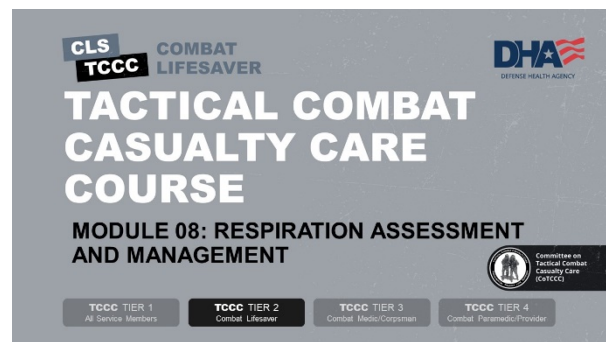


MODULE 08 – RESPIRATION ASSESSMENT AND MANAGEMENT IN TFC

SLIDE 1 – TITLE SLIDE



SLIDE 2 – TCCC ROLES

Tactical Combat Casualty Care is broken up into four roles of care. The most basic is taught to All Service Members (ASM), which is designed to instruct in the absolute basics of hemorrhage control and to recognize more serious injuries.

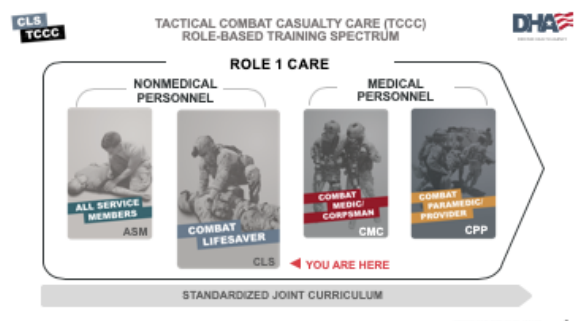
You are in the Combat Lifesaver (CLS) role.

This teaches you more advanced care to treat the most common causes of death on the battlefield, and to recognize, prevent, and communicate with medical personnel the life-threatening complications of these injuries.

The Combat Medic/Corpsman (CMC) role includes much more advanced and invasive care requiring significantly more medical knowledge and skills.

Finally, the last role, Combat Paramedic/Provider (CPP) is for Combat paramedics and advanced providers, to provide the most sophisticated care to keep our wounded warriors alive and get them to definitive care.

Your role as a CLS is to treat the most common causes of death on the battlefield, which are massive hemorrhage and airway/respiratory problems. Also, you are given the skills to prevent complications and treat other associated but not immediately life-threatening injuries.



SLIDE 3 – TLO/ELO

The TCCC-CLS course is built on a foundation of learning objectives. These objectives lay out the basic structure of the course and describe the knowledge and skills you are expected to acquire by the end of the course.

STUDENT LEARNING OBJECTIVES

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 TFC
- 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 TFC
- 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

9 ENABLING LEARNING OBJECTIVES (ELOs)

● Cognitive ELOs ● Performance ELOs

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SPEAKER NOTES

The module has **one Terminal Learning Objective**, or TLO. The TLO is supported by a series of Enabling Learning Objectives, or ELOs. This graphic shows how the ELOs are mapped to the TLOs. The blue dots are cognitive or knowledge learning objectives, and the green dots are performance objectives focused on skills.

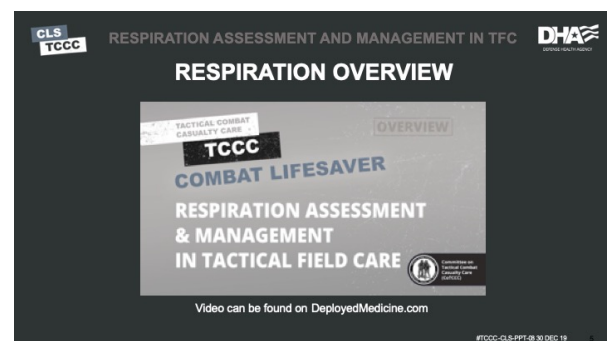
SLIDE 4 – MARCH-PAWS

Respiration assessment is the “R” in the MARCH PAWS sequence.



SLIDE 5 – RESPIRATION OVERVIEW (VIDEO)

Trainer: *Play video*



SLIDE 6 – LIFE-THREATENING CHEST INJURY

Respiratory distress means difficulty breathing.

The casualty is struggling to get air in or out or their breathing is ineffective.

This can result from blunt or penetrating injury.

The diagram shows a human torso with a focus on the chest area. A red circle highlights a specific area on the chest wall, indicating a site of injury. The text explains that respiratory distress means difficulty breathing, which can be caused by a blunt or penetrating injury to the chest wall or lungs. This injury can lead to a pneumothorax, where air enters the pleural space, causing the lung to collapse and reducing the ability to get oxygen to the body.

RESPIRATION ASSESSMENT AND MANAGEMENT IN TFC

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.

SPEAKER NOTES

SLIDE 7 – LIFE-THREATENING CHEST INJURY

While it may be easy to see a gunshot wound or shrapnel wound to the chest, it is important to evaluate casualties for additional injuries, such as bruising, swelling, or other deformities of the chest not normally seen without removing the clothing.

These injuries may be signs of future life-threatening respiration issues.

CLS TCCC RESPIRATION ASSESSMENT AND MANAGEMENT IN TFC DHA

LIFE-THREATENING CHEST INJURY

REMEMBER:
These injuries can lead to a tension pneumothorax.
This is the 2nd leading cause of preventable deaths.

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** which is felt or heard (crackling, popping, grating)

ANY deformities of the chest

MA R C H

#TCCC-CLS-PPT-08/30 DEC 19 7

SLIDE 8 – IDENTIFYING TENSION PNEUMOTHORAX

Tension pneumothorax is caused by significant torso (chest) trauma or a blast injury resulting in severe and progressive respiratory distress.

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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

MA R C H

#TCCC-CLS-PPT-08/30 DEC 19 8

SLIDE 9 – IDENTIFYING SIGNS AND SYMPTOMS OF OPEN PNEUMOTHORAX IN TFC

With an open pneumothorax, also called a sucking chest wound, air enters the pleural space around the lung through a wound in the chest wall.

The elastic lung deflates and pulls away from the chest wall. On inspiration, the air now enters the chest THROUGH THE HOLE instead of INTO THE LUNGS through the normal airways of the mouth and nose. As a result, the affected lung cannot be fully re-inflated by inhalation.

It usually takes a hole in the chest the **size of a nickel or bigger** for a sucking chest wound to occur.

Not all chest wounds are sucking chest wounds; some do not penetrate as deeply as the lung cavity.

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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**

MA R C H

#TCCC-CLS-PPT-08/30 DEC 19 9

SPEAKER NOTES

SLIDE 10 and SLIDE 11 – VENTED AND NONVENTED CHEST SEALS

Get to know the supplies within your JFAK and CLS kit. Vented chest seals are preferred.

Penetrating chest wounds (open or sucking chest wounds) are treated by applying a chest seal.

Once a wound has been occluded with a chest seal, air can no longer enter (or exit) the pleural space through the wound in the chest wall.


The injured lung will remain partially collapsed, but the mechanics of respiration will be better.

Continue to monitor the casualty after treatment with a chest seal. If the casualty condition worsens, a tension pneumothorax should be suspected.

Burping or removing the dressing may help; otherwise, a needle decompression of the chest may be needed.

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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**

#TCCC-CLS-PPT-08-30 DEC 19 10

SLIDE 12 – POSITIONING AFTER TREATMENT

If the casualty is unconscious, place the casualty in the recovery position. If conscious, allow the casualty to adopt the sitting position if that makes breathing more comfortable.

CLS TCCC RESPIRATION ASSESSMENT AND MANAGEMENT IN TFC DHA

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



#TCCC-CLS-PPT-08-30 DEC 19 12

SLIDE 13 – TREATMENT OF OPEN PNEUMOTHORAX WITH CHEST SEAL (VIDEO)

Trainer: *Play video*

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CHEST SEAL



Video can be found on DeployedMedicine.com

#TCCC-CLS-PPT-08-30 DEC 19 13

SLIDE 14 – SKILL STATION

At this time we will break into skill stations to practice the following skills:

- Chest seal



SLIDE 15 – TENSION PNEUMOTHORAX IN TACTICAL FIELD CARE

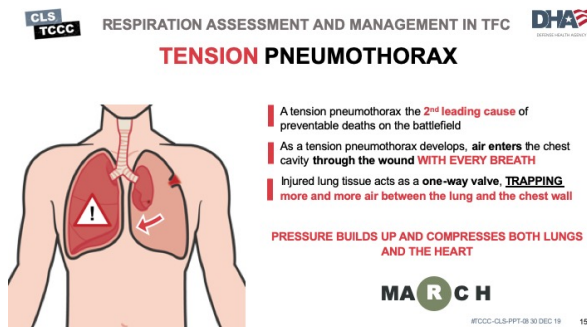
As a **tension pneumothorax** develops, air enters the chest cavity through the wound with every inspiration, but doesn't leave with expiration and is trapped.

Every breath adds more air to the air space inside the rib cage and outside the lung, and the pressure inside the chest builds up.

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 can potentially compress both lungs and the heart.

Both lung function and heart function are impaired with a tension pneumothorax, causing respiratory distress and shock. The elevated air pressure **OUTSIDE** the collapsed lung in a tension pneumothorax can impair the function of both lungs and the heart by preventing them from expanding normally. This **CAN** kill the casualty.

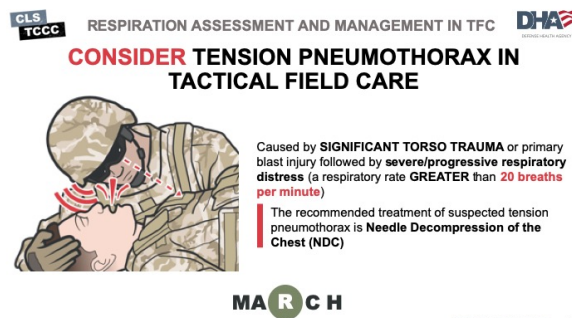


SLIDE 16 – CONSIDER TENSION PNEUMOTHORAX IN TACTICAL FIELD CARE

Signs of tension pneumothorax include early and late signs.

The early signs to look for are:

1. Increased difficulty breathing
2. Rapid or shallow breathing (like being out of breath and not able to take a full breath)
3. Anxiety
4. Agitation
5. Apprehension
6. Decreased level of consciousness or unconsciousness



The late signs may not be displayed or may be displayed only when the casualty's condition has worsened. **Late signs** that indicate progression of tension pneumothorax include neck veins protruding (distended); tracheal deviation (a shift of the windpipe to the right or left).

These signs may be difficult to assess in a combat situation. You must **be alert** to the possibility of tension pneumothorax whenever a casualty has a penetrating or other chest wound. Therefore, the sole criterion for suspecting a tension pneumothorax is a chest wound with increasing respiratory difficulty.

It is important to evaluate casualties during TFC for early and late signs of tension pneumothorax. Like bleeding control, tension pneumothorax is treatable. Left untreated, a tension pneumothorax can cause severe respiratory distress, shock, and death.

The **treatment** is to let the air trapped under pressure escape by inserting a needle into the chest.

After initial treatment by CLS, both types of chest injuries (sucking chest wounds and tension pneumothorax) will require advanced evaluation by medical personnel and evacuation.

SLIDE 17 – UNSUCCESSFUL TREATMENT OR RECURRENCE OF TENSION PNEUMOTHORAX


If initial treatment of tension pneumothorax with NDC is unsuccessful or if symptoms recur after successful treatment, a second NDC should be attempted.

If no improvement is noted after the second NDC, proceed with circulation assessment and treatment following the MARCH protocol.

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UNSUCCESSFUL TREATMENT OR RECURRENCE OF TENSION PNEUMOTHORAX

- Burp chest seal if 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

MARCH

#TCCC-CLS-PPT-08 30 DEC 19 17

SLIDE 18 – TREATMENT OF TENSION PNEUMOTHORAX

The treatment is to let the air trapped under pressure escape by inserting a needle into the chest. This is called **Needle Decompression of the Chest (NDC)**.

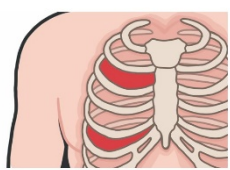
The device used for NDC is a catheter-over-needle device that is found in the JFAK.

NDC can be performed at either the space between the second and third ribs on the front of the chest (away from the middle of the chest outside the nipple line to avoid the heart) or on the side of the chest between the fifth and sixth ribs.

- Use a 14-gauge or 10-gauge 3¼" needle catheter
- Two options for NDC sites
 - 2nd intercostal space on mid-clavicular line
 - 5th intercostal space on the anterior axillary line
- Watch needle placement to avoid the heart and arteries
- Clean the area
- Place the needle perpendicular to body
- Hold in place for 5–10 seconds before removing needle and leaving catheter
- Document all interventions on the DD Form 1380

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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**

MARCH

#TCCC-CLS-PPT-08 30 DEC 19 18

SLIDE 19 – POSITIONING AFTER TREATMENT

If the casualty is unconscious, place in the recovery position. If conscious, allow the casualty to adopt the sitting position if that makes breathing more comfortable.

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TCCC

RESPIRATION ASSESSMENT AND MANAGEMENT IN TFC

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

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SLIDE 20 – NEEDLE DECOMPRESSION OF THE CHEST (NDC) (VIDEO)

Trainer: *Play video*

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RESPIRATION ASSESSMENT AND MANAGEMENT IN TFC

NEEDLE DECOMPRESSION OF THE CHEST

Video can be found on DeployedMedicine.com

#TCCC-CLS-PPT-01-30 DEC 19 20

SLIDE 21 – SKILL STATION

At this time, we will break into skill stations to practice the following skills:

- Needle Decompression of Chest

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SKILL STATION

Respiration (skill)

Needle Decompression of Chest (NDC)

#TCCC-CLS-PPT-01-30 DEC 19 21

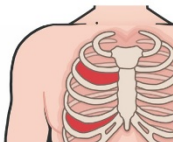


SLIDE 22 – SUMMARY

In this module, we discussed respiration assessment and management in TFC. We identified the signs and symptoms of an open pneumothorax and of a tension pneumothorax, as well as how to treat both. We emphasized that tension pneumothorax is a preventable cause of death. We also reinforced the need for medical personnel to provide advanced evaluation of these types of chest injuries, along with the need for evacuation.

RESPIRATION ASSESSMENT AND MANAGEMENT IN TFC

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

#TCCC-CLS-PPT-08 30 DEC 19 22

SLIDE 23 – CHECK ON LEARNING

Ask questions of the learners, referring to key concepts from the module.

Now for a check on learning.

- What is a tension pneumothorax?
 - As a tension pneumothorax develops, air enters the chest cavity through the wound with every inspiration, but doesn't leave with expiration and is trapped, so every breath adds more air to the air space inside the rib cage and outside the lung, and the pressure inside the chest builds up and causes the lung to collapse. 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.
- How should you treat an open chest wound?
 - Treat open chest wounds by applying a vented chest seal completely over the wound during expiration.
- What should you do if you suspect a casualty has a tension pneumothorax?
 - If a chest seal is in place, burp the seal. If there is no improvement after burping the seal perform a needle decompression of the chest.

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?

#TCCC-CLS-PPT-08 30 DEC 19 23

SLIDE 24 – QUESTIONS

ANY QUESTIONS?

#TCCC-CLS-PPT-08 30 DEC 19 24