CMC
TCCC

COMBAT MEDIC/CORPSMAN
TACTICAL COMBAT CASUALTY CARE

MODULE 20:
CASUALTY MONITORING
SKILL INSTRUCTIONS

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Committee on Tactical Combat Casualty Care (CoTCCC)

SKILL INSTRUCTIONS

ALERT, RESPONDS TO VERBAL, RESPONDS TO PAIN, UNRESPONSIVE (AVPU) ASSESSMENT INSTRUCTION

TASK:	Conduct an AVPU assessment to determine a casualty's level of responsiveness
CONDITION:	Given a Tactical Field Care scenario where the casualty and responder are in combat gear and an evaluation of a casualty's responsiveness is required
STANDARD:	Determine the casualty's level of responsiveness using the AVPU scale, following all steps and meeting all performance measures properly
EQUIPMENT:	N/A

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Check for responsiveness using the following steps:

02 Ask in a loud, but calm, voice, "Are you okay?"
NOTE: If the casualty answers coherently, then they are an **A = Alert** on the AVPU scale and you ***do not*** need to follow steps 3–4.
NOTE: If the casualty does not answer or mumbles, proceed to step 3.

03 Repeat in a loud, but calm, voice, "Are you okay?" If the answer is not clear, ask the casualty to squeeze your finger or to move an arm or leg.
NOTE: If the casualty "mumbles" or is responding to voice commands such as "Squeeze my finger," they are a **V = Responds to Verbal** and you **do not** need to follow step 4.
NOTE: If the casualty does not respond to voice commands, proceed to step 4.

04 Rub the breastbone briskly with a knuckle or squeeze the first or second toe over the toenail, or if the casualty is wearing individual body armor, pinch their nose or earlobe.
NOTE: **Do not** try to elicit pain from any injured areas of the casualty.
NOTE: Observe for reaction to your maneuver. If the casualty responds in any way to painful stimuli, they are a **P = Responds to Pain**.

05 If the casualty does not respond to any of these three attempts, they are a **U = Unresponsive**.

06 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

RADIAL PULSE ASSESSMENT INSTRUCTION

TASK:	Measure a radial pulse
CONDITION:	Given a casualty in a Tactical Field Care scenario where the casualty and responder are in combat gear and a pulse assessment is needed
STANDARD:	Measure a radial pulse following all steps and meeting all performance measures
EQUIPMENT:	A watch or device that can display seconds

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Position the casualty's hand with the palm facing up.
NOTE: In this position, you should see a ligament elevated underneath the skin.

02 Align the middle and index fingers of your dominant hand.

03 Place your fingers next to the ligament on the same side as the casualty's thumb.
NOTE: If your fingers are on the hard surface of the wrist bones, move them down and along the ligament until they reach a softer area.

04 Press your fingers into the hollow space to feel the radial artery beneath the skin.
NOTE: If you cannot feel the pulse, press a little harder, being careful not to hurt the casualty.
NOTE: If you are still having trouble locating the radial artery, slide your fingers up and along the ligament until you reach the bottom of the wrist bones.
NOTE: At the point where the hollow space meets the wrist bones, the pulse is easier to feel.

05 With a timing device, count the beats of the pulse for 15 seconds.

06 Multiply that number by four and you will have the casualty's pulse rate (in beats/minute).

07 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

CAROTID PULSE ASSESSMENT INSTRUCTION

TASK:	Measure a carotid pulse
CONDITION:	Given a casualty in a Tactical Field Care scenario where the casualty and responder are in combat gear and a pulse assessment is needed
STANDARD:	Measure a carotid pulse following all steps and meeting all performance measures
EQUIPMENT:	A watch or device that can display seconds

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Align the middle and index fingers of your dominant hand.

02 Place your middle and index finger on the side of the casualty's neck, to the side of the trachea, to find the carotid artery.

03 Press your fingers into the hollow space to feel the carotid artery beneath the skin.
NOTE: If you cannot feel the pulse, press a little harder, being careful not to hurt the casualty.
CAUTION: Be careful not to press too hard over the carotid artery, as this can cause the casualty to become lightheaded.

04 With a timing device, count the beats of the pulse for 15 seconds.

05 Multiply that number by four, and you will have the casualty's pulse rate (in beats/minute).

06 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

POSTERIOR TIBIAL PULSE ASSESSMENT INSTRUCTION

TASK:	Measure a posterior tibial pulse
CONDITION:	Given a casualty in a Tactical Field Care scenario where the casualty and responder are in combat gear and the casualty has suspected injuries to the lower limbs that need treatment or have been treated
STANDARD:	Measure a posterior tibial pulse following all steps and meeting all performance measures
EQUIPMENT:	A watch or device that can display seconds

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Align the middle and index fingers of your dominant hand.
02 Slide your fingers down the inside of the casualty's boot behind the bony part of the ankle or remove the boot to expose the ankle.
03 Place your fingers, on the inside of the foot, between the bony part of the ankle bone and the Achilles tendon.
04 Press your fingers into the hollow space to feel the posterior tibial artery beneath the skin.
NOTE: If you cannot feel the pulse, press a little harder, being careful not to hurt the casualty.
05 With a timing device, count the beats of the pulse for 15 seconds.
06 Multiply that number by four and you will have the casualty's pulse rate (in beats/minute).
07 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

DORSALIS PEDIS PULSE ASSESSMENT INSTRUCTION

TASK:	Measure a dorsalis pedis pulse
CONDITION:	Given a casualty in a Tactical Field Care scenario where the casualty and responder are in combat gear and the casualty has suspected injuries to the lower limbs that need treatment or have been treated
STANDARD:	Measure a dorsalis pedis pulse following all steps and meeting all performance measures
EQUIPMENT:	A watch or device that can display seconds

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Remove the casualty's boot and sock.

02 Align the middle and index fingers of your dominant hand.

03 Have the top of the casualty's foot facing up.

NOTE: In this position, you should see an elevated arch underneath the skin on the top of the foot.

04 Place fingers just lateral to the extensor tendon (the firm ridge formed by the extensor tendon) of the great toe.

NOTE: A hollow soft spot should be felt.
NOTE: If you cannot feel a pulse, move fingers more laterally until they reach a softer area.

05 Press your fingers into the hollow space to feel the dorsalis pedis artery beneath the skin.

NOTE:

(a) If you cannot feel the pulse, press a little harder, being careful not to hurt the casualty.
(b) If you are still having trouble locating the dorsalis pedis artery, slide your fingers up and along the ligament until you reach the base of the ankle.
(c) At the point where the hollow space meets the foot bones, the pulse is easier to feel.
(d) Press your fingers into the hollow space to feel the dorsalis pedis artery beneath the skin.

06 With a timing device, count the beats of the pulse for 15 seconds.

07 Multiply that number by four and you will have the casualty's pulse rate (in beats/minute).

08 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

FEMORAL PULSE ASSESSMENT INSTRUCTION

TASK:	Measure a femoral pulse
CONDITION:	Given a casualty in a Tactical Field Care scenario where the casualty and responder are in combat gear and the casualty has suspected injuries to the lower limbs that need treatment or have been treated
STANDARD:	Measure a femoral pulse following all steps and meeting all performance measures
EQUIPMENT:	A watch or device that can display seconds

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Position the casualty in the supine position.

02 Align the middle and index fingers of your dominant hand.

03 Draw an imaginary line from the anterior aspect of the pelvic crest to the pubic bone.

04 Place your fingers halfway between the pubis symphysis and the anterior iliac spine (or slightly medial to that) and press in and up toward the head (just past the inguinal gutter).

NOTE: The inguinal gutter is the crevice between the top of the thigh and the lower abdomen where heavy blood flow structures are located; it is halfway between the bone above the genitals (pubic bone) and the top of the thigh.

05 Press on the artery gently with your two fingers to feel a pulse.

NOTE: You should be able to feel a fairly strong pulse since the femoral artery is so large.

(a) If you are unable to feel the pulse, reposition the casualty (ensure they are lying flat on their back with legs outstretched).

(b) If you are still unable to find the pulse, rotate the casualty's leg externally, opening up the inner thigh region.

(c) If you are still unsuccessful, reposition the leg in external rotation with a slight bend to the knee.

06 With a timing device, count the beats of the pulse for 15 seconds.

07 Multiply that number by four and you will have the casualty's pulse rate (in beats/minute).

08 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

RESPIRATORY RATE MEASUREMENT INSTRUCTION

TASK:	Measure a casualty's respiratory rate
CONDITION:	Given a Tactical Field Care scenario where the casualty and responder are in combat gear and a timing device is available
STANDARD:	Measure the casualty's respiratory rate following all steps and measures correctly
EQUIPMENT:	A watch or device that can display seconds

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Have the casualty assume whatever position is comfortable.

02 While using a timing device to time 15 seconds, count the number of times the casualty's chest rises and falls.
NOTE: Do not tell the casualty that you are going to measure their breathing, because they are likely to change their breathing rate without realizing it.

03 Multiply the number you counted by four. The resulting number is the casualty's respiratory rate (in breaths/minute).
NOTE: A respiratory rate greater than 20 breaths per minute indicates respiratory distress.

04 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

PULSE OXIMETRY (SPO2) MONITORING AND ASSESSMENT INSTRUCTION

TASK:	Monitor and assess SpO2
CONDITION:	Given a scenario in the Tactical Field Care phase where you encounter a casualty who needs a measurement of their SpO2
STANDARD:	Measure the casualty's SpO2 using the correct equipment and following the proper steps
EQUIPMENT:	Pulse oximetry sensor

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Select the appropriate sensing probe location for the casualty.
- (a) For adults, sensing probes can be placed on the index, middle, or ring finger.
- (b) Sensing probes can also be placed on the toe unless the casualty has decreased circulation to the lower extremities.
- (c) Earlobe clips and neonate sensing probes for the foot are available for infants and newborns.

02 Ensure the site is clean and dry.

03 Apply the sensor so that the emitting light is directly opposite to the detector.

NOTE: Normal pulse oximetry values will be greater than 95% on room air, with most being between 98% and 100%.
NOTE: Factors that may provide falsely high readings include carbon monoxide poisoning and certain types of toxins.
NOTE: Hypothermia, hypovolemia, and nail polish may make readings difficult or inaccurate.

04 Document the oximeter reading, the location of the sensor, the time taken, and the amount of oxygen being delivered (if applicable).

CAUTION: The pulse oximeter is just a tool; do not rely on it solely for indications of the casualty's condition. Treat the casualty, not the machine.

05 Move sensing probe locations every 2 hours.

06 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

ELECTRONIC MONITORING INSTRUCTION

TASK:	Demonstrate electronic vital sign monitoring in Tactical Field Care (TFC)
CONDITION:	Given a scenario where a casualty is injured and requires electronic monitoring in the TFC phase, and you have an electronic vital sign monitoring device
STANDARD:	Demonstrate the application of an electronic vital sign monitoring device and document the casualty's pulse oximetry, blood pressure, and heart rate
EQUIPMENT:	Electronic vital signs monitoring device

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Check equipment to ensure that all cables are connected, and all wires and leads are intact and in working order.
02 If the casualty is conscious, explain the procedure to the casualty and have the casualty expose areas in which the monitoring devices will be placed; if the casualty is unconscious, expose those areas for the casualty.
03 Turn the device on; if electricity is available, plug the unit in to save battery life.
04 Remove the backing from each electrode and place them on the casualty in accordance with the manufacturer's guidance.
05 Attach the lead wires to the electrodes.
06 Select the desired lead to monitor; feel the casualty's pulse and compare it to the heart rate indicator on the monitor to ensure it is picking up the casualty's rate and rhythm.
07 Attach the blood pressure cuff to the casualty according to manufacturer's guidelines.
08 Press the start button to measure the blood pressure; consider setting for automated pressure readings, if appropriate.
09 Attach the pulse oximetry monitoring device to the casualty according to manufacturer's guidelines.
10 Continue to reassess the casualty as needed.
11 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

END-TIDAL CARBON DIOXIDE (ETCO2) MONITORING INSTRUCTION – (COLORIMETRIC DETECTOR)

TASK:	Demonstrate use of a colorimetric ETCO2 detector to verify proper placement of an advanced airway
CONDITION:	While in the Tactical Field Care phase, you encounter a casualty who requires verification of an advanced airway using ETCO2 colorimetric device
STANDARD:	Verify proper advanced airway placement using an ETCO2 detector following the correct sequence of steps
EQUIPMENT:	Colorimetric ETCO2 detector, advanced airway (endotracheal tube, supraglottic airway, tracheostomy tube, etc.), and bag valve mask (BVM)

PERFORMANCE MEASURES: step-by-step instructions

NOTE: Consider body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.

01 Remove the ETCO2 detection device from its package.

02 Check the color of the indicator; if it is not similar to the "check" color on the reference scale (usually purple, with the exception of devices with a pull tab, which is usually a specific shade of blue), discard the unit and use a new one.

03 Following the establishment of an advanced airway, attach the ETCO2 detector to the advanced airway by sliding the tapered end (15mm **internal** diameter connector) of the monitoring device onto the airway device.

04 Connect the distal end of the device (15mm **outer** diameter connector), which is identical to an advanced airway connector, to the standard oxygen delivery equipment.

05 If the device has a pull tab, pull the red tab from the device to activate the ETCO2 detection function.

06 To assess proper airway placement, attach a BVM to the ETCO2 detector, deliver six breaths, and compare the color change in the center indicator of the detector to the color ranges on the detector cover.

NOTE: Carbon dioxide detectors contain a chemical indicator that is sensitive to CO2. When the detector is attached to a correctly positioned airway, the color of the indicator changes from the baseline "check" color (usually purple or a specific shade of blue) to a numbered or lettered color range (usually yellow) in response to elevated carbon dioxide concentrations.

NOTE: When the detector is attached to an incorrectly positioned airway (in the esophagus, for example), the color of the indicator will not change or there will be an inadequate color change. In devices with a pull tab, a green or yellow/green color change indicates low levels of exhaled CO2.

CAUTION: ETCO2 detectors can be difficult to read in low-light or night vision conditions.

07 If there is no color change or an inadequate color change in the ETCO2 detector, the advanced airway should be repositioned and placement should be reassessed with the ETCO2 detector and a BVM.

CAUTION: With very low cardiac output during cardiopulmonary resuscitation, there may be no color change in the ETCO2 detector, even though the airway is properly positioned.

08 Once the color change is seen, signifying proper airway placement, secure the airway.

09 Continue to monitor the casualty and the ETCO2 detector for the proper color change, reassessing the casualty and repositioning the airway device if the detector reverts to its baseline "check" color or stops changing color with respirations.

NOTE: While in use, the detector will continuously change colors with inspiration and expiration. If the detector becomes permanently yellow, discard and replace as needed.

10 Replace the ETCO2 detector after 2 hours or if exposed to fluids, unless using a device with a pull tab, in which case it can be used for up to 24 hours.

11 Document all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

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