



**COMBAT MEDIC/
CORPSMAN**



TACTICAL COMBAT CASUALTY CARE COURSE

MODULE 18: BURNS



Committee on
Tactical Combat
Casualty Care
(CoTCCC)

TCCC TIER 1
All Service Members

TCCC TIER 2
Combat Lifesaver

TCCC TIER 3
Combat Medic/Corpsman

TCCC TIER 4
Combat Paramedic/Provider

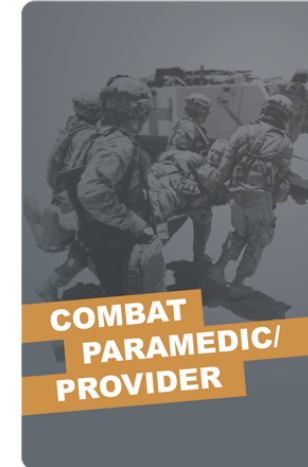
TACTICAL COMBAT CASUALTY CARE (TCCC) ROLE-BASED TRAINING SPECTRUM

ROLE 1 CARE

NONMEDICAL
PERSONNEL



MEDICAL
PERSONNEL



◀ **YOU ARE HERE**

STANDARDIZED JOINT CURRICULUM

1 x **TERMINAL LEARNING OBJECTIVES**

21 Given a combat or noncombat scenario, perform assessment and initial treatment of burns during Tactical Field Care in accordance with CoTCCC Guidelines.

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- 21.1 Identify the specific scene safety issues and actions required of a trauma casualty with burns before evaluation and care of the casualty.
 - 21.2 Identify types and severity of burns in accordance with the conventional burn classification.
 - 21.3 Identify how to estimate the body surface area burned using the Rule of Nines.
 - 21.4 Identify the evidence supporting the indications, progressive strategies, and limitations for burn management in TFC.
 - 21.5 Demonstrate the application of a dry dressing to a burn casualty in accordance with CoTCCC Guidelines.
 - 21.6 Demonstrate techniques used to prevent heat loss in a severe burn casualty in accordance with CoTCCC Guidelines.
 - 21.7 Describe burn fluid resuscitation in Tactical Field Care.
 - 21.8 Identify the indications, contraindications, and administration methods of Lactated Ringer's in Tactical Field Care.

08 x **ENABLING LEARNING OBJECTIVES**

Three PHASES of TCCC

1 CARE UNDER FIRE (CUF) / THREAT

RETURN FIRE AND TAKE COVER

2 TACTICAL FIELD CARE (TFC)

WORK UNDER COVER AND CONCEALMENT

3 TACTICAL EVACUATION CARE (TACEVAC)

MORE DELIBERATE ASSESSMENT AND PRE-EVACUATION PROCEDURES



YOU ARE HERE

NOTE: This is covered in more advanced TCCC training!

MARCH PAWS

LIFE-THREATENING

- M** MASSIVE BLEEDING
#1 Priority
- A** AIRWAY
- R** RESPIRATION (*Breathing*)
- C** CIRCULATION
- H** HYPOTHERMIA / HEAD INJURIES

AFTER LIFE-THREATENING

- P** PAIN
- A** ANTIBIOTICS
- W** WOUNDS
- S** SPLINTING



POTENTIAL CAUSES



FIREFIGHTS



EXPLOSION
IED / VBIED



**VEHICLE/
AIRCRAFT
CRASHES**



ELECTRICAL



THERMAL



CHEMICAL

P A W S

BURN WOUNDS



BURN WOUNDS are an injury to skin or other tissues caused by heat, electricity, or chemicals and are present in **5% to 15%** of combat casualties. **Burn patients** have unique management challenges and considerations.

The combination of **burn** and **non-burn injuries** results in a synergistic increase in mortality

The U.S. Army Institute of Surgical Research (USAISR) leads burn care efforts for the U.S. military

Significant advancements in the care of burn casualties have been made in recent conflicts

FOLLOW MARCH PAWS

- Address **ALL OTHER life-threatening** injuries using the MARCH PAWS sequence
- All trauma treatments can be performed on or through burned skin
- Burn wounds may be distracting, but are unlikely to lead to immediate death



REMEMBER: A burned trauma casualty is a trauma casualty first!



Depending on the source of the burn special consideration must be taken when providing care

P A W S

IN CASE OF ELECTRICAL INJURY



- **Secure** the power, if possible
- Otherwise, **remove** the casualty from the electrical source using a nonconductive object, such as a wooden stick
- **Move** the casualty to a safe place

P A **W** S

IN CASE OF
THERMAL INJURY



- **STOP** the sources of the burning
- **Assess** and **manage** the burn, cut the clothing from around the burned area and gently lift it away



If clothing is stuck to the burn, ensure you cut around the clothing and leave it in place

- Be sure to avoid grabbing or further damaging burned areas

P A W S

IN CASE OF CHEMICAL INJURY



Patients with chemical burns should be deconned IAW Unit SOP

Advise all first responders of the presence of a chemical burn

EXAMPLE

WHITE PHOSPHORUS

SOURCE

Commonly found in tank rounds, mortar rounds, artillery rounds can cause burns

TREATMENTS

Submerge the burned area in water

Apply wet barrier (water-soaked gauze, clothing, mud, etc.) with an occlusive dressing

P A W S

SEVERITY OF BURN

BURNS ARE CLASSIFIED BY THE DEPTH OF THE WOUND



SUPERFICIAL

1ST DEGREE BURNS

These burns are painful and erythematous without blistering or open wounds. An example of a superficial burn is sunburn.



PARTIAL THICKNESS

2ND DEGREE BURNS

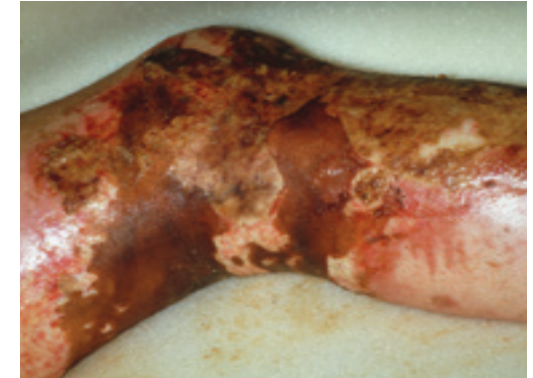
Bright red to mottled in appearance and wet to the touch. Blisters are commonly seen in superficial partial-thickness burns.



FULL THICKNESS

3RD DEGREE BURNS

May appear charred or whitish in color, dry, leathery, and insensate. Thrombosed blood vessels may be visible.



SUBDERMAL BURN

4th DEGREE BURNS

Subdermal burns extend through subcutaneous tissue into fascia, muscle, and even bone.

P A W S

RULE OF NINES

11 areas that each have **9% body surface area** (head, upper extremities, front and backs of lower extremities, and front and back of the torso having **TWO 9% areas**)

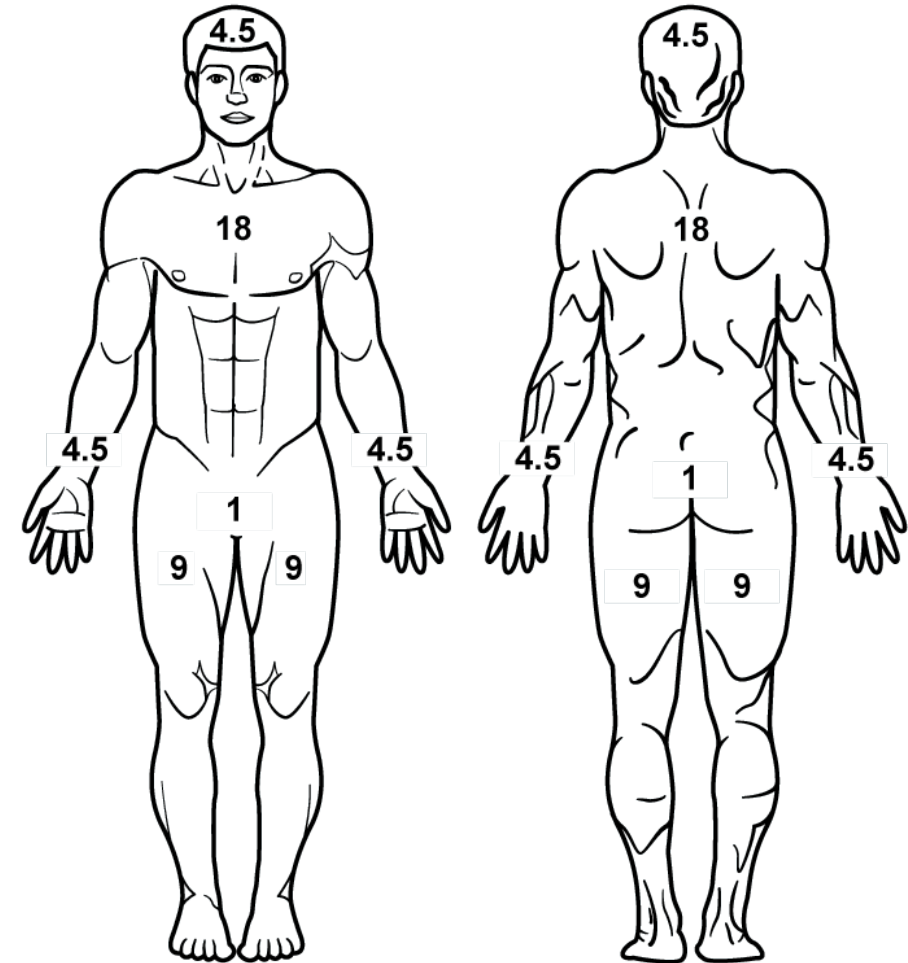
- Palm size represents ~1%
- Estimate/round up to nearest 10%

If half of the front or rear area is burned, the area would be **half** of the area value

Estimation Example:

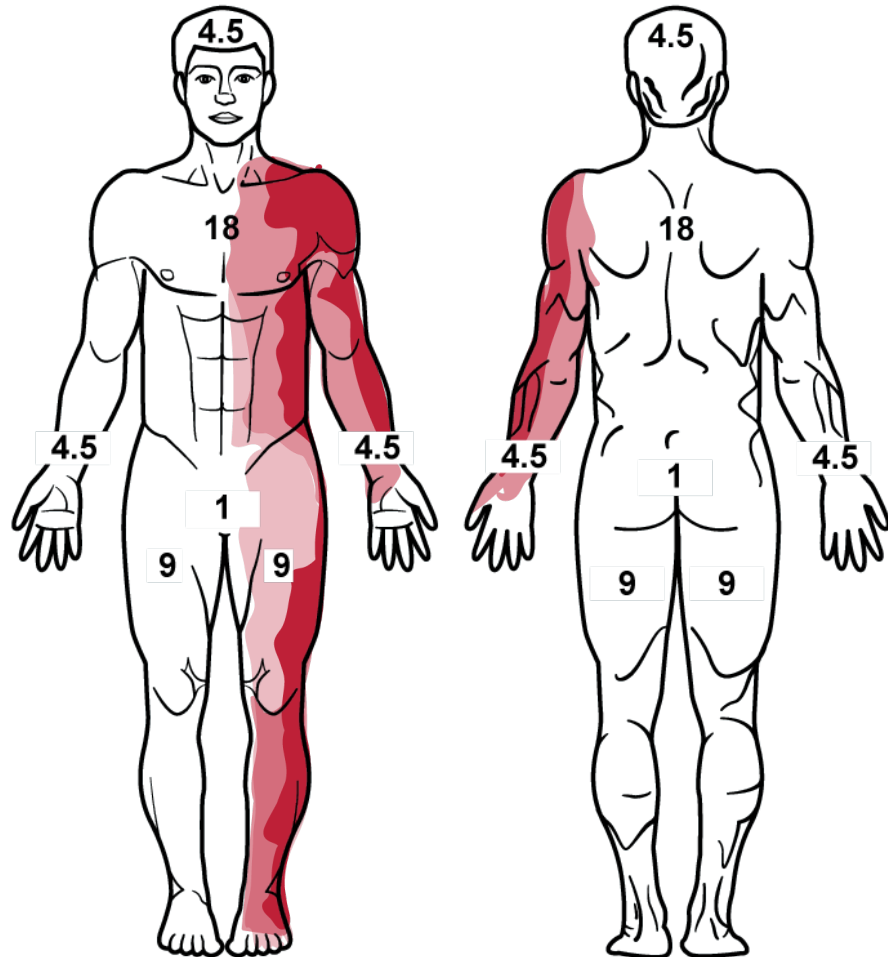
- Half of the front upper/lower extremity is **4.5%**
- Half of the front upper/lower torso is **9%**

DO NOT include first-degree burn in this assessment.



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CALCULATING RULE OF NINES



Burned areas:

- 9%** Left half of anterior torso
- 9%** Front and back of left upper extremity
- 9%** Anterior portion of left lower extremity

Total Body Surface Area (TBSA) Burned = 27%
(9%+9%+9%=27%)

Note: For estimation of fluid resuscitation requirements this would be rounded up to 30%

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AIRWAY

STOP the burning process!

Inhalation injury can cause difficulties with the airway and breathing

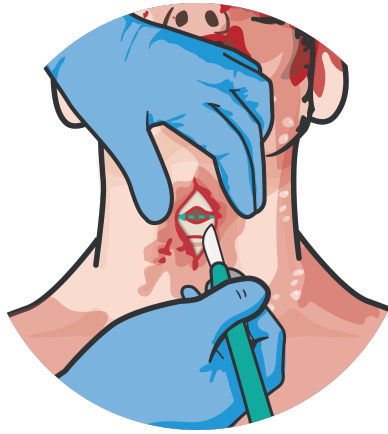


Findings suggestive of inhalation injury include facial burns, carbonaceous sputum, stridor, hoarseness, or cough

Inhalation injury should be suspected if the casualty was in an enclosed space such as a vehicle, a building, or a burning compartment in a ship at sea

P A W S

AIRWAY



- Facial burns, especially in closed spaces, may be associated with **INHALATION INJURY**
- Aggressively monitor airway status and oxygen saturation in such patients and consider early surgical airway for respiratory distress or oxygen desaturation
- Nasopharyngeal airways and extraglottic airways may not suffice and a surgical cricothyroidotomy may be required



DO NOT place NPA or extra-glottic airway in casualty with signs of suspected inhalation injury



BURN CARE



REMOVE watches and jewelry from burned area



COVER the burn area with dry, sterile dressings



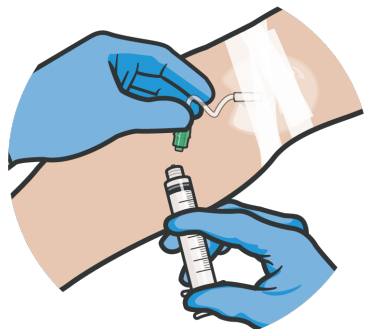
ACTIVE/PASIVE HYPOTHERMIA PREVENTION

For extensive burns (>20%), place the casualty in a Heat-Reflective Shell or Blizzard Survival Blanket in order to cover the burned areas and prevent hypothermia

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BURN CARE AND HYPOTHERMIA PREVENTION

For **extensive burns (>20%)**, consider using **active** warming supplies to cover the burned areas and prevent hypothermia



Analgesia may be administered to treat burn pain
Antibiotic therapy not indicated solely for burns

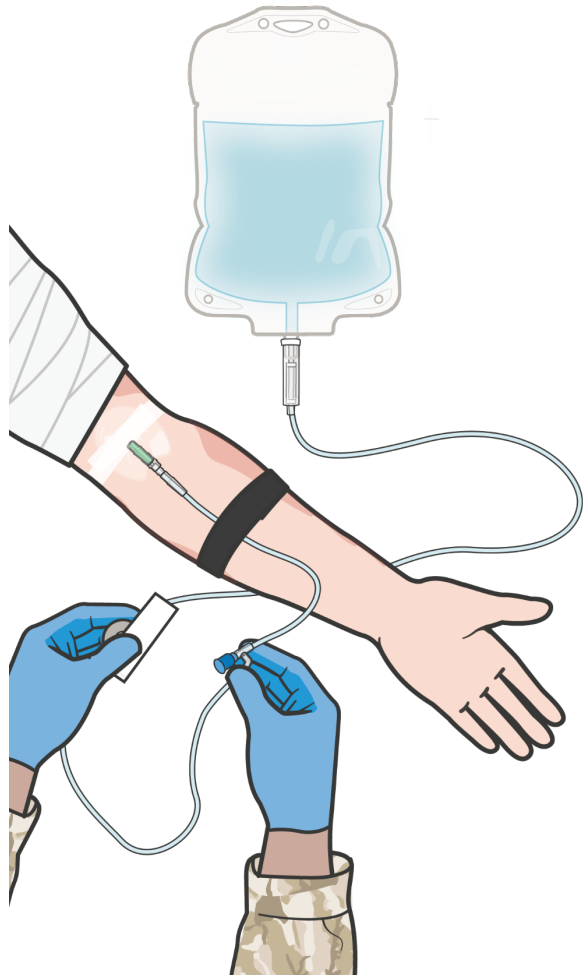
PASSIVE Warming Supplies



- Burn patients are particularly susceptible to hypothermia
- Extra emphasis should be placed on barrier heat loss prevention methods

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BURN FLUID RESUSCITATION



Fluid resuscitation for burn casualties is guided by the **USAISR Rule of Ten**



For burns > 20% TBSA, initiate fluid resuscitation as soon as IV/IO access established



REMEMBER: If hemorrhagic shock is also present, resuscitation for hemorrhagic shock takes precedence over resuscitation for burn shock

Use Lactated Ringer's, normal saline, or Hextend®
(If Hextend is used, no more than 1000 ml should be given, followed by Lactated Ringer's or normal saline as needed)

Initial IV/IO fluid rate is %TBSA x 10 ml/hr for adults 40-80 kg

For every **10 kg ABOVE 80 kg**, increase initial rate by **100 ml/hr**

Consider using oral fluids for burns up to 30% TBSA if casualty is conscious and able to swallow

SKILL STATION

Burn Treatment (Skill)



Burn Dressing

SUMMARY

- **Treatment priorities** in trauma and burn casualties
- **Airway considerations** in burn casualties
- **Potential causes** of burns
- **Types of burns** (Electrical, Thermal, and Chemical)
- **Severity of burn injuries** according to depth
- **Estimating burn size** with the Rule of Nines
- **Fluid Resuscitation** with the USAISR Rule of Ten
- **Prevention of hypothermia** in burn casualties

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CHECK ON LEARNING



What kind of dressing should be placed on burned areas?



What should you do first when you encounter a casualty with an electrical burn?



What should you do first when you encounter a casualty with a thermal burn?



What percentage TBSA requires fluid resuscitation?

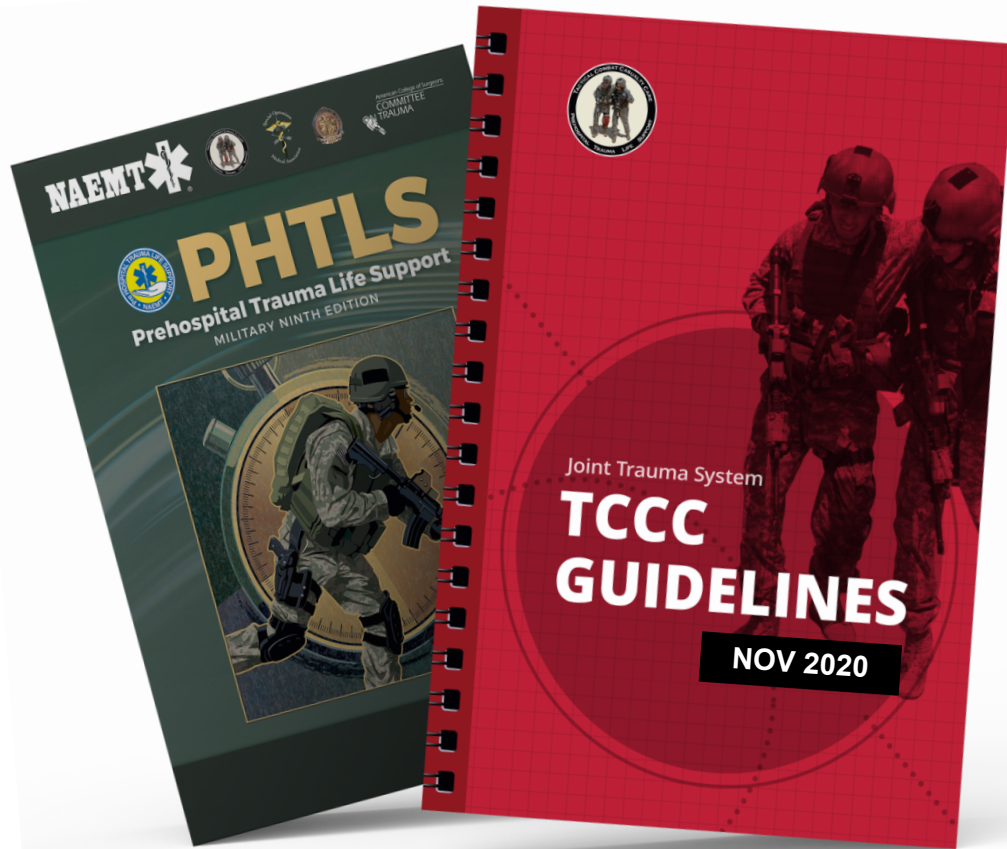


What would be the fluid infusion rate for a 90 kg person with a 40% burn according to the USAISR Rule of Ten?



ANY QUESTIONS?

REFERENCES



TCCC: Guidelines

by JTS/CoTCCC

**Updated regularly – latest edition dated
5 November 2020**

These guidelines are the result of decisions made by the Committee on Tactical Combat Casualty Care as they explore evidence-based research regarding best practices

PHTLS: Military Edition

by NAEMT

**Prehospital Trauma Life Support,
Military Ninth Edition**