

TACTICAL COMBAT CASUALTY CARE COURSE

MODULE 08: RESPIRATION ASSESSMENT AND MANAGEMENT



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

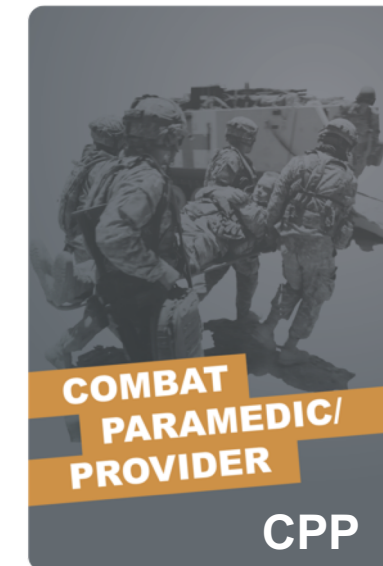
TACTICAL COMBAT CASUALTY CARE (TCCC) ROLE-BASED TRAINING SPECTRUM

ROLE 1 CARE

NONMEDICAL PERSONNEL



MEDICAL PERSONNEL



◀ **YOU ARE HERE**

STANDARDIZED JOINT CURRICULUM

TERMINAL LEARNING OBJECTIVE

09 Given a combat or noncombat scenario, perform assessment and management of respiration and chest trauma during Tactical Field Care in accordance with CoTCCC Guidelines

- 50 Identify the signs and symptoms of respiratory distress
- 51 Identify the signs and symptoms of a life-threatening chest injury
- 52 Identify the signs and symptoms of open pneumothorax (sucking chest wound) in Tactical Field Care
- 53 Identify the importance and implications of vented and non-vented chest seals
- 54 Demonstrate the application of a chest seal to an open chest wound
- 55 Identify the signs, symptoms, and initial treatment of tension pneumothorax in Tactical Field Care
- 56 Demonstrate a needle decompression of the chest at the second intercostal space in midclavicular line
- 57 Demonstrate a needle decompression of the chest at the fifth intercostal space in the anterior axillary line
- 58 Identify the signs of recurring or unsuccessful treatment of tension pneumothorax

09 ENABLING LEARNING OBJECTIVES (ELOs)

● = Cognitive ELOs ● = Performance ELOs

TACTICAL FIELD CARE

MARCH PAWS

DURING LIFE-THREATENING

M MASSIVE BLEEDING #1 Priority

A AIRWAY

▶ **R** RESPIRATION (*breathing*)

C CIRCULATION

H HYPOTHERMIA /
HEAD INJURIES

AFTER LIFE-THREATENING

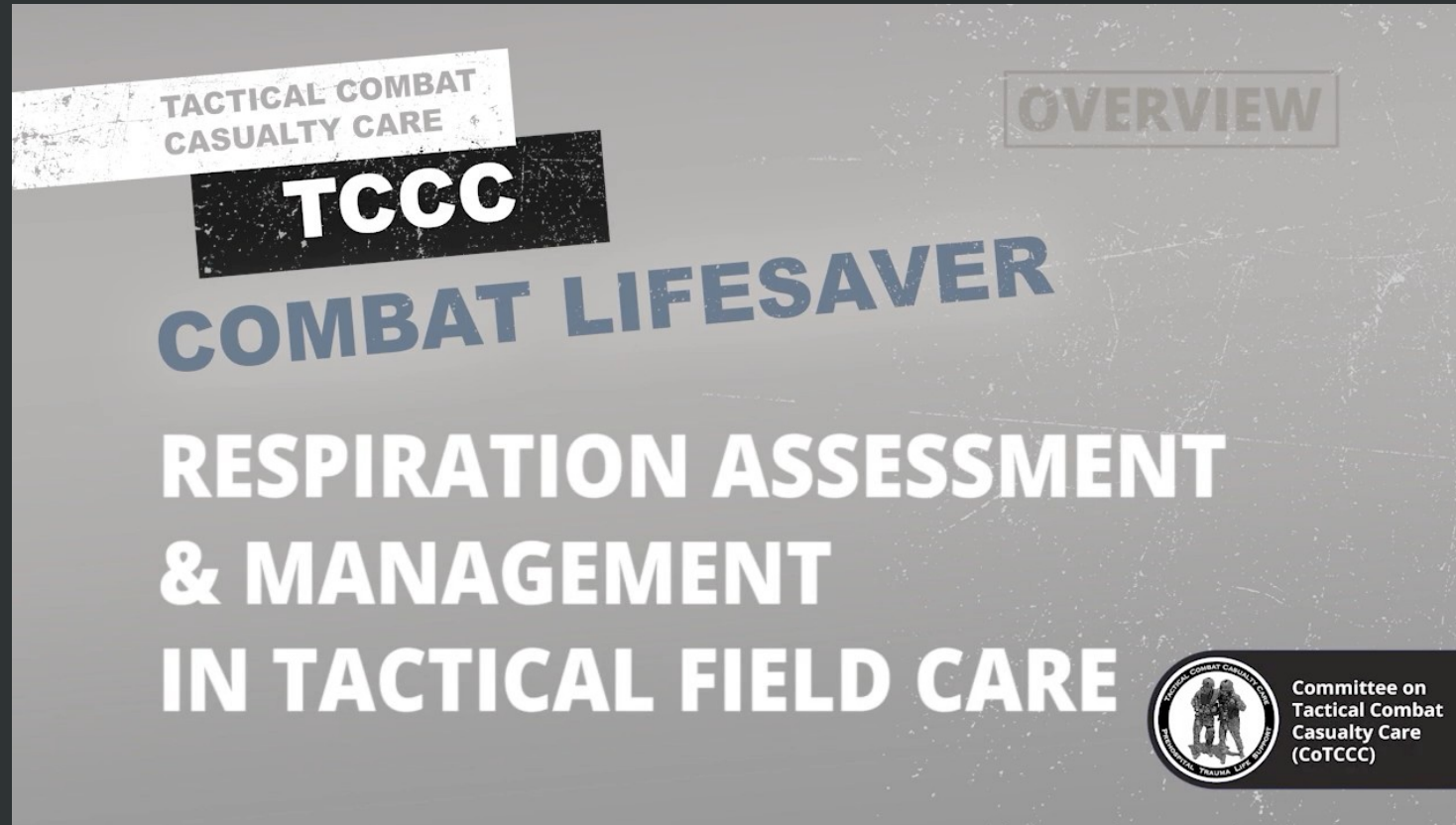
P PAIN

A ANTIBIOTICS

W WOUNDS

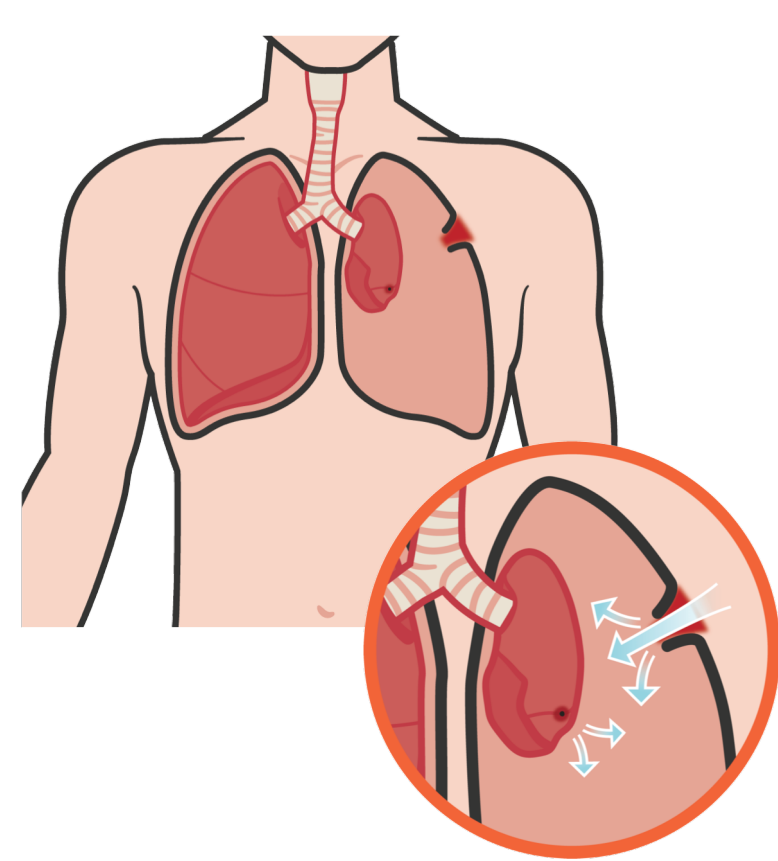
S SPLINTING

RESPIRATION OVERVIEW



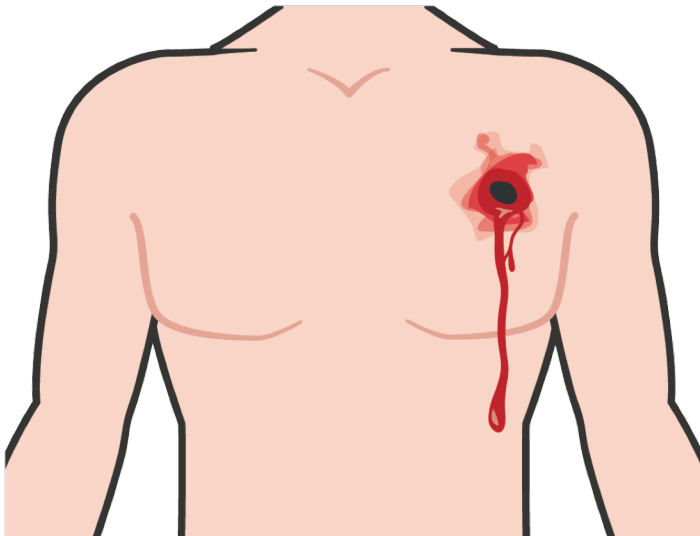
Video can be found on [DeployedMedicine.com](https://www.deployedmedicine.com)

LIFETHREATENING CHEST INJURY

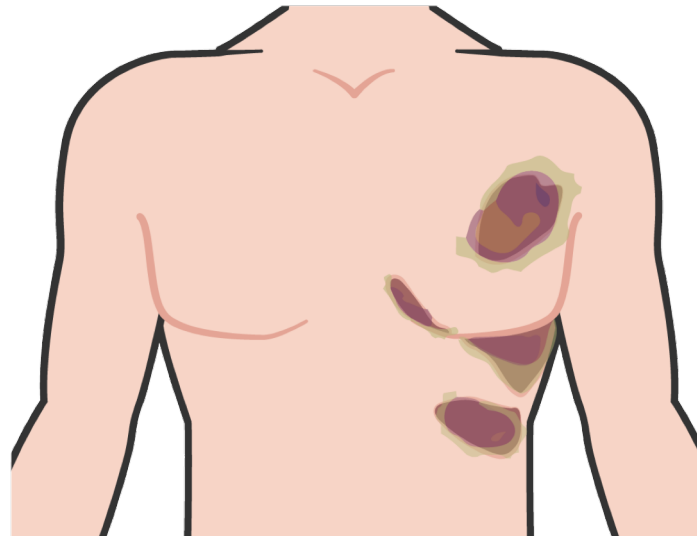


- Respiratory distress means **DIFFICULTY BREATHING** (rapid or abnormally slow breathing), in other words, it is difficult for the casualty to **get air in or out**
- The pleural space between the lungs and chest wall naturally has negative pressure, which helps the lungs to collapse (exhale) and expand (inhale)
- With either a **BLUNT** or **PENETRATING INJURY** to the chest wall or lungs, air may counteract the lung's natural tendency to expand and collapse
 - This is due to positive pressure replacing negative pressure
 - It results in air being trapped in the pleural space, putting pressure on the affected lung
 - This forces the lung to collapse and reduces the ability to get oxygen to the body

LIFE-THREATENING CHEST INJURY



Gunshot or shrapnel wound to the chest (penetrating trauma)



Blunt force trauma (force from an IED explosion, high-impact vehicle accident (chest hitting steering wheel), etc.)

Bruising, contusions (swelling around the chest, back or rib cage), **crepitus** that is felt or heard (crackling, popping, grating)

ANY deformities of the chest

REMEMBER:

- These injuries can lead to a tension pneumothorax
- This is the **second-leading cause** of preventable death

IDENTIFYING TENSION PNEUMOTHORAX



SIGNS AND SYMPTOMS OF **PROGRESSIVE** RESPIRATORY DISTRESS:

- **Progressive** difficulty breathing (labored and rapid breathing worsening overtime)
- **Shortness** of breath
- Confusion/lightheaded and/or agitation due to lack of oxygen
- Bluish discoloration around mouth and lips
- Rapid pulse
- Distended jugular veins



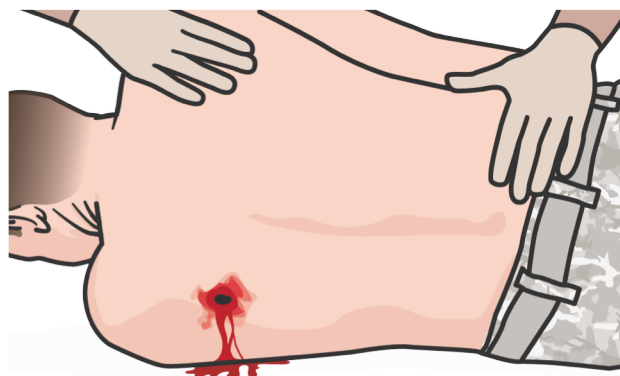
Remember! Airway and Respiration are NOT addressed in CUF and must be addressed in TFC



SIGNS AND SYMPTOMS OF OPEN PNEUMOTHORAX OR SUCKING CHEST WOUND IN TFC

A casualty with an open chest wound will exhibit **ONE OR MORE** of the following signs and symptoms:

- A “**sucking**” or “**hissing**” sound when the casualty **inhales**
- Difficulty breathing
- A **puncture wound** of the chest
- **Froth** or **bubbles** around the injury
- Coughing up blood
- Blood-tinged sputum (spit)



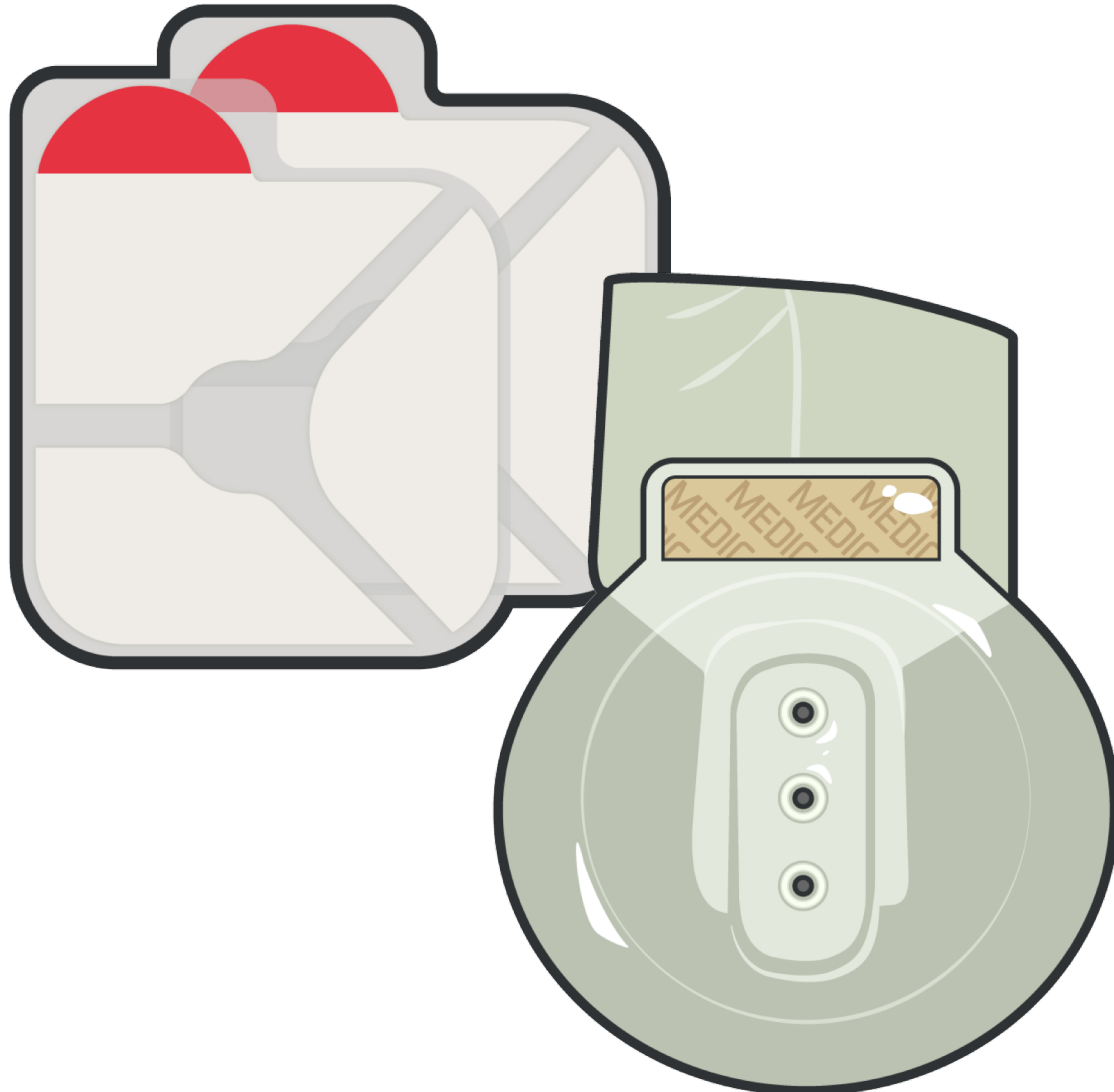
Open Pneumothorax

REMEMBER:

If you are **not sure** if the wound has **penetrated** the chest wall completely, **treat the wound** as though it were an **open chest wound**

If **multiple** wounds are found, treat them **in the order in which you find them**

VENTED CHEST SEALS

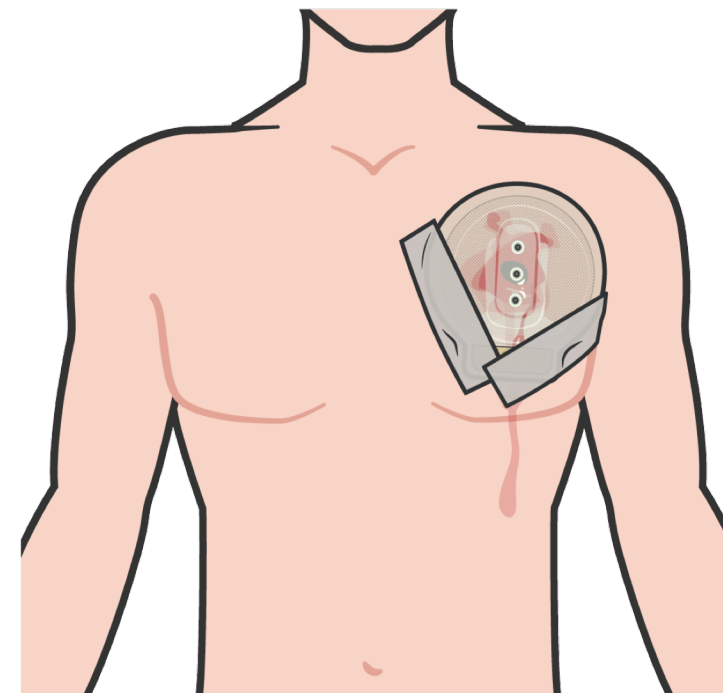


- Vented chest seals are for **treating penetrating wounds** to the chest
- Vented chest seals allow air to **escape** out of the chest while nonvented chest seals **do not**
- The injured lung will remain partially collapsed, **but the mechanics of respiration will be better**

VENTED **AND** NONVENTED CHEST SEALS

Recommended treatment for **open** or **sucking** chest wounds is **prompt application** of a vented chest seal:

- If vented chest seal is **NOT** available, a nonvented chest seal should be used
- Vented chest seals allow air to **escape** out of the chest while nonvented chest seals **do not**
- When the casualty inhales, the plastic should be sucked against the wound, **preventing the entry of air**
- When the casualty exhales, trapped air should be able to escape from the wound and out the valve



MONITOR the casualty **closely** and if their condition **worsens**, you should **suspect a tension pneumothorax**.
Treat this by burping or temporarily removing the dressing.

MA **RRC** H

POSITION AFTER OCCLUSIVE DRESSING TREATMENT

If the casualty is unconscious, place the casualty in the recovery position

If the casualty is conscious, allow the casualty to adopt the sitting position if breathing is more comfortable



CHEST SEAL



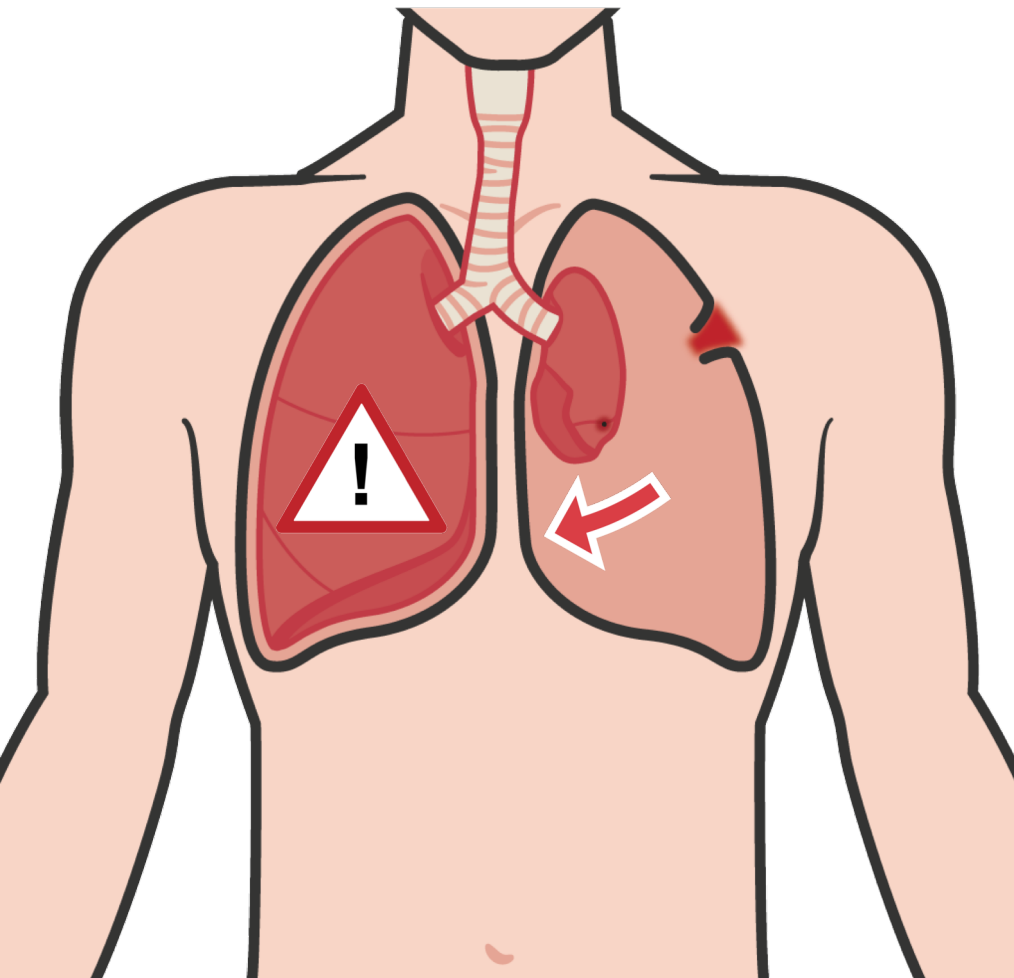
Video can be found on [DeployedMedicine.com](https://www.deployedmedicine.com)

SKILL STATION

Respiration (Skill)

Chest Seal

TENSION PNEUMOTHORAX



- A tension pneumothorax is the **second-leading cause** of preventable deaths on the battlefield
- As a tension pneumothorax develops, **air enters** the chest cavity **through the wound WITH EVERY BREATH**
- Injured lung tissue acts as a **one-way valve**, **TRAPPING more and more air between the lung and the chest wall**

**PRESSURE BUILDS UP AND COMPRESSES
BOTH LUNGS AND THE HEART**

MA **RRC** H

CONSIDER TENSION PNEUMOTHORAX IN TACTICAL FIELD CARE

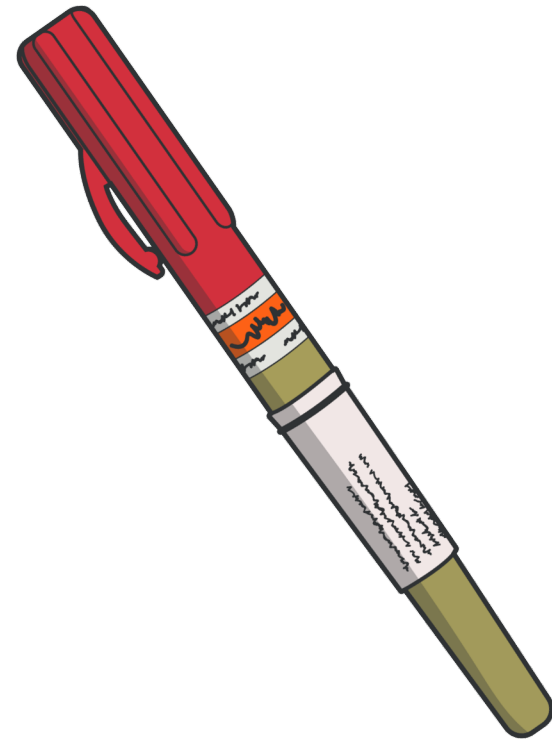


Caused by **SIGNIFICANT TORSO TRAUMA** or primary blast injury followed by **severe/progressive respiratory distress** (a respiratory rate **>20 breaths per minute**)

The recommended treatment of suspected tension pneumothorax is **Needle Decompression of the Chest (NDC)**

UNSUCCESSFUL TREATMENT OR RECURRENCE OF TENSION PNEUMOTHORAX

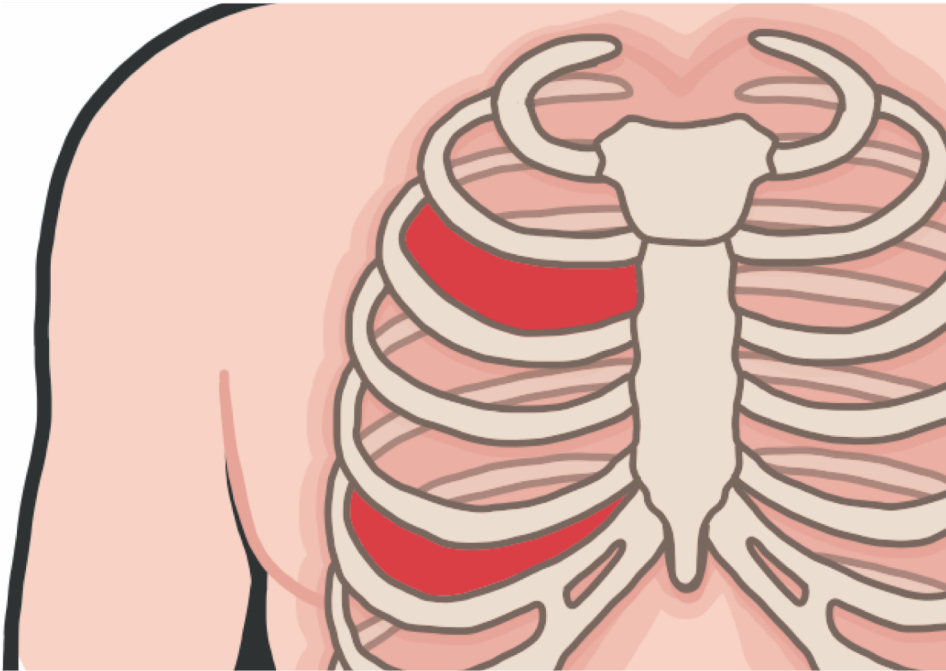
- Burp the chest seal if one is in place
- If **initial** NDC **does not** result in improvement, a second NDC should be attempted at the **alternate recommended site**
- If tension pneumothorax initially responds to NDC, **but** symptoms later **recur**, then **repeat NDC at the same site right beside the original NDC**
- If **no improvement** is noted with the second NDC, **proceed with** circulation assessment and treatment following the **MARCH** protocol



DO NOT put NDC through a chest seal!
Use alternate site instead

MA **RRC** H

NDC SITE SELECTION



- Site selection is based on the **mechanism of injury AND physical findings**
- Use either the **second (A)** or **fifth (B)** intercostal space (**either is preferred**)
- If the needle is used at the second intercostal space, **ensure** the site selection is **OUTSIDE** the nipple line

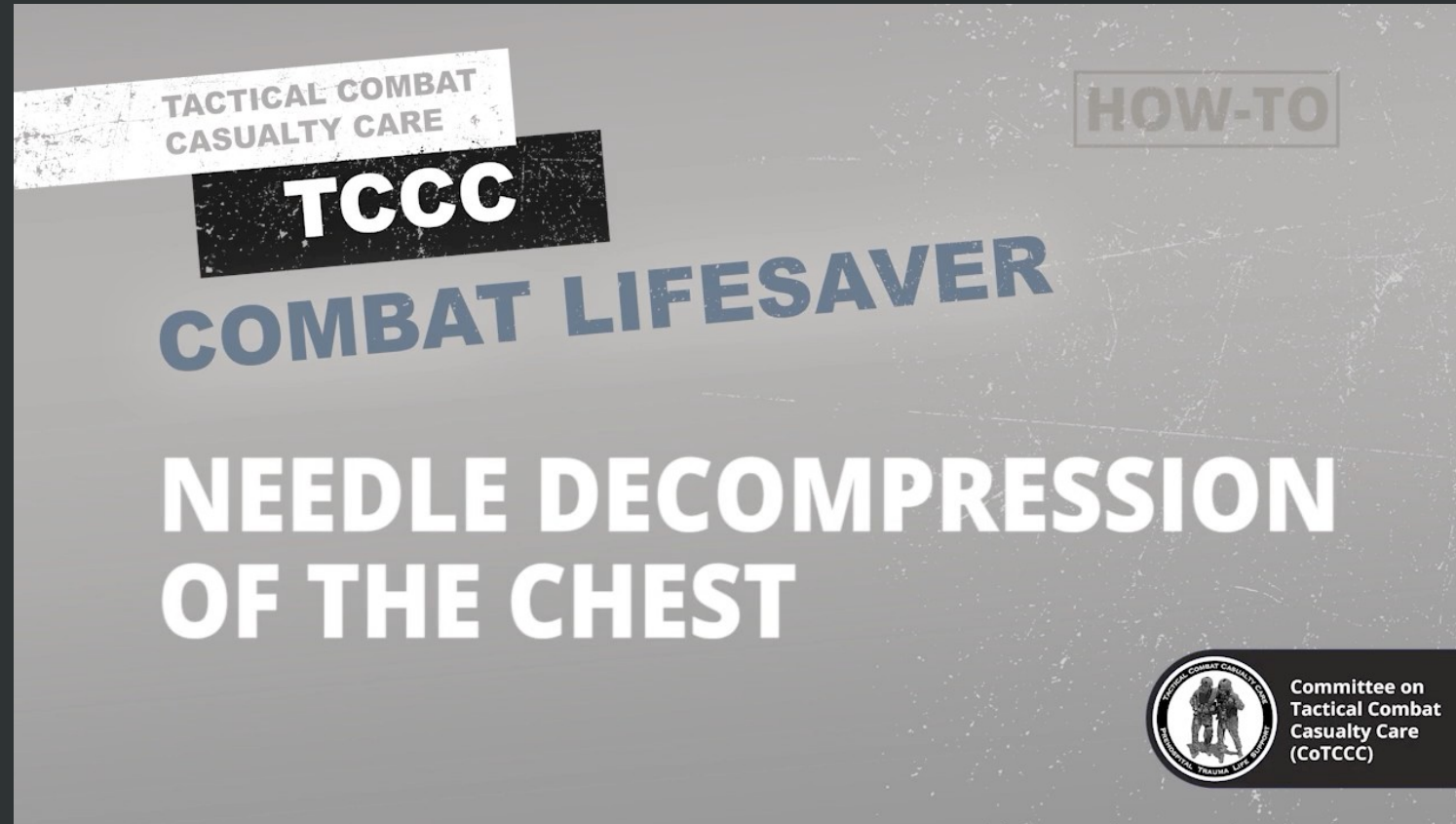
POSITION AFTER NDC TREATMENT

If the casualty is unconscious, place the casualty in the recovery position

If the casualty is conscious, allow the casualty to adopt the sitting position, if breathing is more comfortable



NEEDLE DECOMPRESSION OF THE CHEST



Video can be found on [DeployedMedicine.com](https://www.deployedmedicine.com)

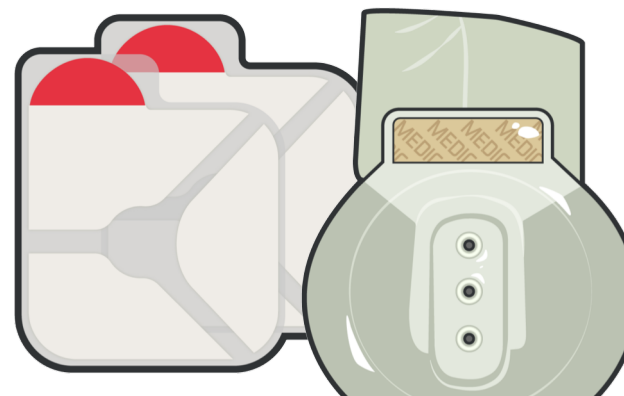
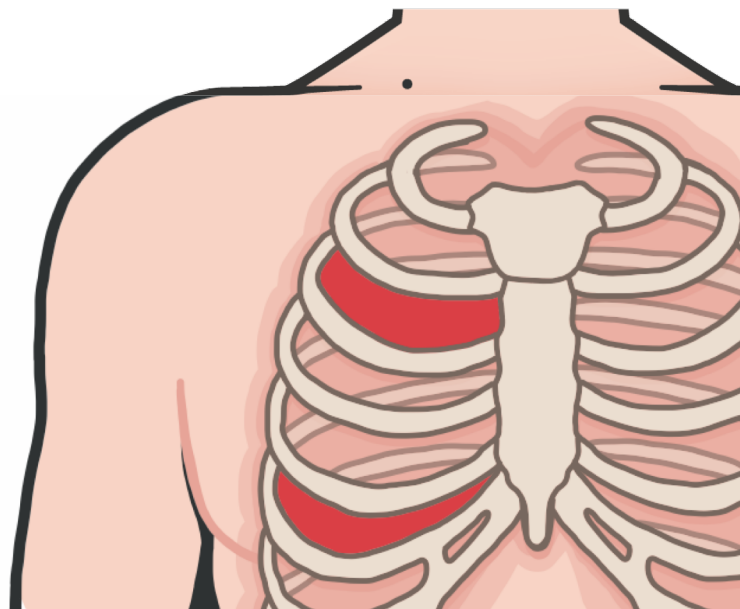
SKILL STATION

Respiration (Skill)

■ Needle Decompression of Chest (NDC)

SUMMARY

- We identified the **signs and symptoms** of an open pneumothorax
- We discussed the **treatment** options for an open pneumothorax
- We identified the **signs and symptoms** of a tension pneumothorax
- We discussed the **treatment** for a tension pneumothorax
- **Both types** of chest injuries (sucking chest wounds and tension pneumothorax) **WILL REQUIRE** advanced evaluation by **medical personnel** and **evacuation**
- Tension pneumothorax is a **PREVENTABLE** cause of death



CHECK ON LEARNING

- What is a tension pneumothorax?
- How should you treat an open chest wound?
- What should you do if you suspect a casualty has a tension pneumothorax?

ANY QUESTIONS?