3.2.1. It is unreasonable to assume that current food and water protective measures in the deployment theater are adequate. Food and water safety, in addition to security, should be implemented jointly by Medical, Security Forces, Services, Civil Engineer, Transportation, Air Force Office of Special Investigations (AFOSI), Intelligence, and Contracting personnel. The results from vulnerability assessments warrant critical review by local and theater leadership, prioritized planning for mitigation, and systematic implementation. This institutionalized process will best ensure improved safety and security of food supplies for consumption by Air Force personnel. (Attachment 3 contains Table A3.1, *Threat Potential of BW Agents to Drinking Water* and Table A3.2, *Effects of Certain Agents on the Appearance of Food*.) Refer to AFI 10-245 *Air Force Antiterrorism(AT) Standards* for additional guidance.

5.4.3.2.2. Roles and responsibilities are:

5.4.3.2.2.1. Installation Commander. The installation commander should direct the overall food and water safety and security program and appoint a food and water safety and security assessment team.

5.4.3.2.2.2. Deployed Medical Commander. The DMC is responsible for the medical aspects of food and water protection throughout the chain of production or procurement and for establishing an ongoing food and water monitoring program during deployment. The DMC, or his/her representative, is a member of the installation food and water safety and security assessment team. The vulnerability of the food and water system to intentional contamination should also be considered when developing a food and water safety surveillance plan. The DMC appoints the public health officer (PHO) and Bioenvironmental Engineer (BEE), as a minimum to the assessment team. In the absence of a PHO or BEE, an IDMT or SME may be appointed. The DMC reports any suspected outbreaks of foodborne or waterborne contamination through Service and joint command and control structures. The DMC, through the PHO and BEE, is responsible for the inspections of stored food and water supplies to include inspection of food service facilities, prepared foods, and water. In addition, food and water supplies, including local water bottling facilities, should be inspected for signs of tampering and contamination.

5.4.3.2.2.3. Contracting Officer. The contracting officer should incorporate safety and security measures in contracting instruments for food and water supplies. These measures are in addition to standard food and water safety requirements, directed in Air Force and DOD directives. The specific measures taken should be determined from assessment processes addressed in food and water force protection guidance documents.

5.4.3.2.2.4. Transportation Commander. The transportation commander should ensure all transportation sources are aware of requirements for shipment, manifest, and container security.

5.4.3.2.2.5. Security Forces Commander. The security forces commander should be responsible for ensuring the security of all shipments upon arrival at the installation and at a minimum, should inspect for intact seals and locks, should review manifests for accuracy, should review driver documentation for accuracy, should notify food service personnel of the arrival of food and water shipments, and should notify CE of the arrival of bulk potable and nonpotable water supplies. Physical security (a preventive measure) is the preferred mitigation option.

5.4.3.2.2.6. Services Commander. The services commander should ensure adequate precautions such as controlling access to food facilities, employee

identification and background checks, physical security measures and ensuring employees are properly trained in all aspects of food security.

5.4.3.2.2.7. Civil Engineer. In conjunction with the BEE, CE should ensure safety and security of bulk water supplies (e.g., wells, reservoirs, lakes, etc.) in addition to standard sanitation requirements.

5.4.3.2.2.8. AFOSI and Intelligence. AFOSI and Intelligence resources should maintain the capability to determine and validate intentional contamination threats to installation food and water supplies.

5.4.3.2.2.9. All Unit Commanders. All unit commanders should maintain the capability to ensure the safety and security of food and water supplies by being aware of the specific vulnerabilities in their locations, ensuring unit personnel inspect food and water supplies prior to consumption and report all suspect supplies.

5.4.3.2.3. The principles of prevention, surveillance, control, and response for naturally occurring food/waterborne illnesses should also apply to some extent for mitigating the effects on intentional contamination. Deployed forces must have clean air, water, and safe food in order to carry out their assigned missions; and depending on the location of the installation, some food and water assets may be more critical than others. The DMC is referred to the Force Protection Battlelab, *Commanders Guide to Food and Water Systems Force Protection* for further guidance.

5.4.3.3. Vector Surveillance. Deployed medical assets will conduct appropriate surveillance of vectors of medical importance to include insects, rodents, and animals capable of transmitting diseases in man. The first deployed asset possessing this capability is the PAM team. Refer to US Army FM 21-10, *Field Hygiene and Sanitation*, for additional guidance on disease vectors and personal protective measures.

5.4.4. In-processing Deploying Service Members. The PAM team, the SME, or the deployed IDMT, accomplishes the following tasks:

5.4.4.1. Ensures that all medical force health protection measures are accomplished.

5.4.4.2. Reviews force health protection measures required for the area of responsibility (AOR) that were accomplished during the predeployment phase and corrects any deficiencies identified.

5.4.4.3. Collects DD Form 2766, *Adult Preventive and Chronic Care Flow Sheet*, or equivalent (deployed Medical Record) from all members.

5.4.4.4. Provides an updated site-specific medical threat briefing and medical aspects of ATSO training.

5.4.5. Field Sanitation and Hygiene. Strict adherence to field sanitation and hygiene measures minimize DNBI and spread of NBC agents or materials. US Army FM 21-10, *Field Hygiene and Sanitation*, provides specific guidance on this subject. This task will typically be accomplished by the PAM team but may also be accomplished by a SME or IDMT as required.

5.4.6. Collective Protection: Collectively protected assets are prepositioned in NBC high-threat areas. The smallest collectively protected capability is the CP EMEDS Basic. The DMC may not have in-place or deployed CP and must plan accordingly for decontamination or alternate facilities if their non-CP DMFs are contaminated and become nonfunctional. The DMC must coordinate these requirements with the deployed AETF and document the requirements in the site Medical Contingency Response Plan (MCRP) or other deliberate plans.

5.4.7. Individual Protective Equipment (IPE). All deployed medical personnel must be intimately familiar with MOPP levels and donning the Individual Protective Equipment (IPE). The deployed medical facility personnel will follow [deployed] wing procedures for donning and doffing IPE. The MOPP levels for the installation or sectors (if used) are determined by the senior Air Force commander and communicated to the base population and to each unit control center (UCC). The deployed medical facility area of responsibility may be designated as an individual sector when the senior Air Force commander delegates MOPP reduction authority to the DMC or SMO.

5.4.8. Medical Sector NBC Detection and Contamination Control Plan. The base will most likely be divided into NBC sectors and the deployed medical facility will be responsible for NBC detection and contamination control within their sector (refer to AFMAN 10-2602 [Draft], *Nuclear, Biological, Chemical, and Conventional (NBCC) Defense Operations and Standards*). Normally, the medical sector is limited to the medical area of responsibility in the immediate area surrounding medical facility and facilities. In accordance with the Law of Armed Conflict, medical organizations may not be assigned responsibility for an area or sector that includes non-medical missions or capabilities or contains activities that are inconsistent with the non-combatant status of medical forces. Key to casualty prevention in an NBC environment is preventing the spread of post-attack NBC agents or materials. Essential components include detection, marking, communication, avoidance, and decontamination.

5.4.8.1. The DMC will develop and employ a NBC Detection Plan at the direction of CE Readiness. The BEE NBC team or other preventive medicine assets will assist. In addition to the M8/M9 Paper capability that all base units possess, the medical unit may have more robust capabilities for detection to include vapor phase detection of CW agents, DOD sampling tickets for detection of BW agents, polymerase chain reaction (PCR) for identification of BW agents, and radiological measurement capability, depending on deployed UTC laydown.

5.4.8.2. A biological agent attack may be covert or not detected by employed point detectors. The detection of BW agents requires healthcare provider awareness of clinical symptoms associated with various BW agents. In addition, a robust DNBI surveillance system performing real-time monitoring with seamless data reporting is necessary to detect a BW attack. Table A3.1 identifies possible biological agents threat potential to drinking water and the duration of impact.

5.4.8.3. The CW Detection Plan must address reporting to the base NBC Defense Cell and marking of any known areas of contamination (refer to AFI 10-206, *Operational Reporting*). Detailed procedures for sector monitoring are found in AFMAN 32-4005, *Personnel Protection and Attack Actions;* and AFH 32-4014, Vol 4, *USAF Ability to Survive and Operate Procedures in a Nuclear, Biological, and Chemical (NBC) Environment* [will be replaced by AFMAN 10-2602 [Draft], *Nuclear, Biological, Chemical, and Conventional Defense Operations and Standards*].

5.5. Deployment Phase: Trans-attack Casualty Prevention Measures. The DMC is responsible for the safety of medical personnel. Operations conducted will be consistent with the procedures specified in AFH 32-4014, Vol 4, *USAF Ability to Survive and Operate Procedures in a Nuclear, Biological, and Chemical (NBC) Environment* [will be replaced by AFMAN 10-2502 [Draft], *WMD Threat Planning and Response Handbook*]. Casualties can be minimized through proper education of personnel on local alarm conditions, donning the IPE, understanding MOPP levels, operation of CP systems, and adherence to ATSO principles for an NBC environment. The deployed medical assets cannot provide passive defense and treat NBC casualties if they themselves fall victim to an NBC attack.

5.6. Deployment Phase: Post-attack Casualty Prevention Measures.

5.6.1. The DMC is responsible for NBC surveillance for health risk assessment and treatment. This surveillance quantifies NBC exposure data to determine personnel's short- and long-term health risk in executing the mission in contaminated environments. It also includes **identification** of NBC agents or materials, either through clinical samples and **diagnosis,** or environmental sampling. The DMC is also responsible for **detection** of NBC agents or materials within the medical sector (only) and in the base drinking water and food supplies. Detection provides the general information necessary to facilitate operations while identification provides the specific information necessary for a tailored medical response and health surveillance.

5.6.2. Detection generally refers to determining the presence of a class of agents (G-series nerve agents, for example) and its relative abundance. This also applies in biological agent detection where hand-held bioassays employed may not have the sensitivity to reliably detect and identify BW agents.

5.6.3. Identification refers to determining the specific NBC agent employed. Identification in the form of clinical diagnoses may be the first indication of a covert attack using biological agents. This distinction becomes important in the response to biological agent incidents

since presentation in the clinical setting and diagnostics may occur after a prolonged incubation period following release. Rapid recognition and identification using deployed health surveillance and advanced NBC agent analytical tools—such as the GEMS and polymerase chain reaction (PCR)-based pathogen identification—vastly improves medical and commander situational awareness to NBC attacks.

5.6.4. Contamination Avoidance.

5.6.4.1. Medical Sector Detection, Marking, and Reporting. When directed by the SRC, the deployed medical unit immediately after the attack will conduct sector reconnaissance for NBC hazards as well as conventional munitions damage, and report this information to the SRC by means of the medical control center (MCC). Refer to AFMAN 10-2602 [Draft], *Nuclear, Biological, Chemical, and Conventional (NBCC) Defense Operations and Standards* for post attack reconnaissance, marking, and reporting procedures. Initial medical NBC detection capability is limited to chemical agent detection in the form of M8 and M9 Paper that is contained in the individual's C-bag. Upon arrival of the PAM team, the chemical detection capability is augmented with M256A1 and M272 detection kits (vapor and water). This capability will be supplemented with the arrival of the BNBC (to be superseded by medical NBC [MNBC]) team that possesses more advanced chemical detection (chemical agent monitoring system [CAMS]), biological agent detection (hand-held bioassays), and radiological measurement (ADM300). The medical unit will report the results of this survey as soon as possible to the SRC.

5.6.4.2. Basewide Surveillance. As soon as operationally feasible, the DMC will resume health surveillance and reporting activities of food, water, NBC exposures, vectors, environmental, and DNBIs using applicable reporting modules such as GEMS.

5.6.4.3. Basewide Agent Identification. Once an NBC event has occurred, the DMC should continue to execute detection and ensure rapid identification for medical treatment and recording of personnel exposures. Environmental samples of contaminated media are collected by the BNBC team and transported for analysis.

5.6.4.3.1. Identification of the specific agent may require several instruments and further analysis. For biological pathogens, deployed BAT teams can conduct expedient presumptive agent identification. There are additional capabilities within specific theaters of operations. For example, the biological warfare defense laboratory (BWDL) at Osan AB provides capability designed for and specific to the operation of the PORTAL SHIELD biological warfare detection system. Sister Service laboratories deployed to the theater (e.g., the 520th Theater Army Medical Laboratory [TAML]) may be used to provide additional quantitative analyses. Definitive identification of biological warfare agents is accomplished at USAMRIID.

5.6.4.3.2. Definitive identification of specific chemical and radiological agents and contamination levels—particularly low-levels—must be accomplished using

theaterwide assets or reach-back laboratories, to include the capabilities of the other Services. These capabilities exist within the Air Force Radiation Assessment Team (AFRAT) for radiological contaminants (FFRA 1/2/3). Other assets that may be available in the theater of operations include the 520th TAML, the Navy Forward Deployed Laboratory (NFDL), Navy Environmental Preventive Medicine Unit (NEPMU) assets, or labs in the continental United States (CONUS).

5.6.5 Protection.

5.6.5.1. The DMC provides technical medical information and advice to the SRC including information on physiological and psychological effects of contamination. The DMC advises the commander on the administration and use of chemical or biological agent pretreatment drugs, prophylaxis medications, and antidotes. The DMC advises mortuary affairs on concerns regarding handling and disposition of contaminated remains.

5.6.5.2. Enforcing sanitation, hygiene, and infection control is a leadership responsibility. Following a biological agent attack, the DMC should stress the importance of good infection control practices within the DMF and base-wide line commanders should stress the importance of field sanitation and hygiene measures to minimize cross contamination. Washing with soap and water is the most effective and simplest measure for controlling communicable disease. Of the potential BW agents, only plague and smallpox are readily spread person-to-person by aerosol and require more than standard infection control precautions (gown, mask with eye shield, gloves).

5.6.6. Contamination Control.

5.6.6.1. The DMC is responsible for medical decontamination of patients and deployed medical facility resources within the medical sector. Upon arrival, the Wartime Medical Decontamination Team (WMDT) provides this capability. In the absence of the WMDT, the DMC may organize and train an ad hoc team of available personnel if medical patient decontamination is tactically necessary, using line and/or medical personnel and materiel. (Refer to AFMS CONOPS for WMDT decontamination procedures.)

5.6.6.2. Movement between sectors is controlled by the base sectoring plan. The deployed medical facility is responsible for contamination control within its sector. DMF personnel contaminated pursuant to their duties will process through the medical facility's ambulatory decontamination line.

5.6.6.3. PAM/BEE NBC teams will advise the SRC on appropriate decontamination and treatment techniques for food and water contaminated with NBC agents or materials.

5.7. Post Deployment Actions.

5.7.1. The DMC needs to continue the ongoing health surveillance program. Performing postdeployment health assessments (DD Form 2796) ensures exposures are documented; ensures follow up of exposures and treatment; and ensures the deployed medical record returns with the individual. Documentation of NBC exposures, medical interventions, and use of prophylaxis and antidotes in the individual's deployed medical record is critical.

5.7.2. The provider (IDMT, SME, or PAM team member) administers this assessment to all redeploying personnel within 5 days of redeployment.

5.7.3. Up-channel surveillance data to the DOD central data repository as specified in Joint Policy Memorandum on Deployed Occupational Health and Environmental Health Surveillance.

Chapter 6

CASUALTY CARE AND MANAGEMENT

6.1. Overview. This chapter gives a general overview of procedures and references for NBC casualty management, combat stress management in NBC environments, patient decontamination, patient movement, and patient evacuation. (A description of medical capability available at each level of care can be found in AFTTP 3-42.7, *Aerospace Medical Contingency Ground Support System.*)

6.2. Casualty Care and Management in NBC Environments. The deployed medical facility should be able to provide, or arrange for the provision of, the following patient care services in an NBC threat environment: (Refer to AFMS CONOPS, *Wartime Medical Decontamination Team.*)

6.2.1. Protect medical personnel and patients against exposure to or contamination by NBC agents or materials.

6.2.2. Provide basic life- and limb-saving care to casualties while in an NBC-contaminated environment, prior to and during the decontamination process.

6.2.3. Decontaminate arriving casualties and medical staff.

6.2.4. Treat casualties from initial resuscitation through definitive care or evacuation.

6.2.5. Evacuate (intratheater/intertheater) decontaminated casualties suffering the effects of radiological, biological, or chemical agents, provide appropriate care en route, and prevent spread of contamination during the evacuation process.

6.2.6. Track and follow-up medical care of personnel exposed to NBC contamination.

6.2.7. Provide prophylactic measures, such as immunizations and medications, to all supported personnel in the threat area.

6.2.8. Conduct medical surveillance to determine if a biological agent is in use in the area.

6.2.9. Initiate treatment of nuclear event casualties, including treatment of blast injury, burn injury, and injury from ionizing radiation.

6.2.10. Initiate treatment of internally contaminated radiological casualties within 6 hours of arrival at a Level 3 or higher medical facility.

6.3. Triage of Suspected Contaminated Casualties (Mixed Casualties).

6.3.1. The purpose of triage is to mitigate the effects of an NBC event and to effectively allocate medical resources. Triage will be based on conventional injuries and NBC exposure (agent type, physical state, route of exposure, and severity of exposure). Triage occurs at three specific points in time—decontamination, treatment, and evacuation. However, it is an on-going process that requires continuous reevaluation of the patient throughout treatment and evacuation. Patients who appear stable may later deteriorate. Patients with life- or limb-threatening conditions will receive immediate emergency medical treatment before decontamination. (Refer to JP 3-11, *Joint Doctrine for Operations in Nuclear, Biological and Chemical [NBC] Environments.*)

6.3.2. A discussion of triage categories and first aid for chemical, nuclear, and biological agents can be found in US Army Medical Research Institute of Chemical Defense (USAMRICD), *Medical Management of Chemical Casualties Handbook,* Armed Forces Radiobiology Research Institute (AFRRI), *Medical Management of Radiological Casualties,* and USAMRIID, *Medical Management of Biological Casualties Handbook.* A general discussion of triage categories is included in attachment 4.

6.4. Medical Decontamination.

6.4.1. The purpose of decontamination is to remove external contamination to prevent further injury to the patient, or contamination of medical personnel, other patients, or medical assets. Medical treatment of casualties is difficult in protective equipment. Definitive medical care will require the patient to first be decontaminated and to receive treatment in a collectively protected or uncontaminated facility. For **detailed decontamination procedures**, refer to the AFMS CONOPS, *Wartime Medical Decontamination Team,* or US Army FM 8-10-7, *Health Service Support in NBC Environments.*

6.4.2. Decontamination starts with self-aid and buddy care. Priority in decontamination should be given to physical removal of the agent as rapidly as possible. This is accomplished by first removing the patient from further exposure to the agent, then removal of the agent from the patient. Spot decontamination should be immediately applied to areas of liquid contamination. This should be followed by thorough decontamination as soon as possible. Although skin decontamination is not generally necessary after exposure to vapor alone, clothing should be removed because it may contain trapped vapor. The skin should be thoroughly cleaned using soap and water or other approved skin decontamination solutions, following clothing removal.

6.4.3. Medical units must be prepared to accept contaminated casualties. Ideally, casualties should be decontaminated to the greatest extent possible in the field during the SABC process. However, some individuals may arrive at the deployed medical facility that have not been decontaminated, are still partially contaminated, or that have become contaminated en route. These individuals must be decontaminated before they are admitted to prevent

further injury to the patient and prevent contamination of medical personnel, other patients, or the DMF.

6.4.4. The deployed medical facility will provide emergency life- and limb-saving medical treatment to casualties prior to and during the decontamination process. Care provided to contaminated casualties may include airway management, assisted ventilation, control of hemorrhage and shock, and medication administration. Available medical resources will determine the scope of care provided to casualties awaiting decontamination. As a minimum, Basic Life Support will be provided. Deployed medical commanders are responsible for allocating treatment resources to support medical management of contaminated, as well as uncontaminated and decontaminated casualties.

6.4.5. At the deployed medical facility entry control point, arriving casualties will be monitored for contamination. Contaminated casualties will be sent to a medical decontamination area where they will be triaged, treated for life- and limb-threatening conditions, and decontaminated as soon as possible. Non-contaminated casualties will be sent directly to the treatment area. (See Figure 6.1.) All patients arriving at the treatment location (decontaminated and originally uncontaminated) will be re-triaged prior to entry into the definitive care area. (See paragraph 6.3, “Triage of Suspected Contaminated Casualties (Mixed Casualties).”) Ambulatory personnel with no significant symptoms should process through standard Contamination Control Areas whenever practical for decontamination.

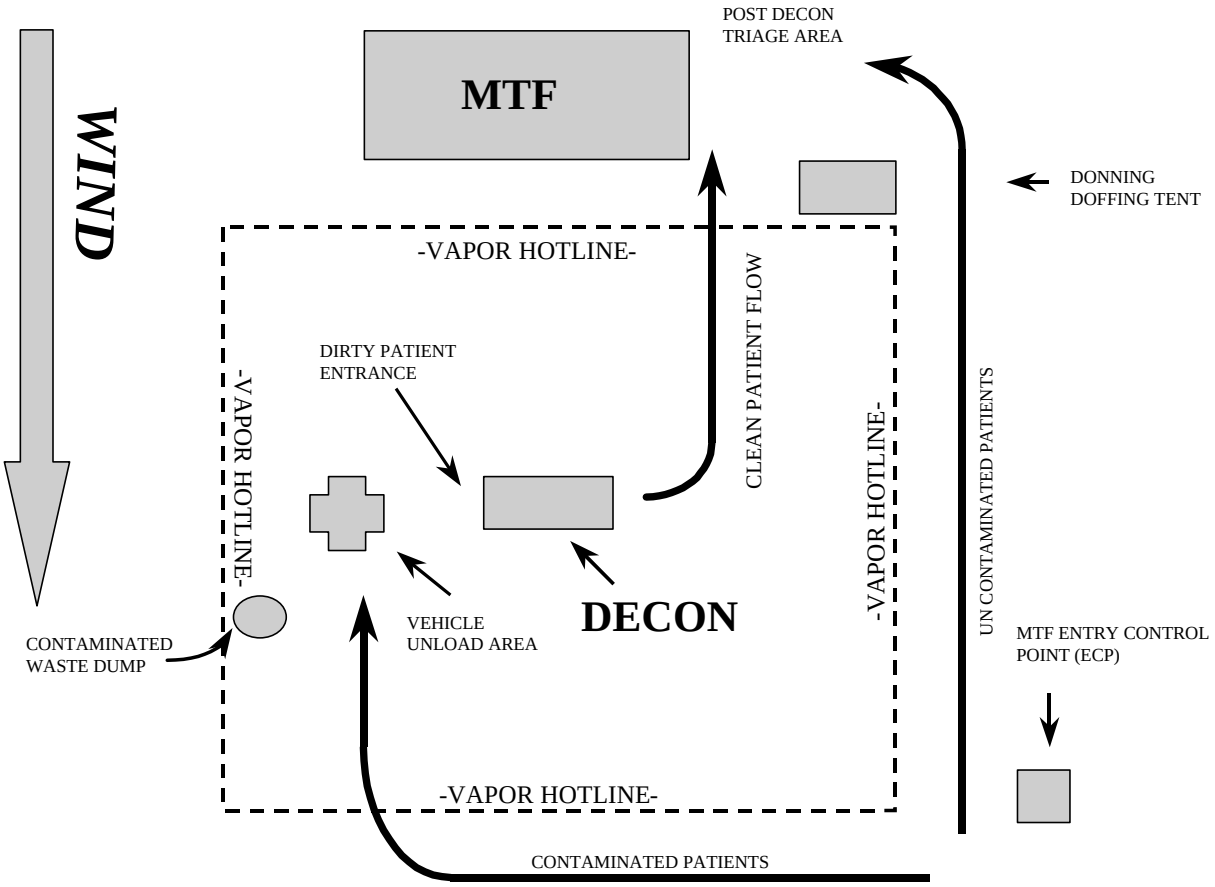


Figure 6.1. Notional Medical Decontamination Area Layout

6.4.6. Ideally, the Wartime Medical Decontamination Team (WMDT) UTC FFGLA/FFGLB will be provided. Bedded deployed medical facilities (fixed sites, EMEDS + 10 and larger deployable assemblages), should be assigned WMDT assets in high NBC threat environments. Smaller medical units such as air transportable clinics, IDMT clinics, and small portable expeditionary aeromedical rapid response (SPEARR) teams will generally not have WMDT teams collocated. EMEDS Basic units may or may not have an assigned WMDT. If a dedicated medical decontamination team is not available, augmentation personnel will be identified and trained. Preplanning for this scenario is vital. The senior medical officer must work through the line commander to obtain sufficient personnel and decontamination materiel of opportunity.

6.5. Patient Treatment.

6.5.1. Chemical Event. Basic principles of emergency medical care are the same for all chemical agents—airway, breathing, circulation, drugs (appropriate therapeutic intervention), and decontamination (ABCDD). Supportive therapy must also be provided. Refer to

AFJMAN 44-149, *Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries*; USAMRICD, *Medical Management of Chemical Casualties Handbook;* and the *Textbook of Military Medicine* for specific procedures for treatment and management of chemical agent casualties.

6.5.1.1. Nerve Agents. Three drugs are used to treat nerve agent exposure—atropine, pralidoxime chloride (2-PAM Cl.), and diazepam. The Mark I autoinjector includes a 2 mg atropine injector and 600 mg of 2-PAM Cl in a second injector. Individuals with mild symptoms of nerve agent exposure should receive one Mark I injector. One to two additional doses should be given at 5-minute intervals if symptoms persist. Patients with severe symptoms (involvement of two or more organ systems) should receive 3 autoinjectors immediately, followed by diazepam injection. Medical personnel may need to administer additional atropine and diazepam. Pyridostigmine bromide (P-tabs) may be used as a pretreatment prior to nerve agent exposure. It is not an antidote. Issue or use of P-tabs requires approval at the Secretary of Defense level. Mark I antidote kit treatment will still be required following actual nerve agent exposure.

6.5.1.2. Vesicants (Blister Agents). Treatment for vesicant exposure is symptomatic, based on site of injury. Vesicants predominantly affect the skin, eyes, and respiratory tract. Severe vesicant exposure can also affect the gastrointestinal and immune systems. Treatment of skin and eye injuries is similar to that for other thermal or chemical burns, except less aggressive intravenous (IV) fluid replacement is typically needed. Symptoms may be delayed following exposure to vesicants. Respiratory distress may occur in otherwise healthy individuals several hours following exposure.

6.5.1.3. Cyanides (Blood Agents). Cyanides inhibit cellular utilization of oxygen. Mild exposures may be treated with oxygen and supportive therapy. Exposure to cyanides agents may result in immediate death. Severe exposure will likely require mechanical ventilation, oxygenation, circulatory support, correction of metabolic acidosis, and seizure control as well as specific antidotal therapy. Antidotal therapy is provided in a two-step process. First, a methemoglobin forming agent such as inhaled amyl nitrite or intravenous sodium nitrite should be administered. This is followed by sodium thiosulfate administered intravenously. Methemoglobin forming agents are contraindicated in smoke inhalation patients with high carboxyhemoglobin levels. These patients should be treated with sodium thiosulfate and oxygen alone.

6.5.1.4. Pulmonary, Incapacitating, and Riot-control Agents. Treatment is specified in AFJMAN 44-149, *Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries*; USAMRICD, *Medical Management of Chemical Casualties Handbook;* and the *Textbook of Military Medicine*.

6.5.2. Biological Event. Key treatment issues are addressed below for different types of biological casualties. Detailed treatment information for biological casualties is found in

AFMAN (I) 44-156, *Treatment of Biological Warfare Agent Casualties* and USAMRIID, *Medical Management of Biological Casualties Handbook.*

6.5.2.1. Anthrax. Anthrax is a known potential biological weapon. The causative agent is *Bacillus anthracis*. Exposure can occur through inhalation, ingestion, or skin absorption. An FDA-licensed vaccine is available. Personnel should be vaccinated IAW current Anthrax Vaccine Immunization Program (AVIP) guidelines. Ciprofloxacin and doxycycline antibiotics can be used for exposure or prophylaxis. Anthrax is not contagious and isolation is not necessary.

6.5.2.2. Plague. Plague can be transmitted by infected fleas (bubonic) or person-to-person (pneumonic) through respiratory droplets. The causative agent is *Yersenia pestis*. Pneumonic plague is a highly contagious disease and droplet precautions are necessary. Effective field sanitation and preventive medicine measures are required to minimize bubonic plague transmission. As a general practice, plague patients should be transported only with other plague patients during aeromedical evacuation. Plague **prophylaxis** is accomplished with doxycycline (preferred) and ciprofloxacin (may also be effective). Early administration of antibiotics and supportive therapy is very effective. However, pneumonic plague is 95% fatal if the disease is not treated within 48 hours of symptom onset. Streptomycin is the drug of choice for **treatment**. Gentamicin, cyprofloxacin, and doxycycline are also effective. There is no licensed vaccine for pneumonic plague.

6.5.2.3. Tularemia. Tularemia (also known as rabbit fever and deer fly fever) is a zoonotic disease. Humans typically acquire infection through contact of their skin or mucous membranes with tissues or body fluids of infected animals, or from bites of infected deerflies, mosquitoes, or ticks. *Francisella tularensis* can remain viable weeks in water, soil, carcasses, and hides. It is resistant to sub-freezing temperatures for several months. It is easily killed by heat and disinfectants. The primary threat is by aerosol release. Contamination of food or water supply is also possible.

6.5.2.3.1. Preexposure prophylaxis is provided by a live attenuated vaccine available as an IND. Postexposure prophylaxis, following a BW attack includes doxycycline, tetracycline, or ciprofloxacin.

6.5.2.3.2. Supportive care may include respiratory support and hydration. Open lesions should be covered and topical antibiotics applied. Tularemia may be treated with streptomycin, gentamicin, or ciprofloxacin. Fatality rate for inhalation tularensis is unknown.

6.5.2.3.3. Control of infection is through the application of standard precautions. Tularemia is not communicable person to person. Patients may be evacuated observing Standard Precautions during evacuation.

6.5.2.4. Q-Fever. The endemic form of Q-fever is a zoonotic disease caused by a rickettsia, *Coxiella burnetii*. Natural reservoirs are sheep, cattle, and goats. The

organisms grow to especially high concentrations in placental tissues. Exposure to infected animals at parturition is an important risk factor for endemic disease. The organisms are also excreted in animal milk, urine, and feces. Humans acquire the disease by inhalation of aerosols contaminated with the organisms. Heavy environmental contamination with *C. burnetii* could pose a long-term risk due to environmental persistence. Dusts generated from the contaminated environment may continue to transmit the disease.

6.5.2.4.1. Preexposure Prophylaxis. A formalin-inactivated whole cell vaccine is available as an IND for immunization of at-risk personnel.

6.5.2.4.2. Postexposure Prophylaxis. Postexposure prophylaxis is accomplished with tetracycline or doxycycline. Antibiotics given prophylactically after exposure may delay but not prevent the onset of symptoms.

6.5.2.4.3. Medical Management. Medical management is with doxycycline or tetracycline. Treat patients who are unable to take tetracycline with ciprofloxacin or other quinolones.

6.5.2.4.4. Infection Control. Q-fever is not communicable person to person. Patients exposed to Q-fever by aerosol do not present a risk for secondary contamination or re-aerosolization of the organism. Observe standard precautions when handling patients.

6.5.2.4.5. Decontamination. Exposed clothing and equipment should be decontaminated. Decontamination is accomplished with soap and water, 5% microchem plus (quaternary ammonium compound), 70% ethyl alcohol, or 0.5% hypochlorite solution.

6.5.2.4.6. Aeromedical Evacuation. Patients may be evacuated with other classes of patients.

6.5.2.5. Smallpox. *Variola* virus causes smallpox. It is a member of the *Orthopox* virus family and is very contagious to humans. Despite the global eradication of smallpox and continued availability of a vaccine, the potential weaponization of *Variola* continues to pose a military threat. Humans are the only natural reservoir of *Variola*. Transmission usually occurs by respiratory droplet, following close face-to-face contact. Smallpox is also transmitted by direct contact with skin lesions or drainage, or with contaminated objects.

6.5.2.5.1. Preexposure Prophylaxis. US forces are no longer routinely immunized. When the threat indicates, senior leadership may direct vaccination of personnel, pending vaccine availability.

6.5.2.5.2. Postexposure Prophylaxis. All individuals exposed to or suspected of being exposed to smallpox BW agents should have active immunization. Contacts should be vaccinated, or receive booster vaccinations as soon as possible, optimally within 24 hours.

6.5.2.5.3. Medical Management. Provide supportive care since there is no specific antiviral therapy available for smallpox.

6.5.2.5.4. Infection Control. Strict (standard, contact, and airborne) isolation and quarantine of all patients must be maintained until scabs have separated.

6.5.2.5.5. Aeromedical Evacuation. Smallpox is an internationally quarantinable disease (IQD). Apply strict quarantine measures. Isolate and evacuate all smallpox patients with other smallpox patients only. Evacuation of smallpox patients across national boundaries requires close coordination between the supported and supporting combatant commanders and the Department of State. See paragraph 6.5.5, "Quarantine and Isolation."

6.5.2.6. Toxins.

6.5.2.6.1. *Clostridium botulinum* Toxin. *Botulinum* toxins are a group of proteins produced by the bacillus *Clostridium botulinum*. There are seven distinct but related neurotoxins, A through G, produced by different strains of the *clostridial* bacillus. All seven types act by similar mechanisms. The toxins produce similar effects when inhaled or ingested. The time course may vary depending on the route of exposure and the dose received. Covert contamination of water supplies by botulism toxin should be addressed. Although an aerosol attack is by far the most likely scenario, enemy special forces or terrorists might use this agent to produce foodborne botulism in those so targeted. The reservoir is soil, animals, and fish. High-risk foods are primarily improperly canned foods and dried meat or fish. Transmission is via the consumption of food contaminated with the *C. botulinum* toxin.

6.5.2.6.1.1. Pre-exposure Prophylaxis. A pentavalent toxoid of *Clostridium botulinum* toxin types A, B, C, D, and E is available under an IND status.

6.5.2.6.1.2. Postexposure Prophylaxis. Currently, postexposure prophylaxis is not available. Animal experiments demonstrate that *botulinum* antitoxin is effective; however, human data or practice guidelines are not available. *Botulinum* antitoxin should be considered in extraordinary circumstances.

6.5.2.6.1.3. Medical Management. Supportive care includes respiratory support, hydration, bowel, bladder and skin care, nasogastric suctioning for ileus, physical therapy, and psychological support.

6.5.2.6.1.4. Antitoxin. Administration of antitoxin is reasonable if disease has not progressed to a stable state. A trivalent equine antitoxin has been available from the Centers for Disease Control and Prevention for cases of foodborne botulism.

6.5.2.6.1.5. Contamination Control and Aeromedical Evacuation. Botulism is not communicable person to person. Patients may be evacuated with other classes of patients. Observe standard precautions for evacuation.

6.5.3. Radiation Exposure Event.

6.5.3.1. Patients who are contaminated with radiological material should be decontaminated by removal of surface contaminants. This should be accomplished by clothing removal and skin washing with soap and water. As with biological and chemical agents, do not delay emergency medical treatment for radiologically contaminated casualties. Once decontaminated, a patient is not "radioactive." However, patients suffering from radiological exposure may require reverse/barrier isolation due to bone marrow suppression and a compromised immune system. As a minimum, this should include gloves, masks, and strict hand washing at all levels of care. Systemic exposure may affect the bone marrow, gastrointestinal system, cardiovascular system, skin, and the central nervous system. Radiation injuries, including systemic exposures, will require supportive care at all levels of care. Once patients are decontaminated externally, the potential for cross-contamination to uncontaminated areas and personnel is minimal. Supportive care includes airway management, fluid administration with volume expanders, antiemetic and antidiarrheal medications, and aggressive therapeutic treatment when signs and symptoms of infection appear.

6.5.3.2. Internal contamination may occur from inhalation, ingestion, or absorption. Intact skin is a barrier to alpha particles; however internal contamination can occur through abrasions and punctures in the skin. Organs affected by internal contamination include the lungs, liver, thyroid, and bones. Blocking or diluting agents, and chelation therapy, may reduce total exposure to radioactive materials in the body.

6.5.3.3. Detailed treatment information for radiological casualties is found in AFMAN(I) 44-161, *Treatment of Nuclear and Radiological Casualties* and Armed Forces Radiology Research Institute *(*AFRRI), *Medical Management of Radiological Casualties*. For patients with internal contamination, low-levels of radioactive material may be excreted in the urine, feces, sweat, and other body fluids.

6.5.4. Mental Health Service Support.

6.5.4.1. NBC events will generate stress, fear, panic, and uncertainty. US forces have little real world operational experience in NBC environments, and fear of the unknown will cause both acute stress and delayed stress reactions among personnel in all ranks.

The senior medical officer must provide the installation commander consultation on mental health issues and stress management.

6.5.4.2. Stress will manifest itself in different ways at different times during the NBC event. In the pre-attack phase, fear of the unknown and uncertainty of the adequacy of defensive equipment and emergency plans may produce excessive stress. During an NBC event, the psychological effects of death, suffering, and destruction; the physiological and psychological effect of wearing protective equipment; and being isolated and not knowing what is happening, will be the greatest stressors. After an NBC event, debilitating injury for wounded personnel, "survivor guilt," and fear of long-term health consequences (particularly reproductive) are mental health concerns.

6.5.4.3. The following techniques are recommended to minimize these stressors and their negative impact on mental health.

6.5.4.3.1. Keep people informed as much as security concerns will permit.

6.5.4.3.2. Train aggressively and exercise response plans. Improve these as needed.

6.5.4.3.3. Encourage open discussion about possible health affects and related concerns at all levels of supervision and command. Provide fact-based risk assessments to unit leadership that neither diminish nor exaggerate the threat.

6.5.4.3.4. Take steps to ensure all personnel are assigned clear roles and responsibilities in response to an NBC event. Hold personnel accountable for understanding and performing their jobs.

6.5.4.3.5. Encourage open and realistic, but respectful and appropriate, discussion of stress and fear. Emphasize to personnel that they can succeed in their jobs despite their fear.

6.5.4.3.6. Rapidly intervene at the lowest command level possible for individuals displaying signs and symptoms of acute or delayed stress reactions. Recognize that stress is a normal reaction. Recommend treatments that emphasize reassurance, temporary rest and removal, and return to duty (RTD) as soon as medically advisable.

6.5.4.3.7. Establish guidelines for medication and evacuation of stress casualties in severe cases.

6.5.4.3.8. Coordinate with Life Skills Support Center and Chaplain Services for counseling and mental health support at the installation.

6.5.4.3.9. Determine location and establish plans for accessing mental health care providers if not available at the deployed medical facility.

6.5.5. Quarantine and Isolation.

6.5.5.1. Quarantine Considerations. BW agents may display a wide range of times between exposure and the onset of clinical symptoms (*botulinum* toxin, 12 to 36 hours; and smallpox, 7 to 17 days). Multiple agents can lead to the presence of coinfection-acute illness with short incubation and longer incubating agent such as smallpox (which may declare itself after patients have been evacuated for evaluation or treatment of the short incubating disease). Therefore, consideration should be given to quarantining patients for 17 days after AE from a BW area if plague, smallpox, and viral hemorrhagic fevers cannot be excluded. Administrative quarantine of the entire military installation/facility may be required in the event of a large disease outbreak, BW, or terrorist event.

6.5.5.2. Isolation Considerations. Isolation should be in designated tents or other structures. The use of surgical masks on patients is appropriate when separate tents or structures are not available. Infection control practices can be modified after the agent is identified. Most agents require only standard precautions.

6.5.5.3. References. Refer to AFMAN(I) 44-156, *Treatment of Biological Warfare Agent Casualties,* and USAMRIID, *Medical Management of Biological Casualties Handbook,* for additional information. Contact the AFFOR/SG for current quarantine and isolation guidance and policy.

6.5.5.4. Mass Casualty Situations. Infection control procedures should be reinforced for mass casualty situations with undifferentiated febrile illness following a suspected BW attack. Isolate patients and use respiratory droplet precautions, in addition to standard precautions, until contagious disease can be excluded. Field conditions may dictate actual isolation practices. **The precautions listed below should be complied with to the fullest extent possible**.

6.5.5.5. Respiratory Protection. Base personnel use the NBC mask for protection from biological agents. When biological agent contamination is limited to a quarantine or isolation area within the DMF, alternative respiratory protection may be appropriate. Bioenvironmental Engineering personnel, in consultation with infection control personnel, should determine alternative respiratory protection requirements. The following should be considered when determining respiratory protection:

6.5.5.5.1. The degree to which the agent is infectious (i.e., Will it spread person to person?).

6.5.5.5.2. The degree to which aerosolization of the agent is possible: If spread by respiratory droplets (e.g., Plague), they are heavy and are believed to not travel more than 3 feet from the patient, versus droplet nuclei (Smallpox, TB) which are small and can travel on air currents for long distances.

6.5.5.5.3. Prognosis if exposed to agent.

6.5.5.5.4. Existing ventilation and infection control procedures.

6.5.5.5.5. Respiratory protection alternatives may include the use of air purifying respirators with N, P, or R-series filters at 95, 99, or 100% efficiency.

6.5.5.6. Standard Precautions.

6.5.5.6.1. Wash hands after patient contact.

6.5.5.6.2. Use gloves when touching blood, body fluids, secretions, excretions, and contaminated items.

6.5.5.6.3. Use respiratory protection. Powered air-purifying respirators (PAPRs) and atmosphere supplying respirators may also be used when filtering face piece devices and other air purifying respirators will not provide adequate protection during procedures likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.

6.5.5.6.4. Use eye protection and wear a gown during procedures likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.

6.5.5.6.5. Handle contaminated patient-care equipment and linen in a manner that prevents the transfer of microorganisms to people or equipment.

6.5.5.6.6. Practice care when handling sharps.

6.5.5.6.7. Use a mask or other ventilation device as an alternative to mouth-to-mouth resuscitation when practical.

6.5.5.6.8. Ideally, place the patient in a private room when feasible if they may have a contagious illness. Use cohort isolation of patients with similar infection if unable to isolate individual patients.

6.5.5.7. Specific Precautions. Include standard precautions plus:

6.5.5.7.1. Airborne Precautions. This isolation strategy must be thought through based on the physical nature of the structure from which care is provided, i.e., hospital versus tent.

6.5.5.7.1.1. Hospital. Place the patient in a private room that has negative air pressure, at least six air changes per hour, and appropriate air filtration before it is discharged from the room.

6.5.5.7.1.2. Hospital. Use respiratory protection when entering the room; i.e., N-95 particulate respirator.

6.5.5.7.1.3. Hospital. Limit movement and transport of the patient. Use a mask on the patient if they need to be moved.

6.5.5.7.1.4. Tent. This isolation will pose one of the greatest challenges as it requires a special negative pressure ventilation, which a tent does not have. Therefore, considerations will include the following:

6.5.5.7.1.5. Tent. First, put a mask on the patient immediately. If available, use the N-95 particulate respirator. If it is not available, use the cup style surgical mask as a second choice. If that is not available, use the tie style surgical mask with the goal being to ensure a very close fit around the edges so respiratory particles do not escape. If the patient cannot tolerate a mask then try to avoid having them enter the tent, have all healthcare workers in a mask and begin to consider options.

6.5.5.7.1.6. Tent. Evaluate the patient as soon as possible. If they have to be admitted and the Infectious Disease Team component is not present then consider setting up an alternate shelter outside (downwind) if the weather permits, OR, placing the patient as far as possible from all other patients AND keeping the patient masked at all times. The mask will have to be changed approximately every two hours, as the moisture from exhalation will decrease its ability to act as an effective barrier. If the Infectious Disease Team component is present they will have the capability to set up a tent specifically for the care of patients requiring airborne precautions.

6.5.5.7.1.7. Tent. Another intervention can be the use of a curtain to create a "cubical" for this type of patient. They will still have to wear the mask but it may offer some additional protection to others in the tent.

6.5.5.7.1.8. Tent. Teach the patient to use a facial tissue to cover their mouth and nose if they need to remove the mask for coughing or clearing secretions. Provide them a trash bag in which to place their facial tissue.

6.5.5.7.1.9. Tent. Healthcare workers will wear a mask when providing immediate care to this type of patient. For healthcare workers, the mask is worn once for a patient encounter and then discarded into the regular trash. Attempts to try and save or reuse these masks are usually unsuccessful due to limited space and the potential to cross contaminate each other's mask.

6.5.5.7.1.10. Tent. Other protective apparel to include gloves and gowns are worn as appropriate for the task being performed.

6.5.5.7.1.11. Tent. Transporting the patient within the tent area requires the patient wear the N-95 respirator mask, properly fitted to cover the nose and mouth.

6.5.5.7.2. Droplet Precautions.

6.5.5.7.2.1. Hospital. Place the patient in a private room or with someone with the same infection. If not feasible, maintain at least 3 feet between patients.

6.5.5.7.2.2. Hospital. Use respiratory protection within 3 feet of the patient. A surgical mask that is well fitted to the face, such that it is not gapped open on the sides, is adequate.

6.5.5.7.2.3. Hospital. Limit movement and transport of the patient. Use a well fitting mask on the patient if they need to be moved.

6.5.5.7.2.4. Tent. The easiest way to prevent the spread of these droplets is to place a surgical mask on the patient. If available, use the cup-style as it fits more closely to the face.

6.5.5.7.2.5. Tent. Patient condition and weather permitting, the patient may also be evaluated outside the tent, downwind preferably. If they require entry in the tent or need to be admitted, the mask is required for the patient. If admitted they should be placed as far as possible from other patients, at the far end of the tent.

6.5.5.7.2.6. Tent. It is recommended that a tent curtain/divider be used to create a “cubical” for the patient. As long as they are enclosed in the cubical they will not have to wear a mask because the respiratory droplets are large and will not travel far (3 feet is the general rule). If this type of cubical cannot be created, it would be wise to keep a mask on the patient until such time as they are no longer infectious.

6.5.5.7.2.7. Tent. Healthcare workers providing immediate care to the patient will wear a cup-style surgical mask.

6.5.5.7.2.8. Tent. Other protective apparel to include gloves and gowns are worn appropriate for the task being performed.

6.5.5.7.2.9. Tent. Transporting the patient within the tent area requires the patient wear a cup style surgical mask as a minimum.

6.5.5.7.3. Contact Precautions.

6.5.5.7.3.1. General. In addition to standard precautions use contact precautions for patients known to or suspected to have serious illnesses easily transmitted by direct patient contact or by indirect contact with items in the patient's environment. The patient is restricted to the room during isolation.

6.5.5.7.3.2. Hospital. Place the patient in a private room or with someone with the same infection if possible.

6.5.5.7.3.3. Hospital. Use gloves when entering the room. Change gloves after contact with infective material.

6.5.5.7.3.4. Hospital. Wear a gown when entering the room if contact with patient is anticipated or if the patient has diarrhea, a colostomy, or wound drainage not covered by a dressing.

6.5.5.7.3.5. Hospital. Limit the movement or transport of the patient from the room.

6.5.5.7.3.6. Hospital. Ensure that patient-care items, bedside equipment, and frequently touched surfaces receive daily cleaning.

6.5.5.7.3.7. Hospital. Dedicate use of noncritical patient-care equipment to a single patient or cohort of patients with the same pathogen. If not feasible, adequate disinfection between patients is necessary.

6.5.5.7.3.8. Tent. Any patient or group of patients suspected of having an illness spread via contact should be separated, either by distance or a barrier such as a curtain, from the rest of the patients. This is not because the germs will jump from patient to patient but instead to act as a reminder to healthcare workers that this particular patient requires something extra.

6.5.5.7.3.9. Tent. Guidance for wearing personal protective attire (PPA): Gloves are required when entering the patient's cubical or providing direct care. Gown and gloves are required for all personnel and visitors when in close or direct contact with the patient, or used patient equipment (e.g., over bed table, etc.), or supplies. Close contact is defined as within 3 feet of the patient or contaminated equipment or furniture. If the patient has an ileostomy, colostomy, or diarrhea, gowns are required at all times.

6.5.5.7.3.10. Tent. Guidance for transporting the patient within the tent: For personnel transporting the patient, wear gloves and preferably an isolation gown. Cover the patient with a clean sheet.

6.5.6. Patient Movement in NBC Environments.

6.5.6.1. Patient evacuation must be conducted, even in contaminated environments. Operation in NBC contamination may slow evacuation and increase patient holding times. Adequate planning and training will help to mitigate these difficulties.

6.5.6.2. Evacuation may be conducted using personnel, vehicles, or aircraft. Use of personnel to physically carry casualties is labor intensive and difficult in IPE and adverse climatic conditions. This should only be used for short distances. Ground vehicles are readily available and are easier to decontaminate and replace than aircraft. The primary means of evacuation will be by ground vehicle.

6.5.6.3. The NBC environment forces the commander to consider what assets will be committed to evacuation from the contaminated area. Minimize the number of medical evacuation assets that are exposed to contamination, taking into account the number and rate of casualties requiring evacuation. Use those vehicles that are already contaminated prior to committing additional assets to the contaminated area. Consider use of non-medical vehicles of opportunity that are already contaminated. If possible, dirty vehicles should not leave the contaminated area. Use these vehicles to shuttle patients to the decontamination or transload point. If contaminated vehicles must travel outside of the contaminated area, use the same route for all contaminated vehicles to travel to the decontamination area and return. This route should be considered "dirty" and should not be crossed by clean vehicles or troops. The route should be coordinated with higher headquarters and the host nation to prevent unintended exposure of vehicles or personnel. Patient protective wraps (PPWs) should be used to protect decontaminated patients if they must be transported through contaminated areas.

6.5.6.4. Helicopter rotorwash may disturb contaminants on the ground posing a risk of contamination to adjacent areas. The landing zone should not be located upwind of decontamination or "clean" areas.

6.5.6.5. Fixed wing air evacuation may be limited. Contaminated casualties should be transported by ground vehicles and decontaminated prior to entry into the MASF or air evacuation holding area. Air evacuation of potentially contaminated patients requires the approval of the destination country, and of any country where the aircraft will land or overfly. Foreign nations may not permit contaminated aircraft to land or overfly their airspace. Coordination between the supported combatant commander and Department of State may be required. Authorization to transport contaminated patients on US Air Force aircraft requires approval of the Theater and US Transportation Command combatant commanders. If an aircraft is committed to the contamination zone, patients should be decontaminated prior to transfer to clean aircraft, vehicles, or facilities. This should be accomplished at a remote transload point or isolated ramp area, keeping in mind the off-load and decontamination areas will become contaminated. (Refer to AFTTP 3-42.5, *Aeromedical Evacuation*, for additional information.)

6.5.6.6. Air evacuation personnel should be able to provide en route care for NBC casualties. Normally casualties will be decontaminated prior to air evacuation. However, biologic casualties may remain infectious. The US Army maintains an Aeromedical Isolation Team (AIT) at USAMRIID. This is a rapid response team designed to safely evacuate and manage patients with potentially lethal communicable diseases under high-level containment. The AIT cannot provide mass casualty evacuation.

6.5.6.7. Air evacuation crews should have required immunizations and chemoprophylaxis. Capabilities for isolation of infectious casualties and disposal of contaminated wastes need to be in place. Procedures for decontamination of non-disposable medical equipment should be identified. All Air Evacuation personnel should know isolation and universal protective precautions and be competent in operation in required personal protective equipment to include IPE. Protocols for transport of contaminated and infectious patients should be developed and exercised for each air evacuation platform.

6.5.7. Management of Human Remains.

6.5.7.1. Management of human remains is primarily a Services responsibility. The medical community advises to protect health and prevent the spread of disease. For more information, reference JP 4-06, *JTTP for Mortuary Affairs in Joint Operations* and AFMAN 10-2602 [Draft], *Nuclear, Biological, Chemical, and Conventional Defense Operations and Standards.*

6.5.7.2. Human remains should be rendered safe for transportation into the United States and for release to mortuaries. Remains should be evacuated to military port mortuaries in CONUS. Remains contaminated by chemical agents can normally be rendered safe by external decontamination. Biologically contaminated remains must be embalmed and transported in appropriate sealed containers.

6.5.7.3. The Mortuary Affairs Decontamination Collection Point (MADCP) is an operational element under oversight of the Joint Mortuary Affairs Office (JMAO). The MADCP is staffed by specialized mortuary affairs and NBC defense personnel. In the event of a large number of NBC casualties spread over a wide area, the resources of the MADCP may be overwhelmed. Local initial decontamination or contaminated remains collection points may need to be established. US Air Force, mortuary affairs activities are performed by Services personnel. Medical consultation may be required in the event of contaminated casualties. Large numbers of contaminated remains may require alternative procedures. If adequate decontamination capability is not available, contaminated remains may have to be buried in place. The area commander, with consultation of the JMAO, may authorize mass burials.

Chapter 7

LOGISTICS

7.1. General. Protecting medical supplies and equipment from the effects of NBC contamination is absolutely essential to maintaining operational capability of any deployed medical unit. The Medical Logistics Supply Chain must be able to deliver essential medical supplies in an NBC environment. Medical supplies must continue to arrive at the deployed location free of contamination and in serviceable condition. Deployed medical units must be able to protect their limited supply stocks from becoming lost due to NBC attack.

7.2. Protecting Medical Materiel on Site.

7.2.1. Every effort must be made to protect all medical supplies and equipment during NBC defense operations. This includes materiel kept at the various sections throughout the DMF. Placing supplies and equipment under sufficient cover will decrease the potential for loss. Supplies should be wrapped in plastic and placed under tents or stored in CP locations if possible. Wrapping supplies in two layers of plastic with M-8 paper placed on the outer layer to assist in the identification of post-attack chemical agent contamination. The thicker the plastic the longer it will protect.

7.2.2. Plastic wrap is not part of allowance standards and must be obtained prior to deployment into an NBC threat area or obtained immediately upon notification of an increasing threat. Base supply or CE is the source for plastic coverings; contact them prior to deployment to palletize necessary supplies.

7.2.3. Protection from the thermal and blast effects of nuclear detonations requires more elaborate measures. Placing supplies in trenches, inside earthen berms, behind substantial stonewalls, or in other field expedient depressions or facilities will enhance the protective posture of supplies and equipment from nuclear effects.

7.3. Protecting Medical Materiel During Transportation.

7.3.1. Normal transportation methods offer a reasonable amount of protection from BW/CW agents by virtue of their design. Supplies are normally shipped in boxes that are transported in closed aircraft and or trucks. In addition to being placed in boxes most items are shrink-wrapped and or placed under plastic if built onto a 463L aircraft pallet.

7.3.2. Supplies en route are most vulnerable when awaiting transfer at transshipment nodes. It is recommended that supplies destined for a known NBC environment or a designated high threat area be placed in plastic bags or wrapped in plastic before being placed in shipping boxes or containers. This will further protect the cargo from exposure. This extra protection will add minimal procedural changes at the source of supply and the deployed location.

7.3.3. Coordination with the sustaining base must be made to ensure steps are taken with vendors and other sources of supply to protect cargo during and immediately after transportation.

7.4. Biomedical Maintenance Support in an NBC Environment.

7.4.1. To minimize exposure to NBC agents or materials, medical equipment should be covered with plastic or tarps when practical. Maintenance on biomedical equipment will become more complex under NBC conditions.

7.4.2. After exposure, the decontamination of some medical equipment may be a problem for maintenance personnel. The use of standard decontamination agents may cause damage beyond repair to some biomedical and electronic equipment. In some instances, removal of chemical agents from medical equipment will require aging (off gassing).

7.4.3. Decontamination of biomedical equipment must be performed in MOPP Level 4 until decontamination is completed.

7.5. Biological Warfare/Chemical Warfare (BW/CW) Personal Protection Items. The chemical/biological ensemble provides adequate protection for most internal radiological hazards. An area contaminated with radioactive material would require the donning of a lead suit as protection from the external radiation hazards. However, the donning of mask, gloves, and boot covers will minimize the inhalation and ingestion of radiological contamination.

7.5.1. Issue. When directed by appropriate authority BW/CW individual protection items will be issued IAW AFMAN 23-110, *USAF Supply Manual*, Volume 5, chapter 15. This means that most units arriving in-theater will receive their BW/CW protection items prior to deployment and have them when they arrive. Units already in theater will require their BW/CW items to be issued when notified by the appropriate authority. There will also be units and individuals arriving in-theater without some or all of their BW/CW items. They too must be issued their required BW/CW items IAW AFMAN 23-110, Volume 5, chapter 15. Recognize that medical logistics must be able to accommodate units or individuals that will require occasional re-issue of some or all items due to various reasons. This means it may be necessary for deployed medical logistics activities to periodically requisition BW/CW items through the established supply chain.

7.5.2. Accountability. The procedures in AFMAN 23-110, Volume 5, chapter 15, will account for quantity and lot numbers issued. This provides a starting point for possible quality assurance recall actions. They also provide a starting point for implementing investigational new drug (IND) protocol accountability requirements if applicable. Troop commanders and individuals are to maintain accountability of the items from time of issue until turn-in. The medical logistics activity cannot account for BW/CW items once they are issued to units or individuals.

7.5.3. Turn-in. The turn-in of all unused BW/CW individual protective items will be accepted by the issuing medical logistics activity. If this is not feasible, assets may be returned to any Air Force medical logistics activity. At recurrent deployment sites, prepositioning assets at the deployed location based on the UMD will reduce wastage of supplies. BW/CW items turned back in will not be considered for re-issue. Medical logistics activities will separate turn-in items and hold them until disposition instructions are provided.

Chapter 8

EDUCATION AND TRAINING

8.1. General.

8.1.1. The role of the Air Force HSS in the NBC environment is to mitigate and to minimize the effects of NBC wounds, injuries, and disease in order to maintain and sustain sortie generation. It is through education and training that Air Force medical personnel will obtain the necessary counter NBC operational skills required to ensure an optimal degree of success.

8.1.2. The goal of education and training, formal or informal, is to impart a working knowledge of the concepts, principles, and procedures of operating in the NBC environment. This education and training shall address the individual, collective unit, and leadership skills needed to support combatant commander requirements.

8.1.3. It is clear that there is a core set of skill requirements that apply to every medic, regardless of specialty. However, the level of expertise brought to bear on the NBC event will determine the breath and depth of understanding and level of proficiency. Through education, the basis for training will be established. Training will include hands-on exposure to NBC defense techniques and procedures, and exercises. Stressing, realistic exercises are the best ways in which to demonstrate and revalidate operational capability of the medical response to an NBC event. These exercises will not only reinforce skill sets but will serve to provide a tool to objectively measure the desired mission outcome. In the end, the desired goal of all NBCCDT is to develop a working knowledge of the required skill set and to demonstrate an appropriate level of proficiency.

8.1.4. The combination of core skill requirements and mission specific or UTC specific requirements represent the full-spectrum requisite NBC training. The Manpower and Equipment Force Packaging (MEFPAK) for each UTC establishes a mission essential task list (METL) which identifies the key skills required by UTC members to function effectively in the NBC environment. UTC-specific training requirements are derived from the METLs.

8.1.5. Medical readiness education and training building blocks begins with initial training received upon entry into the Service and continues with periodic refresher training throughout the lifecycle of the Service member. The pieces of the blocks can best be described in three phases: initial training, sustainment training, and just-in-time (JIT) training. (See Figure 8.1.)

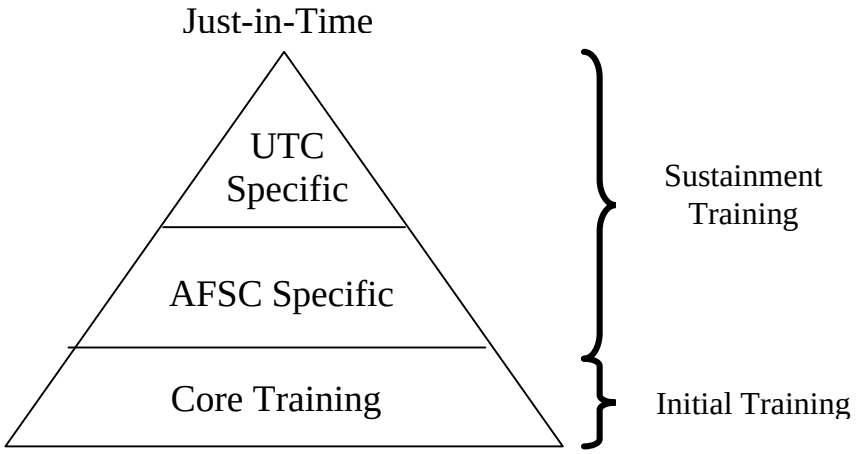


Figure 8.1. Training Building Blocks

8.1.5.1. Initial Training. Initial NBCCDT will occur at the accession/entry-level courses. NBCCDT is described in AFI 10-2501 (Draft), *Full Spectrum Threat Response (FSTR) Planning and Operations*, and includes, but is not limited to, the proper use of individual protective equipment (IPE). For the enlisted, these entry-level courses may include Basic Military Training (BMT) at Lackland AFB, the Expeditionary Medical Readiness Course (EMRC) at Sheppard AFB, or Basic Expeditionary Medical Readiness Training (BEMRT) at Brooks AFB. Officers receive initial training by attending the Commissioned Officer Training (COT)/Reserve Commissioned Officer Training (RCOT) course, or through a commissioning program such as a Service academy, Reserve Officer Training Corps (ROTC), or Officer Training School. All personnel that do not receive NBCCDT through these accession programs must be trained at the unit level within 6 months of their assignment.

8.1.5.2. Sustainment Training.

8.1.5.2.1. Air Force specialty code (AFSC) sustainment training (AFSC-specific Readiness Skills Verification Program [RSVP]) is designed to maintain medical skills of a fully qualified member to adequately perform the duties required by the member's AFSC in a deployed setting. **All personnel assigned to deployable UTCs must participate in appropriate AFSC specific training**. MAJCOMs may provide supplemental guidance for all other medical personnel (e.g., nondeployable UTCs, in-place/generation/forward deployed units, CONUS reception/expansion, and those personnel not assigned to UTCs) to complete RSVP training, based on readiness missions.

8.1.5.2.2. Enlisted personnel enter into the sustainment training upon award of the 5-skill level. Officers enter sustainment training after completion of unit orientation program and completion of a fully qualified AFSC.

8.1.5.2.3. The RSVP training database, maintained by the Wartime Medical Planning System Office (WAR-MED PSO) is the primary guide for medical specialty specific medical readiness training. Units will use AFSC specific training RSVP requirements as part of their annual medical readiness training plan to ensure that every opportunity to conduct training is identified, planned, and documented appropriately. Training tasks, which are identified in the AFSC specific sustainment training database, are the catalyst for training program development.

8.1.5.2.4. Several venues for sustainment training that address AFSC-specific and UTC-specific requirements are available to medical personnel. Formal courses provide an opportunity for a standardized approach to training. Additionally, maximum utilization of distance learning capabilities will be integral in reducing temporary duty (TDY) costs and time away from home station. Reference materials (e.g., NBC toolkit, CD-ROM training, etc.) should be incorporated as needed to augment initial training.

8.1.5.3. Just-in-time (JIT) Training. Although JIT training is a component of education and training, it is not the optimal or desired method of training. Therefore, JIT training should occur just prior to the deployment phase (predeployment) of the operation or while deployed. The goal of JIT training is immediate reenforcement of critical NBC skills only (e.g., wear of the protective mask, proper inspection of individual protective equipment [IPE], use of auto-injectors, etc.).

8.1.6. Field Exercises. Training conducted outside the classroom, normally employing unit equipment, and operating under simulated NBC conditions. An example of a field exercise is a circumstance in which a unit focuses on setting up its medical equipment and simulates all aspects of the deployment phase of an NBC operation. Essential elements of the exercise should include aspects of triage, decontamination, treatment, and transportation of casualties. These tasks should be performed both with and without IPE.

8.2. Core NBC Requirements. Core requirements are those essential or critical NBC training requirements that if not received would significantly degrade the individual's or unit's ability to operate in an NBC environment. These critical skills, common to every medic regardless of deployment status, forward location, or home-based assignment, are identified in support of the three pillars of force health protection (FHP): healthy and fit force, casualty prevention, and casualty care management, as outlined in AFDD 2-4.2, *Health Services*, and JP 4-02 [Final Draft], *Doctrine for Health Service Support in Joint Operations*. Specifically, all health care providers must attend in-residence or take by satellite course the following courses: Medical Management of Biological Casualties Course (USAMRIID, Fort Detrick, Maryland), Medical Management of Chemical Casualties Course (USAMRICD, Aberdeen, Maryland), and Medical Effects of Ionizing Radiation Course (AFRRI, Bethesda, Maryland). Enlisted medical personnel should attend the Field Management of Chemical and Biological Casualties Course (USAMRIID/USAMRICD). Attachment 5 contains a list of NBC references for health care providers.

8.2.1. Healthy and Fit Force. A healthy and fit force increases resiliency to overcome adversity. All personnel should make every effort to promote emotional and physical health and fitness, both individually and as a unit. The DMC's leadership skills will include:

8.2.1.1. Planning factors:

8.2.1.1.1. Chain of command/lines of communication.

8.2.1.1.2. Threat.

8.2.1.1.3. Unique factors during predeployment, deployment and postdeployment phases of operations (e.g., plans, vulnerability assessments, beddown considerations, lessons learned, etc.).

8.2.1.1.4. Required capability necessary to meet threat.

8.2.1.1.5. Combat stress control.

8.2.1.2. Logistics considerations:

8.2.1.2.1. Protecting materiel.

8.2.1.2.2. Biomedical Equipment Technician (BMET) support.

8.2.1.2.3. Issuing BW/CW countermeasures.

8.2.2. Casualty Prevention. Core requirements for casualty prevention will include the following passive defense actions:

8.2.2.1. Contamination avoidance.

8.2.2.2. Decontamination.

8.2.2.3. IPE.

8.2.2.4. Chemoprophylaxis.

8.2.2.5. Medical intelligence/NBC threat to base population.

8.2.2.6. In-processing immunization.

8.2.2.7. Prevention.

8.2.2.8. Infection control.

8.2.2.9. Containment.

8.2.3. Casualty Care Management. Core requirements for casualty care management will include:

8.2.3.1. First responder—those units/personnel who are first on the scene when medical care is required. These individuals provide initial life saving/life sustaining care to NBC casualties prior to the transport of the patient to the next level of care. These situations include, but are not limited to in-flight emergencies (IFEs), mass casualty situations, hazardous materials (HAZMAT) response, and other emergency responses. In some cases, triage teams may be classified as first responders. All 4NOX1 first responders will be nationally registered as Emergency Medical Technician (EMT)-Basic as a minimum level of qualification. Physicians, nurses, physician assistants, and IDMTs who also may ride in ambulances, will have even higher levels of certification and inherently meet this requirement.

8.2.3.2. Principles of the phases of care:

8.2.3.2.1. Triage.

8.2.3.2.2. Decontamination.

8.2.3.2.3. Treatment.

8.2.3.2.4. Transportation.

8.2.3.3. Self-aid/buddy care (SABC).

8.2.3.4. Surgical stabilization.

8.2.3.5. Surveillance (disease, vector).

8.2.3.6. Security.

8.2.3.7. Medical management of NBC casualties.

8.2.3.7.1. Pathophysiology.

8.2.3.7.2. Clinical effects/presentation.

8.2.3.7.3. Medical management (prophylaxes).

8.2.3.7.4. Protective measures and containment (isolation, universal precautions).

8.3. Summary

8.3.1. The Joint Chiefs of Staff has identified four resources of measurement to determine the readiness of any unit. This measurement tool, known as the Status of Resources and Training System (SORTS), assesses equipment/supplies, equipment/supplies condition, personnel, and training. Of these, training is by far the easiest to influence for optimal effectiveness.

8.3.2. Education and training is a vital determinant to the success or failure in any operation, whether in an NBC environment or conventional. Education and training of Air Force Medical Service personnel in support of combatant commander requirements and FHP activities will minimize the medical effects of an NBC event on operational units and increase survivability during NBC environments.

8.4. Forms Prescribed.

DD Form 2766, *Adult Preventive and Chronic Care Flow Sheet.*
DD Form 2795, *Predeployment Health Assessment*.
DD Form 2796, *Postdeployment Health Assessment*.

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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AFTTP 3-42.5, *Aeromedical Evacuation*
AFTTP 3-42.7, *Aerospace Medical Contingency Ground Support System*
AFMAN 10-100, *Airman's Manual*
AFI 10-206, *Operational Reporting*
AFI 10-212, *Air Base Operability Program*
AFPAM 10-219 Vol 5, *Bare Base Conceptual Planning Guide*
AFI 10-245, *Anti-terrorism*
AFI 10-404, *Base Support and Expeditionary Site Planning*
AFI 10-2501 [Draft], *Full Spectrum Threat Response Operations*
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AFI 32-4001, *Disaster Preparedness Planning and Operations*
AFMAN 32-4002, *Hazardous Materials Emergency Planning and Response Program*
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AFMAN 32-4005, *Personnel Protection and Attack Actions*
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AFH 32-4014, Vol 2, *USAF Operations in a Chemical and Biological (CB) Warfare Environment, CB Hazards*
AFH 32-4014, Vol 3, *USAF Operations in a Chemical and Biological (CB) Warfare Environment, Defense Equipment*
AFH 32-4014 Vol 4, *USAF Ability to Survive and Operate Procedures in a Nuclear, Biological, and Chemical (NBC) Environment* [will be replaced by AFMAN 10-2502]
AFMAN 32-4017, *Civil Engineer Readiness Technician's Manual for Nuclear, Biological, and Chemical Defense*

AFPAM 32-4019, *Chemical-Biological Warfare Commander's Guide*
AFI 41-106, *Medical Readiness Planning and Training*
AFD 41-317, *Compendium of Aeromedical Evacuation Terminology*

AFJMAN 44-149, *Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries*
AFJMAN 44-151, *NATO Handbook on the Medical Aspects of NBC Defensive Operations*
AFMAN (I) 44-156, *Treatment of Biological Warfare Agent Casualties*
AFMAN (I) 44-161, *Treatment of Nuclear and Radiological Casualties*
AFJI 48-110, *Immunizations and Chemoprophylaxis*
AFMS CONOPS, *Wartime Medical Decontamination Team*

Joint Doctrine and Policy
CJCS Memo, MCM 251-98, *Deployment Health Surveillance and Readiness*
CJCS Memo MCM 0006-02, *Updated Procedures for Deployment Health Surveillance and Readiness*
Joint Policy Memo, *Deployed Occupational Health and Environmental Health Surveillance*
JP 3-11, *Joint Doctrine for Operations in Nuclear, Biological, and Chemical (NBC) Environments*
JP 4-02 [Final Draft], *Doctrine for Health Service Support in Joint Operations*
JP 4-06, *JTTP for Mortuary Affairs in Joint Operations*

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US Army FM 8-33/NAVMED P-5038, *Control of Communicable Diseases Manual*
US Army FM 8-285, *Chemical Agent Casualties*
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US Army Medical Research Institute of Chemical Defense (USAMRICD), *Medical Management of Chemical Casualties Handbook*
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Abbreviations and Acronyms

ABCDD.....airway, breathing, circulation, drugs, and decontamination
ADCON .....administrative control
AE .....aeromedical evacuation
AEF.....aerospace expeditionary force
AETF.....air and space expeditionary task forces
AEW .....air expeditionary wing
AFDD.....Air Force Doctrine Document
AFFOR.....Air Force forces
AFMAN .....Air Force Manual
AFMIC.....Air Force Medical Intelligence Center
AFMS.....Air Force Medical Service
AFOSI.....Air Force Office of Special Investigations
AFRAT .....air force radiation assessment team
AFRC .....Air Force Reserve Command
AFRRI.....Armed Forces Radiology Research Institute
AFSC.....Air Force specialty code
AFTH .....Air Force Theater Hospital
AIT .....Aeromedical Isolation Team
ANG.....Air National Guard
AOR .....area of responsibility
ASF .....aeromedical staging facility
ATSO .....ability to survive and operate
AVIP .....Anthrax Vaccine Immunization Program

BAT.....biological augmentation team
BEE .....Bioenvironmental Engineer
BEMRT.....Basic Expeditionary Medical Readiness Training
BMET .....Biomedical Equipment Technician
BMT.....Basic Military Training
BW .....biological warfare
BWDL.....biological warfare defense laboratory

C2.....command and control
C4ISR.....command, control, communications, computers, intelligence, surveillance, and reconnaissance
CAMS .....chemical agent monitoring system
CASF.....contingency aeromedical staging facility
CB .....chemical and biological
CCA .....contamination control area
CE .....Civil Engineer
CHATH.....Chemically Hardened Air Transportable Hospital
CK.....cyanogen chloride
COMAFFOR.....Commander, Air Force Forces

CONOPS.....concept of operations
CONUS.....continental United States
COT.....Commissioned Officer Training
CP.....collective protection
CW.....chemical warfare

DMC.....deployed medical commander
DMF.....deployed medical facility
DNBI.....disease and nonbattle injury
DOD.....Department of Defense

ECP.....entry control point
EMEDS.....expeditionary medical support
EMOS.....expeditionary medical operations squadron
EMP.....electromagnetic pulse
EMRC.....Expeditionary Medical Readiness Course
EMT.....Emergency Medical Technician
ERG.....emergency response guidebook

FHP.....force health protection
FOL.....forwarding operating location
FSTR.....Full Spectrum Threat Response

GEMS.....Global Expeditionary Medical System
GRL.....Global Reach Laydown

HAZMAT.....hazardous materials
HSS.....health service support
HUMINT.....human intelligence

IAW.....in accordance with
IDMT.....independent duty medical technician
IDT.....Infectious Disease Team
IFE.....in-flight emergency
IMINT.....imagery intelligence
IND.....investigational new drug
IOC.....initial operational capability
IPE.....individual protective equipment
IQD.....internationally quarantinable disease
IV.....intravenous

JFACC.....joint forces air component commander
JFC.....joint force commander
JIT.....just-in-time
JMAO.....Joint Mortuary Affairs Office

JP.....Joint Publication
JRCAB.....Joint Readiness Clinical Advisory Board
JTF .....joint task force
JULLS.....Joint Uniform Lessons Learned System

LAF.....line of the Air Force
LIMFACS .....limiting factors

MADCP .....Mortuary Affairs Decontamination Collection Point
MAJCOM .....major command
MASF.....mobile aeromedical staging facility
MASINT .....measurement and signature intelligence
MAT.....medical analysis tool
MCC.....medical control center
MCRP .....Medical Contingency Response Plan
MEDREP .....medical report
MEFPAK .....Manpower and Equipment Force Packaging
METL.....mission essential task list
MIO.....Medical Intelligence Officer
MISCAPS .....mission capability statements
MOPP.....mission-oriented protection posture
MNBC.....medical nuclear biological chemical
MTF .....medical treatment facility

NBC .....nuclear, biological, and chemical
NBCCDT .....nuclear, biological, chemical and conventional defense training
NCO .....noncommissioned officer
NEPMU.....Navy Environmental Preventive Medicine Unit
NFDL .....Navy Forward Deployed Laboratory
NIRF .....Nuclear Incident Response Force

OPCON.....operational control
OPLAN .....operation plan
OPORD.....operation order

2-PAM Cl.....pralidoxime chloride
P-tabs.....pyridostigmine bromide
PAM.....Prevention and Aerospace Medicine
PAPR.....powered air-purifying respirator
PAR.....population at risk
PAT.....Protection Assessment Test System
PCR.....polymerase chain reaction
PD .....passive defense
PEM .....Patient Encounter Module
PH .....public health

PHO.....Public Health Officer
PMRC .....patient movement requirements center
PPE.....personal protective equipment
PPW .....protective patient wrap
PRD-5 .....Presidential Review Directive-5
PRU.....personnel readiness unit

QNFT .....quantitative fit testing

RAT.....Radioanalytical Assessment Team
RCOT.....Reserve Commissioned Officer Training
RDD .....radiological dispersal device
ROTC.....Reserve Officer Training Corps
RSVP.....Readiness Skills Verification Program
RTD.....return to duty

SABC .....self aid/buddy care
SG .....Surgeon
SIGINT .....signals intelligence
SITREP .....situation report
SME .....squadron medical element
SMO.....senior medical officer
SORTS .....Status of Resources and Training
SPEARR .....small portable expeditionary aeromedical rapid response
SRC.....survival recovery center

TACON.....tactical control
TAML .....Theater Army Medical Laboratory
TDY .....temporary duty
TEM .....Theater Epidemiological Module
TEMPER.....tent, expandable, modular, personnel
TET .....theater epidemiology team
TIC .....toxic industrial chemical
TIM .....toxic industrial material
TOM.....Theater Occupational Module
TTP .....tactics, techniques, and procedures

UCC .....unit control center
UMD .....unit manning document
USAF .....United States Air Force
USAMRICD .....US Army Medical Research Institute of Chemical Defense
USAMRIID.....US Army Medical Research Institute of Infectious Diseases
UTC.....unit type code

WAR-MED PSO.....Wartime Medical Planning System Office

WHO.....World Health Organization
WMD .....weapons of mass destruction
WMDT.....Wartime Medical Decontamination Team

Attachment 2

MEDICAL NBC UTC MISCAPS

NBC-Related AFMS UTCs. UTC CONOPS can be located at USAF/SGX homepage, https://www.afms.mil/sgxr/index.cfm.

Wartime Medical Decontamination Team (WMDT)(UTCs FFGLA and FFGLB): UTC FFGLA is equipment and UTC FFGLB is a 19-person team. Provides decontamination (decon) personnel to support theater bed-down locations as determined by the medical planner. The Patient Decontamination Team consists of medical personnel and is equipped to decontaminate 500 patients over a 30-day period without resupply. Each Air Force Theater Hospital (AFTH) is authorized and may require two personnel teams per equipment set, capable of operating on a 24-hour basis. Low threat areas may have one team assigned at the discretion of the Theater AFFOR/ASETF Surgeon.

Bioenvironmental Engineering (BEE) Nuclear/Biological/Chemical (NBC) Team (UTC FFGL1) (Note, this UTC is undergoing modernization to a new name (Medical NBC Team) and reduction in personnel size to 3 persons; ECD for revision is Sep 02): Provides increased wing survivability through NBC surveillance, detection, and abatement. Advises wing survival recovery center (SRC) on NBC threats, decontamination options, personnel protective equipment capabilities, and NBC health risk to deployed personnel. Provides field NBC detection through augmentation of the base NBC Defense Cell. Advises SRC on threat impact, protective action, and recovery activities. This six-member team includes equipment.

Biological Augmentation Team (BAT) (UTC FFBAT): Provides advanced diagnostic identification capability for pathogens of operational concern at the deployed location. Team members analyze samples and interpret results using a nucleic acid based testing platform. The two-member team deploys based on threat assessments and may deploy along with the EMEDS forces or individually, depending on mission needs.

Infectious Disease: Provides infectious disease augmentation to an AFTH with two UTCs: **FFHA2, Infectious Disease Team**, and **FFHA5, Infectious Disease Augmentation Team**.

> **Infectious Disease Team (UTC FFHA2):** Provides infectious disease support and equipment to 25-bed or larger AFTH facilities (generally centrally located at one to three locations per theater). The 15-member team (consisting of one infectious disease physician, a clinical nurse trained in infection control, six clinical nurses, six medical technicians, and one public health technician) identifies, controls, and provides treatment for infectious diseases in the deployed theater. The team provides public health surveillance and specialized care for patients with biological warfare, nosocomial, and DNBI infections transmissible to other patients and personnel. Identifies, confirms, and reports use of biological warfare agents. Provides consultation to preventive medicine teams, uses telemedicine capabilities for consultation with theater epidemiology team (UTC FFHA1),

BEE NBC team (UTC FFGL1), and CONUS-based medical and all biological and infectious disease centers. Oversees operation of six-bed patient isolation area.

Infectious Disease Augmentation Team (UTC FFHA5): Provides two personnel who provide manpower to augment infectious disease and infection control support in the theater. Normally deploys after UTC FFHA2 to AFTHs with more than 100 beds where a significant threat of biological warfare or infectious disease casualties exists. Augments ability to identify, control, and provide treatment for infectious diseases and biological warfare agents in the theater. Provides intratheater infectious disease consultation.

Theater Epidemiology Team (TET) (UTC FFHA1): Provides theater level support to Air Force component command surgeon or joint task force surgeon. Provides medical environmental and occupational threat assessments, support for outbreak investigations, and recommendations for preventive countermeasures and needed surveillance systems. Coordinates with other medical and line force protection teams and with federal and international agencies. Collocated with their theater surgeon or appropriate headquarters element.

Air Force Radiation Assessment Team (AFRAT): The AFRAT Nuclear Incident Response Force (NIRF) 1 and 2(FFRA1 and FFRA2), and the Radioanalytical Assessment Team (RAT) (FFRA3) are globally responsive specialty asset teams that provide specialized field radiological monitoring and consequence management support to the assigned theater medical authority. The team measures, analyzes and interprets radiological measurements in and around the affected area. Team capabilities include radiological dose rate measurements, air concentrations, ground deposition, and plume modeling. They provide expert guidance on the type and degree of radiological hazard that face deployed forces. Based on these assessments, recommendations are made to optimize force protection in light of achieving mission objectives. Typical deployment scenarios could include consequence management operations from nuclear weapons accidents (Broken Arrows), nuclear reactor accidents (Faded Giants), and terrorist use of radiological dispersion weapons or improvised nuclear devices, or humanitarian assistance operations to countries that have experienced a nuclear exchange. The AFRAT NIRF 1 consists of two health physicists, two Bioenvironmental Engineering Craftsman, two Bioenvironmental Engineering Journeyman and one Instrument Craftsman. AFRAT NIRF 2 consists of four Health Physicists, two Bioenvironmental Engineers, six Bioenvironmental Engineering Craftsman, six Bioenvironmental Engineering Journeyman, and two Instrument Craftsman. The activation of these assets would be scaled to the specific mission needs. AFRAT NIRF 1 only, or AFRAT NIRF 1 followed by NIRF 2.

Attachment 3

FOOD AND WATER VULNERABILITY TABLES

Table A3.1. Threat Potential of BW Agents to Drinking Water

Agent	Water Threat	Stable in Water	Chlorine Tolerance
Anthrax	Yes	2 years (spores)	Spores Resistant
Brucellosis	Probable	20-72 days	Unknown
Clostridium perfringens	Probable	Common in Sewage	Resistant
Tularemia	Yes	Up to 90 days	Inactivated 1 ppm – 5 min
Glanders	Unlikely	Up tp 30 days	Unknown
Melioidosis	Unlikely	Unknown	Unknown
Shigellosis	Yes	2-3 days	Inactivated 0.05 ppm – 10 min
Cholera	Yes	Survives well	Easily killed
Salmonella	Yes	8 days, fresh water	Inactivated
Plague	Yes	16 days	Unknown
Q fever	Possible	Unknown	Unknown
Typhus	Unlikely	Unknown	Unknown
Psittacosis	Possible	18-24 hrs, seawater	Unknown
Encephalomyelitis	Unlikely	Unknown	Unknown
Hemorrhagic fever	Unlikely	Unknown	Unknown
Variola	Possible	Unknown	Unknown
Hepatitis A	Yes	Unknown	Inactivated 0.6 ppm –30 min
Cryptosporidiosis	Yes	Stable days or more	Oocysts resistant
Botulinum toxins	Yes	Stable	Inactivated 0.6 ppm – 20 min
T-2 mycotoxin	Yes	Stable	Resistant
Aflatoxin	Yes	Probably stable	Probably tolerant
Ricin	Yes	Unknown	Resistant at 10 ppm
Staph. Enterotoxins	Yes	Probably Stable	Unknown
Microcystins	Yes	Probably Stable	Resistant at 100 ppm
Anatoxin A	Probable	Inactivated in days	Unknown
Tetrodotoxin	Yes	Unknown	Inactivated at 0.5 ppm
Saxitoxin	Yes	Stable	Resistant at 10 ppm

Table A3.2. Effects of Certain Agents on the Appearance of Food
[Reference Table 12-I from FM 8-9, Part III]

Agent	Taste	Smell	Color
Mustard	Affected	Garlic	Meat discolored
N-Mustard	Affected	Fishy	No discoloration
Arsenicals	Acid	Unpleasant	Meat & vegetables discolored
Nerve Agents	None	None	No effect
White Phosphorus	Acid	Garlic	Glows in dark
Food may become highly toxic without any changes in its appearance. The absence of these signs must not be relied upon in deciding that exposed food is fit for consumption.			

Attachment 4

TRIAGE CATEGORIES

Table A4.1. Triage Categories

Immediate -Patients with life-threatening injuries treatable with available resources -May be suffering the effects of conventional injuries, NBC exposure, or combination of both -Unconscious, disoriented, severe bleeding, airway compromise, signs/symptoms of shock are typical indicating factors
Delayed -Stable patients with injuries requiring extensive medical treatment -Definitive treatment can be delayed without immediate threat to life -Typically suffering from uncomplicated conventional injuries or limited NBC exposure
Minimal -Stable patients with injuries requiring minimal medical treatment -Little threat to life, even without medical intervention -"Walking wounded" are typically minimal patients
Expectant -Patients likely to die even with aggressive treatment with all available resources -Severe, multisystem trauma and/or severe NBC exposure signs and symptoms *-Expectant patients may be re-triaged to "immediate" if sufficient resources become available to initiate aggressive treatment*

Attachment 5

NBC REFERENCES FOR HEALTHCARE PROVIDERS

NBC:

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Nuclear:

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Field Management of Biological/Chemical Casualties Course; USAMRIID/USAMRICD
Medical Effects of Ionizing Radiation Course; Armed Forces Radiology Research Institute
Satellite Training Course; Biological Warfare and Terrorism; USAMRIID

Satellite Training Course; Chemical Warfare and Terrorism; USAMRICD
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Contingency Operations Course (CONOPS) # B30ZYCONOP-001; USAF School of Aerospace Medicine, Brooks AFB
Patient Decontamination Course # B30ZYDECON-000; USAF School of Aerospace Medicine, Brooks AFB
Battle Field Nursing Course # B30ZY46X0-000; USAF School of Aerospace Medicine, Brooks AFB

INTERNET

http://www.afrri.usuhs.mil
http://www.anthrax.osd.mil
http://www.biomedtraining.org
http://www.nbc-med.org
http://usamriid.army.mil

Attachment 6

NBC DEFENSE-RELATED TASK SUMMARY

	CE Readiness—UTCs	Medical—Medical NBC	Medical—Prevention and Aerospace Medicine (PAM) Team	Medical—Biological Augmentation Team (BAT)	Medical—Wartime Medical Decontamination Team (WMDT)
Pre-Attack	Conduct NBC agent hazard Analysis (identification, vulnerability, and risk assessment)	Provide medically-related NBC defensive advice for hazard analysis	Conduct food, water, disease, and industrial hazard vulnerability assessments		Establish patient decontamination capability at DMF
	Determine NBC passive defense measures	Provide human health data on potential threat agents to commanders	Initiate medical surveillance to support early BW identification	Conduct lab analysis of clinical and environmental samples for pathogens	Coordinate with medical facility commander, SMEs, and casualty collection points, to establish contaminated patient flow patterns
	Set up/maintain NBC warning, reporting, and notification network capabilities	Team with BAT to determine BW sample handling procedures	Establish detection system at the medical facility	Team with Medical NBC to determine sample handling procedures	Establish decontamination capability for medical equipment, vehicles, and shelters
	Provide advice to shelter teams		Check ventilation In shelters; provide advice on medical aspects of shelters		
	Monitor CCA capability establishment				Obtain base sectoring grid, and connection to contamination status on base
	Provide MOPP level recommendation (operational)	Advise in support of reduced MOPP level recommendation (health/medical)	Recommend and provide NBC prophylaxis (immunizations and chemoprophylaxis)		
		Assist with medical portion of environmental baseline survey	Conduct environmental baseline survey		

Trans-Attack	Provide advice on activation of warning and notification system Increase NBC attack vigilance	Shelter medical personnel and equipment Increase NBC attack vigilance	Shelter medical personnel and equipment	Shelter medical personnel and equipment	Shelter medical personnel and equipment
Post-Attack	Conduct tactical NBC reconnaissance to determine contamination footprint(s) and subservant operational protective measures Gather PAR information from SRC, UTC, and troops in the field Plot detailed NBC footprint contamination Plot NBC attacks for theater warning and reporting Advise SRC commander on operational aspects of NBC agents or materials (e.g., persistency, contamination isolation, and control) Provide MOPP level recommendation (operational)	Dispatch to identified NBC footprints for further identification and quantification of hazard concentrations and collection of samples (surveillance for health protection) Report field surveillance data to NBC Defense Cell and SRC Identify groups of personnel in hazard areas (e.g., squadrons in contaminated sectors) and track exposure to NBC agents to meet PRD-5 requirements* Advise SRC commander on health effects and health risks of NBC agents or materials Advise in support of reduced MOPP level recommendation (health/medical) Sample food and water for NBC contamination Conduct surveillance activities in reduced	Detect NBC agents or materials at the deployed medical facility, report to SRC and NBC Defense Cell Conduct epidemiological surveillance and report information Obtained at DMF to SRC and NBC Defense Cell Document individual exposure (other than NBC agents) (PRD-5 requirements)	Perform lab analysis and identification for medical surveillance purposes, to include "silver standard" presumptive identification Report laboratory diagnostic information (including "silver standard" analysis) to SRC and NBC cell Assist MNBC in preserving, packaging, and shipping confirmatory BW agent samples	Perform patient decontamination Perform medical vehicle, shelter, and equipment decontamination as appropriate

	Oversee CCA operations Oversee contamination control operations	MOPP level sectors Conduct environmental surveillance in support of human health hazard assessment			

*Identify through footprint, using detection and surveillance data.