## JOINT TRAUMA SYSTEM CLINICAL PRACTICE GUIDELINE

# Chemical, Biological, Radiological and Nuclear (CBRN) Injury

# Part I: Initial Response to CBRN Events (CPG ID: 69)

This guideline is intended for use in conjunction with Tactical Combat Casualty Care (TCCC) guidelines as an organized approach to the care of chemical, biological, radiological and nuclear (CBRN) casualties in the deployed environment.

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**SUMMARY OF CHANGES**

1. Updated CRESS findings for select chemical agents based on latest available information from US Department of Health and Human Services
2. Condensed and clarified information
3. Updated hot/warm/cold zone responses based on most updated TCCC Guidelines from January 2024

# INTRODUCTION

This Role 1 (including Point of Injury [POI]) through Role 4 Clinical Practice Guideline (CPG) is intended for use in conjunction with Tactical Combat Casualty Care (TCCC) Guidelines. This CPG is meant to provide medical professionals who encounter CBRN exposures with evidence-based guidance where it exists or consensus opinion when evidence is lacking. Additional information and resources for decontamination, medical management, and overall management during a CBRN exposure are available at https://chemm.hhs.gov. JTS CBRN CPGs include four separate parts:

1. Response to CBRN events (an approach to all CBRN casualties)
2. Medical management of chemical agent exposure
3. Medical management of radiation exposure and nuclear events

4. Medical management of biologic agent exposure

While encountering conventional casualties on the battlefield is more likely, it is important to remain vigilant in identifying any unusual scenarios that may indicate a CBRN incident occurred. Initial suspicion of a CBRN attack will often rest solely on clinical signs and symptoms when environmental sampling and rapid point-of-care testing for agent identification is unavailable. Figure 1 provides a breakdown of different toxidromes and syndromes for an ease of use and an integrated approach. Note that some chemical agents traditionally considered chemical warfare agents are being moved to the Inhalational Injury and Toxic Industrial Chemicals (TICs) CPG as they are more likely to be encountered via other occupational exposures.

This CPG Part I guideline is intended to provide an approach to casualty assessment and treatment from POI to established medical facilities.

***Figure 1. Toxidromes and syndromes by CPG location for ease of reference***

**Chemical Toxidromes:**

TICS CPG:

| Toxidrome | Example Agents |
|---|---|
| Anticoagulant | Superwarfarins |
| Convulsant | TETS (Tetramethylenedisulfotetramine) |
| Knockdown | Cyanide |
| Irritant/Corrosive | Chlorine, phosgene, ammonia |

CBRN CPG 2:

| Toxidrome | Example Agents |
|---|---|
| Anticholinergic | BZ (3-quinuclidinyl benzilate) |
| Cholinergic | Nerve agents |
| Irritant/Corrosive | Vesicants, Riot Control Agents |
| Opiate | Carfentanil |
| Solvents, Anesthetics, Sedatives (SAS) | Volatile anesthetics |
| Sympathomimetic | Methylamphetamine |

**Acute Radiation Syndrome (ARS):**

CBRN CPG 3:

| |
|---|
| Hematopoietic |
| Gastrointestinal |
| Neurovascular |

**Biological Syndromes:**

CBRN CPG 4*:

| |
|---|
| Undifferentiated Fever |
| Respiratory |
| Cutaneous |
| Lymphadenopathy |
| Gastrointestinal |
| Viral Hemorrhagic Fever |
| Neurological |

*CBRN CPG 4 covers toxins that can be encountered in the environment or are considered traditional biothreats. Envenomation from snakes, spiders and scorpions are covered in separate JTS CPGs.

Note: Edits to the CBRN CPG 2 and TICS CPG are currently in update to reflect the above figure of toxidromes and syndromes.

## BASIC PRINCIPLES OF CBRN CASUALTY MANAGEMENT

Initial care of the CBRN casualty should be approached in the same manner as other casualties. However, there are additional layers of personal protection, decontamination and medical countermeasures that need to be applied. Life threatening conditions require prompt recognition and intervention, while non-life-threatening sequelae can be addressed when clinically appropriate. Early recognition and categorization of CBRN-exposed patients is key for initiating patient treatment and preventing contamination of medical personnel, equipment, and facilities. Thorough and appropriate decontamination is a core skill that requires planning and practice. Attention to detail such as preventing hypothermia and clinical reassessment at each stage of the process will reduce unnecessary morbidity. Hypothermia is highly likely to occur in patients not only due to the decontamination processes but also due to agent exposure itself. Furthermore, easy access to reference materials to guide advanced therapy should be a part of every provider's armamentarium. These basic principles will be discussed in more detail in the following sections. Understanding the difference between exposure and contamination is critical. Contamination occurs when a material/agent is somewhere undesirable. If intact Personal Protective Equipment (PPE) is contaminated and the contaminated PPE is safely removed there is no longer contamination, i.e., the patient has been decontaminated. If contamination is present on the skin and the skin is properly decontaminated the patient is clean and poses no threat to caregivers.

### CRITICAL TASK LIST

The critical task list applies to medical and non-medical personnel and addresses core competencies that can be adjusted based on the medical skill level of the responder. All personnel should be trained on the concepts and principles identified in

the critical task list to respond to CBRN casualties. These tasks should be taught according to service-specific publications and recognized standards of medical care and are outlined below.

- Recognize CBRN exposure
- Don personal protective equipment (PPE) to prevent self-exposure and assist others with PPE (Tables 1 and 2)
- Egress from the threat
    - Move upwind, uphill, and upstream from threat
    - Utilize time, distance, and shielding for protection
- Utilize CRESS and clinical toxidromes and syndromes to build a differential diagnosis (Figure 4)
    - Utilize the CRESS acronym (Consciousness, Respirations, Eyes, Secretions, Skin) (Table 3) for the rapid identification of signs/symptoms of CBRN exposure (Table 4) that prompt immediate self-treatment or treatment of others (i.e. nerve agent and cyanide exposure)
    - Clinical toxidromes and syndromes can be used to broaden the differential diagnosis
- Apply TCCC integrated with CBRN response: TCCC + CBRN = $(MARCHE)^2$
    - $(MARCHE)^2$: Massive hemorrhage/mask, airway/antidote, respiration/rapid focused decontamination, circulation/countermeasure, hypothermia/head injury, extraction/evacuation
- Apply airway management skills in a CBRN setting (positioning, suction, manual/mechanical ventilation, placement of definitive airway)
- Perform Rapid Focused Decontamination
- Identify and establish Hot/Warm/Cold Zones (Appendix A)
- Establish a dirty casualty collection point (CCP) in the hot zone (Figure 7)
- Understand decontamination principles and casualty procedures for partial or complete removal of PPE, clothing, and equipment
- Understand cross-contamination and take appropriate measures to prevent it

## PLANNING CONSIDERATIONS

The response to CBRN exposure requires extensive planning based on the threat. In a high-threat environment, immediate availability of adequate PPE is essential. Personnel should also be aware of field expedient PPE options (Table 2).

***Table 1. Examples of Military-issued PPE***

| Examples of PPE –Military Issued | |
|---|---|
| Respiratory | ▪ M50 Joint Service General Protective Mask (JSGPM)<br>▪ M61 filter, C2A1 canister<br>▪ M40/M45, M53 Mask |
| Skin | ▪ Joint Service Lightweight Integrated Suit Technology (JSLIST) Chemical & Biological Protective Garment (24-hour protection)<br>▪ All-Purpose-Personal Protective Ensemble (AP-PPE)<br>▪ Lion Extended Response Team (XRT) Suit (8 hours protection)<br>▪ Butyl rubber gloves with cotton liner<br>▪ Vinyl overboot |

***Table 2. Field Expedient PPE Alternative***

| Field Expedient PPE Options When CBRN-Specific Equipment Not Available | |
|---|---|
| Respiratory | Emergency Passenger Oxygen System (EPOS)* |
| Skin | Nitrile gloves x 3 pairs** |
| Equipment | 6mm sheeting and bags |

*Up to one hour time limit for use

**With gross contamination nitrile gloves should be changed promptly to limit breakthrough

## EVACUATION PLANNING CONSIDERATIONS

The en-route care approach to the combined CBRN/trauma casualty should not differ from POI through MEDEVAC. The $(MARCHE)^2$ mnemonic provides a helpful methodology for assessing and applying critical interventions during transport. The medical provider should perform regular reassessments, recheck all $(MARCHE)^2$ interventions, and intercede where necessary. Challenges of the physical exam during transport are amplified in the CBRN environment when the medical provider and crew are wearing PPE. Training while in Mission Oriented Protective Posture (MOPP) IV and practicing patient care maneuvers that may be hindered by this protective posture is paramount to successful care of the CBRN casualty. Incorporating evacuation planning considerations into training exercises will allow optimal casualty management and provider safety.

### MEDICAL REGULATING

Military Treatment Facility (MTF)

- Decontamination (DECON)/Treatment Coordination: Ensure MTF is prepared to receive exposed casualties.
- Ensure MTF is prepared to conduct decontamination of exposed casualties as needed.
- Treatment Capabilities (Toxicology, Critical Care, Trauma Surgery): Determine whether the MTF has capability to care for and sustain the CBRN casualty on site and/or establish telemedicine support.
- Capacity: The CBRN casualty is far more resource intensive than a typical trauma or critically ill casualty. Assess the MTF's capacity to treat CBRN casualties and identify potential alternate locations.

### LANDING ZONE / CASUALTY EXCHANGE POINTS

Each scenario will be unique based on the mission, location, available assets, etc. General considerations include:

1. Route coordination: consider alternate routes, primary routes may be jammed or unavailable.
2. Environmental Considerations
    - Wind
    - Terrain/Slope
    - Drainage
    - Water sources

### EVACUATION PLATFORMS

Clean and Dirty: It is necessary to plan for both clean and dirty platforms for evacuation.

1. Refuel: When planning evacuations, consider the time it takes for refueling in a MASCAL situation, the distance from the objective to the DECON site and MTF, and any platform decontamination necessary before arrival at the refueling site.
2. Aircraft/Vehicle DECON (Focused, Wash Down, Detailed): Based on the available assets, determine the time it will take to conduct each type of decontamination. Note that vehicle decontamination may not be viable in the field setting and some vehicles may need to be designated "dirty transport."
3. Preparation time: Factor the time it takes to prepare the platform for a hasty or deliberate CBRN mission.
4. Protective Measures
    - Barrier (disposable; plan for additional on-hand quantities)
        - Preventive maintenance checks need to occur on a regular basis
        - Consider time required for deliberate vs. hasty set-up
        - 6mm tarp and chemical/100-mph tape for improvised barrier
    - PPE (Pilots/Drivers/Crew)

### CASUALTY CARE

Class VIII (medical supplies) and critical care support equipment:

1. Antidote and countermeasure resupply and additional stock (Service/CCMD specific stocks and Joint Deployment Formulary)
2. Airway support/ventilation: Anticipate need for advanced airway management and ventilators
3. Casualty Monitoring
    - Close clinical monitoring to include vital signs and $ETCO_2$ monitoring
    - Hypothermia: Special emphasis must be placed on maintaining body temperature, as casualty decontamination procedures will create greater exposure to environmental factors. Additionally, chemical agent exposure by itself (especially nerve agent) is likely to create or exacerbate hypothermia.

## DECONTAMINATION

An extensive discussion of decontamination is outside the scope of this CPG; however, recognize decontamination is considered a critical medical treatment for the casualty and limits exposure risk to medical providers. Basic decontamination principles are outlined below:

1. Medical personnel apply appropriate PPE before treating others
2. Remove all clothing and equipment from the casualty (removal of clothing can eliminate 90-95% of contamination). Contain and dispose of contaminated material appropriately.
3. If radiologic exposure, cover wounds before further decontamination. Ensure gentle decontamination as radionuclide absorption may be increased if the skin barrier becomes erythematous or broken.
    a. For additional details reference CBRN CPG 3
4. Decontamination solutions
    a. Soap and water
        - Use in copious amounts for the physical removal and dilution of agents

- Does not destroy biological agents or neutralize radioactive particles. Does not destroy all chemical agents.

b. 0.5% hypochlorite solution
   - Nine parts water to one part 5% bleach
   - Wipe on the skin and rinse with fresh water
   - Can be used in open wounds but do not use in chest/abdominal cavity, open brain/spinal cord wounds, or in the eyes

c. Reactive Skin Decontamination Lotion (RSDL)
   - Deactivates mustard (HD) and nerve agent
   - Currently FDA-approved only for intact skin, not for wounds or eyes
   - Packaged sponge contains reactive agent that penetrates skin
   - Indicated for chemical agents and T-2 mycotoxin
   - Best results occur when RSDL is applied immediately after exposure, the sponge is vigorously rubbed in circles on skin for a minimum of two minutes, RSDL is removed, and then reapplied (RSDL may be left on skin for up to 24 hours).
   - RSDL is not effective for decontamination of hair

d. Surgical irrigation solutions for open chest and abdominal cavity wounds

e. Water, normal saline, or eye solutions are recommended for flushing the eye

f. Decontamination of hair following chemical exposure should not be forgotten. Consideration should be given to cutting (not shaving due to potential spread of contamination) longer hair vs spending time to decontaminate. Level of contamination will determine effectiveness of the decontaminant used.

g. Additional detail on decontamination by chemical agent is discussed in CBRN Injury Response Part 2

5. Due to potential time delays in presentation after exposure, casualties presenting with syndromes due to infectious agents may not require decontamination. Note that the casualties may be infectious, and warrant the use of empiric transmission-based precautions.

   a. However, if there was an incident with a weaponized biothreat delivered via aerosol or powder, decontamination is warranted.

   b. Removing clothing and washing exposed skin and hair with soap and water, followed by drying the skin and hair is generally considered adequate decontamination for most biothreats.

   c. Additional detail on decontamination of biological casualties is discussed in CBRN Injury Response Part 4.

6. Internal decontamination for radiologic agents will be discussed in detail in the medical management of radiologic exposure and nuclear events (CBRN Injury Response Part 3).

## IDENTIFICATION OF AGENT

Although agent identification may help to drive the treatment course, it is not required prior to providing casualty care in a CBRN environment. Casualty treatment should never be delayed pending confirmatory agent identification. Clinical assessment (using CRESS described below and in Table 3) is necessary to determine immediate therapy. Decisive efforts for agent identification can be done in parallel with timely medical treatment. It should be recognized that intelligence reporting may be incomplete or inadequate. There are a variety of detectors that can aid in agent identification and providers should be familiar with the technology that is part of their organization.

Combine available intelligence, technology, and patient presentation to create a comprehensive picture for agent identification to help guide treatment. Mixed exposures are possible and correlating patient signs and symptoms with adjunctive agent identification techniques can help ensure the proper treatment is pursued.

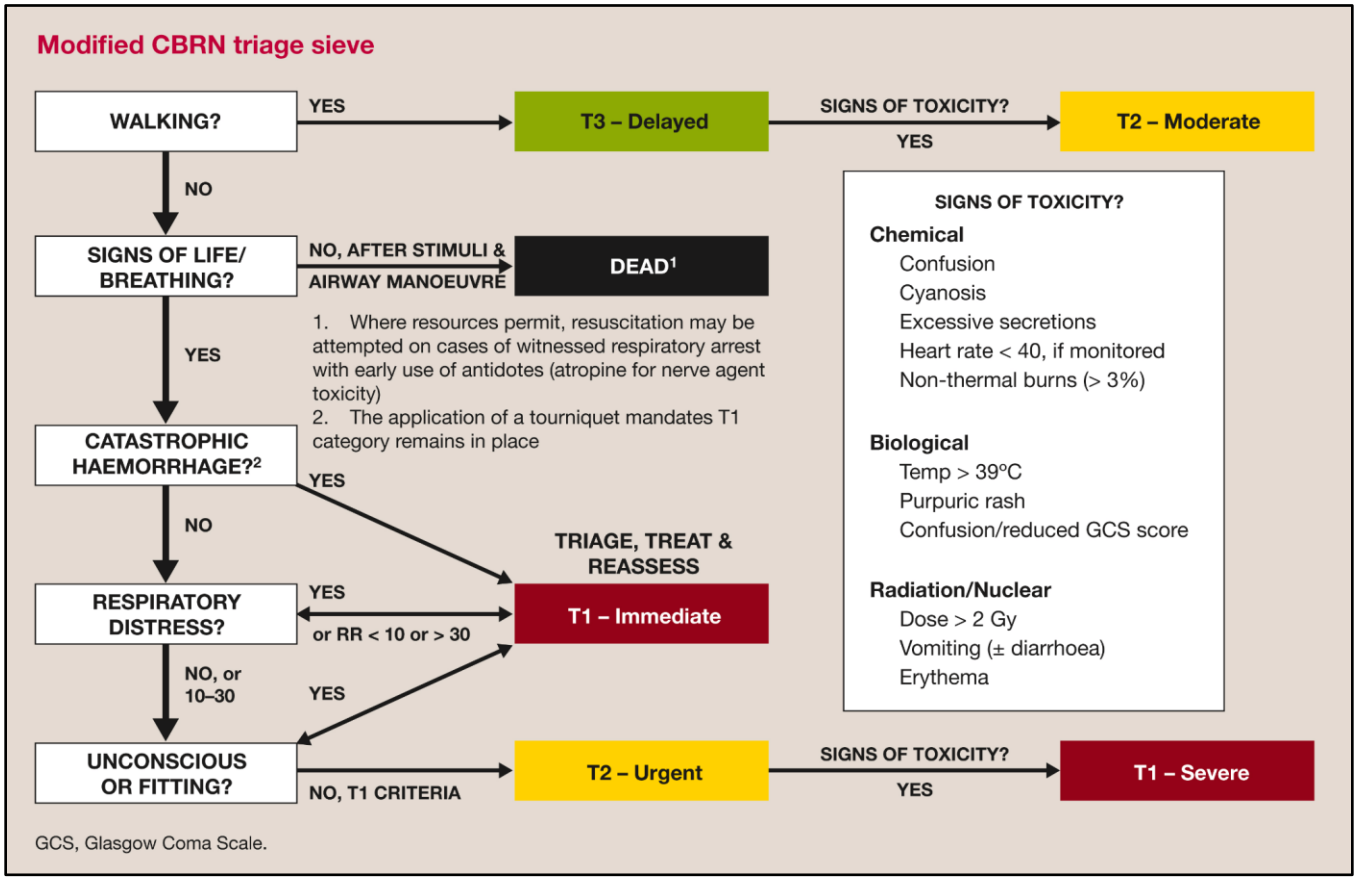
**Casualty treatment should never be delayed pending confirmatory agent identification. Clinical assessment (using CRESS described below) is necessary to determine immediate therapy. Decisive efforts for agent identification can be done in parallel to timely medical treatment.**

## TRIAGE AND EVACUATION PRIORITIES

Because of the differences in presentation for CBRN casualties, specific triage recommendations and evacuation priority considerations will be addressed in the portion of the CPG that is specific to the different categories of CBRN exposures.

As in all tactical situations, security and fire superiority are the first priorities. Triage for a CBRN event follows established triage principles, including doing the most good for the most people. Because of the complexity of combined CBRN and trauma casualties, it may be beneficial to assign an experienced provider to triage. Continuous triage should occur during decontamination, medical treatment, and the evacuation phases of care. True triage for decontamination involves a determination of who can tolerate delays in decontamination. Decontamination order should be based on extent of exposure because the patient must be able to survive the decontamination process with limited medical interventions, keeping in mind initial symptoms may be delayed based on the agent. All patients will benefit from rapid decontamination as this decreases duration of exposure, and reduces the future burden on medical resources. Once decontaminated, patients are triaged according to medical priority. Decontamination is a medical intervention and any casualty with an area suspicious of having been exposed to a liquid chemical agent is automatically medically triaged as immediate until immediate (focused) decontamination has been accomplished. The casualty is then re-triaged. Except for vesicant casualties, those exposed only to vapor can tolerate delays in decontamination or may not even require thorough decontamination. It is important to frequently reassess patients because many CBRN agents cause delayed symptoms, a casualty initially determined to be minimal may become immediate.[10] Remember that the process of decontamination can significantly change the casualty status. It is critically important to monitor for hypothermia, disruption of previously controlled bleeding, and other changes in patient status that would change triage priority.

***Figure 2. Example of a CBRN Triage Sieve***

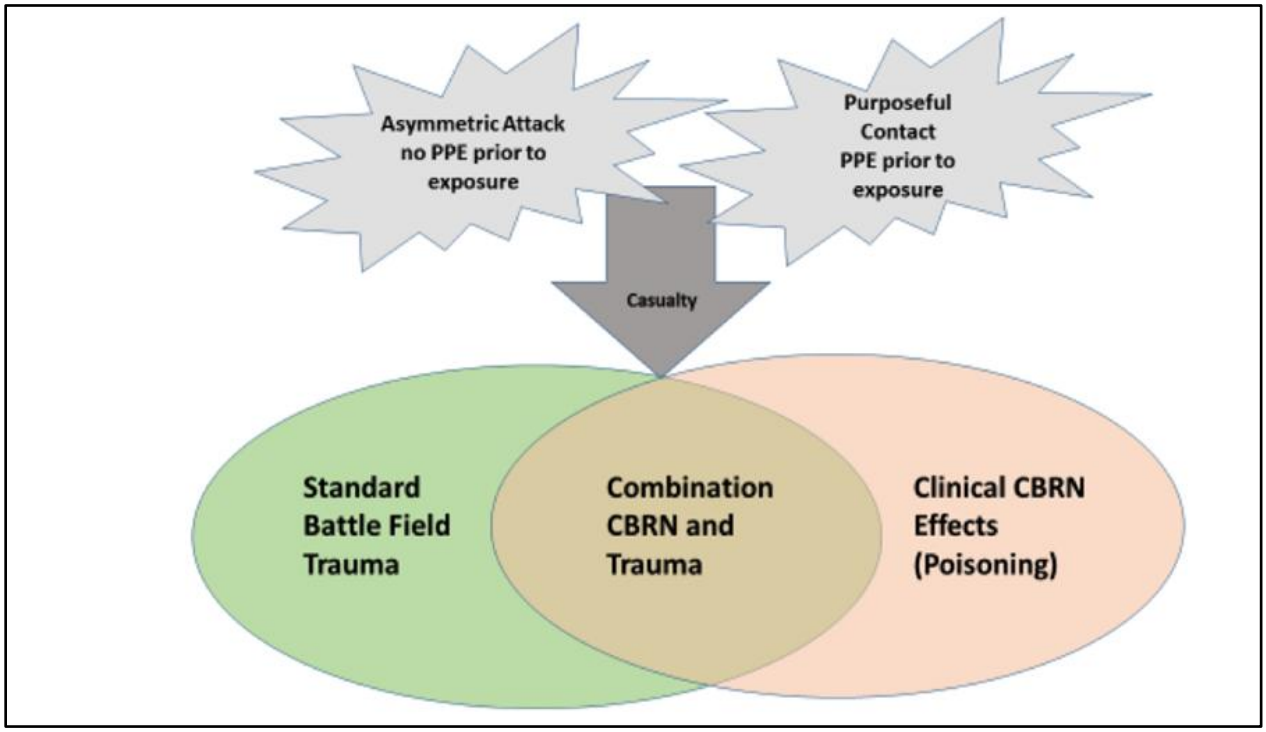



*Source: Parry S, Johnson C. Chemical, biological, radiological and nuclear major incidents. Surgery. Volume 42, Issue 7. Pages 487-493. 2024*

## TACTICAL COMBAT CASUALTY CARE + CBRN

Assessment and management of CBRN casualties is complex because it involves not only life-threatening symptoms but also the threat of contamination of all first responders. An added source of complexity is the frequent mixing of CBRN and penetrating trauma injuries (Figure 3). Working through this complexity involves a stepwise approach that first rules in or rules out CBRN injuries so that first responders can protect themselves if necessary before rendering aid. The next step integrates assessment and management of both CBRN and traumatic injuries, prioritizing the recognition and management of life-threats first.

***Figure 3. CBRN Casualties***




## CRESS: A SIMPLIFIED APPROACH TO CBRN CASUALTY ASSESSMENT

Just as trauma casualties present differently (blunt trauma, GSW, blasts, etc.), CBRN casualties also have varied presentations. For example, chlorine casualties will require more attention to the toxic inhalation symptoms contrasted with a mustard casualty whose associated trauma may initially require more prompt intervention than the mustard-specific effects. CBRN casualties can be categorized by circumstances of exposure and presence or absence of trauma and CBRN effects.

In a CBRN-threat environment, casualties may have traumatic, CBRN, or mixed injuries. Before applying TCCC, it is important to identify whether CBRN injuries are present to allow first responders to protect themselves before treating the patient. While this often can be deduced using intelligence reports, technologic agent identification resources, and circumstances of the CBRN event, there will be times when agent identification will need to be made solely based on clinical assessment of symptoms. Clinical clues can be aggregated to identify the most likely agent responsible for symptoms according to the CRESS assessment. Infectious agent exposure, for example, is unlikely to cause early symptoms (see CBRN CPG Part 4), while toxins, chemical and high dose radiologic exposures may lead to symptoms in minutes to hours (see CBRN CPGs Part 2-4). A CRESS assessment can be used to assess which chemical toxidrome exposure may be linked to. Each letter in CRESS corresponds to physical exam findings that can be used to categorize the suspected chemical based on the constellation of findings (Table 3). A depiction of time to onset of signs/symptoms as well as common chemical toxidromes and biological and radiological syndromes can be found in Figure 4.

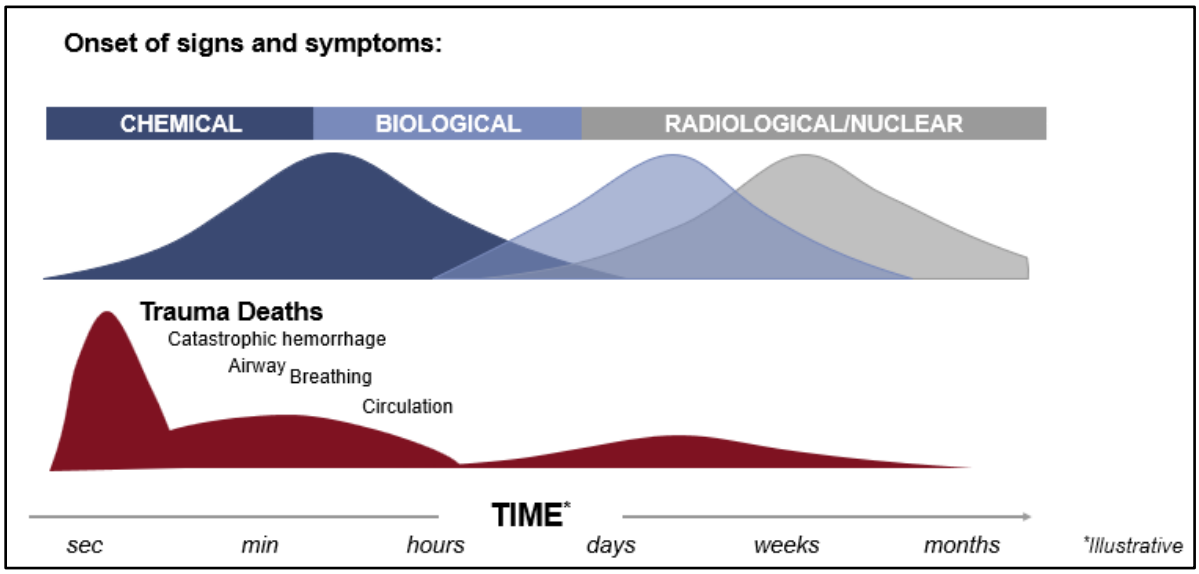
***Table 3. The CRESS acronym***

| | |
|---|---|
| **C** | **C**onsciousness (agitated, depressed, unconscious) |
| **R** | **R**espirations (normal, increased, or decreased) |
| **E** | **E**yes (constricted/pinpoint, dilated, normal) |

| | |
|---|---|
| **S** | **S**ecretions (dry, normal, increased) |
| **S** | **S**kin (diaphoretic, dry, hot, cyanotic) |

*Source: US Department of Health and Human Services. Types and Categories of Hazardous Chemicals and Related Toxidromes.*

***Figure 4. Timing of CBRN symptoms/signs onset***




*Source: Calder A, Bland S. CBRN considerations in a major incident. Surgery. Volume 36, Issue 8. Pages 417-423. 201*

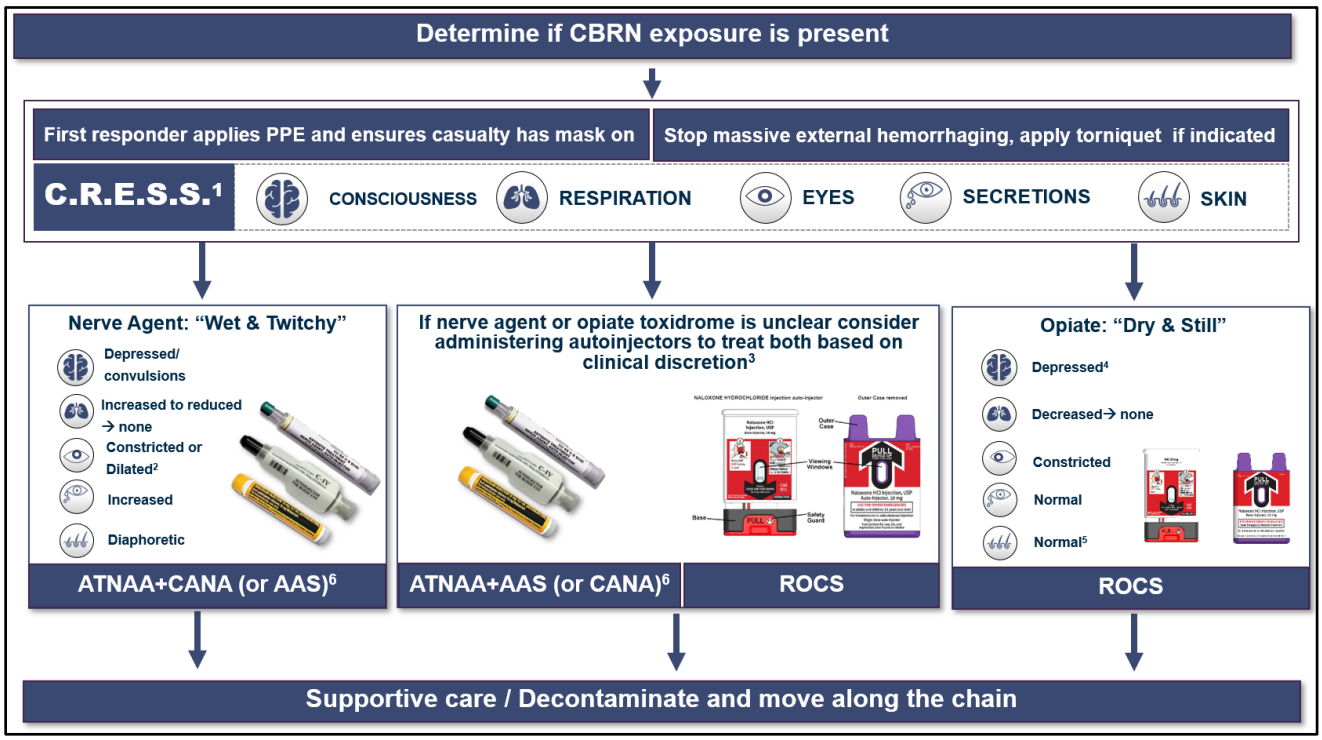
***Table 4. Toxidrome findings for select chemical agents***

| Toxidromes | Consciousness | Respirations | Eyes | Secretions | Skin |
|---|---|---|---|---|---|
| **Cholinergic (e.g., nerve agents, insecticides, etc.)** | Depressed consciousness or unconscious | Increased | Pinpoint pupils* | Increased (lacrimation, rhinorrhea, salivation, bronchial secretions) | Diaphoretic |
| **Knockdown (e.g., cyanide, hydrogen sulfide)** | Depressed consciousness or unconscious | Increased | Normal | Normal | Early: Flushed<br>Late (advanced shock): Cyanotic |
| **Irritant/Corrosive** (e.g., Chlorine, phosgene) | Normal<br>Late: Unconscious (due to respiratory failure) | Increased | Normal | Increased (lacrimation, rhinorrhea, salivation) | Normal |
| **Irritant/Corrosive** (e.g., vesicants, sulfur mustard, chemical burns) | Normal | Increased | Normal | Increased (lacrimation, rhinorrhea, salivation)<br>At high doses causes buildup of fluid in lungs (pulmonary edema) | Early: Normal<br>Late: Blisters and burns |
| **Irritant/Corrosive** (e.g., riot control agents, tear gas) | Normal | Normal or increased | Normal pupils<br>Ocular irritation | Increased (lacrimation, rhinorrhea, salivation) | Normal |
| **Opioid** | Depressed consciousness or unconscious | Decreased | Pinpoint pupils | Normal | Early: Normal<br>Late: Cyanotic |
| **Anticholinergic** (e.g., BZ, atropine) | Agitated/confused | Normal or increased | Dilated pupils | Decreased | Dry and hot |

*Source: US Department of Health and Human Services. Types and Categories of Hazardous Chemicals and Related Toxidromes*.

*Acutely with vapor exposure but could be delayed with cutaneous exposures

***Figure 5. Chemical casualty assessment and use of autoinjectors for first responders***




Antidote Treatment - Nerve Agent, Auto-Injector (ATNAA) [2.1 mg atropine and 600mg pralidoxime (2-PAM)]; Convulsant Antidote for Nerve Agent (CANA) [10mg diazepam]; Advanced Anticonvulsant System (AAS) [10mg midazolam]; Rapid Opioid Countermeasure System (ROCs) [10mg naloxone]

[1]May be variable due to agent characteristics, exposure dose, individual response variability, PPE worn at time of exposure, and whether antidotes administered.

[2]May be variable due to agent characteristics, exposure dose, individual response variability, PPE worn at time of exposure, and whether anticholinergics administered.

[3]ROCS (naloxone) does not have any significant drug interactions with the drugs contained in ATNAA, CANA or AAS.

[4]Depending on the agent and dose there may be convulsions.

[5]If wearing PPE may be diaphoretic.

[6]Reference ATP 4-02.85/MCRP 4-11.1A/NTRP 4-02.22/AFTTP(I) 3-2.69 for nuances of self-aid, buddy aid, combat lifesaver care, or treatment by the combat medic/corpsman/Air Force medic.

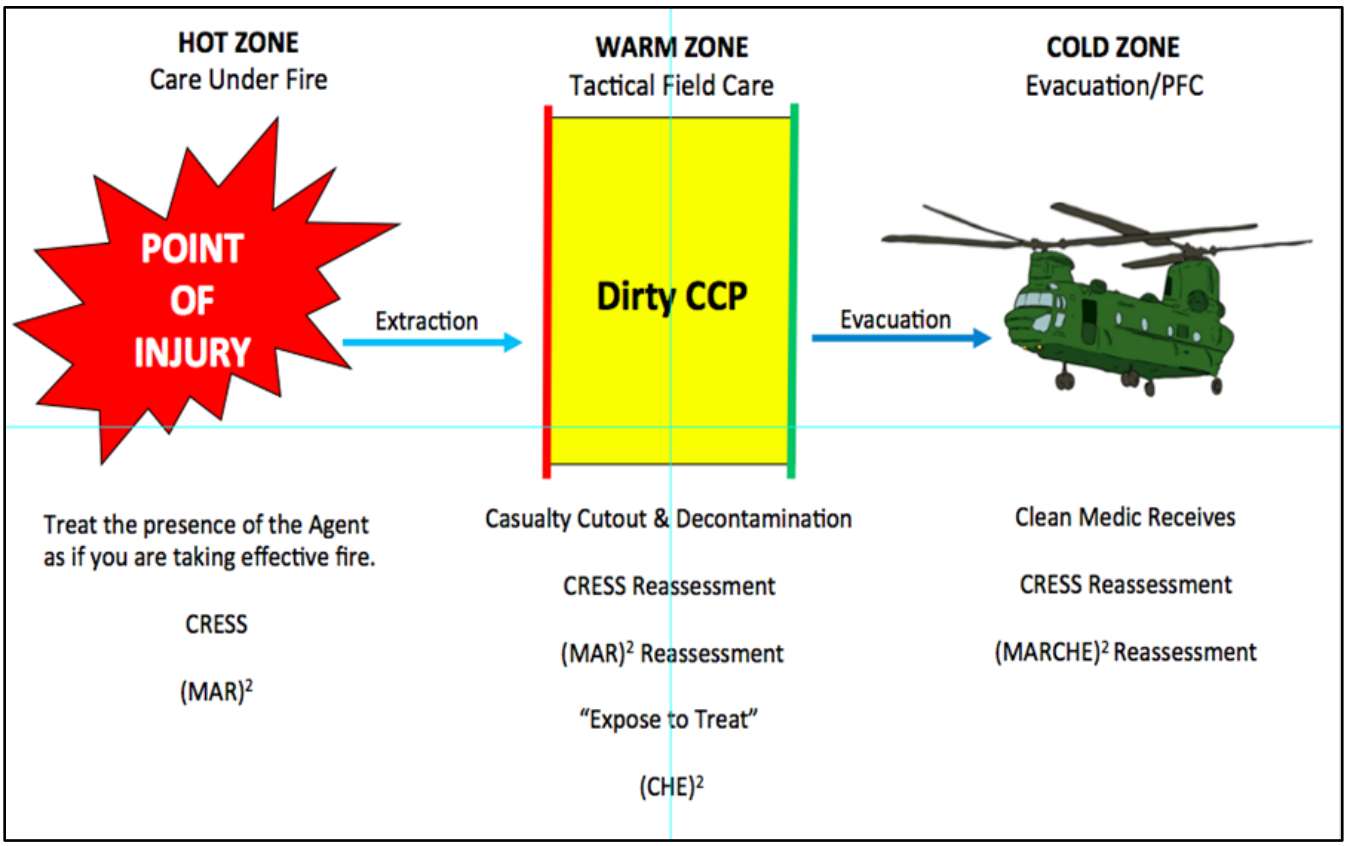
## (MARCHE)²: INTEGRATING TCCC MARCH WITH CBRN FIRST RESPONSE

After initial assessment of casualties for the presence or absence of CBRN symptoms using the CRESS algorithm (and donning of PPE by first responders), the integrated assessment and management of TCCC and CBRN injuries can proceed.

The acronym (MARCHE)[2] integrates the established TCCC MARCH algorithm (Massive Hemorrhage, Airway, Respirations, Circulation, Hypothermia) with CBRN MARCHE priorities (Mask, Antidotes, Rapid spot decontamination, Countermeasures, Extraction and Evacuation). Combining these two approaches gives the acronym (MARCHE)[2] or "MARCH-squared."

Similar to TCCC, (MARCHE)[2] can be broken into phases of care from highest threat (care under fire or active CBRN threat), to intermediate threat (tactical field care or warm zone casualty management), to lowest threat (Prolonged Field Care (PFC)/evacuation or cold zone care of decontaminated casualties) (Figure 6 below).

***Figure 6. (MARCHE)²***




MARCHE$^2$: Massive hemorrhage/Mask, Airway/Antidote, Respiration/Rapid spot decontamination, Circulation/Countermeasure, Hypothermia/Head injury, Extraction/Evacuation. CRESS: Consciousness, Respirations, Eyes, Secretions, Skin.

## PUTTING IT ALL TOGETHER: INTEGRATING CRESS AND (MARCHE)²

### Step 1: Hot Zone / Care Under Fire

The hot zone is an area where there is an immediate and ongoing threat to casualties and responders. During "hot zone" care, the agent itself is similar to enemy fire. As such, the priorities are protection and egress away from the threat (CBRN agent) for both casualty and provider. Both the casualty and provider should don protective masks. If the casualty is incapacitated, the provider must ensure the casualty's protective gear is applied and functional.

Only rapid interventions for immediate life-threats should be addressed. This typically includes management of catastrophic hemorrhage, airway problems, and antidote administration before evacuating out of the hot zone for decontamination and further treatment. Massive hemorrhage, if present, is the most immediate life threat and control of hemorrhage supersedes other interventions. Massive hemorrhage, if compressible, should be treated according to TCCC guidelines with limb or junctional tourniquets, as applicable.

Perform a rapid assessment of the airway and respirations. Excessive secretions and increased respirations may indicate nerve agent exposure. Completion of the CRESS assessment will help determine if the symptoms are due to trauma or chemical agent exposure. Most airway and respiratory interventions should be deferred, though there are some interventions that may take priority over mask application. The decision to unmask a casualty to provide these interventions needs to be weighed against the risk of the contaminated environment.

Some CBRN agents are rapid killers. The CRESS assessment will quickly determine whether immediate antidotes are required. If exposure to a rapidly killing agent (i.e. nerve agent, cyanide, opioid incapacitating agent) is suspected,

administer the appropriate antidotes (ATNAA/AAS, hydroxocobalamin, naloxone). Cyanide treatment can be considered in the hot zone, but the need to establish IV/IO access to administer hydroxocobalamin makes this a judgment call weighed against the time needed to reach the warm zone and the ongoing threat in the hot zone location. If nerve agent exposure is suspected (decreased level of consciousness, increased respirations, constricted pupils, increased secretions, diaphoretic skin), then the provider should direct self-administration of Antidote Treatment Nerve Agent Auto-injector (ATNAA) and Convulsant Antidote for Nerve Agent (CANA) or administer the antidotes for an incapacitated casualty.

Rapid spot decontamination of skin or wounds is indicated when there is gross contamination on the skin or wounds or when protective gear is breached. If wound contamination with a chemical agent is suspected, immediately expose the wound to perform rapid spot decontamination even in a contaminated environment. This step is necessary even in a contaminated environment and may be lifesaving.

As in TCCC, non-essential interventions should be deferred until the next phase of care.

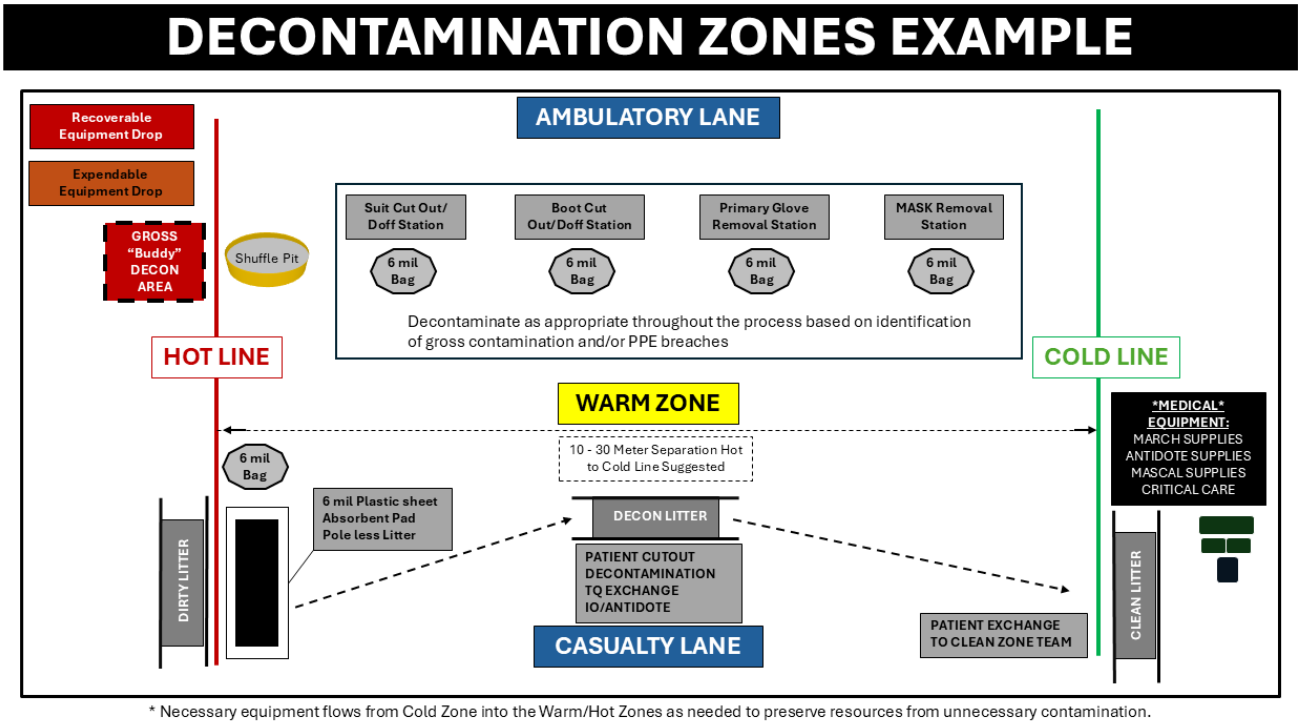
***Table 5. Point of Injury (Hot Zone) Response – (M A R)[2]***

| **Point of Injury (Hot Zone) Response– (M A R)[2]** | |
|---|---|
| **TCCC** | **CBRN** |
| **Massive Hemorrhage** | **Mask** |
| Stop life-threatening external hemorrhage if tactically feasible:<br>▪ Direct casualty to control hemorrhage by self-aid if able<br>▪ Apply a CoTCCC-recommended limb tourniquet over the uniform proximal to the bleeding site(s). Place the tourniquet "high and tight" (as proximal as possible) on the injured limb and move the casualty to cover. | ▪ Don mask<br>▪ Help casualty don mask or ensure proper seal if mask already in place.<br>▪ Ensure Powered Air Purifying Respirator (PAPR) or Self Contained Breathing Apparatus (SCBA) is functional. |
| **Airway** | **Antidotes** |
| ▪ Assess (excessive secretions may indicate nerve agent exposure)<br>▪ Airway management is generally best deferred | ▪ Antidotes are given in the Hot Zone if the casualty has symptoms of these rapidly killing agents:<br>- Nerve agent (give ATNAA, AAS [or CANA])<br>- Cyanide (give hydroxocobalamin*)<br>- Pharmaceutical-based sedating agent (give naloxone) |
| **Respiration** | **Rapid Spot Decon** |
| ▪ Assess: normal, increased, or decreased (increased respirations may indicate nerve agent exposure)<br>▪ Complete the CRESS assessment and determine if caused by the agent or trauma<br>▪ Respiratory intervention is generally best deferred | ▪ At the point of injury, physical removal of the agent/rapid spot decontamination is indicated if agent can be seen on the skin, if there is suspicion of wound contamination by agent, or if there is a breach in the suit<br>▪ Apply RSDL, M100, M295, Sorbent, tech wipe, etc. |
| **Extraction** | |
| Egress away from the threat | |
| *Requires IV/IO access and may not be feasible in the hot zone. Time to reach the warm zone and on-going hot zone threats should be considered prior to administration. | |

## Step 2: Warm Zone / Tactical Field Care

In the warm zone, or tactical field care phase, attention is given to decontamination and reassessment of the casualty. This phase occurs at a dirty CCP (hotline) and requires personnel dedicated to triage, decontamination, and patient treatment. At this phase, interventions may have altered the clinical presentation of the casualty, so it is important to take into account prior interventions and changes in the clinical status of the casualty and administer life-saving treatments.

***Figure 7. Casualty decontamination schematic***




**Note:** Casualty Flow moves from top to bottom in this diagram. Triage flows immediate to delayed from left to right in the hot zone diagram. Medical personnel, at least one provider designated clean and one provider designated dirty

Decontamination and treatment should be a synchronous process. Medical personnel need to clearly communicate with non-medical personnel responsible for decontamination. "Expose to treat" is used by decontamination personnel when the provider deems it in the best interest of the casualty to remove PPE to provide life-saving medical intervention. For example, the mask may be removed and the head, face, and chest quickly decontaminated for the provider to ventilate the casualty and insert a sternal IO if parenteral antidotes, blood product, or fluid resuscitation are immediately indicated. It may also be appropriate to prioritize decontamination of an extremity to establish an IV or IO access, should a sternal IO not be an option.

Circulation should be assessed to identify external hemorrhage and shock. Per TCCC guidelines, fluid resuscitation is only indicated for altered mental status in the absence of brain injury and/or a weak or absent radial pulse. The provider can also assess the effects of both CBRN agents and antidotes on the patient's circulatory status. As decontamination ensues, dirty treatments are replaced with clean. Due to cold water and the need to fully expose the casualty in order to conduct thorough decontamination, hypothermia is a significant risk. Added to the hypothermia risk is the fact that exposure to many of the chemical warfare agents will themselves cause hypothermia of the casualty. Ensure rapid transit through the decontamination line with careful attention to hypothermia mitigation to prevent iatrogenic injury from the decontamination process due to exposure. Additionally, it is important to recognize that personnel working within the warm zone in full protective gear are at risk of heat injury and stressors associated with operating in PPE.

***Table 6. Assessment at the Dirty CCP (Warm Zone)– (M A R C H E)*** [2]

| **Assessment at the Dirty CCP (Warm Zone)– (M A R C H E)[2]<br>Treat life-threats ONLY** | |
|---|---|
| **TCCC** | **CBRN** |
| Reassess: Are immediate life threats addressed? | |
| M.A.R. Reassessment (Massive hemorrhage, Airway, Respirations)<br>▪ Stop all external hemorrhage<br>▪ Advanced airway as indicated<br>▪ Treat tension pneumothorax and all open/sucking chest wounds<br>▪ If persistent hypoxia < 90%, consider nasopharyngeal airway and bag-valve-mask | M.A.R. Reassessment (Mask, Antidote, Rapid spot decon)<br>▪ Check mask seal<br>▪ Assess response to antidote and reassess CRESS<br>▪ Reassess need for rapid spot decontamination |
| **Circulation** | **Countermeasures** |
| ▪ Pulse Check<br>▪ Check capillary refill (<2 seconds)<br>▪ Assess for Shock<br>▪ Fluid resuscitation per TCCC guidelines only if weak or absent radial pulse<br>▪ IV/IO access if needed immediately | ▪ Nebulized or inhaler-administered medications<br>▪ IV/IO Drips<br>▪ Suction the airway<br>▪ Rapid sequence intubation and ventilator if indicated<br>▪ Specific countermeasures may be found in CBRN CPG Part II. |
| **Hypothermia** | |
| ▪ Minimize exposure to the elements<br>▪ Package the casualty<br>▪ Use a battery-powered warming device to deliver IV/IO fluids | |
| **Head Wounds (Altered Mental Status)** | |
| ▪ Determine whether casualty's altered mental status is due to agent, blast exposure, or direct trauma<br>▪ Prevent hypoxemia (goal SpO2 > 90-95%) and hypotension (goal SBP 100-110 mmHg)<br>▪ Identify and treat central herniation | |
| **Evacuation** | |
| ▪ Determine Evacuation Priority<br>▪ Fill out Casualty Card<br>▪ Move patient for further decontamination or to the evacuation platform.<br>▪ The Dirty CCP may be far from the point of injury, necessitating exhausting casualty carries and exposing rescuers to heat injury from the burdens of PPE. | |

## Step 3: Cold Zone / Tactical Evacuation Care / Prolonged Field Care

Once the decontaminated casualty has passed into the cold zone, they should be re-evaluated and receive needed interventions including tactical evacuation or prolonged field care. The decontamination process can result in significant change in the casualty's condition, so re-triage and reassessment are the first priority. A secondary survey should be done immediately after re-assessment of the primary survey. Documentation throughout the phases of care is vital to facilitate information transfer as the patient transitions from one phase to another. The CBRN casualty card (Appendix C) is a useful tool to ensure comprehensive documentation relevant to the CBRN casualty. In the absence of a CBRN casualty card, the TCCC casualty card is sufficient if duration of care before transfer is short. If handoff of care is delayed, PFC documentation will likely be necessary.[9]

It is important to consider that receiving providers at all roles of care may have limited experience with CBRN patients. Communication is crucial to ensure receiving providers understand previous decontamination, care, and exposures that may be suspected as to prevent unnecessary repetitive decontamination or redundant treatments.

Casualties that reach the cold zone have been decontaminated and are now suitable for the full spectrum of care appropriate to the clinical environment and capabilities. There are, however, some unique concerns to address in a combination CBRN/trauma casualty. Consider the casualty may have retained foreign material or contaminated dressings in wounds. Such material may pose a risk to treating personnel from off-gassing or secondary contamination. Additionally, this residual contamination may represent a source of exposure to the patient via a route that bypasses the normal skin barriers resulting in rapid systemic distribution of the agent. Larger fragments should be removed from the wound using a "no touch" technique with surgical instruments and placed in a sealed container with hypochlorite solution, minimizing the risk to providers. The contaminated wound should be further irrigated with clean water. Providers dealing with contaminated foreign material or dressings can wear 3 pairs of nitrile gloves. The outer gloves should be discarded every 20 minutes. In the absence of suspected retained debris, the fully decontaminated patient in the cold zone can be treated as all other patients at that level of care.

# PERFORMANCE IMPROVEMENT MONITORING

## POPULATION OF INTEREST

All patients with Chemical, Biological, Radiological and/or Nuclear (CBRN) exposure/injury

## INTENT

1. Perform CRESS assessment
2. Perform MARCHE$^2$ assessment and interventions
3. Reassess patient to monitor for changes related to chemical toxidromes, biological syndrome, acute radiation syndrome and/or nuclear exposure

## PERFORMANCE / ADHERENCE METRICS

1. CRESS assessment is documented
2. Appropriate Antidote was administered
3. Changes related to chemical toxidrome, biological syndromes, acute radiation syndrome, and/or nuclear exposure are documented.

## DATA SOURCE

- Patient Record
- Department of Defense Trauma Registry (DoDTR)

## SYSTEM REPORTING & FREQUENCY

The above constitutes the minimum criteria for PI monitoring of this CPG. System reporting will be performed annually; additional PI monitoring and system reporting may be performed as needed.

The system review and data analysis will be performed by the Joint Trauma System (JTS) Chief and the JTS PI team.

## RESPONSIBILITIES

It is the trauma team leader's responsibility to ensure familiarity, appropriate compliance, and PI monitoring at the local level with this CPG.

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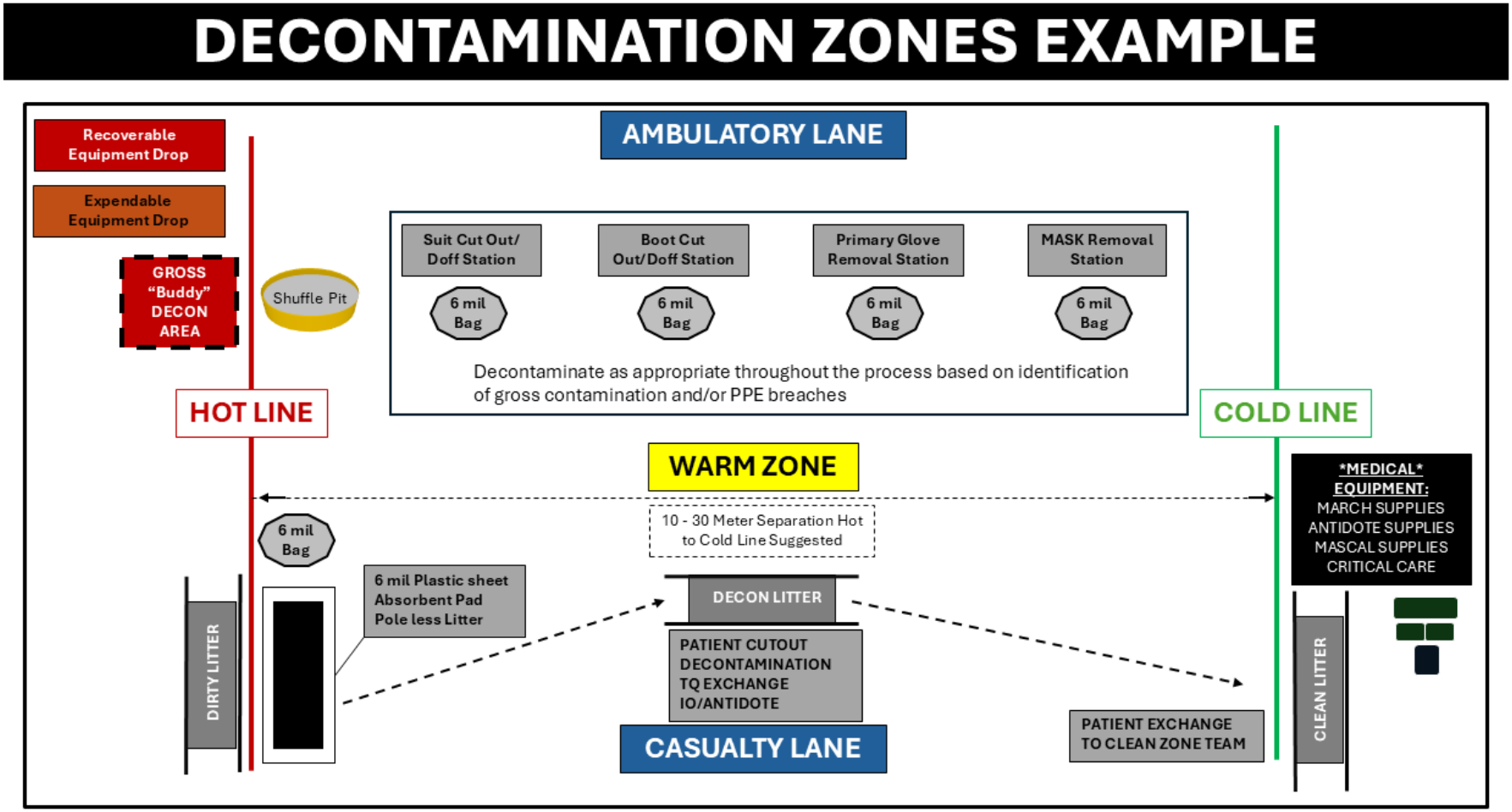
# APPENDIX A: (MARCHE)$^2$ SUMMARY

| TCCC + CBRN = (MARCHE)$^2$ | | | |
|---|---|---|---|
| | **Hot Zone** | **Warm Zone** | **Cold Zone** |
| **Priorities** | • Care Under Fire<br>• "What is killing the casualty now, is it the agent or trauma?" The answer dictates your treatments<br>• Triage<br>• Protect yourself and the casualty from the threat: time, distance, shielding, upwind, uphill, upstream<br>• Treat only immediate life-threats (i.e. massive hemorrhage)<br>• CRESS assessment. Identify chemical agent exposure.<br>  ◦ If chemical contamination suspected: perform rapid focused decontamination as soon as possible<br>  ◦ If rapidly killing chemical agent exposure suspected: give appropriate antidotes<br>• Expose only what is needed to save life<br>• Getting to the warm zone may require prolonged movement of the casualty<br>• Dirty medic: a medic caring for chemical casualties in the hot zone is contaminated<br>• Heat injury from those operating in PPE is common and may be unrelated to the agent exposure | • Tactical Field Care<br>• "What is killing the casualty now, is it the agent or trauma?" The answer dictates your treatments<br>• Re-triage<br>• Provide only life-saving care, get them to the cold zone for definitive care.<br>  ◦ Advanced airway management and ventilator support as indicated<br>  ◦ Assess circulation and administer resuscitation fluids per TCCC guidelines only if absent radial pulse<br>• Countermeasures: administer specific treatments for life-threats as needed based on exposure and symptoms (CRESS assessment)<br>• Replace dirty tourniquets and decontaminate indwelling devices or replace as indicated<br>• Perform cutout and thorough decontamination.<br>• Perform treatments while decontamination is being conducted. "Expose to treat."<br>• Hypothermia is a threat due to agent exposure and exposure during decontamination<br>• Determine whether altered mental status is due to agent exposure or trauma<br>• Heat injury from those operating in PPE is common and may be unrelated to the agent exposure | • Tactical Evacuation or Prolonged Field Care<br>• "What is killing the casualty now, is it the agent or trauma?" The answer dictates your treatments.<br>• Re-triage<br>• Anticipate and mitigate hypothermia<br>• Receiving medical personnel may have limited experience with CBRN. Ensure effective patient handoff.<br>• Clean medic: remains on cold zone side of warm line and not exposed to contaminated casualties. |
| **TCCC** | M: Massive Hemorrhage | M.A.R.: reassessment | (MARCHE)$^2$ reassessment |
| | A: Airway | C: Circulation and Shock Status | |
| | R: Respirations | H: Hyperthermia, H: Head Trauma | |
| | E: Extraction | E: Evacuation | |
| **CBRN** | M: Don Mask, Mask check | M.A.R.: reassessment | (MARCHE)$^2$ reassessment |
| | A: Antidote (ATNAA/CANA) | C: Countermeasures (drips, nebulized medicines, etc.) | |
| | R: Rapid Shot Decontamination | H: Hyperthermia, H: Head Trauma | |
| | E: Extraction | E: Evacuation | |

Terms: (MARCH)$^2$: Massive hemorrhage/Mask, Airway/Antidote, Respiration/Rapid spot decontamination, Circulation/Countermeasures, Head/Hypothermia, Extraction/Evacuation
TCCC: Tactical Combat Casualty Care; CBRN: chemical, biological, radiological, nuclear; CRESS: Consciousness, Respirations, Eyes, Secretions, Skin PAPR: Powered Air Purifying Respirator; SCBA: Self Contained Breathing Apparatus; ATNAA: Antidote Treatment Nerve Agent Auto-injector; CANA: Convulsant Antidote for Nerve Agent

## APPENDIX B: CASUALTY DECONTAMINATION SCHEMATIC




*Source: CBRN MED = (MARCHE)[2], The Tactical Medic's Approach to the Poisoned and Traumatically, Devin DeFeo 18D, FP-C, NREMT-P, http://www.specialoperationsmedicine.org/Documents/2017%20SOMSA/2017%20Presentations/24May17%201300%20UW-FID%20CBRNE%20Threat%20in%20Current%20AO.pdf*

# APPENDIX C: CASUALTY CARE CARDS

CUI (when filled in)

Prescribed by: DoDI 6040.45, DoDD 6490.02E, DHA-PI 6040.01 (Updated 20250721)

**TACTICAL COMBAT CASUALTY CARE (TCCC) CARD**

BATTLE ROSTER #:

EVAC: ☐ Urgent ☐ Priority ☐ Routine

NAME (Last, First): LAST 4:

SEX: ☐M ☐F DATE (DD-MMM-YY): TIME:

SERVICE: UNIT: ALLERGIES:

**Mechanism of Injury:** (X all that apply)

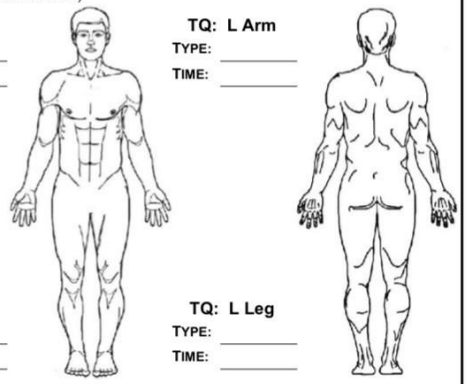
☐Artillery ☐Blunt ☐Burn ☐Fall ☐Grenade ☐GSW ☐IED

☐Landmine ☐MVC ☐RPG ☐Other:

**Injury:** (Mark injuries with an X)

TQ: R Arm
TYPE:
TIME:

TQ: L Arm
TYPE:
TIME:



TQ: R Leg
TYPE:
TIME:

TQ: L Leg
TYPE:
TIME:

**Signs & Symptoms:** (Fill in the blank)

| Time | | | | |
|---|---|---|---|---|
| Pulse (Rate & Location) | | | | |
| Blood Pressure | / | / | / | / |
| Respiratory Rate | | | | |
| Pulse Ox % O2 Sat | | | | |
| AVPU | | | | |
| Pain Scale (0-10) | | | | |

DD FORM 1380, JUL 2025 TCCC CARD

CUI (when filled in)

Controlled by: DHA
CUI Category: PRVCY
Distribution/Dissemination Control: FEDCON
POC: dha.ncr.bus-ops.mbx.dha-formsmanagement@health.mil

CUI (when filled in) (Updated 20250721)

BATTLE ROSTER #:

EVAC: ☐ Urgent ☐ Priority ☐ Routine

**Treatments:** (X all that apply, and fill in the blank) Type

C: TQ- ☐Extremity ☐Junctional ☐Truncal
Dressing- ☐Hemostatic ☐Pressure ☐Other
A: ☐Intact ☐NPA ☐CRIC ☐ET-Tube ☐SGA
B: ☐O2 ☐Needle-D ☐Chest-Tube ☐Chest-Seal

| C: | Name | Volume | Route | Time |
|---|---|---|---|---|
| Fluid | | | | |
| | | | | |
| Blood Product | | | | |
| | | | | |

| MEDS: | Name | Dose | Route | Time |
|---|---|---|---|---|
| Analgesic (e.g., Ketamine, Fentanyl, Morphine) | | | | |
| | | | | |
| | | | | |
| Antibiotic (e.g., Moxifloxacin, Ertapenem) | | | | |
| | | | | |
| Other (e.g., TXA) | | | | |
| | | | | |

OTHER: ☐Combat-Pill-Pack ☐Eye-Shield ( ☐R ☐L) ☐ Splint
☐Hypothermia-Prevention Type:

NOTES:

FIRST RESPONDER
NAME (Last, First): LAST 4:

DD FORM 1380, JUL 2025 (Back) TCCC CARD

CUI (when filled in)

*Source: JTS. https://jts.health.mil/assets/docs/forms/DD_Form_1380_TCCC_Card.pdf*

# APPENDIX C: CASUALTY CARE CARDS (CONTINUED)

| CBRN CASUALTY CARD | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NERVE | ATNAA AUTO INJECTOR<br>(2.1 mg Atropine, 600 mg 2PAM) | | | | | | | | | | | |
| | NERVE | AAS or CANA AUTO INJECTOR<br>(10 mg Midazolam or 10 mg Diazepam) | | | | | | | | | | | |
| | NERVE | ATROPINE AUTO INJECTOR<br>(Atropen 2 mg) or (Bolus/Push 2 mg doubled every 3-5 min) | | | | | | | | | | | |
| | NERVE | SCOPOLAMINE<br>(0.8 mg IV/IO) | | | | | | | | | | | |
| | NERVE | 2PAM CHLORIDE<br>(1 g IV/IO over 30 min; repeat over 30 if severe) | | | | | | | | | | | |
| | TOXIC INHALATION<br>CHLORINE MUSTARD INHALATION | TICS/TIMS PROTOCOL in steps<br>(Albuterol, 1 bullet / 2 cc 2% lidocaine / 2 cc 4.2% bicarb given alone)<br>Dexamethasone 8 mg IV/IO q 6hr | | | | | | | | | | | |
| | CYANIDE | CYANOKIT (Hydroxycobalamin IV/IO)<br>One Dose: 5 gm / 15 min reconstituted in 100 mL NS per vial | | | | | | | | | | | |
| | CYANIDE | SODIUM THIOSULFATE 25% 12.5 g IV/IO<br>Given after Cyanokit, different line | | | | | | | | | | | |
| | CYANIDE / OP INGESTION | ACTIVATED CHARCOAL<br>50 g Adult / 1 g/kg Kids | | | | | | | | | | | |
| | OPIOIDS | ROCS AUTO INJECTOR (10 mg Naloxone)<br>(Additional doses of Naloxone may be required for reversal) *Drip rate 2/3 of reversal dose per hr | | | | | | | | | | | |
| | BIOLOGICAL AGENT* | | | | | | | | | | | | |
| | TOXIN^ | | | | | | | | | | | | |
| | STRONTIUM 90 | ALUMINUM PHOSPHATE (MYLANTA/MAALOX)<br>(100 mL PO) | | | | | | | | | | | |
| | CESIUM 137 | RADIOGARDASE 500 mg/tab<br>PRUSSIAN BLUE 3 g PO TID | | | | | | | | | | | |
| | PU 238-239, URANIUM, COBALT 60 | Ca-DTPA 1 g / 5 mL in 250 mL NS over 30 min | | | | | | | | | | | |
| | PU 238-239, URANIUM | Zn-DTPA 1 g / 5 mL in 250 mL NS over 30 min | | | | | | | | | | | |
| | URANIUM | SODIUM BICARBONATE<br>50 mEq / 50 mL, new line / no mix | | | | | | | | | | | |
| Name: | HF | CALCIUM GLUCONATE 3 g IV<br>Nebuluized 2.5% w/O2 for inhalation<br>or<br>CALCIUM CHLORIDE 1 g IA | | | | | | | | | | | |

*Antimicrobial (antibiotic, antiviral, etc.)

^Antitoxin and/or targeted supportive care

*Source: CBRN MED = (MARCHE)[2], The Tactical Medic's Approach to the Poisoned and Traumatically, Devin DeFeo 18D, FP-C, NREMT-P*

# APPENDIX D: CLASS VIII

**Disclaimer**: This document should not be taken as doctrinal and should not supersede any command directed, or SOP directed medical materiel planning documents. Each of the Services have CBRN medical assemblages. Direct all questions regarding Class VIII and assemblage contents to appropriate unit supply personnel.

This is an example medical materiel list for the Joint Trauma System CPG "Chemical, Biological, Radiological, and Nuclear (CBRN) Injury — Part I: Initial Response" (CPG ID: 69). This list reflects a focus on chemical casualties. For biologic and radiation/nuclear lists see CBRN CPGs 3 and 4.

There is additional information contained in the Field Management of Chemical and Biological Casualties Handbook: https://medcoe.army.mil/borden-field-mgt-of-cb-casualities.

**A. Personal Protective Equipment (PPE) & clinician protection**

- CBRN masks/service respirators (fit-tested combat masks or equivalent)
- Powered Air Purifying Respirators (PAPR) or SCBA
- Nitrile/chemical-resistant gloves (multiple sizes) recommend 3 layers or spares for don/doff
- Chemical & Biological Protective Garment/MOPP ensemble
- Joint Service Lightweight Integrated Suit Technology (JSLIST)
- Eye protection/splash goggles
- Reusable or disposable surgical gowns/aprons for warm/cold zone tasks
- Face shields, vinyl boot covers, and tape/seal kits (6 mm sheeting and tape)
- All-purpose-Personal Protective Ensemble (AP-PPE)
- Lion Extended Response Team (XRT) Suit
- Butyl rubber gloves with cotton liner

**B. Respiratory & airway adjuncts**

- Emergency Passenger Oxygen System (EPOS) or equivalent field respiratory support devices
- Chemical Resuscitation Device (RDIC) (Bag-valve mask with viral/chemical filter)
- Oxygen tubing & masks
- Suction, intubation kits, airway adjuncts

**C. Antidotes, countermeasures, and critical medications (forward-stock)**

- ATNAA (Antidote Treatment Nerve Agent Auto-injector) and/or service nerve-agent autoinjectors
- Advanced Anticonvulsant System (AAS) [midazolam autoinjector]
    - AAS is replacing CANA (Convulsant Antidote for Nerve Agent)
- Hydroxocobalamin (Cyanide antidote - Cyanokit)

- Rapid Opioid Countermeasure System (ROCS) [Naloxone 10mg autoinjector]
- Pyridostigmine bromide 30 mg oral tablets (Soman Nerve Agent Pretreatment Pyridostigmine [SNAPP]) taken three times per day OR 105 mg extended release (PB ER) taken daily
- IV/IO supplies for resuscitation per TCCC (catheters, tubing, fluids)
- Nebulizers/inhaled bronchodilators and supplies
- Emergency analgesics and sedation
- If planning for any level of extended care include IV atropine, pralidoxime, midazolam and naloxone vials

**D. Decontamination supplies (spot & systematic decon)**

- Reactive Skin Decontamination Lotion (RSDL) individual and casualty packs
- M100, M295, sorbent pads, tech wipes (or service-equivalent decon wipes/cloths)
- Eyewash solutions/Morgan lens
- Large-volume wash/decontamination showers or improvised decon setups: supply of water, hoses, shower nozzles, collection berms
- Buckets, basins, large tarps (6mm), plastic sheeting, heavy-duty trash bags
- Disposable gowns, apron-TAP, towels, scrub brushes, disposable razors
- Containment/segregation supplies - labeled bags

**E. Triage, documentation & small equipment**

- DD Form 1380/TCCC casualty cards, and pens/markers
- Triage tags (color coded), waterproof markers
- Laminated pocket MARCHE$^2$/CRESS quick reference cards
- Signage kits for decon zones and contaminated areas/equipment

**F. Waste management, infection control & sanitation**

- Sharps containers, biohazard waste bags
- Neutralization/treatment capacity or coordination plan for contaminated waste per environmental/operational SOPs
- Hand hygiene supplies (alcohol-based hand rubs, soap and water)

**G. Casualty handling / evacuation equipment**

- Stretchers/litters suitable for contaminated casualties (designated “dirty” litters)
- Blankets/hypothermia prevention
- Replacement/sterile tourniquets and indwelling device spares
- Contaminated human remains pouches

**H. Clinical supplies for point-of-care & symptomatic treatment**

- IV/IO kits, catheter trays, fluids
- Basic wound care & dressings, splints
- Nebulizers, O2 cylinders, bronchodilators, suction
- Portable monitors (pulse oximeter, BP cuff, thermometer)

**I. Communications, manpower & ergonomics**

- Two-way radios/comms with range to coordinate hot/warm/cold zones and evacuations
- Heat-mitigation aids (cooling vests, shaded shelters)

For additional information including National Stock Number (NSN), please contact dha.ncr.med-log.list.lpr-cps@health.mil

## APPENDIX E: TELEMEDICINE / TELECONSULTATION

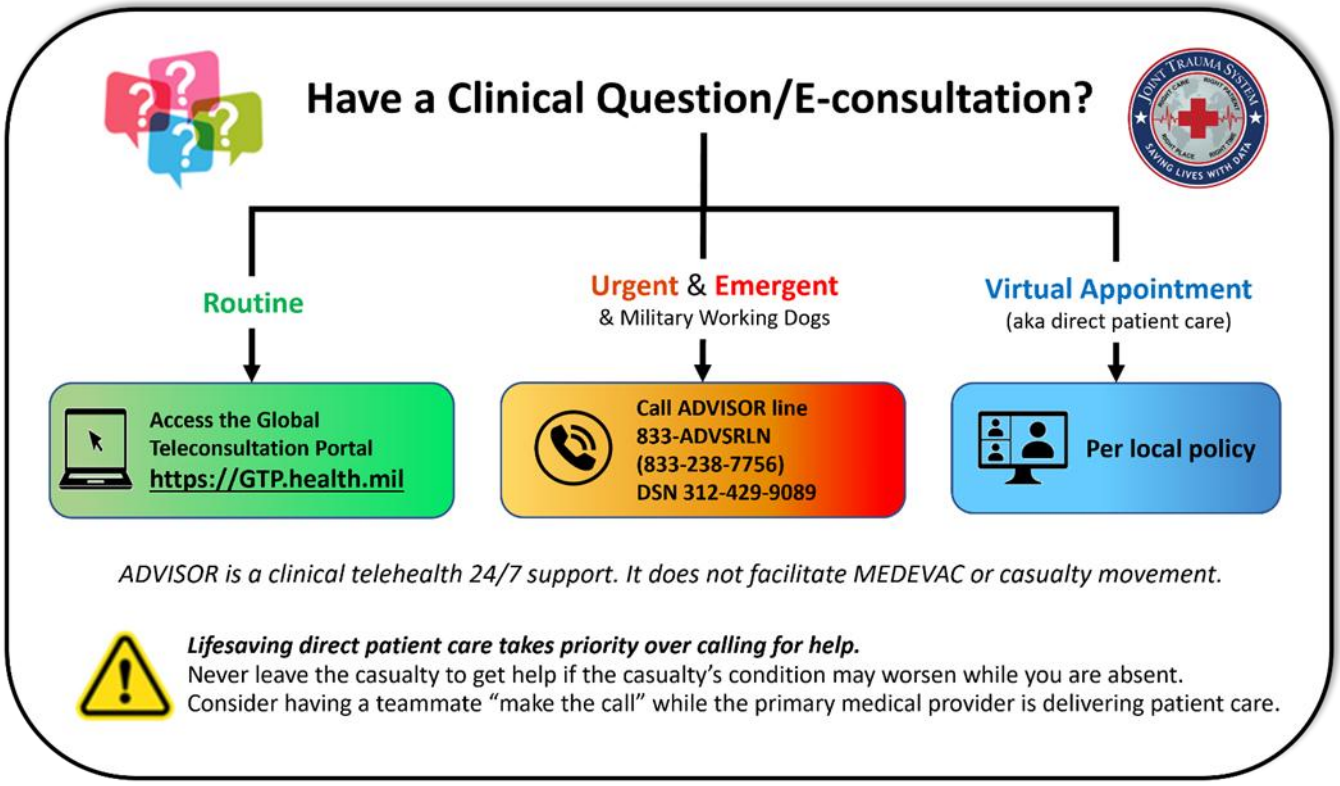



*Illustration by Raymond Samonte*

*GTP: https://GTP.health.mil*

*Theater Patient Movement Requirements Center (TPMRC) to coordinate evacuation:*

- *TPMRC-Americas (NORTHCOM & SOUTHCOM), 618-817-4200*
- *TPMRC- East (EUCOM, AFRICOM, CENTCOM), DSN 314-480-8040*
- *TPMRC- West (INDOPACOM), DSN 315-448-1062*

# APPENDIX F: INFORMATION REGARDING OFF-LABEL USES IN CPGS

## PURPOSE

The purpose of this Appendix is to ensure an understanding of DoD policy and practice regarding inclusion in CPGs of "off-label" uses of U.S. Food and Drug Administration (FDA)–approved products. This applies to off-label uses with patients who are armed forces members.

## BACKGROUND

Unapproved (i.e. "off-label") uses of FDA-approved products are extremely common in American medicine and are usually not subject to any special regulations. However, under Federal law, in some circumstances, unapproved uses of approved drugs are subject to FDA regulations governing "investigational new drugs." These circumstances include such uses as part of clinical trials, and in the military context, command required, unapproved uses. Some command requested unapproved uses may also be subject to special regulations.

## ADDITIONAL INFORMATION REGARDING OFF-LABEL USES IN CPGS

The inclusion in CPGs of off-label uses is not a clinical trial, nor is it a command request or requirement. Further, it does not imply that the Military Health System requires that use by DoD health care practitioners or considers it to be the "standard of care." Rather, the inclusion in CPGs of off-label uses is to inform the clinical judgment of the responsible health care practitioner by providing information regarding potential risks and benefits of treatment alternatives. The decision is for the clinical judgment of the responsible health care practitioner within the practitioner-patient relationship.

## ADDITIONAL PROCEDURES

### Balanced Discussion

Consistent with this purpose, CPG discussions of off-label uses specifically state that they are uses not approved by the FDA. Further, such discussions are balanced in the presentation of appropriate clinical study data, including any such data that suggest caution in the use of the product and specifically including any FDA-issued warnings.

### Quality Assurance Monitoring

With respect to such off-label uses, DoD procedure is to maintain a regular system of quality assurance monitoring of outcomes and known potential adverse events. For this reason, the importance of accurate clinical records is underscored.

### Information to Patients

Good clinical practice includes the provision of appropriate information to patients. Each CPG discussing an unusual off-label use will address the issue of information to patients. When practicable, consideration will be given to including in an appendix an appropriate information sheet for distribution to patients, whether before or after use of the product. Information to patients should address in plain language: a) that the use is not approved by the FDA; b) the reasons why a DoD health care practitioner would decide to use the product for this purpose; and c) the potential risks associated with such use.