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Executive Summary

Over the past several years the United States has been working with the North Atlantic Treaty Organization (NATO) to develop the symptom based methodology for estimating chemical, biological, radiological and nuclear (CBRN) casualties as presented in NATO *Allied Medical Publication 8(C), NATO Planning Guide for the Estimation of CBRN Casualties*, (*AMedP-8(C)*). To fully implement the *AMedP-8(C)* casualty estimation methodology, the casualty estimate must be integrated into the medical logistical models and tools used by the medical planner providing medical support to the CBRN battlefield. The Common User Database (CUD) is a data repository for medical materiel and personnel planners, medical combat and requirements developers, clinicians and trainers, medical logisticians, and force structure planners. It provides an authoritative data-set of clinical and medical logistics data used by the Department of Defense (DOD) modeling or planning tools.[1] The casualty estimate must be able to act as an input to the medical logistical tools, and the medical logistical tools (and their underlying models and databases) must be able to effectively use the casualty estimate.

This study compares the parameters and the outputs of *AMedP-8(C)* with the parameters and the inputs of the CUD. The main objective is to properly link the outputs of *AMedP-8(C)* to the inputs of the CUD. The simplest solution, with the least modifications, will be proposed to bridge the gap between the sources. Since the CUD is still being released, not all sections/portions are available. Although the CUD covers significantly more warfare agents than *AMedP-8(C)*, for the purposes of this study only the agents in *AMedP-8(C)* are of interest.

Chemical Agents

- **Sarin (GB)**: The casualty categories reported by the *AMedP-8(C)* methodology and the CUD patient condition (PC) codes align very well, with an additional PC code (102018, CBRN: Sarin (GB)) available in the CUD for estimates that do not specify the injury severity of the casualty. No further adjustments to this alignment are recommended.
- **Methylphosphonothioic Acid (VX)**: The casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes do not align. The casualty categories are based explicitly on symptom severity, while the PC codes do not specify either symptom severity or dose range. Even having two PC codes is misleading, since treatment of Russian VX (also known as "VR") is essentially the same as the treatment

[1] "Common User Database," Defense Medical Material Program Office (DMMPO) website, U.S. Department of Defense, accessed July 16, 2012, https://www.dmsb.mil/cud.asp.

for VX, and having separate condition codes for the same treatment does not serve a useful purpose. To address these disparities, IDA recommends that the CUD delete Russian VX as a separate agent, including the medical management of a VR casualty as equivalent to that of a VX casualty, and that it consider developing a set of patient conditions, and associated treatment briefs to allow the definition of patient conditions for mild, moderate, and severe VX/VR patients (thereby aligning with *AMedP-8(C)* casualty categories).

- **Sulfur Mustard (HD)**: The alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. The single PC code that does not explicitly align with the casualty categories may have some utility when the casualty modeling does not yield specific symptom severity information. No further adjustments to this alignment are recommended.

Biological Agents

- **Anthrax**: The alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. The single PC code that does not explicitly align with the casualty categories may have some utility when the casualty modeling does not yield specific symptom severity information. No further adjustments to this alignment are recommended.
- **Botulinum**: The alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #102016, "CBRN: Botulinum Toxin," and Patient Condition ID #127524, "CBRN: Botulinum Inhalation Multiple Acuity: Incubation period," may have some utility when the casualty modeling does not yield specific symptom severity information. The single recommendation is to review the utility of Patient Condition ID #127525, "CBRNMA: Botulinum Prodromal," to determine if there is any operational or medical significance to this patient condition.
- **Brucellosis**: The alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #115522, "CBRN: Brucellosis (997.11.3)," may have some utility when the casualty modeling does not yield specific symptom severity information. The single recommendation is to review the utility of Patient Condition ID #129526, "CBRNMA: Brucellosis Inhalation Prodromal," to determine if there is any operational or medical significance to this patient condition.
- **Glanders**: The casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes do not align. The casualty categories are based explicitly on symptom severity, while the PC codes do not specify either symptom severity or stage of illness. The recommendation, which addresses these disparities, is that the CUD consider

developing a set of patient conditions, and associated treatment briefs, to allow the definition of patient conditions for mild, moderate, and severe glanders patients (thereby, aligning with *AMedP-8(C)* casualty categories).

- **Plague**: The alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #102022, "CBRN: Plague (*Yersinia Pestis*) (020.3/E997.1.2/E979.6.2)," may have some utility when the casualty modeling does not yield specific symptom severity information. The single recommendation is to review the utility of Patient Condition ID #130024, "CBRNMA: Plague Prodromal," to determine if there is any operational or medical significance to this patient condition.
- **Q Fever**: The alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #115523, "CBRN: Q Fever," may have some utility when the casualty modeling does not yield specific symptom severity information, although with a single stage disease this may be redundant with Patient Condition ID #130046, "CBRNMA: Q Fever Moderate." The single recommendation is to review the utility of Patient Condition ID #130045, "CBRNMA: Q Fever Prodromal," and Patient Condition ID #130047, "CBRNMA: Q Fever Severe," to determine if there is any operational or medical significance to these patient conditions.
- **Smallpox**: The casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes align reasonably closely. Patient Condition ID #101518, "CBRN: Smallpox (PC 0366) (ICD9 50.9/E979.6/E997.1)" may have some utility when the casualty modeling does not yield specific symptom severity information. The single recommendation is to review the utility of Patient Condition ID #128027, "CBRNMA: Smallpox Prodromal," to determine if there is any operational or medical significance to these patient conditions.
- **Staphylococcal Enterotoxin B (SEB)**: There is a casualty category reported by the *AMedP-8(C)* methodology that aligns with one CUD PC code. The single recommendation is to review the operational or medical significance of Patient Condition ID #102040, "CBRN: Staphylococcal Enterotoxin B Prodromal," Patient Condition ID #130577, "CBRNMA: Staphylococcal Enterotoxin B (SEB) Prodromal," and Patient Condition ID #130031, "CBRNMA: Staphylococcal Enterotoxin B (SEB) Moderate."
- **Tularemia**: The casualty category reported by the *AMedP-8(C)* methodology and a CUD PC codes align. Patient Condition ID #102037, "CBRN: Tularemia (*Francisella Tularensis*)," may have some utility when the casualty modeling does not yield specific symptom severity information; although this may be of limited utility in a disease that is at its most severe in the first stage. The recommendation is to review the utility of

Patient Condition ID #128024, "CBRNMA: Tularemia Prodromal," and Patient Condition ID #128025, "CBRNMA: Tularemia Moderate," to determine if there is any operational or medical significance to these patient conditions.

- **Venezuelan Equine Encephalitis (VEE)**: The casualty category reported by the *AMedP-8(C)* methodology and a CUD PC codes align. Patient Condition ID #115524, "CBRN: Venezuelan Equine Encephalitis," may have some utility when the casualty modeling does not yield specific symptom severity information; although this may be of limited utility in a disease that is at its most severe in the first stage. The recommendation is to review the utility of Patient Condition ID #129027, "CBRNMA: Venezuelan Equine Encephalitis Prodromal," and Patient Condition ID #129024, "CBRNMA: Venezuelan Equine Encephalitis Moderate," to determine if there is any operational or medical significance to these patient conditions.

Nuclear and Radiological Effects

- **Inhalation (or ingestion) of radioisotopes**: No further alignment of *AMedP-8(C)* casualty categories and CUD PC codes is recommended.
- **Cutaneous radiation**: Treatment briefs should be developed to define CUD patient conditions for mild, moderate, and severe cutaneous radiation casualties.
- **Whole-body radiation**: *AMedP-8(C)* should include dose range information in the reported casualty estimates; the CUD should consider developing a treatment brief to define patient conditions for mild whole-body radiation casualties (thereby aligning with *AMedP-8(C)* casualty categories) and the CUD should simplify its dose range structure to align with the one used in *AMedP-8(C)*.
- **Primary blast injuries (PBI)**: The CUD should consider developing treatment briefs to define CUD patient conditions for moderate and severe PBI (thereby aligning with *AMedP-8(C)* casualty categories) and the *AMedP-8(C)* methodology should be supplemented with models that can be used to estimate wounded in action (WIA) casualties suffering from secondary, tertiary, or quaternary blast injuries.
- **Burns**: One recommendation is to develop a probability distribution function for each casualty category (similar to the patient condition occurrence frequency (PCOF) used in medical analysis tools). This would allow the medical planner to assign the casualties to a given casualty category among the various relevant PC codes. Alternatively, it is recommended that the CUD be reviewed to determine the significance of using 15 unique PC codes to estimate the medical management requirements for burn patients. It may be possible that that fewer PC codes are sufficient for medical planning purposes, and that fewer PC codes would align more directly with the casualty categories.

- **Combined injuries**: The individual effects should be aligned prior to addressing the alignment of the combined effects. Once the individual effects are aligned, particularly with the expansion of blast categories and patient codes, to include all (primary, secondary, tertiary, and quaternary) of the blast effects, then the recommendation is to review the utility of all of the probable combinations of effects to determine if there is any operational or medical significance to each of these casualty categories and PC codes.

Contents

Appendices

1. Background

Since 1994, the Institute for Defense Analyses (IDA) has supported the United States (U.S.) Army Office of the Surgeon General (OTSG) in the Medical Chemical, Biological, Radiological, and Nuclear (CBRN) Defense Planning and Response Project in its efforts to plan, prepare, and conduct exercises to defend against CBRN weapons use. The objective of the project is to ensure that the U.S. military medical community can successfully fulfill its missions in a CBRN environment. Over the past several years the United States has been working with the North Atlantic Treaty Organization (NATO) to develop the symptom based methodology for estimating CBRN casualties as presented in NATO *Allied Medical Publication 8(C), NATO Planning Guide for the Estimation of CBRN Casualties*, (*AMedP-8(C)*). OTSG asked IDA to coordinate the *AMedP-8(C)* casualty estimation methodology with the CBRN treatment protocols developed by the Defense Medical Materiel Program Office (DMMPO) for use in U.S. medical planning tools.

In order to fully implement the *AMedP-8(C)* casualty estimation methodology, the casualty estimate must be integrated into the medical logistical models and tools used by the medical planner preparing to provide medical support to the CBRN battlefield. The Common User Database (CUD) is a data repository for medical materiel and personnel planners, medical combat and requirements developers, clinicians and trainers, medical logisticians, and force structure planners. It provides an authoritative data-set of clinical and medical logistics data used by the Department of Defense (DOD) modeling or planning tools.[1] The casualty estimate must be able to act as an input to the medical logistical tools, and the medical logistical tools (and their underlying models and databases) must be able to effectively use the casualty estimate.

OTSG requested a study that addresses the integration of *AMedP-8(C)* and the CUD. As a result, this study will compare the parameters and the outputs of *AMedP-8(C)* with the parameters and the inputs of the CUD. To properly link these sources the main objective is to get the outputs of *AMedP-8(C)* to equate to an input of the CUD. The simplest solution, with the least modifications, will be proposed to bridge the gap between the sources. Since the CUD is still being released, not all sections/portions are

[1] "Common User Database," Defense Medical Material Program Office (DMMPO) website, U.S. Department of Defense, accessed July 16, 2012, https://www.dmsb.mil/cud.asp.

available. Although the CUD covers significantly more warfare agents than *AMedP-8(C)*, for the purposes of this task only the agents in *AMedP-8(C)* are of interest.

This study is an attempt to link all possible outputs of *AMedP-8(C)* to patient condition (PC) codes in the CUD and the corresponding treatment briefs. These connections between sources may not be perfect, but suggested changes or modifications will be made to facilitate the unity of both sources.

A. *Allied Medical Publication 8(C), NATO Planning Guide for the Estimation of CBRN Casualties (AMedP-8(C))*

AMedP-8(C) provides a methodology for estimating casualties that occur uniquely as a consequence of chemical, biological, radiological, or nuclear (CBRN) attacks in order to support the planning processes. *AMedP-8(C)* includes five biological agents, three chemical agents, seven radiological agents, and three nuclear effects. The casualty estimates are intended to enable planners, logisticians, and staff officers to quantify requirements for medical personnel; medical materiel stockpiles; patient transport or evacuation capabilities; and facilities needed for patient decontamination, triage, treatment, and supportive care.

AMedP-8(C) employs criteria that determine whether an individual is declared dead or injured, and thereby considered to be a casualty.

An individual killed in action (KIA) is defined as "a battle casualty who is killed outright or who dies as a result of wounds or other injuries before reaching a medical treatment facility." (This may also be referred to as a "prompt fatality.") A KIA casualty, by definition, does not reach a medical facility and, therefore, is not pertinent to planning medical support to a military operation. KIA casualties will not be considered further in this study.

An individual wounded in action (WIA) is

> a battle casualty other than "killed in action" who has incurred an injury due to an external agent or cause. The term encompasses all kinds of wounds and other injuries incurred in action, whether there is a piercing of the body, as in a penetrating or perforated wound, or none, as in the contused wound; all fractures, burns, blast concussions, all effects of biological and chemical warfare agents, the effects of exposure to ionizing radiation or any other destructive weapon or agent.[2]

The nature of the injury and the time of onset depend on the specific agent or effect. The five severity levels used to describe the progression of injury are shown in Table 1.

[2] North Atlantic Treaty Organization (NATO), *AMedP-8(C): NATO Planning Guide for the Estimation of CBRN Casualties* (Brussels: NATO, 2011), 1–4.

Table 1. *AMedP-8(C)* Injury Severity Levels

Severity Level	Severity	Description
0	No Observable Effect	Although exposure to an agent or effect may have occurred, no observable injury (as would be indicated by manifested symptoms) has developed.
1	Mild	Injury manifesting symptoms (and signs for biological agents) of such severity that individuals can care for themselves or be helped by untrained personnel; condition may not impact ability to conduct the assigned mission.
2	Moderate	Injury manifesting symptoms (and signs for biological agents) of such severity that medical care may be required; general condition permits treatment as outpatient and some continuing care and relief of pain may be required before definitive care is given; condition may be expected to interrupt or preclude ability to conduct the assigned mission.
3	Severe	Injury manifesting symptoms (and signs for biological agents) of such severity that there is cause for immediate concern, but there is no imminent danger to life; individual is acutely ill and likely requires hospital care. Indicators are questionable—condition may or may not reverse without medical intervention; individual is unable to conduct the assigned mission due to severity of injury.
4	Very Severe	Injury manifesting symptoms (and signs for biological agents) of such severity that life is imminently endangered. Indicators are unfavorable—condition may or may not reverse even with medical intervention; prognosis is death without medical intervention; individual is unable to conduct the assigned mission and is not expected to return to the mission due to severity of injury.

In the context of *AMedP-8(C)*, an individual is considered WIA at the time of first onset of a specified injury severity level resulting from exposure to a CBRN agent or effect. The specified injury severity level is defined as a casualty criterion established by the medical planner. This casualty criterion defines the injury severity level at which an individual would be expected to become a casualty—that is, the injury severity level that would result in the individual becoming a loss to the unit. A casualty criterion defining someone as a casualty at Severity Level 1 ("Mild") or greater is designated as WIA(1). A casualty criterion defining someone as a casualty at Severity Level 2 ("Moderate") or greater is designated as WIA(2). Finally, a casualty criterion defining someone as a casualty at Severity Level 3 ("Severe") or greater is designated as WIA(3). Since severe injuries or illness are defined as those which preclude an individual's ability to conduct the assigned mission, a casualty criterion set above WIA(3) is not defined, and a designation of WIA(4) is never assigned.

An individual who died of wounds (DOW) is described in *AMedP-8(C)* as "a battle casualty who dies of wounds or other injuries received in action, after having reached a medical treatment facility."[3] (This person may also be referred to as a "delayed fatality.") To become a DOW casualty, an individual must have been previously designated as WIA. However, if reporting time periods are longer than the time spent as a WIA casualty, an individual may appear to proceed directly to DOW and may not have been recorded as WIA. A DOW casualty is not pertinent to the CUD since the CUD already includes estimates of the outcomes of medical care, including death. DOW casualties will not be considered further in this study.

Because CBRN casualties will present to the medical system differently than conventional trauma casualties and result in different medical requirements, IDA recommends that CBRN casualties be characterized differently than conventional casualties. Rather than simply designating CBRN casualties as WIA, additional information should be provided to consider the special characteristics of the CBRN casualty. *AMedP-8(C)* generates casualty estimates that are categorized by the severity of injuries or illness at the time the casualties would enter the medical management system. Because the casualty estimation methodology links personnel status to specific levels of injury severity, a WIA casualty can be characterized by specifying the injury severity level at which an individual becomes a casualty and the causative CBRN agent (e.g., moderate anthrax WIA, severe nerve agent WIA, mild radiological WIA).

B. The Common User Database (CUD)

The CUD is a web-based clinical/medical logistical data repository for medical materiel and personnel planners, medical combat and requirements developers, clinicians and trainers, medical logisticians, and force structure planners. It provides an authoritative data-set of clinical and medical logistics data, which is needed by various Joint and Service-level applications, to predict materiel and personnel requirements. The CUD data focuses on the first 30–60 days of a planning scenario. The CUD is a data repository of information to be used by DOD modeling or planning applications, such as the Joint Medical Analysis Tool (JMAT).[4]

The CUD database includes PC codes and treatment briefs (Appendix A). The CUD starts with information about the injury and the amount of exposure an individual has received (which can be derived from the *AMedP-8(C)* casualty estimation methodology). The CUD assigns a code that corresponds to a certain injury type, called a PC code. PC

[3] Ibid.

[4] "Common User Database," Defense Medical Material Program Office (DMMPO) website, U.S. Department of Defense, accessed July 16, 2012, https://www.dmsb.mil/cud.asp.

codes correspond to International Classification of Diseases Ninth Revision (ICD-9) codes.[5] For CBRN the PC codes correspond loosely with the ICD-9 codes as the ICD-9 codes do not account for variations and acuity levels for CBRN conditions. This code directly correlates to a treatment brief. The treatment brief contains information on treatment for that specific injury, supplies, personnel, and levels of care. Research for treatment briefs is reviewed and updated every three years. The CUD is currently under development but a significant portion of this database is available.

The treatment brief is comprised of a treatment narrative (a research-based summary of the most current literature), the task-time-treater file (TTTF), and associated medical materiel (which may include generic and or specific materiel like Joint Products of Choice (JPOC)). The file details the "who" (Provider), "what" (Patient Presentation), "where" (Level of Care—care band), "why" (Medical Condition), and "how" (Supplies and Equipment) to treat a military service member's medical condition over a 24 hour period and/or for the time within a particular care band. Although not yet implemented, there are plans to include the consideration of treatment at medical care levels 3 and 4 and beyond 24 hours.

[5] "International Classification of Diseases," Ninth Revision (ICD-9) Centers for Disease Control and Prevention (CDC) website, accessed July 16, 2012, http://www.cdc.gov/nchs/icd/icd9.htm.

2. Objective

The objective of this analysis is to assess the necessary changes required to make the outputs of *AMedP-8(C)* equate to an input of the CUD. Once a link is created between these sources, a more complete medical planning guide can be created to assist in the event of a CBRN event. The availability of appropriate and timely medical treatment has the potential to change the symptomatology, and the outcome of the disease.

Allied Medical Publications 8(C), NATO Planning Guide for the Estimation of CBRN Casualties, or *AMedP-8(C)*, models a methodology that can be used to plan for the incidence of CBRN injuries and the severity of injuries and illness over time. This model was created without taking into account any medical intervention and should be viewed as a worst case scenario.

The CUD, an update of the TTTF published in 2004, is a database that includes information about treatments, supplies, and equipment required to manage military casualties medically. Currently under development, the complete CUD database is not available in its entirety. The completed database will enable the user to estimate supplies and personnel required over time.

This document will compare and contrast the differences between the outputs of *AMedP-8(C)* and the inputs of the CUD. Recommendations will be proposed to adjust any of the sources so that they align with each other. Once this connection is made, a medical planner will be able to follow an individual through the course of the whole illness with and without medical intervention. It will also be possible to follow individuals in the military medical system from the point of entry until their exit and to predict treatments and supplies required while in the system, based on injuries found in *AMedP-8(C)* and treatments found in the CUD.

3. Sarin (GB) Nerve Agent

A. *AMedP-8(C)* Casualty Categories

At a casualty criterion of WIA(1), a casualty from inhaled GB would present to the medical system with mild injuries (Severity Level 1) from dosages of 0.2–<1 mg-min/m^3, moderate injuries (Severity Level 2) from dosages of 1–<12 mg-min/m^3, or severe injuries (Severity Level 3) from dosages of 12–<30 mg-min/m^3. Dosages above 30 mg-min/m^3 are lethal in less than 30 minutes, and do not result in WIA casualties.

At a casualty criterion of WIA(2), inhaled GB dosages less than 1 mg-min/m^3 would not result in casualties. WIA(2) results in inhaled GB casualties estimated to present to the medical system with moderate injuries (Severity Level 2) from dosages of 1–<12 mg-min/m^3 or severe injuries (Severity Level 3) from dosages of 12–<30 mg-min/m^3.

At a casualty criterion of WIA(3), inhaled GB dosages less than 12 mg-min/m^3 would not result in casualties. WIA(3) results in inhaled GB casualties estimated to present to the medical system with severe injuries (Severity Level 3) from dosages of 12–<30 mg-min/m^3.

Summarizing, *AMedP-8(C)* reports three categories of GB WIA casualties, as shown in Table 2.

Table 2. GB Casualty Categories

Mild GB Casualty
Moderate GB Casualty
Severe GB Casualty

B. CUD Patient Condition (PC) Codes

The four unique PC codes relevant to inhalation GB casualties in the CUD are shown in Table 3.

Table 3. GB Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102018	CBRN: Sarin (GB)
130035	CBRNMA: Sarin Severe
130033	CBRNMA: Sarin Mild
130034	CBRNMA: Sarin Moderate

C. Recommendation

For inhaled GB, the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes align very well, with an additional PC code (102018, CBRN: Sarin (GB)) available in the CUD for estimates that do not specify the injury severity of the casualty. No further adjustments to this alignment are recommended.

4. Methylphosphonothioic Acid (VX) Nerve Agent

A. *AMedP-8(C)* Casualty Categories

At a casualty criterion of WIA(1), a casualty from liquid VX would present to the medical system with mild symptoms (Severity Level 1) from doses of 0.8 mg or greater of liquid VX; for inhaled VX the casualty would present with mild symptoms (Severity Level 1) from dosages of 0.02–<0.3 mg-min/m^3, moderate symptoms (Severity Level 2) from dosages of 0.3–<4 mg-min/m^3, or severe symptoms (Severity Level 3) from dosages of 4–<13 mg-min/m^3. Dosages above 13 mg-min/m^3 are lethal in less than 30 minutes, and do not result in WIA casualties.

At a casualty criterion of WIA(2), a casualty from liquid VX would present to the medical system with moderate symptoms (Severity Level 2) from doses of 0.8 mg or greater of liquid VX; for inhaled VX the casualty would present with moderate symptoms (Severity Level 2) from dosages of 0.3–<4 mg-min/m^3 or severe symptoms (Severity Level 3) from dosages of 4–<13 mg-min/m^3.

At a casualty criterion of WIA(3), a casualty from liquid VX would present to the medical system with severe symptoms (Severity Level 3) from doses of 1.6 mg or greater of liquid VX. At a casualty criterion of WIA(3) inhaled VX dosages less than 4 mg-min/m^3 would not result in casualties. WIA(3) results in inhaled VX casualties estimated to present to the medical system with severe symptoms (Severity Level 3) from dosages of 4–<13 mg-min/m^3.

Summarizing, *AMedP-8(C)* reports three categories of VX WIA casualties, as shown in Table 4.

Table 4. VX Casualty Categories

Mild VX Casualty
Moderate VX Casualty
Severe VX Casualty

B. CUD PC Codes

The two unique PC codes relevant to inhalation VX casualties in the CUD are shown in Table 5.

Table 5. VX Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102033	CBRN: Methylphosphonothioic Acid (VX)
102035	CBRN: Russian VX (R-VX, VR, R-33)

C. Recommendations

For VX, the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes do not align. The casualty categories are based explicitly on symptom severity, while the PC codes do not specify either symptom severity or dose range. Even having two PC codes is misleading, since treatment of Russian VX (also known as "VR") is essentially the same as treatment for VX, and having separate PC codes for the same treatment does not serve a useful purpose.

The recommendations that address these disparities are that the CUD delete VR as a separate agent, including the medical management of a VR casualty as equivalent to that of a VX casualty, and to consider developing a set of patient conditions, and associated treatment briefs, to allow the definition of patient conditions for mild, moderate, and severe VX/VR patients (thereby aligning with *AMedP-8(C)* casualty categories).

5. Sulfur Mustard (HD) Vesicant Agent

A. *AMedP-8(C)* Casualty Categories

At a casualty criterion of WIA(1), a casualty from inhaled HD vapor would present to the medical system with mild symptoms (Severity Level 1) from dosages of 50 mg-min/m^3 or greater; a casualty from ocular HD vapor exposure would present to the medical system with moderate symptoms (Severity Level 2) from dosages of 4 mg-min/m^3 or greater; and a percutaneous casualty from HD exposure would present to the medical system with mild symptoms (Severity Level 1) from equivalent percutaneous HD vapor dosages of 12 mg-min/m^3 or greater.

At a casualty criterion of WIA(2), a casualty from inhaled HD vapor would present to the medical system with moderate symptoms (Severity Level 2) from dosages of 100 mg-min/m^3 or greater; a casualty from ocular HD vapor exposure would present to the medical system with moderate symptoms (Severity Level 2) from dosages of 4 mg-min/m^3 or greater; and a percutaneous casualty from HD exposure would present to the medical system with moderate symptoms (Severity Level 2) from equivalent percutaneous HD vapor dosages of 180 mg-min/m^3 or greater.

At a casualty criterion of WIA(3), a casualty from inhaled HD vapor would present to the medical system with severe symptoms (Severity Level 3) from dosages of 150 mg-min/m^3 or greater; a casualty from ocular HD vapor exposure would present to the medical system with severe symptoms (Severity Level 3) from dosages of 70 mg-min/m^3 or greater; and a percutaneous casualty from HD exposure would present to the medical system with severe symptoms (Severity Level 3) from equivalent percutaneous HD vapor dosages of 180 mg-min/m^3 or greater.

Summarizing, *AMedP-8(C)* reports three categories of HD WIA casualties, as shown in Table 6.

Table 6. HD Casualty Categories

Mild HD Casualty
Moderate HD Casualty
Severe HD Casualty

B. CUD PC Codes

The four unique PC codes relevant to HD casualties in the CUD are shown in Table 7.

Table 7. HD Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102020	CBRN: Sulfur Mustard (HD) Vapor/Gas
130036	CBRNMA: Sulfur Mustard Prodromal
130037	CBRNMA: Sulfur Mustard Moderate
130609	CBRNMA: Sulfur Mustard Severe

C. Recommendation

For HD, the alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. The single PC code that does not explicitly align with the casualty categories may have some utility when the casualty modeling does not yield specific symptom severity information. No further adjustments to this alignment are recommended.

6. Anthrax

A. *AMedP-8(C)* Casualty Categories

Anthrax is an illness that consists of two different stages. The first (prodromal) stage of illness presents with moderate symptoms. The second (manifest illness) stage of illness presents with very severe symptoms.

At casualty criteria of WIA(1) or WIA(2), a casualty from inhalational anthrax would present to the medical system with moderate symptoms (Severity Level 2) in the prodromal stage of the illness.

At a casualty criterion of WIA(3), a casualty from inhalational anthrax would present to the medical system with very severe symptoms (Severity Level 4) in the manifest illness stage of the disease.

Summarizing, *AMedP-8(C)* reports two categories of anthrax WIA casualties, as shown in Table 8.

Table 8. Anthrax Casualty Categories

Moderate Anthrax Casualty (Prodromal)
Very Severe Anthrax Casualty (Manifest Illness)

B. CUD PC Codes

The three unique PC codes relevant to anthrax casualties in the CUD are shown in Table 9.

Table 9. Anthrax Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102538	CBRN: Anthrax (022.1/E979.6)
127022	CBRNMA: Anthrax Prodromal
127023	CBRNMA: Anthrax Severe

C. Recommendation

For anthrax, the alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. The single PC code that does not explicitly align with the casualty categories may have some utility when the casualty modeling does not yield specific symptom severity information. No further adjustments to this alignment are recommended.

7. Botulism

A. *AMedP-8(C)* Casualty Categories

Botulism is an illness that consists of three different stages. The first stage of the illness presents with moderate symptoms. The second stage of the illness presents with severe symptoms. The third stage shows recovery for survivors with moderate symptoms, while non-survivors have very severe symptoms.

At casualty criteria of WIA(1) or WIA(2), a casualty from botulism would present to the medical system with moderate symptoms (Severity Level 2) in the first stage of the illness.

At a casualty criterion of WIA(3), a casualty from botulism would present to the medical system with severe symptoms (Severity Level 3) in the second stage of the disease.

Summarizing, *AMedP-8(C)* reports two categories of botulism WIA casualties, as shown in Table 10.

Table 10. Botulism Casualty Categories

Moderate Botulism Casualty
Severe Botulism Casualty

B. CUD PC Codes

The five unique PC codes relevant to botulism casualties in the CUD are shown in Table 11.

Table 11. Botulism Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102016	CBRN: Botulinum Toxin
127524	CBRN: Botulinum Inhalation Multiple Acuity: Incubation period
127525	CBRNMA: Botulinum Prodromal
127526	CBRNMA: Botulinum Moderate
127527	CBRNMA: Botulinum Severe

C. Recommendation

For botulinum, the alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #102016, "CBRN: Botulinum Toxin," and Patient Condition ID #127524, "CBRN: Botulinum Inhalation Multiple Acuity: Incubation period" may have some utility when the casualty modeling does not yield specific symptom severity information. The single recommendation is to review the utility of Patient Condition ID #127525, "CBRNMA: Botulinum Prodromal," to determine if there is any operational or medical significance to this PC.

8. Brucellosis

A. *AMedP-8(C)* Casualty Categories

Brucellosis presents as an illness in one of two forms: “Abrupt Onset” with a single stage consisting of severe symptoms, and “Insidious” with two stages progressing from mild symptoms in stage 1 to severe symptoms in stage 2.

At a casualty criterion of WIA(1), a casualty from brucellosis would present to the medical system with severe symptoms (Severity Level 3) in the Abrupt Onset form, or with mild symptoms (Severity Level 1) in the Insidious form.

At casualty criteria of WIA(2) or WIA(3), a casualty from brucellosis would present to the medical system with severe symptoms (Severity Level 3) from either form of the disease.

Summarizing, *AMedP-8(C)* reports two categories of brucellosis WIA casualties, as shown in Table 12.

Table 12. Brucellosis Casualty Categories

Mild Brucellosis Casualty
Severe Brucellosis Casualty

B. CUD PC Codes

The four unique PC codes relevant to brucellosis casualties in the CUD are in Table 13.

Table 13. Brucellosis Patient Condition Codes

Patient Condition ID	Treatment Brief Name
115522	CBRN: Brucellosis (997.11.3)
129526	CBRNMA: Brucellosis Inhalation Prodromal
129527	CBRNMA: Brucellosis Inhalation Moderate
129528	CBRNMA: Brucellosis Inhalation Severe

C. Recommendation

For brucellosis, alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #115522, "CBRN: Brucellosis (997.11.3)," may have some utility when the casualty modeling does not yield specific symptom severity information. The single recommendation is to review the utility of Patient Condition ID #129526, "CBRNMA: Brucellosis Inhalation Prodromal," to determine if there is any operational or medical significance to this PC.

9. Glanders

A. *AMedP-8(C)* Casualty Categories

Glanders is an illness that consists of up to four different stages. The first stage of the illness presents with mild symptoms. The second stage of the illness presents with moderate symptoms. The third stage presents with severe symptoms. Survivors experience a fourth stage, showing a prolonged period of recovery with moderate symptoms.

At a casualty criterion of WIA(1), a casualty from glanders would present to the medical system with mild symptoms (Severity Level 1) in the first stage of the illness.

At a casualty criterion of WIA(2), a casualty from glanders would present to the medical system with moderate symptoms (Severity Level 2) in the second stage of the illness.

At a casualty criterion of WIA(3), a casualty from glanders would present to the medical system with severe symptoms (Severity Level 3) in the third stage of the disease.

Summarizing, *AMedP-8(C)* reports three categories of glanders WIA casualties, as shown in Table 14.

Table 14. Glanders Casualty Categories

Mild Glanders Casualty
Moderate Glanders Casualty
Severe Glanders Casualty

B. CUD PC Codes

The one unique PC code relevant to glanders casualties in the CUD is shown in Table 15.

Table 15. Glanders Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102053	CBRN: Glanders (Burkholderia Mallei)

C. Recommendation

For glanders, the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes do not align. The casualty categories are based explicitly on symptom severity, while the PC codes do not specify either symptom severity or stage of illness. The recommendation that addresses these disparities is that the CUD consider developing a set of patient conditions, and associated treatment briefs, to allow the definition of patient conditions for mild, moderate and severe glanders patients (thereby aligning with *AMedP-8(C)* casualty categories).

10. Plague

A. *AMedP-8(C)* Casualty Categories

Pneumonic plague is an illness that consists of two different stages. The first stage of the illness presents with moderate symptoms. The second stage of the illness presents with very severe symptoms. This disease is contagious (transmissible from human to human), and casualties may be either from the primary exposure or subsequent (secondary) exposures.

At casualty criteria of WIA(1) or WIA(2), a casualty from pneumonic plague would present to the medical system with moderate symptoms (Severity Level 2) in the first stage of the illness.

At a casualty criterion of WIA(3), a casualty from pneumonic plague would present to the medical system with very severe symptoms (Severity Level 4) in the second stage of the disease.

Summarizing, *AMedP-8(C)* reports two categories of plague WIA casualties, as shown in Table 16.

Table 16. Plague Casualty Categories

Moderate Plague Casualty
Very Severe Plague Casualty

B. CUD PC Codes

The four unique PC codes relevant to plague casualties in the CUD are shown in Table 17.

Table 17. Plague Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102022	CBRN: Plague (*Yersinia Pestis*) (020.3/E997.1.2/E979.6.2)
130024	CBRNMA: Plague Prodromal
130025	CBRNMA: Plague Moderate
130026	CBRNMA: Plague Severe

C. Recommendation

For plague, the alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #102022, "CBRN: Plague (*Yersinia Pestis*) (020.3/E997.1.2/E979.6.2)," may have some utility when the casualty modeling does not yield specific symptom severity information. The single recommendation is to review the utility of Patient Condition ID #130024, "CBRNMA: Plague Prodromal," to determine if there is any operational or medical significance to this PC.

11. Q Fever

A. *AMedP-8(C)* Casualty Categories

Q Fever is a single stage illness with moderate symptoms.

At casualty criteria of WIA(1) or WIA(2), a casualty from Q Fever would present to the medical system with moderate symptoms (Severity Level 2).

At a casualty criterion of WIA(3), there would be no casualties from Q Fever.

Summarizing, *AMedP-8(C)* reports one category of Q Fever WIA casualties, as shown in Table 18.

Table 18. Q Fever Casualty Category

Moderate Q Fever Casualty

B. CUD PC Codes

The four unique PC codes relevant to Q Fever casualties in the CUD are shown in Table 19.

Table 19. Q Fever Patient Condition Codes

Patient Condition ID	Treatment Brief Name
115523	CBRN: Q Fever
130045	CBRNMA: Q Fever Prodromal
130046	CBRNMA: Q Fever Moderate
130047	CBRNMA: Q Fever Severe

C. Recommendation

For Q Fever, the alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #115523, "CBRN: Q Fever," may have some utility when the casualty modeling does not yield specific symptom severity information, although with a single stage disease this may be redundant with Patient Condition ID #130046, "CBRNMA: Q Fever Moderate." The

single recommendation is to review the utility of Patient Condition ID #130045, “CBRNMA: Q Fever Prodromal,” and Patient Condition ID #130047, “CBRNMA: Q Fever Severe,” to determine if there is any operational or medical significance to these PCs.

12. Smallpox

A. *AMedP-8(C)* Casualty Categories

Ordinary smallpox is an illness that consists of up to three different stages. The first stage of the illness presents with moderate symptoms. The second stage of the illness presents with severe symptoms for survivors, or very severe symptoms for non-survivors. For survivors, the third stage is the recovery period with mild symptoms. This disease is contagious (transmissible from human to human), and casualties may be either from the primary exposure or subsequent (secondary) exposures.

At casualty criteria of WIA(1) or WIA(2), a casualty from smallpox would present to the medical system with moderate symptoms (Severity Level 2) in the first stage of the illness.

At a casualty criterion of WIA(3), a casualty who will survive smallpox would present to the medical system with severe symptoms (Severity Level 3), while a casualty who will not survive smallpox would present to the medical system with very severe symptoms (Severity Level 4); both survivor and non-survivor in the second stage of the disease.

Summarizing, *AMedP-8(C)* reports three categories of smallpox WIA casualties, as shown in Table 20.

Table 20. Smallpox Casualty Categories

Moderate Smallpox Casualty
Severe Smallpox Casualty
Very Severe Smallpox Casualty

B. CUD PC Codes

The four unique PC codes relevant to smallpox casualties in the CUD are shown in Table 21.

Table 21. Smallpox Patient Condition Codes

Patient Condition ID	Treatment Brief Name
101518	CBRN: Smallpox (PC 0366) (ICD9 50.9/E979.6/E997.1)
128027	CBRNMA: Smallpox Prodromal
128028	CBRNMA: Smallpox Moderate
128029	CBRNMA: Smallpox Severe

C. Recommendation

For smallpox, the alignment of the casualty categories reported by the *AMedP-8(C)* methodology and the CUD PC codes is reasonably close. Patient Condition ID #101518, "CBRN: Smallpox (PC 0366) (ICD9 50.9/E979.6/E997.1)," may have some utility when the casualty modeling does not yield specific symptom severity information. The single recommendation is to review the utility of Patient Condition ID #128027, "CBRNMA: Smallpox Prodromal," to determine if there is any operational or medical significance to these PCs.

13. Staphylococcal Enterotoxin B (SEB)

A. *AMedP-8(C)* Casualty Categories

SEB is a biotoxin that results in an illness that consists of up to two different stages. The first stage of the illness presents with severe symptoms. The second stage of the illness presents with mild symptoms for survivors, while non-survivors would not survive to this stage.

At casualty criteria of WIA(1), WIA(2), or WIA(3), a casualty from SEB would present to the medical system with severe symptoms (Severity Level 3) in the first stage of the illness.

Summarizing, *AMedP-8(C)* reports one category of SEB WIA casualties, as shown in Table 22.

Table 22. SEB Casualty Category

Severe SEB Casualty

B. CUD PC Codes

The four unique PC codes relevant to SEB casualties in the CUD are shown in Table 23.

Table 23. SEB Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102040	CBRN: Staphylococcal Enterotoxin B Prodromal
130577	CBRNMA: Staphylococcal Enterotoxin B (SEB) Prodromal
130031	CBRNMA: Staphylococcal Enterotoxin B (SEB) Moderate
130032	CBRNMA: Staphylococcal Enterotoxin B (SEB) Severe

C. Recommendation

For SEB, there is a casualty category reported by the *AMedP-8(C)* methodology that aligns with one CUD PC code. The single recommendation is to review the operational or medical significance of Patient Condition ID #102040, “CBRN: Staphylococcal

Enterotoxin B Prodromal," Patient Condition ID #130577, "CBRNMA: Staphylococcal Enterotoxin B (SEB) Prodromal," and Patient Condition ID #130031, "CBRNMA: Staphylococcal Enterotoxin B (SEB) Moderate."

14. Tularemia

A. *AMedP-8(C)* Casualty Categories

Tularemia is an illness that consists of three different stages. The first stage of the illness presents with severe symptoms. The second stage of the illness continues with severe symptoms for survivors, or very severe symptoms for non-survivors. The third stage for survivors is the recovery period with moderate symptoms.

At casualty criteria of WIA(1), WIA(2), or WIA(3), a casualty from tularemia would present to the medical system with severe symptoms (Severity Level 3) in the first stage of the illness.

Summarizing, *AMedP-8(C)* reports one category of Tularemia WIA casualties, as shown in Table 24.

Table 24. Tularemia Casualty Category

Severe Tularemia Casualty

B. CUD PC Codes

The four unique PC codes relevant to tularemia casualties in the CUD are shown in Table 25.

Table 25. Tularemia Patient Condition Codes

Patient Condition ID	Treatment Brief Name
102037	CBRN: Tularemia (*Francisella Tularensis*)
128024	CBRNMA: Tularemia Prodromal
128025	CBRNMA: Tularemia Moderate
128026	CBRNMA: Tularemia Severe

C. Recommendation

For tularemia, the casualty category reported by the *AMedP-8(C)* methodology and a CUD PC codes align. Patient Condition ID #102037, "CBRN: Tularemia (*Francisella Tularensis*)" may have some utility when the casualty modeling does not yield specific

symptom severity information, although this may be of limited utility for a disease that is at its most severe in the first stage. The single recommendation is to review the utility of Patient Condition ID #128024, "CBRNMA: Tularemia Prodromal," and Patient Condition ID #128025, "CBRNMA: Tularemia Moderate," to determine if there is any operational or medical significance to these PCs.

15. Venezuelan Equine Encephalitis (VEE)

A. *AMedP-8(C)* Casualty Categories

VEE is a viral infection that can be aerosolized. It has an incubation period of 1.72 days. The illness progresses in three stages. The first stage of the illness produces severe symptoms. The second stage of illness produces moderate symptoms. The third stage of illness produces mild symptoms.

At casualty criteria of WIA(1), WIA(2), or WIA(3), a casualty from VEE would present to the medical system with severe symptoms (Severity Level 3) in the first stage of the illness.

Summarizing, *AMedP-8(C)* reports one category of VEE WIA casualties, as shown in Table 26.

Table 26. VEE Casualty Categories

Severe VEE Casualty

B. CUD PC Codes

The four unique PC codes relevant to VEE casualties in the CUD are shown in Table 27.

Table 27. VEE Patient Condition Codes

Patient Condition ID	Treatment Brief Name
115524	CBRN: Venezuelan Equine Encephalitis
129027	CBRNMA: Venezuelan Equine Encephalitis Prodromal
129524	CBRNMA: Venezuelan Equine Encephalitis Moderate
129525	CBRNMA: Venezuelan Equine Encephalitis Severe

C. Recommendation

For VEE, the casualty category reported by the *AMedP-8(C)* methodology and the CUD PC codes align. Patient Condition ID #115524, "CBRN: Venezuelan Equine Encephalitis," may have some utility when the casualty modeling does not yield specific

symptom severity information, although this may be of limited utility for a disease that is at its most severe in the first stage. The single recommendation is to review the utility of Patient Condition ID #129027, “CBRNMA: Venezuelan Equine Encephalitis Prodromal,” and Patient Condition ID #129024, “CBRNMA: Venezuelan Equine Encephalitis Moderate,” to determine if there is any operational or medical significance to these PCs.

16. Radiological Agents

A. *AMedP-8(C)* Casualty Categories

AMedP-8(C) models radioactive material present on the battlefield from two sources: radiological dispersal devices (RDD) and radioactive fallout resulting from a nuclear detonation. The radioisotopes that could be RDD components modeled are: Cobalt-60 (^{60}Co), Strontium-90 (^{90}Sr), Iodine-131 (^{131}I), Cesium-137 (^{137}Cs), Iridium-192 (^{192}Ir), Plutonium-238 (^{238}Pu), and Americium-241 (^{241}Am). Radioactive fallout deposited on the ground, which is not isotope-specific, is also considered in *AMedP-8(C)* as a separate source of radiological exposure.

For radiological agents, the methodology assumes that external whole-body and cutaneous radiation doses continue to accumulate for as long as the individual remains within the radiation area (exposure from radioactive material in the air ("cloudshine") and on the ground ("groundshine") or skin). Exposure from inhalation of radioisotopes is not modeled under the assumption that inhalation will not result in significant acute casualties (the dose expected from inhalation is assumed to be negligible relative to external radiation).

The whole-body radiation [absorbed] and cutaneous radiation dose (equivalent dose to the skin) are discussed separately, below.

B. CUD PC Codes

Table 28 shows the six unique PC codes in the CUD relevant to radiological agent (radioisotope) patients.

Table 28. Radiological Agent Patient Condition Codes

Patient Condition ID	Treatment Brief Name
101520	CBRN: Radiological Dispersal Device (990/E979.5.1)
125522	CBRN: Radionuclide Internal Contamination-RDD-Without other Physical Injury
130571	CBRNMA: Radionuclide Internal Contamination Plutonium 238/239 without other physical injury
130572	CBRNMA: Radionuclide Internal Contamination Uranium 238/235 without other physical injury
130573	CBRNMA: Radionuclide Internal Contamination Cesium 137 without other physical injury
130574	CBRNMA: Radionuclide Internal Contamination Strontium 89/90 without other physical injury

C. Recommendation

The objectives of *AMedP-8(C)* and the CUD are not exactly congruent. *AMedP-8(C)* provides a methodology for estimating casualties uniquely occurring as a consequence of CBRN attacks in order to support the planning process, particularly focused on planning a scenario. The CUD provides clinical and medical logistics data to predict materiel and personnel requirements. The CUD is envisioned to include data that crosses the continuum of care (from time of entry in the Military Health System (MHS) to the time the patient is discharged from a medical bed within Definitive Care).[6]

Given the assumption that exposure from inhalation (or ingestion) of radioisotopes will not result in significant acute casualties (within the first 30–60 days post-exposure), no further alignment of *AMedP-8(C)* casualty categories and CUD PC codes is recommended.

6 "Common User Database," Defense Medical Material Program Office (DMMPO) website, U.S. Department of Defense, accessed July 16, 2012, https://www.dmsb.mil/cud.asp.

17. Cutaneous Radiation

A. *AMedP-8(C)* Casualty Categories

At a casualty criterion of WIA(1), a casualty from cutaneous radiation would present to the medical system with mild injuries (Severity Level 1) from doses equal to or greater than 2 Gy to the skin.

At a casualty criterion of WIA(2), a casualty from cutaneous radiation would present to the medical system with moderate injuries (Severity Level 2) from doses equal to or greater than 40 Gy to the skin.

At a casualty criterion of WIA(3), a casualty from cutaneous radiation would present to the medical system with severe injuries (Severity Level 3) from doses equal to or greater than 40 Gy to the skin.

Summarizing, *AMedP-8(C)* reports three categories of cutaneous radiation WIA casualties, as shown in Table 29.

Table 29. Cutaneous Radiation Casualty Categories

Mild Cutaneous Radiation Casualty
Moderate Cutaneous Radiation Casualty
Severe Cutaneous Radiation Casualty

B. CUD PC Codes

The CUD contains no unique PC codes relevant to cutaneous radiation patients.

C. Recommendation

It is reasonable to expect that, with appropriate practices of personal protection and personal hygiene, there would be relatively few cutaneous radiation patients. The medical care requirements for cutaneous radiation injury are, however, unique and should not be neglected within the CUD. The recommendation of this study is that treatment briefs be developed to allow the definition of CUD PCs for mild, moderate, and severe cutaneous radiation casualties.

18. Whole-Body Radiation

A. *AMedP-8(C)* Casualty Categories

At a casualty criterion of WIA(1), a casualty from whole-body radiation would present to the medical system with mild injuries (Severity Level 1) from doses of 1.25–<3 Gy and 5.3–<8.3 Gy, moderate injuries (Severity Level 2) from doses of 3–<5.3 Gy, or severe injuries (Severity Level 3) from doses equal to or greater than 8.3 Gy.

At a casualty criterion of WIA(2), a casualty from whole-body radiation would present to the medical system with moderate injuries (Severity Level 2) from doses of 3–<8.3 Gy or severe injuries (Severity Level 3) from doses equal to or greater than 8.3 Gy.

At a casualty criterion of WIA(3), a casualty from whole-body radiation would present to the medical system with severe injuries (Severity Level 4) from doses equal to or greater than 3 Gy.

Summarizing, *AMedP-8(C)* reports three categories of whole-body radiation WIA casualties, as shown in Table 30.

Table 30. Whole-Body Radiation Casualty Categories

Mild Whole-Body Radiation Casualty
Moderate Whole-Body Radiation Casualty
Severe Whole-Body Radiation Casualty

B. CUD PC Codes

Table 31 shows the nine unique PC codes relevant to whole-body radiation patients in the CUD.

Table 31. Whole-Body Radiation Patient Condition Codes

Patient Condition ID	Treatment Brief Name
117023	CBRN: Acute Radiation Syndrome External Irradiation RDD
115526	CBRNMA: Radiation Exposure, Moderate (996.2)
115527	CBRN: Radiation Exposure, Severe (996.3)
130567	CBRNMA: Radiation Injury at Level R2 (0.7-1.25 Gy) without other physical injury
130568	CBRNMA: Radiation Injury at Level R3 (1.25-3.0 Gy) without other physical injury
130569	CBRNMA: Radiation Injury at Level R4 (3.0-5.0 Gy) without other physical injury
130570	CBRNMA: Radiation Injury at Level R5 (5.0-8.0Gy) without other physical injury
130561	CBRNMA: Radiation Injury at Level R6 (8.0-15 Gy) without other physical injury
130562	CBRNMA: Radiation Injury at Level R7 (15+Gy) without other physical injury

C. Recommendations

This review of the casualty categories and PC codes reveals two different approaches to defining whole-body radiation injuries, whether for casualties or patients. One approach is to define the injury as a function of the severity of the injuries, while the other approach defines the injury on the basis of the whole-body radiation dose. While injury severity is useful in defining the time at which an exposed individual is estimated to become a casualty, whole-body radiation injuries progress from milder to more severe over time, and (at in the dose range 3–8.3 Gy) also exhibit a "latent period" of apparent recovery and subsequent relapse of severe or very severe injuries. This dose-based approached is complicated further by *AMedP-8(C)* using five dose ranges and the CUD using seven dose ranges (including the lowest range that produces no casualties and has no associated PC codes).

The recommendations that address these disparate approaches are that *AMedP-8(C)* include dose range information in the reported casualty estimates, that the CUD consider developing a treatment brief to allow the definition of patient conditions for mild whole-body radiation casualties (thereby aligning with *AMedP-8(C)* casualty categories) and that the CUD simplify its dose range structure to align with the structure used by *AMedP-8(C)*.

19. Blast

A. *AMedP-8(C)* Casualty Categories

An explosion may kill or maim a casualty in several ways. Whether it travels through air or water, the blast wave itself may cause damage to an individual's internal organs without leaving any external sign of injury. A blast may also propel fragments into a casualty, causing secondary blast injury, or can bodily displace an individual and cause tertiary blast injury upon impact.

Primary blast injury (PBI) occurs when the blast wave acts directly upon the human body. Rapid compression and decompression result in the transmission of pressure waves through the tissues. These waves can be quite severe and will result in damage primarily at junctions between tissues of different densities (bone and muscle) or at the interface between tissue and air spaces. Lung tissue and the GI system, both of which contain air, are particularly susceptible to injury. The resulting tissue disruptions can lead to severe hemorrhage or to air embolism, either of which can rapidly be fatal. Perforation of the ear drums would be a common, but a minor, blast injury. *AMedP-8(C)* considers PBI as a function of the static overpressure (kPa) as the nuclear blast wave passes over the casualty.

Estimation of WIA casualties from blast is modeled in *AMedP-8(C)* solely as a function of primary and direct physiological effects. Higher order blast effects—such as missiling (secondary blast injury), whole-body translation (tertiary blast injury), or crushing from building collapse (quaternary blast injury)—are difficult to model due to the large uncertainties in predicting the actual environment or the posture of exposed individuals.

At a casualty criterion of WIA(1) or WIA(2), a casualty from PBI would present to the medical system with moderate injuries (Severity Level 2) from static overpressures of 50–<140 kPa, or severe injuries (Severity Level 3) from static overpressures of 140–<290 kPa.

At a casualty criterion of WIA(3), a casualty from PBI would present to the medical system with severe injuries (Severity Level 3) from static overpressures of 140–<290 kPa.

Summarizing, *AMedP-8(C)* reports two categories of PBI WIA casualties, as shown in Table 32.

Table 32. Primary Blast Injury Casualty Categories

Moderate PBI Casualty
Severe PBI Casualty

B. CUD PC Codes

The CUD contains no PC codes uniquely relevant to blast patients, although at least two, shown in Table 33, are perhaps peripherally relevant. There are multiple PC codes that may be applicable to secondary, tertiary, or quaternary blast injury (such as those for various fractures, lacerations, and other wounds, see Annex A), but these are not relevant in a comparison with *AMedP-8(C)* casualty categories.

Table 33. Blast Patient Condition Codes

Patient Condition ID	Treatment Brief Name
3920	Other disorders of tympanic membrane (384.)-Perforation of tympanic membrane (384.2)
114516	Injury Due to War Operations by Other Explosion (E993)

C. Recommendations

There is a clear misalignment of the casualty categories and PC codes for blast injuries. *AMedP-8(C)* addresses only PBI, while the CUD may be applicable to all blast injuries except PBI. The recommendations that address this misalignment are that the CUD consider developing treatment briefs to allow the definition of CUD PCs for moderate and severe PBI (thereby aligning with *AMedP-8(C)* casualty categories) and that the *AMedP-8(C)* methodology be supplemented with models that allow the estimation of WIA casualties suffering from secondary, tertiary, or quaternary blast injuries.

20. Burns

A. *AMedP-8(C)* Casualty Categories

Following the detonation of a tactical fission nuclear weapon, approximately 35% of the weapon's energy is dissipated as thermal energy. The kinds of injuries that result from this type of energy are burns and eye injuries, including flash blindness and retinal burns.[7] The effects of the thermal flash on the eyes are not included in the *AMedP-8(C)* methodology. These effects are highly dependent upon the orientation of the individual relative to the detonation, as well as the presence of structures or other conditions that would mitigate or enhance the flash effects. Flash burns result from the skin's exposure to a large quantity of thermal energy in a very brief time. *AMedP-8(C)* considers burn casualties resulting from at least partial thickness flash burns (second degree or greater). Injuries caused by flash burns are a function of the extent of the burn, measured both in depth (i.e., epidermal or surface, partial-thickness, or full-thickness) and the percent of the body surface area (%BSA) burned.

At a casualty criterion of WIA(1), a casualty from burns resulting from a nuclear detonation would present to the medical system with mild injuries (Severity Level 1) from second degree or more severe burn to 1–<10 %BSA, moderate injuries (Severity Level 2) from burns of 10–<20 %BSA, or severe injuries (Severity Level 3) from burns equal to or greater than 20 %BSA.

At a casualty criterion of WIA(2), a casualty from burns resulting from a nuclear detonation would present to the medical system with moderate injuries (Severity Level 2) from second degree or more severe burn to 1–<20 %BSA or severe injuries (Severity Level 3) from burns equal to or greater than 20 %BSA.

At a casualty criterion of WIA(3), a casualty from burns resulting from a nuclear detonation would present to the medical system with severe injuries (Severity Level 3) from second degree or more severe burn equal to or greater than 20 %BSA.

Summarizing, *AMedP-8(C)* reports three categories of burn WIA casualties, as shown in Table 34.

[7] Richard I. Walker and T. Jan Cerveny, eds., *Textbook of Military Medicine, Part I: Warfare, Weaponry, and the Casualty, Vol. 2: Medical Consequences of Nuclear Warfare* (Falls Church, VA: Department of the Army, Office of the Surgeon General, Borden Institute, 1996).

Table 34. Burn Casualty Categories

Mild Burn Casualty
Moderate Burn Casualty
Severe Burn Casualty

B. CUD PC Codes

The CUD contains at least 15 unique PC codes relevant to burn patients, as shown in Table 35.

Table 35. Burn Patient Condition Codes

Patient Condition ID	Treatment Brief Name
9282	Burn of Face, Head, and Neck; Unspecified Degree (941.0)
9289	Burn of Trunk; Unspecified Degree (942.0)
9296	Burn of Upper Limb Except Wrist and Hand, Unspecified Degree(943.0)
115015	Burn of Lower Limb(s)
115022	Burn of Wrist(s) and Hand(s) (944)
121022	Multiple Injury Group (Multiple Injury)-MC 43 Burn of face head and neck + Burn of trunk (941 + 942)
120542	Multiple Injury Group (Multiple Injury)-MC 44 Burn of face head and neck + Burn of wrist(s) and hand(s) (941 + 944)
120543	Multiple Injury Group (Multiple Injury)-MC 45 Burn of face head and neck + Burn of lower limb(s) (941 + 945)
120544	Multiple Injury Group (Multiple Injury)-MC 46 Burn of trunk + Burn of lower limb(s) (942 + 945)
120545	Multiple Injury Group (Multiple Injury)-MC 47 Burn of wrist(s) and hand(s) + Burn of lower limb(s) (944 + 945)
121022	Multiple Injury Group (Multiple Injury)-MC 43 Burn of face head and neck + Burn of trunk (941 + 942)
120542	Multiple Injury Group (Multiple Injury)-MC 44 Burn of face head and neck + Burn of wrist(s) and hand(s) (941 + 944)
120543	Multiple Injury Group (Multiple Injury)-MC 45 Burn of face head and neck + Burn of lower limb(s) (941 + 945)
120544	Multiple Injury Group (Multiple Injury)-MC 46 Burn of trunk + Burn of lower limb(s) (942 + 945)
120545	Multiple Injury Group (Multiple Injury)-MC 47 Burn of wrist(s) and hand(s) + Burn of lower limb(s) (944 + 945)

C. Recommendations

There is an apparent misalignment of the casualty categories and PC codes for burn injuries. This misalignment is easily resolved when comparing CUD burn PC codes to *AMedP-8(C)* burn casualty categories, although alignment in the other direction (*AMedP-8(C)* to CUD) is more challenging.

The CUD defines burn PC codes on the basis of the part of the body injured, while *AMedP-8(C)* burn casualty categories are expressed as a function of the severity of the injuries. These two different approaches can be readily aligned through the use of the "Rule of Nines."[8] The Rule of Nines allows for the estimation of the fractional burn surface area as a function of the parts of the body burned. The fractional burn surface area is directly related to the injury severity used in the *AMedP-8(C)* casualty categories (mild injuries from second degree or more severe burn to 1–<10 %BSA, moderate injuries from burns of 10–<20 %BSA, or severe injuries from burns equal to or greater than 20 %BSA). For example, Patient Condition ID #121022 addresses the treatment of burns to the face, head, neck, and trunk. From the Rule of Nines; the face, head, and neck are estimated as 9 %BSA, and the trunk (front of chest and abdomen) is estimated as 18 %BSA, for a total of 27 %BSA. Since this is greater than 20 %BSA, this aligns with the "Severe Burn Casualty" category.

Alignment of a casualty category to a specific PC code is more problematic because *AMedP-8(C)* does not include any information regarding which part of the body is burned. Two recommendations result from this problem. One recommendation is to develop a probability distribution function for each casualty category (similar to the patient condition occurrence frequency (PCOF) used in medical analysis tools). This would allow the medical planner to assign the casualties in a given casualty category among the various relevant PC codes. Alternatively, it is recommended that the CUD be reviewed to determine the significance of using 15 unique PC codes relevant to estimate the medical management requirements for burn patients. It may be possible that fewer PC codes are sufficient for medical planning purposes, and that fewer PC codes would more directly align with the casualty categories.

[8] "Burn Triage and Treatment: Thermal Injuries," Radiation Emergency Medical Management (REMM), U.S. Department of Health and Human Services website, accessed July 16, 2012, http://www.remm.nlm.gov/burns.htm#diagnosis.

21. Combined Injuries

A. *AMedP-8(C)* Casualty Categories

In the event of a nuclear detonation, many casualties will probably suffer burns and blast injuries combined with radiation injuries. In the environment around a nuclear detonation, it is possible to experience any combination of radiation injury concurrently with blast and burn injuries, in multiple (at least 33) combined injury casualty categories. Although *AMedP-8(C)* does not explicitly report a "Combined Injury" casualty category; it is possible to use the methodology to report concurrent casualty categories, as shown in Table 36.

Table 36. Combined Injury Casualty Categories

Mild Whole-Body Radiation Casualty with Mild Burn
Mild Whole-Body Radiation Casualty with Moderate Burn
Mild Whole-Body Radiation Casualty with Severe Burn
Mild Whole-Body Radiation Casualty with Moderate PBI
Mild Whole-Body Radiation Casualty with Severe PBI
Mild Whole-Body Radiation Casualty with Mild Burn and Moderate PBI
Mild Whole-Body Radiation Casualty with Mild Burn and Severe PBI
Mild Whole-Body Radiation Casualty with Moderate Burn and Moderate PBI
Mild Whole-Body Radiation Casualty with Moderate Burn and Severe PBI
Mild Whole-Body Radiation Casualty with Severe Burn and Moderate PBI
Mild Whole-Body Radiation Casualty with Severe Burn and Severe PBI
Moderate Whole-Body Radiation Casualty with Mild Burn
Moderate Whole-Body Radiation Casualty with Moderate Burn
Moderate Whole-Body Radiation Casualty with Severe Burn
Moderate Whole-Body Radiation Casualty with Moderate PBI
Moderate Whole-Body Radiation Casualty with Severe PBI
Moderate Whole-Body Radiation Casualty with Mild Burn and Moderate PBI
Moderate Whole-Body Radiation Casualty with Mild Burn and Severe PBI
Moderate Whole-Body Radiation Casualty with Moderate Burn and Moderate PBI
Moderate Whole-Body Radiation Casualty with Moderate Burn and Severe PBI
Moderate Whole-Body Radiation Casualty with Severe Burn and Moderate PBI
Moderate Whole-Body Radiation Casualty with Severe Burn and Severe PBI
Severe Whole-Body Radiation Casualty with Mild Burn
Severe Whole-Body Radiation Casualty with Moderate Burn
Severe Whole-Body Radiation Casualty with Severe Burn
Severe Whole-Body Radiation Casualty with Moderate PBI
Severe Whole-Body Radiation Casualty with Severe PBI
Severe Whole-Body Radiation Casualty with Mild Burn and Moderate PBI
Severe Whole-Body Radiation Casualty with Mild Burn and Severe PBI
Severe Whole-Body Radiation Casualty with Moderate Burn and Moderate PBI
Severe Whole-Body Radiation Casualty with Moderate Burn and Severe PBI
Severe Whole-Body Radiation Casualty with Severe Burn and Moderate PBI
Severe Whole-Body Radiation Casualty with Severe Burn and Severe PBI

B. CUD PC Codes

Table 37 shows the nine unique PC codes relevant to combined injury patients in the CUD.

Table 37. Combined Injury Patient Condition Codes

Patient Condition ID	Treatment Brief Name
117024	CBRN: Radiation Injury AT 0-125 cGy with Closed Fracture, Dislocated Elbow
130565	CBRNMA: Radiation Injury at Level R1/2 (0.0-1.25 Gy) with 1st and 2nd degree burns not involving genitalia or eyes
130566	CBRNMA: Radiation Injury at Level R3/4 (1.25-5.0 Gy) with mild burn
130564	CBRNMA: Radiation Injury at Level R3/R4 (1.25-5.0 Gy) with non-operative trauma (simple laceration)
130563	CBRNMA: Radiation Injury at Level R3/R4 with Operative Trauma

C. Recommendations

This review of the casualty categories and PC codes found no clear alignment between combined injury casualties and patients. Because the radiation, blast, and thermal casualty categories and PC codes do not align when regarded as individual effects, the combined effects will have that same shortfall. The recommendation to align the individual effects must be accomplished prior to addressing the alignment of the combined effects. Once the individual effects are aligned, particularly after expanding the blast categories and patient codes to include all (primary, secondary, tertiary, and quaternary) blast effects, IDA recommends reviewing the utility of all of the probable combinations of effects to determine if there is any operational or medical significance to each of the casualty categories and PC codes.

22. Summary and Review

AMedP-8(C) defines injuries and severity of injuries over time. It does not cover any medical intervention. The CUD contains PC codes and defines the treatment for each. There is good alignment between *AMedP-8(C)* and the CUD for certain agents, as indicated in Table 38. There are PC codes that, while not directly aligning with casualty categories, may have some utility when the casualty modeling does not yield specific symptom severity information, as shown in Table 39. Since, as Table 40 demonstrates, there are some casualty categories for which there is no explicit alignment to any PC code, Table 41 contains recommendations to improve the utilization of *AMedP-8(C)* in medical logistical tools using the CUD.

Table 38. Summary of Casualty Categories which Align with Patient Condition Codes

Agent, Material, or Condition	Casualty Categories	Patient Condition ID	Treatment Brief Name
GB	Mild GB Casualty	130033	CBRNMA: Sarin Mild
	Moderate GB Casualty	130034	CBRNMA: Sarin Moderate
	Severe GB Casualty	130035	CBRNMA: Sarin Severe
HD	Mild HD Casualty	130036	CBRNMA: Sulfur Mustard Prodromal
	Moderate HD Casualty	130037	CBRNMA: Sulfur Mustard Moderate
	Severe HD Casualty	130609	CBRNMA: Sulfur Mustard Severe
Anthrax	Moderate Anthrax Casualty (Prodromal)	127022	CBRNMA: Anthrax Prodromal
	Very Severe Anthrax Casualty (Manifest Illness)	127023	CBRNMA: Anthrax Severe
Botulism	Moderate Botulism Casualty	127526	CBRNMA: Botulinum Moderate
Brucellosis	Mild Brucellosis Casualty	129527	CBRNMA: Brucellosis Inhalation Moderate
	Severe Brucellosis Casualty	129528	CBRNMA: Brucellosis Inhalation Severe
Plague	Moderate Plague Casualty	130025	CBRNMA: Plague Moderate
	Very Severe Plague Casualty	130026	CBRNMA: Plague Severe
Q Fever	Moderate Q Fever Casualty	130046	CBRNMA: Q Fever Moderate
Smallpox	Moderate Smallpox Casualty	128028	CBRNMA: Smallpox Moderate
	Severe Smallpox Casualty	128029	CBRNMA: Smallpox Severe
	Very Severe Smallpox Casualty	101518	CBRN: Smallpox (PC 0366) (ICD9 50.9/E979.6/E997.1)
SEB	Severe SEB Casualty	130032	CBRNMA: Staphylococcal Enterotoxin B (SEB) Severe
Tularemia	Severe Tularemia Casualty	128026	CBRNMA: Tularemia Severe
VEE	Severe VEE Casualty	129525	CBRNMA: Venezuelan Equine Encephalitis Severe
Whole-Body Radiation	Mild Whole-Body Radiation Casualty	117023	CBRN: Acute Radiation Syndrome External Irradiation RDD
	Moderate Whole-Body Radiation Casualty	115526	CBRNMA: Radiation Exposure, Moderate (996.2)
	Severe Whole-Body Radiation Casualty	115527	CBRN: Radiation Exposure, Severe (996.3)

Table 39. Summary of Patient Condition Codes with Utility Relative to Casualty Categories

Agent, Material, or Condition	Patient Condition ID	Treatment Brief Name
GB	102018	CBRN: Sarin (GB)
VX	102033	CBRN: Methylphosphonothioic Acid (VX)
HD	102020	CBRN: Sulfur Mustard (HD) Vapor/Gas
Anthrax	102538	CBRN: Anthrax (022.1/E979.6)
Botulism	102016	CBRN: Botulinum Toxin
	127524	CBRN: Botulinum Inhalation Multiple Acuity: Incubation period
Brucellosis	115522	CBRN: Brucellosis (997.11.3)
Tularemia	102037	CBRN: Tularemia (*Francisella Tularensis*)
VEE	115524	CBRN: Venezuelan Equine Encephalitis

Table 40. Summary of Casualty Categories with No Explicit Alignment to Patient Condition Codes

Agent, Material, or Condition	Casualty Categories
VX	Mild VX Casualty
	Moderate VX Casualty
	Severe VX Casualty
Glanders	Mild Glanders Casualty
	Moderate Glanders Casualty
	Severe Glanders Casualty
Cutaneous Radiation	Mild Cutaneous Radiation Casualty
	Moderate Cutaneous Radiation Casualty
	Severe Cutaneous Radiation Casualty
Blast	Moderate PBI Casualty
	Severe PBI Casualty
Burn	Mild Burn Casualty
	Moderate Burn Casualty
	Severe Burn Casualty
Combined Injury	Mild Whole-Body Radiation Casualty with Mild Burn
	Mild Whole-Body Radiation Casualty with Moderate Burn
	Mild Whole-Body Radiation Casualty with Severe Burn
	Mild Whole-Body Radiation Casualty with Moderate PBI
	Mild Whole-Body Radiation Casualty with Severe PBI
	Mild Whole-Body Radiation Casualty with Mild Burn and Moderate PBI
	Mild Whole-Body Radiation Casualty with Mild Burn and Severe PBI
	Mild Whole-Body Radiation Casualty with Moderate Burn and Moderate PBI
	Mild Whole-Body Radiation Casualty with Moderate Burn and Severe PBI
	Mild Whole-Body Radiation Casualty with Severe Burn and Moderate PBI
	Mild Whole-Body Radiation Casualty with Severe Burn and Severe PBI
	Moderate Whole-Body Radiation Casualty with Mild Burn
	Moderate Whole-Body Radiation Casualty with Moderate Burn
	Moderate Whole-Body Radiation Casualty with Severe Burn
	Moderate Whole-Body Radiation Casualty with Moderate PBI

Combined Injury (Cont.)	Moderate Whole-Body Radiation Casualty with Severe PBI
	Moderate Whole-Body Radiation Casualty with Mild Burn and Moderate PBI
	Moderate Whole-Body Radiation Casualty with Mild Burn and Severe PBI
	Moderate Whole-Body Radiation Casualty with Moderate Burn and Moderate PBI
	Moderate Whole-Body Radiation Casualty with Moderate Burn and Severe PBI
	Moderate Whole-Body Radiation Casualty with Severe Burn and Moderate PBI
	Moderate Whole-Body Radiation Casualty with Severe Burn and Severe PBI
	Severe Whole-Body Radiation Casualty with Mild Burn
	Severe Whole-Body Radiation Casualty with Moderate Burn
	Severe Whole-Body Radiation Casualty with Severe Burn
	Severe Whole-Body Radiation Casualty with Moderate PBI
	Severe Whole-Body Radiation Casualty with Severe PBI
	Severe Whole-Body Radiation Casualty with Mild Burn and Moderate PBI
	Severe Whole-Body Radiation Casualty with Mild Burn and Severe PBI
	Severe Whole-Body Radiation Casualty with Moderate Burn and Moderate PBI
	Severe Whole-Body Radiation Casualty with Moderate Burn and Severe PBI
	Severe Whole-Body Radiation Casualty with Severe Burn and Moderate PBI
	Severe Whole-Body Radiation Casualty with Severe Burn and Severe PBI

Table 41. Summary of Recommendations to Align Patient Condition Codes with Casualty Categories

Agent, Material, or Condition	Patient Condition ID	Treatment Brief Name	Recommendations
Botulism	127525	CBRNMA: Botulinum Prodromal	Review to determine if there is any operational or medical significance to this patient condition.
Brucellosis	129526	CBRNMA: Brucellosis Inhalation Prodromal	
Plague	130024	CBRNMA: Plague Prodromal	
Q Fever	130045	CBRNMA: Q Fever Prodromal	
	130047	CBRNMA: Q Fever Severe	
Smallpox	128027	CBRNMA: Smallpox Prodromal	
SEB	102040	CBRN: Staphylococcal Enterotoxin B Prodromal	
	130577	CBRNMA: Staphylococcal Enterotoxin B (SEB) Prodromal	
	130031	CBRNMA: Staphylococcal Enterotoxin B (SEB) Moderate	
Tularemia	128024	CBRNMA: Tularemia Prodromal	
	128025	CBRNMA: Tularemia Moderate	
VEE	129027	CBRNMA: Venezuelan Equine Encephalitis Prodromal	

	129524	CBRNMA: Venezuelan Equine Encephalitis Moderate
VX	Develop a set of patient conditions, and associated treatment briefs, for mild, moderate and severe VX/VR patients.	
Glanders	Consider developing a set of patient conditions, and associated treatment briefs, to allow the definition of patient conditions for mild, moderate and severe glanders patients	
Cutaneous Radiation	Develop treatment briefs to allow the definition of CUD patient conditions for mild, moderate, and severe cutaneous radiation casualties.	
Whole-Body Radiation	Consider developing a treatment brief to allow the definition of patient conditions for mild whole-body radiation casualties (thereby aligning with *AMedP-8(C)* casualty categories). Simplify the CUD dose range structure to align with the structure used by *AMedP-8(C)*.	
Blast	Develop treatment briefs to allow the definition of CUD patient conditions for moderate and severe PBI.	
Burn	Review the CUD to determine the significance of using 15 unique PC codes relevant to estimate the medical management requirements for burn patients. It may be possible that fewer PC codes are sufficient for medical planning purposes, and that fewer PC codes would more directly align with the casualty categories.	
	Develop a probability distribution function for each casualty category (similar to the patient condition occurrence frequency (PCOF) used in medical analysis tools) to allow the medical planner to assign the casualties in a given casualty category among the various relevant PC codes.	
Combined Injury	Review the utility of all of the probable combinations of effects to determine if there is any operational or medical significance to each of the casualty categories and PC codes.	

Appendix A
Common User Database List of Patient Condition Codes

PATIENT CONDITIONS ID	TREATMENT BRIEF NAME
30	Other food poisoning (bacterial) (005.)
40	Amebiasis (006.)
58	Other protozoal intestinal diseases (007.)-Unspecified protozoal intestinal disease (007.9)
75	Intestinal Infection Due to Clostridium Difficile (008.45)
79	Intestinal infections due to other organisms (008.)-Bacterial enteritis, unspecified (008.5)
89	Intestinal infections due to other organisms (008.)-Other viral organism, not elsewhere classified (008.8)
94	Primary tuberculous infection (010.)
251	Tetanus (037.)
268	Septicemia (038.)-Unspecified septicemia (038.9)
314	Human immunodeficiency virus [HIV] disease (042.)
331	Meningitis due to enterovirus (047.)-Unspecified viral meningitis (047.9)
348	Chickenpox (052.)
349	Chickenpox (052.)-Postvaricella encephalitis (052.0)
355	Herpes zoster (053.)
374	Herpes simplex (054.)
376	Genital Herpes (054.1)
421	Other viral exanthemata (057.)-Erythema infectiosum [fifth disease] (057.0)
423	Other viral exanthemata (057.)-Viral exanthem, unspecified (057.9)
424	Yellow fever (060.)
428	Dengue (061.)
429	Mosquito-borne viral encephalitis (062.)
437	Mosquito-borne Viral Encephalitis; Unspecified (062.9)
438	Tick-borne viral encephalitis (063.)
445	Arthropod-borne hemorrhagic fever (065.)
458	Other arthropod-borne viral diseases (066.)-West Nile fever (066.4)
459	West Nile Fever, unspecified (066.40)
465	Viral hepatitis (070.)
467	Viral Hepatitis A (070.1)
487	Rabies(071.)

515	Trachoma (076.)
530	Other diseases due to viruses and Chlamydiae (078.)-Molluscum contagiosum (078.0)
531	Other diseases due to viruses and Chlamydiae (078.)-Viral warts (078.1)
537	Foot and Mouth Disease (078.4)
550	Rhinovirus Infection in Condition Elsewhere of Unspecified Site (079.3)
566	Viral and chlamydial infection in conditions classified elsewhere and of unspecified site (079.)-Unspecified viral infection (079.99)
573	Tick-borne rickettsioses (082)
590	Malaria (084.)
601	Leishmaniasis (085.)
602	Leishmaniasis, Visceral (085.0)
609	Trypanosomiasis (086.)
642	Early syphilis, symptomatic (091.)
661	Early syphilis, symptomatic (091.)-Unspecified secondary syphilis (091.9)
679	Neurosyphilis (094.)
710	Gonococcal infections (098.)
740	Gonococcal infections (098.)-Gonococcal arthritis (098.50)
760	Other venereal diseases (099.)-Other nongonococcal urethritis [NGU] (099.4)
775	Leptospirosis (100.)
808	Dermatophytosis of the foot(110.4)
812	Dermatophytosis of unspecified site(110.9)
869	Schistosomiasis, unspecified(120.9)
934	Other and unspecified helminthiasis(128.9)
960	Pediculosis, unspecified(132.9)
963	Acariasis (133.)-Other acariasis (133.8)
1861	Other nutritional deficiencies (269.)
1906	Gout (274.)
1907	Gout (274.)-Gouty arthropathy (274.0)
1929	Disorders of fluid, electrolyte, and acid-base balance (276.)
2202	Episodic mood disorders (296.)
2203	Bipolar Disorder, Single Manic Episode (296.0)
2233	Other nonorganic psychoses (298.)-Unspecified psychosis (298.9)
2269	Anxiety, dissociative and somatoform disorders (300.)-Unspecified nonpsychotic mental disorder (300.9)
2407	Adjustment reaction (309.)
2408	Adjustment Disorder w/ Depressed Mood
2420	Adjustment reaction (309.)-Posttraumatic stress disorder (309.81)
2424	Unspecified Adjustment Reaction (309.9)
2428	Specific nonpsychotic mental disorders due to brain damage (310.)-Postconcussion syndrome (310.2)
2431	Depressive disorder, not elsewhere classified (311.)

2751	Epilepsy and recurrent seizures (345.)-Petit mal status (345.2)
2752	Epilepsy and recurrent seizures (345.)-Grand mal status (345.3)
2759	Migraine (346.)
2937	Retinal detachments and defects (361.)
3102	Uveitis NOS 364.3
3132	Glaucoma (365.)
3336	Keratitis (370.)
3338	Keratitis (370.)-Corneal ulcer, unspecified (370.00)
3784	Other disorders of eye (379.)-Aphakia and other disorders of lens (379.3)
3785	Aphakia (379.31)
3827	Disorders of external ear (380.)-Infective otitis externa (380.1)
3844	Disorders of external ear (380.)-Impacted cerumen (380.4)
3854	Nonsuppurative otitis media and Eustachian tube disorders (381.)
3884	Nonsuppurative otitis media and Eustachian tube disorders (381.)-Unspecified Eustachian tube disorder (381.9)
3920	Other disorders of tympanic membrane (384.)-Perforation of tympanic membrane (384.2)
4014	Other disorders of ear (388.)-Tinnitus, unspecified (388.30)
4053	Hearing Loss, Unspecified 389.9
4092	Essential hypertension (401.)
4093	Hypertension (401.0)
4124	Acute myocardial infarction (410.)
4145	Angina pectoris (413.)-Other and unspecified angina pectoris (413.9)
4262	Cardiac dysrhythmias (427.)-Cardiac dysrhythmia, unspecified (427.9)
4487	Other venous embolism and thrombosis (453.)-Venous embolism and thrombosis of deep vessels of lower extremity (453.4)
4562	Acute Pharyngitis (462)
4581	Acute upper respiratory infections of multiple or unspecified sites (465.)
4585	Acute bronchitis and bronchiolitis (466.)
4619	Peritonsillar abscess (475.)
4699	Pneumonia, organism unspecified (486.)
4705	Chronic bronchitis (491.)
4706	Chronic bronchitis (491.)-Simple chronic bronchitis (491.0)
4714	Emphysema (492.)
4715	Emphysema (492.)-Emphysematous bleb (492.0)
4724	Asthma (493.)-Asthma, unspecified (493.9)
4887	Gingival and periodontal diseases (523.)
5086	Diseases of esophagus (530.)-Ulcer of esophagus (530.2)
5095	Diseases of esophagus (530.)-Esophageal reflux (530.81)
5104	Gastric ulcer (531.)
5114	Duodenal ulcer (532.)

5184	Appendicitis, unqualified (541.)
5192	Inguinal hernia (550.)-Inguinal hernia, without mention of obstruction or gangrene (550.9)
5227	Other hernia of abdominal cavity without mention of obstruction or gangrene (553.)-Umbilical hernia (553.1)
5234	Other hernia of abdominal cavity without mention of obstruction or gangrene (553.)-Hernia of unspecified site (553.9)
5282	Functional digestive disorders, not elsewhere classified (564.)
5283	Constipation (564.0)
5288	Functional digestive disorders, not elsewhere classified (564.)-Irritable bowel syndrome (564.1)
5302	Abscess of anal and rectal regions (566.)
5319	Peritonitis and retroperitoneal infections (567.)-Unspecified peritonitis (567.9)
5380	Cholelithiasis (574.)
5414	Diseases of pancreas (577.)-Acute pancreatitis (577.0)
5415	Diseases of pancreas (577.)-Chronic pancreatitis (577.1)
5422	Gastrointestinal hemorrhage (578.)-Hemorrhage of gastrointestinal tract, unspecified (578.9)
5467	Acute renal failure, Unspecified (584.9)
5509	Calculus of kidney and ureter (592.)-Calculus of kidney (592.0)
5579	Other disorders of urethra and urinary tract (599.)-Urinary tract infection, site not specified (599.0)
5588	Other disorders of urethra and urinary tract (599.)-Hematuria (599.7)
5658	Other disorders of male genital organs (608.)-Torsion of testis (608.2)
5665	Other disorders of male genital organs (608.)-Other inflammatory disorders of male genital organs (608.4)
5694	Other disorders of breast (611.)-Lump or mass in breast (611.72)
5881	Ectopic pregnancy (633.)
5897	Spontaneous abortion (634.)
6138	Abnormality of forces of labor (661.)-Precipitate labor (661.3)
6255	Cellulitis and abscess of finger and toe (681.)
6265	Other cellulitis and abscess (682.)-Face (682.0)
6271	Other cellulitis and abscess (682.)-Leg, except foot (682.6)
6272	Other cellulitis and abscess (682.)-Foot, except toes (682.7)
6274	Other cellulitis and abscess (682.)-Unspecified site (682.9)
6595	Intervertebral disc disorders (722.)
6598	Intervertebral Disc Disorder; Lumbar Intervertebral Disc without Myelopathy (722.10)
6626	Other disorders of cervical region (723.)
6627	Spinal Stenosis of Cervical Region (723.0)
6638	Other and unspecified disorders of back (724.)-Spinal stenosis, other than cervical (724.0)
6641	Spinal Stenosis of Lumbar Region (724.02)
6644	Other and unspecified disorders of back (724.)-Lumbago (724.2)
6645	Other and unspecified disorders of back (724.)-Sciatia (724.3)
6646	Thoracic or Lumbosacral Neuritis or Radiculitis, Unspecified (724.4)

6647	Other and unspecified disorders of back (724.)-Backache, unspecified (724.5)
6659	Peripheral enthesopathies and allied syndromes (726.)-Disorders of bursae and tendons in shoulder region, unspecified (726.10)
6661	Peripheral enthesopathies and allied syndromes (726.)-Bicipital tenosynovitis (726.12)
6664	Peripheral enthesopathies and allied syndromes (726.)-Enthesopathy of elbow region (726.3)
6670	Peripheral enthesopathies and allied syndromes (726.)-Enthesopathy of wrist and carpus (726.4)
6671	Peripheral enthesopathies and allied syndromes (726.)-Enthesopathy of hip region (726.5)
6672	Peripheral enthesopathies and allied syndromes (726.)-Enthesopathy of knee (726.6)
6680	Peripheral enthesopathies and allied syndromes (726.)-Enthesopathy of ankle and tarsus (726.7)
6758	Other disorders of soft tissues (729.)-Rheumatism, unspecified and fibrositis (729.0)
6766	Other disorders of soft tissues (729.)-Pain in limb (729.5)
7670	General symptoms (780.)-Alteration of consciousness (780.0)
7676	General symptoms (780.)-Syncope and collapse (780.2)
7680	General symptoms (780.)-Other convulsions (780.39)
7682	General symptoms (780.)-Sleep disturbances (780.5)
7693	General symptoms (780.)-Fever (780.6)
7725	Symptoms involving skin and other integumentary tissue (782.)-Rash and other nonspecific skin eruption (782.1)
7727	Symptoms involving skin and other integumentary tissue (782.)-Edema (782.3)
7737	Symptoms concerning nutrition, metabolism, and development (783.)-Anorexia (783.0)
7753	Symptoms involving head and neck (784.)-Headache (784.0)
7754	Symptoms involving head and neck (784.)-Throat pain (784.1)
7766	Symptoms involving head and neck (784.)-Epistaxis (784.7)
7767	Symptoms involving head and neck (784.)-Hemorrhage from throat (784.8)
7799	Symptoms involving respiratory system and other chest symptoms (786.)-Chest pain (786.5)
7809	Symptoms involving digestive system (787.)-Nausea and vomiting (787.0)
7821	Symptoms involving digestive system (787.)-Diarrhea (787.91)
7857	Other symptoms involving abdomen and pelvis (789.)-Abdominal pain (789.00)
8002	Fracture of vault of skull (800.)-Closed without mention of intracranial injury (800.0)
8013	Fracture of base of skull (801.)-Closed without mention of intracranial injury (801.0)
8020	Fracture of base of skull (801.)-Open with subarachnoid, subdural, and extradural hemorrhage (801.7)
8024	Fracture of face bones (802.)-Nasal bones, closed (802.0)
8025	Fracture of face bones (802.)-Nasal bones, open (802.1)
8050	Fracture of face bones (802.)-Orbital floor (blow-out), closed (802.6)
8051	Fracture of face bones (802.)-Orbital floor (blow-out), open (802.7)
8052	Fracture of face bones (802.)-Other facial bones, closed (802.8)
8053	Fracture of face bones (802.)-Other facial bones, open (802.9)
8077	Fracture of vertebral column without mention of spinal cord injury (805.)-Cervical, closed (805.0)

8088	Fracture of vertebral column with spinal cord injury (806.)-Cervical, closed (806.0)
8099	Fracture of vertebral column with spinal cord injury (806.)-Cervical, open (806.1)
8110	Fracture of vertebral column with spinal cord injury (806.)-Dorsal [thoracic], closed (806.2)
8121	Fracture of vertebral column with spinal cord injury (806.)-Dorsal [thoracic], open (806.3)
8132	Fracture of vertebral column with spinal cord injury (806.)-Lumbar, closed (806.4)
8133	Fracture of vertebral column with spinal cord injury (806.)-Lumbar, open (806.5)
8134	Fracture of vertebral column with spinal cord injury (806.)-Sacrum and coccyx, closed (806.6)
8135	Fracture of Vertebral Column with Unspecified Spinal Cord Injury (806.60)
8139	Fracture of vertebral column with spinal cord injury (806.)-Sacrum and coccyx, open (806.7)
8140	Fracture of vertebral column with spinal cord injury (806.)-Sacrum and coccyx, open (806.70)
8147	Fracture of rib(s), sternum, larynx, and trachea (807.)-Rib(s), closed (807.0)
8148	Fracture of rib(s), sternum, larynx, and trachea (807.)-Rib(s), open (807.1)
8149	Fracture of rib(s), sternum, larynx, and trachea (807.)-Sternum, closed (807.2)
8150	Fracture of rib(s), sternum, larynx, and trachea (807.)-Sternum, open (807.3)
8169	Fracture of pelvis (808.)-Unspecified, closed (808.8)
8170	Fracture of pelvis (808.)-Unspecified, open (808.9)
8175	Fracture of clavicle (810.)-Closed (810.0)
8176	Fracture of clavicle (810.)-Open (810.1)
8178	Fracture of scapula (811.)-Closed (811.0)
8179	Fracture of scapula (811.)-Open (811.1)
8181	Fracture of humerus (812.)-Upper end, closed (812.0)
8182	Fracture of Unspec. Part of Upper End of Humerous Closed (812.00)
8257	Fracture of radius and ulna (813.)-Unspecified part, closed (813.8)
8262	Fracture of radius and ulna (813.)-Unspecified part, open (813.9)
8271	Fracture of metacarpal bone(s) (815.)-Closed (815.0)
8274	Fracture of one or more phalanges of hand (816.)-Closed (816.0)
8275	Fracture of one or more phalanges of hand (816.)-Open (816.1)
8277	Multiple fractures of hand bones (817.)-Closed (817.0)
8278	Multiple fractures of hand bones (817.)-Open (817.1)
8306	Fracture of neck of femur (820.)-Unspecified part of neck of femur, closed (820.8)
8307	Fracture of neck of femur (820.)-Unspecified part of neck of femur, open (820.9)
8308	Fracture of other and unspecified parts of femur (821.)
8309	Fracture of other and unspecified parts of femur (821.)-Shaft or unspecified part, closed (821.0)
8311	Fracture of other and unspecified parts of femur (821.)-Shaft (821.01)
8312	Fracture of other and unspecified parts of femur (821.)-Shaft or unspecified part, open (821.1)
8314	Fracture of other and unspecified parts of femur (821.)-Shaft (821.11)
8328	Fracture of patella (822.)-Closed (822.0)
8329	Fracture of patella (822.)-Open (822.1)
8337	Fracture of tibia and fibula (823.)-Unspecified part, open (823.9)
8338	Fracture of Ankle, Open 824.9

8347	Fracture of ankle (824.)-Unspecified, closed (824.8)
8348	Fracture of Ankle, Unspecified; Open(824.9)
8349	Fracture of one or more tarsal and metatarsal bones (825.)
8350	Fracture of Calcaneous Closed (825.0)
8368	Fracture of one or more phalanges of foot (826.)
8369	Closed Fracture of One or More Phalanges of Foot (826.0)
8378	Fracture of unspecified bones (829.)-Unspecified bone, closed (829.0)
8381	Dislocation of jaw (830.)-Closed dislocation (830.0)
8382	Dislocation of jaw (830.)-Open dislocation (830.1)
8384	Dislocation of shoulder (831.)-Closed dislocation (831.0)
8385	Dislocation of shoulder (831.)-Open dislocation (831.1)
8387	Dislocation of elbow (832.)-Closed dislocation (832.0)
8388	Dislocation of elbow (832.)-Open dislocation (832.1)
8390	Dislocation of wrist (833.)-Closed dislocation (833.0)
8391	Dislocation of wrist (833.)-Open dislocation (833.1)
8393	Dislocation of finger (834.)-Closed dislocation (834.0)
8394	Dislocation of finger (834.)-Open dislocation (834.1)
8396	Dislocation of hip (835.)-Closed dislocation (835.0)
8397	Dislocation of hip (835.)-Open dislocation (835.1)
8399	Dislocation of knee (836.)-Tear of medial cartilage or meniscus of knee, current (836.0)
8400	Dislocation of knee (836.)-Tear of lateral cartilage or meniscus of knee, current (836.1)
8401	Dislocation of knee (836.)-Other tear of cartilage or meniscus of knee, current (836.2)
8404	Dislocation of knee (836.)-Other dislocation of knee, closed (836.5)
8411	Dislocation of knee (836.)-Other dislocation of knee, open (836.6)
8414	Dislocation of knee (836.)-Posterior dislocation of tibia, proximal end (836.62)
8425	Other, multiple, and ill-defined dislocations (839.)-Cervical vertebra, closed (839.0)
8427	Other, Multiple, and Ill-Defined Dislocations; First Cervical Vertebra (839.01)
8474	Sprain of Rotator Cuff (840.4)
8479	Sprains and strains of shoulder and upper arm (840.)-Unspecified site of shoulder and upper arm (840.9)
8499	Sprains and strains of hip and thigh (843.)
8510	Sprains and strains of knee and leg (844.)-Unspecified site of knee and leg (844.9)
8512	Sprains and strains of ankle and foot (845.)-Ankle (845.0)
8524	Sprains and strains of sacroiliac region (846.)
8525	Lumbosacral (joint)(ligament) Sprain(846.0)
8534	Sprains and strains of other and unspecified parts of back (847.)-Lumbar (847.2)
8535	Sprains and strains of other and unspecified parts of back (847.)-Sacrum (847.3)
8540	Other and ill-defined sprains and strains (848.)-Jaw (848.1)
8542	Other and ill-defined sprains and strains (848.)-Ribs (848.3)
8560	Concussion (850.)-Concussion, unspecified (850.9)

8561	Cerebral laceration and contusion (851.)
8562	Cerebral Contusion w/o Open Wound No Loss of Consciousness (851.01)
8572	Subarachnoid, subdural, and extradural hemorrhage, following injury (852.)
8580	Other and unspecified intracranial hemorrhage following injury (853.)-Without mention of open intracranial wound (853.00)
8581	Other and unspecified intracranial hemorrhage following injury (853.)-With open intracranial wound (853.1)
8586	Traumatic pneumothorax and hemothorax (860.)-Pneumothorax without mention of open wound into thorax (860.0)
8587	Traumatic pneumothorax and hemothorax (860.)-Pneumothorax with open wound into thorax (860.1)
8588	Traumatic pneumothorax and hemothorax (860.)-Hemothorax without mention of open wound into thorax (860.2)
8589	Traumatic pneumothorax and hemothorax (860.)-Hemothorax with open wound into thorax (860.3)
8590	Traumatic pneumothorax and hemothorax (860.)-Pneumohemothorax without mention of open wound into thorax (860.4)
8591	Traumatic pneumothorax and hemothorax (860.)-Pneumohemothorax with open wound into thorax (860.5)
8593	Injury to heart and lung (861.)-Heart, without mention of open wound into thorax (861.0)
8598	Injury to heart and lung (861.)-Heart, with open wound into thorax (861.10)
8603	Injury to heart and lung (861.)-Lung, without mention of open wound into thorax (861.2)
8607	Injury to heart and lung (861.)-Lung, with open wound into thorax (861.3)
8624	Injury to gastrointestinal tract (863.)
8625	Injury to Stomach w/o open wound (863.0)
8669	Injury to liver (864.)
8672	Injury to spleen (865.)
8676	Injury to kidney (866.)-Without mention of open wound into cavity (866.0)
8677	Injury to kidney (866.)-With open wound into cavity (866.1)
8679	Injury to pelvic organs (867.)-Bladder and urethra, without mention of open wound into cavity (867.0)
8680	Injury to pelvic organs (867.)-Bladder and urethra, with open wound into cavity (867.1)
8681	Injury to pelvic organs (867.)-Ureter, without mention of open wound into cavity (867.2)
8682	Injury to pelvic organs (867.)-Ureter, with open wound into cavity (867.3)
8683	Injury to pelvic organs (867.)-Uterus, without mention of open wound into cavity (867.4)
8684	Injury to pelvic organs (867.)-Uterus, with open wound into cavity (867.5)
8696	Open wound of ocular adnexa (870.)-Laceration of skin of eyelid and periocular area (870.0)
8699	Open wound of ocular adnexa (870.)-Penetrating wound of orbit, without mention of foreign body (870.3)
8700	Open wound of ocular adnexa (870.)-Penetrating wound of orbit with foreign body (870.4)
8705	Ocular Laceration w Prolapse of intraocular Tissue (871.1)
8709	Open wound of eyeball (871.)-Penetration of eyeball with magnetic foreign body (871.5)

8713	Open wound of ear (872.)
8752	Other open wound of head (873.)-Face, unspecified site (873.40)
8781	Other open wound of head (873.)-Other and unspecified open wound of head without mention of complication (873.8)
8782	Other open wound of head (873.)-Other and unspecified open wound of head, complicated (873.9)
8796	Open wound of neck (874.)-Other and unspecified parts, without mention of complication (874.8)
8798	Open wound of chest (wall) (875.)
8799	Open wound of chest (wall) (875.)-Without mention of complication (875.0)
8801	Open wound of back (876.)
8802	Open Wound of Back w/o Complication (876.0)
8805	Open wound of buttock (877.)-Without mention of complication (877.0)
8807	Open wound of genital organs (external), including traumatic amputation (878.)
8821	Open wound of other and unspecified sites, except limbs (879.)-Abdominal wall, anterior, without mention of complication (879.2)
8825	Open wound of other and unspecified sites, except limbs (879.)-Other and unspecified parts of trunk, without mention of complication (879.6)
8827	Open wound of other and unspecified sites, except limbs (879.)-Open wound(s) (multiple) of unspecified site(s) without mention of complication (879.8)
8830	Open wound of shoulder and upper arm (880.)-Without mention of complication (880.0)
8834	Open wound of elbow, forearm, and wrist (881.)-Without mention of complication (881.0)
8838	Open wound of hand except finger(s) alone (882.)-Without mention of complication (882.0)
8842	Open wound of finger(s) (883.)-Without mention of complication (883.0)
8846	Multiple and unspecified open wound of upper limb (884.)-Without mention of complication (884.0)
8850	Traumatic amputation of thumb (complete) (partial) (885.)-Without mention of complication (885.0)
8853	Traumatic amputation of other finger(s) (complete) (partial) (886.)-Without mention of complication (886.0)
8856	Traumatic amputation of arm and hand (complete) (partial) (887.)-Unilateral, below elbow, without mention of complication (887.0)
8865	Open wound of hip and thigh (890.)-Without mention of complication (890.0)
8869	Open wound of knee, leg [except thigh], and ankle (891.)-Without mention of complication (891.0)
8873	Open wound of foot except toe(s) alone (892.)-Without mention of complication (892.0)
8881	Multiple and unspecified open wound of lower limb (894.)-Without mention of complication (894.0)
8885	Traumatic amputation of toe(s) (complete) (partial) (895.)-Without mention of complication (895.0)
8888	Traumatic amputation of foot (complete) (partial) (896.)-Unilateral, without mention of complication (896.0)
8893	Traumatic amputation of leg(s) (complete) (partial) (897.)

8972	Injury to blood vessels of upper extremity (903.)-Axillary vessel(s), unspecified (903.00)
8983	Injury to blood vessels of lower extremity and unspecified sites (904.)-Common femoral artery (904.0)
9049	Superficial injury of face, neck, and scalp except eye (910.)-Abrasion or friction burn without mention of infection (910.0)
9115	Superficial injury of hip, thigh, leg, and ankle (916.)-Abrasion or friction burn without mention of infection (916.0)
9116	Superficial injury of hip, thigh, leg, and ankle (916.)-Abrasion or friction burn, infected (916.1)
9117	Superficial injury of hip, thigh, leg, and ankle (916.)-Blister without mention of infection (916.2)
9118	Superficial injury of hip, thigh, leg, and ankle (916.)-Blister, infected (916.3)
9119	Superficial injury of hip, thigh, leg, and ankle (916.)-Insect bite, nonvenomous, without mention of infection (916.4)
9120	Superficial injury of hip, thigh, leg, and ankle (916.)-Insect bite, nonvenomous, infected (916.5)
9137	Superficial injury of eye and adnexa (918.)-Eyelids and periocular area (918.0)
9138	Superficial Injury of Cornea (918.1)
9152	Contusion of face, scalp, and neck except eye(s) (920.)
9154	Contusion of eye and adnexa (921.)-Black eye, NOS (921.0)
9161	Contusion of trunk (922.)-Chest wall (922.1)
9162	Contusion of trunk (922.)-Abdominal wall (922.2)
9167	Contusion of trunk (922.)-Genital organs (922.4)
9190	Contusion of lower limb and of other and unspecified sites (924.)-Knee and lower leg (924.1)
9193	Contusion of lower limb and of other and unspecified sites (924.)-Ankle and foot, excluding toe(s) (924.2)
9196	Contusion of lower limb and of other and unspecified sites (924.)-Toe (924.3)
9201	Crush Injury of face, scalp, and neck (925)
9204	Crushing Injury of Trunk (926)
9212	Crush Injury of Upper Limb
9228	Crush Injury Lower Limb(928)
9244	Foreign Body On External Eye (930)
9260	Foreign Body in Mouth, Esophagus, and Stomach (935)
9282	Burn of Face, Head, and Neck; Unspecified Degree (941.0)
9289	Burn of Trunk; Unspecified Degree (942.0)
9296	Burn of Upper Limb Except Wrist and Hand, Unspecified Degree(943.0)
9302	Burn of Wrist(s) and Hand(s) (944.)
9324	Treatment Brief for Burns of Mouth and Pharynx
9395	Injury to Nerve Roots and Spinal Plexus; Cervical Root (953.0)
9399	Injury To Nerve Roots and Spinal Plexus; Brachial Plexus (953.4)
9409	Injury to Peripheral Nerve of Shoulder Girdle and Upper Limb; Axillary Nerve (955.0)
9420	Injury to Peripheral Nerve(s) of Pelvic Girdle and Lower Limb; Sciatic Nerve (956.0)
9451	Injury, Other and Unspecified; Head Injury, Unspecified (959.01)
9452	Injury, Other and Unspecified; Injury of Face and Neck (959.09)

9464	Other and Unspecified Injury to Knee, Leg, Ankle, and Foot (959.7)
9721	Toxic Effect of Venom (989.5)
9730	Toxic Effect of Other Substances Chiefly Nonmedicinal as to Source; Unspecified (989.9)
9736	Frostbite of other and Unspecified Sites (991.3)
9739	Hypothermia (991.6)
9741	Unspecified Effect of Reduced Temp. (991.9)
9743	Heat Stroke (992.0)
9745	Heat Cramps (992.2)
9746	Heat Exhaustion, Anhydrotic (992.3)
9762	Effects of Other External Causes; Effects of Lightning (994.0)
9763	Drowning and Non-Fatal Submersion (994.1)
9764	Effects of Deprivation of Food (994.2)
9765	Effects of Other External Causes; Effects of Thirst (994.3)
9766	Effects of Other External Causes; Exhaustion due to Exposure (994.4)
9767	Exhaustion Due to Excessive Exertion (994.5)
9768	Effects of other external causes (994.)-Motion sickness (994.6)
9770	Effects of External Causes: Electrocution and Nonfatal Effects of Electric Current (994.8)
9773	Certain Adverse Effects not Elsewhere Classified; Other Anaphylactic Shock (995.0)
101515	Other and unspecified disorders of joint (719.)-Pain in joint, shoulder (719.41)
101516	Other and unspecified disorders of joint (719.)-Pain in joint, lower leg (719.46)
101517	Other and unspecified disorders of joint (719.)-Pain in joint, ankle (719.47)
101518	CBRN: Smallpox (PC 0366) (ICD9 50.9/E979.6/E997.1)
101519	CBRN: Deleted Testing (anthrax)
101520	CBRN: Radiological Dispersal Device (990/E979.5.1)
102016	CBRN: Botulinum Toxin
102017	CBRN: Ricin Toxin, Inhalation
102018	CBRN: Sarin (GB)
102019	CBRN: Chlorine
102020	CBRN: Sulfur Mustard (HD) Vapor/Gas
102021	CBRN: Ammonia
102022	CBRN: Plague (*Yersinia Pestis*)(020.3/E997.1.2/E979.6.2)
102023	CBRN: Nitrogen Mustard (HN)
102024	CBRN: Nitric Acid
102025	CBRN: Soman (GD)
102029	CBRN: Hydrogen Chloride
102030	CBRN: Cyclosarin
102030	CBRN: Cyclosarin
102031	CBRN: Sulfur Dioxide
102032	CBRN: Eastern Equine Encephalitis
102033	CBRN: Methylphosphonothioic Acid (VX)

102034	CBRN: Hydrogen Sulfide
102035	CBRN: Russian VX (R-VX, VR, R-33)
102036	CBRN: Hydrogen Fluoride
102037	CBRN: Tularemia (*Francisella Tularensis*)
102038	CBRN: Tabun (GA)
102039	CBRN: Hydrogen Cyanide
102040	CBRN: Staphylococcal Enterotoxin B Prodromal
102041	CBRN: Lewisite
102042	CBRN: Cyanogen Chloride
102043	CBRN: Marburg Virus (997.1.7)
102044	CBRN: Fentanyl Derivatives
102045	CBRN: Phosgene (CG)
102046	CBRN: Ebola Virus
102047	CBRN: Ricin Toxin, Inhalation
102048	CBRN: T2 Mycotoxin
102049	CBRN: Marburg Virus
102052	CBRN: BZ-INHALATION
102053	CBRN: Glanders (Burkholderia Mallei)
102054	CBRN: T2 Mycotoxin
102055	CBRN: Western Equine Encephalitis
102056	CBRN: Task and GM Repository Stephanie
102538	CBRN: Anthrax (022.1/E979.6)
103015	Acute Appendicitis without Mention of Peritonitis
103017	CBRNMA: Daily Equipment PMCS and Accountability
107019	Injury Due To War Ops from Other Bullets(not rubber/pellet)(E991.2)
107020	Injury Due To War Ops, Other Unspecified Fragments (E991.9)
107021	Injury Due To War Ops from Antipersonnel Bomb Fragments (E991.3)
108016	Closed Dislocation of Acromioclavicular Joint (831.04)
109016	Open Fracture Base of Skull w/ Subarachnoid Subdural-Extradural Hematoma w Location Unspecified (801.76)
110015	Tick-Borne Viral Encephalitis, Unspecified 063.9
110515	Fracture Tibia/Fibula Unspec. Part (Closed) (823.82)
111015	Tick-Borne Rickettsioses(082)
111016	Dislocated Wrist, Open (833.1)
111516	Unspecified Intracranial Hemorrhage with Open Intracranial Wound (853.15)
111517	Injury to Optic Nerve and Pathways (950)
112515	Open Fracture of Shaft of Clavicle (810.12)
112517	Rabies Contact or Exposure (V01.5)
113015	Cortex (Cerebral) Contusion W/O Intracranial Wound State of Consciousness Unspec (851.00)
114516	Injury Due to War Operations by Other Explosion (E993)

115015	Burn of Lower Limb(s)
115016	Injury to Liver; Unspecified with Open Wound into Cavity (864.10)
115018	Screening for Depression (V79.0)
115022	Burn of Wrist(s) and Hand(s) (944)
115522	CBRN: Brucellosis (997.11.3)
115523	CBRN: Q.Fever
115524	CBRN: Venezuelan Equine Encephalitis
115525	CBRN: Vibrio Cholera
115526	CBRNMA: Radiation Exposure, Moderate (996.2)
115527	CBRN: Radiation Exposure, Severe (996.3)
116524	MC 43: Burn of Face, Head, and Neck (941) + Burn of Trunk (942)
117023	CBRN: Acute Radiation Syndrome External Irradiation RDD
117024	CBRN: Radiation Injury AT 0-125 cGy with Closed Fracture, Dislocated Elbow
119527	Multiple Injury Group (Multiple Injury)-Fracture of rib(s) sternum larynx and trachea AND Traumatic pneumothorax and hemothorax (807+860) (MC 807 + 860)
119530	Fracture of rib(s) sternum larynx and trachea + Traumatic pneumothorax and hemothorax
120022	Multiple Injury Group (Multiple Injury)-MC 1 Fracture of vault of skull + Fracture of face bones (800 + 802)
120023	Multiple Injury Group (Multiple Injury)-MC 2 Fracture of vault of skull + Other open wound of head (800 + 873)
120024	Multiple Injury Group (Multiple Injury)-MC 3 Fracture of base of skull + Fracture of face bones (801 + 802)
120025	Multiple Injury Group (Multiple Injury)-MC 4 Fracture of base of skull + Fracture of vertebral column without mention of spinal cord injury (801 + 805)
120026	Multiple Injury Group (Multiple Injury)-MC 5 Fracture of base of skull + Traumatic pneumothorax and hemothorax (801 + 860)
120027	Multiple Injury Group (Multiple Injury)-MC 6 Fracture of base of skull + Other open wound of head (801 + 873)
120028	Multiple Injury Group (Multiple Injury)-MC 7 Fracture of face bones + Fracture of vertebral column without mention of spinal cord injury (802 + 805)
120029	Multiple Injury Group (Multiple Injury)-MC 8 Fracture of face bones + Fracture of other and unspecified parts of femur (802 + 821)
120030	Multiple Injury Group (Multiple Injury)-MC 10 Fracture of face bones + Cerebral laceration and contusion (802 + 851)
120031	Multiple Injury Group (Multiple Injury)-MC 9 Fracture of face bones + Fracture of tibia and fibula (802 + 823)
120032	Multiple Injury Group (Multiple Injury)-MC 12 Fracture of face bones + Open wound of ocular adnexa (802 + 870)
120033	Multiple Injury Group (Multiple Injury)-MC 11 Fracture of face bones + Traumatic pneumothorax and hemothorax (802 + 860)
120034	Multiple Injury Group (Multiple Injury)-MC 14 Fracture of face bones + Other open wound of head (802 + 873)
120035	Multiple Injury Group (Multiple Injury)-MC 13 Fracture of face bones + Open wound of eyeball (802 + 871)

120036	Multiple Injury Group (Multiple Injury)-MC 16 Fracture of face bones + Open wound of knee leg (except thigh) and ankle (802 + 891)
120037	Multiple Injury Group (Multiple Injury)-MC 15 Fracture of face bones + Open wound of shoulder and upper arm (802 + 880)
120038	Multiple Injury Group (Multiple Injury)-MC 18 Fracture of vertebral column without mention of spinal cord injury + Traumatic pneumothorax and hemothorax (805 + 860)
120039	Multiple Injury Group (Multiple Injury)-MC 17 Fracture of vertebral column without mention of spinal cord injury + Fracture of rib(s) sternum larynx and trachea (805 + 807)
120040	Multiple Injury Group (Multiple Injury)-MC 19 Fracture of vertebral column with spinal cord injury + Traumatic pneumothorax and hemothorax (806 + 860)
120041	Multiple Injury Group (Multiple Injury)-MC 21 Fracture of rib(s) sternum larynx and trachea + Injury to heart and lung (807 + 861)
120042	Multiple Injury Group (Multiple Injury)-MC 22 Fracture of rib(s) sternum larynx and trachea + Certain early complications of trauma (807 + 958)
120522	Multiple Injury Group (Multiple Injury)-MC 23 Fracture of pelvis + Injury to gastrointestinal tract (808 + 863)
120523	Multiple Injury Group (Multiple Injury)-MC 24 Fracture of humerus + Fracture of other and unspecified parts of femur (812 + 821)
120524	Multiple Injury Group (Multiple Injury)-MC 25 Fracture of radius and ulna + Traumatic amputation of leg(s) (complete) (partial) (813 + 897)
120525	Multiple Injury Group (Multiple Injury)-MC 26 Fracture of other and unspecified parts of femur + Traumatic amputation of leg(s) (complete) (partial) (821 + 897)
120526	Multiple Injury Group (Multiple Injury)-MC 27 Fracture of tibia and fibula + Traumatic pneumothorax and hemothorax (823 + 860)
120527	Multiple Injury Group (Multiple Injury)-MC 28 Fracture of tibia and fibula + Traumatic amputation of leg(s) (complete) (partial) (823 + 897)
120528	Multiple Injury Group (Multiple Injury)-MC 29 Fracture of tibia and fibula + Certain early complications of trauma (823 + 958)
120529	Multiple Injury Group (Multiple Injury)-MC 30 Cerebral laceration and contusion + Other open wound of head (851 + 873)
120530	Multiple Injury Group (Multiple Injury)-MC 31 Subarachnoid subdural and extradural hemorrhage following injury + Other open wound of head (852 + 873)
120531	Multiple Injury Group (Multiple Injury)-MC 32 Traumatic pneumothorax and hemothorax + Other open wound of head (860 + 873)
120532	Multiple Injury Group (Multiple Injury)-MC 33 Traumatic pneumothorax and hemothorax + Traumatic amputation of leg(s) (complete) (partial) (860 + 897)
120533	Multiple Injury Group (Multiple Injury)-MC 34 Traumatic pneumothorax and hemothorax + Open wound of hip and thigh (860 + 890)
120534	Multiple Injury Group (Multiple Injury)-MC 35 Traumatic pneumothorax and hemothorax + Certain early complications of trauma (860 + 958)
120535	Multiple Injury Group (Multiple Injury)-MC 36 Injury to heart and lung + Other open wound of head (861 + 873)
120536	Multiple Injury Group (Multiple Injury)-MC 37 Injury to gastrointestinal tract + Traumatic amputation of leg(s) (complete) (partial) (863 + 897)
120537	Multiple Injury Group (Multiple Injury)-MC 38 Injury to gastrointestinal tract + Injury to blood vessels of abdomen and pelvis (863 + 902)

120538	Multiple Injury Group (Multiple Injury)-MC 39 Open wound of elbow forearm and wrist + Traumatic amputation of leg(s) (complete) (partial) (881 + 897)
120539	Multiple Injury Group (Multiple Injury)-MC 40 Open wound of hip and thigh + Traumatic amputation of leg(s) (complete) (partial) (890 + 897)
120540	Multiple Injury Group (Multiple Injury)-MC 41 Open wound of knee leg (except thigh) and ankle + Traumatic amputation of leg(s) (complete) (partial) (891 + 897)
120541	Multiple Injury Group (Multiple Injury)-MC 42 Traumatic amputation of leg(s) (complete) (partial) + Certain early complications of trauma (897 + 958)
120542	Multiple Injury Group (Multiple Injury)-MC 44 Burn of face head and neck + Burn of wrist(s) and hand(s) (941 + 944)
120543	Multiple Injury Group (Multiple Injury)-MC 45 Burn of face head and neck + Burn of lower limb(s) (941 + 945)
120544	Multiple Injury Group (Multiple Injury)-MC 46 Burn of trunk + Burn of lower limb(s) (942 + 945)
120545	Multiple Injury Group (Multiple Injury)-MC 47 Burn of wrist(s) and hand(s) + Burn of lower limb(s) (944 + 945)
121022	Multiple Injury Group (Multiple Injury)-MC 43 Burn of face head and neck + Burn of trunk (941 + 942)
121522	CBRN: Smallpox
122522	CBRN: Ricin Toxin
123022	CBRN: Scipio 6
124022	Amicus
125022	CBRN: Vibrio Cholerae
125522	CBRN: Radionuclide Internal Contamination-RDD-Without other Physical Injury
126522	MC 43 Burn of face head and neck + Burn of trunk (941 + 942)
127022	CBRNMA: Anthrax Prodromal
127023	CBRNMA: Anthrax Severe
127524	CBRN: Botulinum Inhalation Multiple Acuity: Incubation period
127525	CBRNMA: Botulinum Prodromal
127526	CBRNMA: Botulinum Moderate
127527	CBRNMA: Botulinum Severe
128024	CBRNMA: Tularemia Prodromal
128025	CBRNMA: Tularemia Moderate
128026	CBRNMA: Tularemia Severe
128027	CBRNMA: Smallpox Prodromal
128028	CBRNMA: Smallpox Moderate
128029	CBRNMA: Smallpox Severe
128524	CBRNMA: Ebola Prodromal
128525	CBRNMA: Ebola Moderate
128526	CBRNMA: Ebola Severe
129024	CBRNMA: Marburg Prodromal
129025	CBRNMA: Marburg Moderate
129026	CBRNMA: Marburg Severe

129027	CBRNMA: Venezuelan Equine Encephalitis Prodromal
129524	CBRNMA: Venezuelan Equine Encephalitis Moderate
129525	CBRNMA: Venezuelan Equine Encephalitis Severe
129526	CBRNMA: Brucellosis Inhalation Prodromal
129527	CBRNMA: Brucellosis Inhalation Moderate
129528	CBRNMA: Brucellosis Inhalation Severe
130024	CBRNMA: Plague Prodromal
130025	CBRNMA: Plague Moderate
130026	CBRNMA: Plague Severe
130027	CBRNMA: Viral Hemorrhagic Fevers Mild (997.8.134)
130028	CBRNMA: Viral Hemorrhagic Fevers Moderate
130029	CBRNMA: Viral Hemorrhagic Fevers Severe
130031	CBRNMA: Staphylococcal Enterotoxin B (SEB) Moderate
130032	CBRNMA: Staphylococcal Enterotoxin B (SEB) Severe
130033	CBRNMA: Sarin Mild
130034	CBRNMA: Sarin Moderate
130035	CBRNMA: Sarin Severe
130036	CBRNMA: Sulfur Mustard Prodromal
130037	CBRNMA: Sulfur Mustard Moderate
130038	CBRNMA: Sulfur Mustard Severe (997.2.109)
130042	CBRNMA: Phosgene Mild
130043	CBRNMA: Phosgene Moderate
130044	CBRNMA: Phosgene Severe
130045	CBRNMA: Q Fever Prodromal
130046	CBRNMA: Q Fever Moderate
130047	CBRNMA: Q Fever Severe
130561	CBRNMA: Radiation Injury at Level R6 (8.0-15 Gy) without other physical injury
130562	CBRNMA: Radiation Injury at Level R7 (15+Gy) without other physical injury
130563	CBRNMA: Radiation Injury at Level R3/R4 with Operative Trauma
130564	CBRNMA: Radiation Injury at Level R3/R4 (1.25-5.0 Gy) with non-operative trauma (simple laceration)
130565	CBRNMA: Radiation Injury at Level R1/2 (0.0-1.25 Gy) with 1st and 2nd degree burns not involving genitalia or eyes
130566	CBRNMA: Radiation Injury at Level R3/4 (1.25-5.0 Gy) with mild burn
130567	CBRNMA: Radiation Injury at Level R2 (0.7-1.25 Gy) without other physical injury
130568	CBRNMA: Radiation Injury at Level R3 (1.25-3.0 Gy) without other physical injury
130569	CBRNMA: Radiation Injury at Level R4 (3.0-5.0 Gy) without other physical injury
130570	CBRNMA: Radiation Injury at Level R5 (5.0-8.0Gy) without other physical injury
130571	CBRNMA: Radionuclide Internal Contamination Plutonium 238/239 without other physical injury
130572	CBRNMA: Radionuclide Internal Contamination Uranium 238/235 without other physical injury

130573	CBRNMA: Radionuclide Internal Contamination Cesium 137 without other physical injury
130574	CBRNMA: Radionuclide Internal Contamination Strontium 89/90 without other physical injury
130577	CBRNMA: Staphylococcal Enterotoxin B (SEB) Prodromal
130580	CBRNMA: Typhus Prodromal
130581	CBRNMA: Typhus Severe
130582	CBRNMA: E. Coli Infection Prodromal
130583	CBRNMA: E. Coli Infection Moderate
130584	CBRNMA: E. Coli Infection Severe
130585	CBRNMA: Shigellosis Prodromal
130586	CBRNMA: Shigellosis Moderate
130587	CBRNMA: Cryptosporidiosis Moderate
130588	CBRNMA: Cryptosporidiosis Severe
130589	CBRNMA: Typhoid Fever Prodromal
130590	CBRNMA: Typhoid Fever Moderate
130591	CBRNMA: Typhoid Severe
130592	CBRNMA: Rift Valley Fever Mild
130593	CBRNMA: Rift Valley Fever Moderate
130594	CBRNMA: Rift Valley Fever Severe
130595	CBRNMA: Cholera Mild
130596	CBRNMA: Cholera Moderate
130597	CBRNMA: Cholera Severe
130598	CBRNMA: Melioidosis Mild
130599	CBRNMA: Melioidosis Moderate
130600	CBRNMA: Melioidosis Severe
130609	CBRNMA: Sulfur Mustard Severe
130610	CBRNMA: Chlorine Mild
130611	CBRNMA: Chlorine Moderate
130612	CBRNMA: Chlorine Severe
130616	CBRNMA: Lassa Fever Prodromal
130617	CBRNMA: Lassa Fever Moderate
130618	CBRNMA: Lassa Fever Severe
130619	CBRNMA: Psittacosis Prodromal
130620	CBRNMA: Psittacosis Moderate
130621	CBRNMA: Psittacosis Severe
131524	CBRNMA: Typhus Moderate
131525	CBRNMA: Shigellosis Severe
132026	CBRNMA: Cryptosporidiosis Prodromal
132027	CBRN: Novel Influenza A (H1N1) with Other Manifestations (Flu-Like Symptoms)
132529	CBRN: Seasonal Influenza A (997.168)

Appendix B
Illustrations

Tables

Appendix C
References

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Appendix D
Abbreviations

%BSA	Fraction (percentage) of the body surface area burned
^{131}I	Iodine-131
^{137}Cs	Cesium-137
^{192}Ir	Iridium-192
^{238}Pu	Plutonium-238
^{241}Am	Americium-241
^{60}Co	Cobalt-60
^{90}Sr	Strontium-90
AMedP-8(C)	NATO *Allied Medical Publication 8(C), NATO Planning Guide for the Estimation of CBRN Casualties*
CBRN	Chemical, Biological, Radiological, and Nuclear
CUD	Common User Database
DMMOP	Defense Medical Materiel Program Office
DOD	Department of Defense
DOW	Died of Wounds
GB	Sarin
GI	Gastrointestinal
Gy	Radiation Dose, in gray
HD	Sulfur Mustard
ICD-9	International Classification of Diseases Ninth Revision
IDA	Institute for Defense Analyses
JMAT	Joint Medical Analysis Tool
JPOC	Joint Products of Choice
KIA	Killed in Action
kPa	Static Overpressure expressed in kilopascals
mg	Dose expressed in milligram
mg-min/m^3	Dosage (concentration-time) in milligram-minutes per cubic meter
MHS	Military Health System
NATO	North Atlantic Treaty Organization
OTSG	Office of the Surgeon General
PBI	Primary Blast Injury
PC	Patient Condition
PCOF	Patient Condition Occurrence Frequency
RDD	Radiological Dispersal Device
SEB	Staphylococcal Enterotoxin B
TTTF	Task-Time-Treater File
VEE	Venezuelan Equine Encephalitis

VR	Russian VX
VX	Methylphosphonothioic Acid
WIA	Wounded in Action
WIA(1)	Casualty Criterion defining someone as a casualty at Severity Level 1 (“Mild”) or greater
WIA(2)	Casualty Criterion defining someone as a casualty at Severity Level 2 (“Moderate”) or greater
WIA(3)	Casualty Criterion defining someone as a casualty at Severity Level 3 (“Severe”) or greater

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14. ABSTRACT

The main objective of this study is to link the Allied Medical Publication 8(C): NATO Planning Guide for the Estimation of CBRN Casualties (*AMedP-8(C)*) to the Common User Database (CUD). To fully implement the *AMedP-8(C)* casualty estimation methodology, the casualty estimate must be integrated into the medical logistical models and tools used by medical planners providing medical support to the chemical, biological, radiological, and nuclear (CBRN) battlefield. The CUD provides an authoritative data-set of clinical and medical logistics data used by the Department of Defense (DOD). The casualty estimate must be able to act as an input to the medical logistical tools, and the medical logistical tools (and their underlying models and databases) must be able to effectively use the casualty estimate. By comparing the parameters and outputs of *AMedP-8(C)* with the parameters and inputs of the CUD, this study attempts to link all possible outputs of *AMedP-8(C)* to patient condition codes in the CUD and corresponding treatment briefs and it suggests changes or modifications to facilitate the unity of both sources.

15. SUBJECT TERMS

Casualty estimation, CBRN, modeling, *AMedP-8*, radiological, nuclear, biological agents, chemical agents, Common User Database, human response, medical planning

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