# 2007
# NATIONAL CONTEST
# FIRST AID
# PROBLEM NO. 2

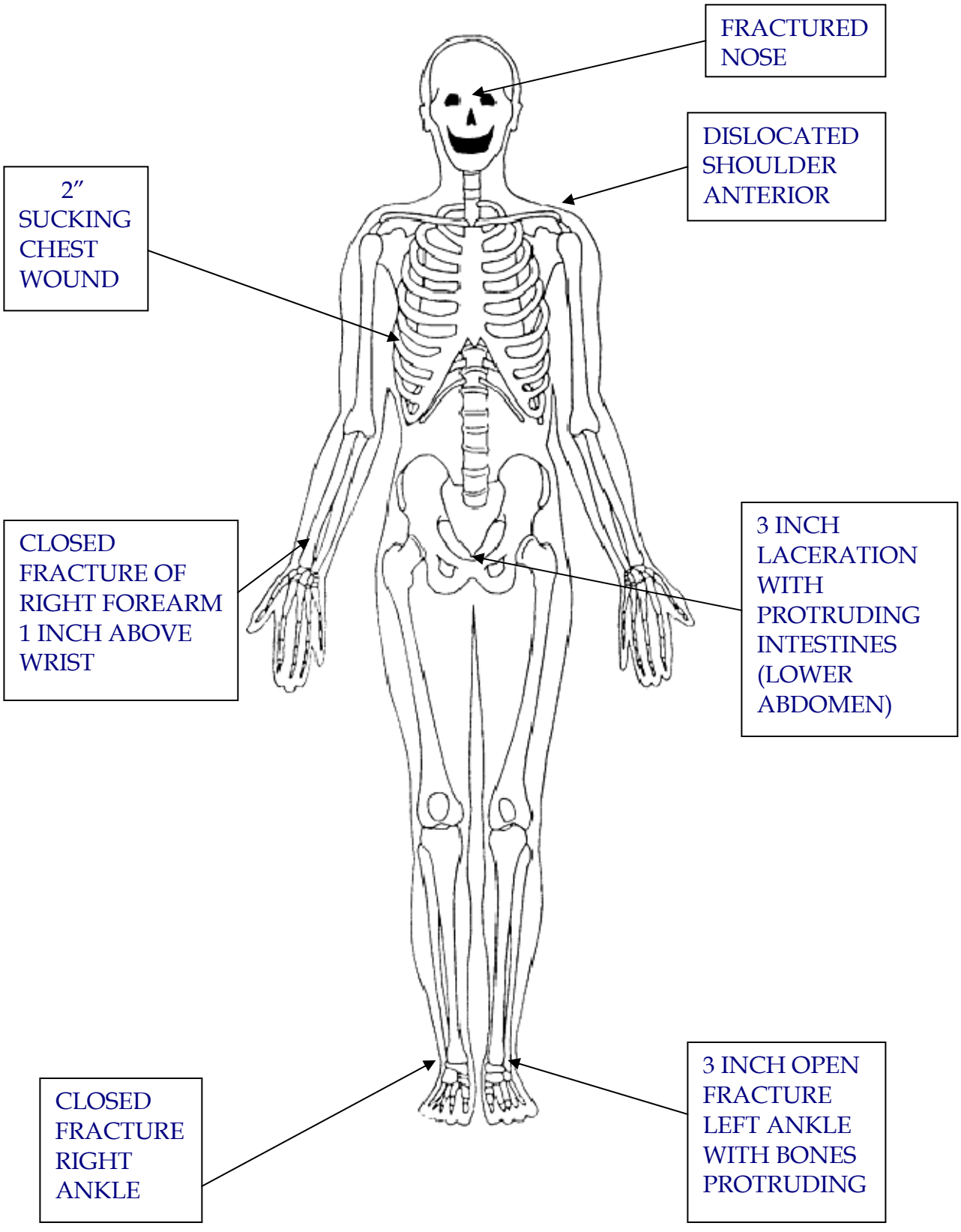
**A continuous mining machine operator helper was dragging the trailing cable out of the No. 3 entry when he tripped or stumbled forward against the conveyor boom of the continuous mining machine which was being trammed across the intersection toward the No. 2 entry. The continuous mining machine trammed over the road gob causing the conveyor boom end of the machine to tilt upward against the mine roof crushing the continuous mining machine operator helper between the boom and mine roof. Two first – aid team members were on the section. They found the continuous mining machine operator helper in a safe location, on his left side, legs drawn up and vomiting blood (looks like coffee grounds). He has a pulse, breathing, unconscious and suffers from physical shock throughout the problem.**

**There is no spinal injury.**

**Transportation is delayed.**

**Treat the continuous mining machine operator helper – no elevation required**

**Package for transport**




ENVELOPE: PATIENT IS NOT BREATHING AND DOES NOT HAVE A PULSE.

ENVELOPE: CPR FOR 5 CYCLES: PATIENT IS BREATHING AND HAS A PULSE.

List of Injuries

1. **2 – inch sucking chest wound in center of the right side midway between the arm pit and the waist line.**

2. **Fractured nose (no dressing required)**

3. **3 – inch wound on lower part of abdomen and protruding intestines.**

4. **Closed fracture on the right ankle.**

5. **A 3 – inch wound on the left ankle with bones protruding.**

6. **Dislocated left shoulder – anterior**

7. **Fractured right forearm 1 – inch above the wrist.(closed)**

8. **Physical shock.**

10. **Patient is not breathing and does not have a pulse.**
**CPR FOR 5 CYCLES: Patient is breathing and has a pulse**

## PATIENT ASSESSMENT

| PROCEDURES | CRITICAL SKILL |
|---|---|
| 1. SCENE SIZE UP | □ A. Observe area to ensure safety<br>□ B. Call for help |
| 2. MECHANISM OF INJURY | □ A. Determine causes of injury, if possible<br>□ B. Ask patient (if conscious) what happened |
| 3. INITIAL ASSESSMENT | □ A. Verbalize general impression of the patient(s)<br>□ B. Determine responsiveness/level of consciousness (AVPU) Alert, Verbal, Painful, Unresponsive<br>□ C. Determine chief complaint/apparent life threats |
| 4. ASSESS AIRWAY AND BREATHING | □ A. Correctly execute head-tilt/chin-lift or jaw thrust maneuver, depending on the presence of cervical spine (neck) injuries<br>□ B. Look, listen, and feel for breathing (3-5 seconds)<br>□ C. If present, treat sucking chest wound |

# SUCKING CHEST WOUND

## SUCKING CHEST WOUND

| PROCEDURES | CRITICAL SKILL |
|---|---|
| 1. EXPOSE WOUND | □ A. Expose entire wound |
| 2. SEAL WOUND AND CONTROL BLEEDING | □ A. Place occlusive dressing over wound (If occlusive dressing is not available use gloved hand)<br>□ B. Ensure dressing extends two inches beyond edges of wound<br>□ C. Apply direct pressure as needed to stop the bleeding |
| 3. APPLY AN OCCLUSIVE DRESSING | □ A. Keep patient calm and quiet<br>□ B. Explain to the patient what you are doing<br>□ C. Ensure dressing is large enough not to be sucked into the wound (two inches beyond edges of wound)<br>□ D. Affix dressing with tape<br>□ E. Seal on three sides<br>□ F. Monitor patient closely for increasing difficulty breathing<br>□ G. Transport as soon as possible<br>□ H. Keep patient positioned on the injured side unless other injuries prohibit<br>□ I. Reassess wound to ensure bleeding control<br>□ J. Assess level of consciousness(AVPU), respiratory status and patient response |

NOTE: Alert, verbal, painful, unresponsive (AVPU)

# CONTINUE PATIENT ASSESSMENT

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| 5. ASSESS FOR IMMEDIATE LIFE THREATENING CONDITIONS | □ A. Check for presence of a carotid pulse (5-10 seconds)<br>□ B. If present, control life threatening bleeding |

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| 6. DETERMINE PRIORITY OF PATIENT | □ A. Teams must make statement to judge, "Will transport as soon as possible"<br>□ B. Teams must make statement to judge, "Removing clothing, exposing and cleaning wound surface(s)" |

# CONTINUE PATIENT ASSESSMENT

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|---|---|
| 7. DETAILED PHYSICAL EXAMINATION<br><br>ASSESS:<br>(a) HEAD | **ENVIRONMENTAL AND MEDICAL EMERGENCIES CAN BE TREATED ANY TIME DURING DETAILED PHYSICAL EXAMINATION**<br><br>□ A. Check head for DOTS: Deformities, Open wounds, Tenderness and Swelling<br>□ B. Check and touch the scalp<br>□ C. Check the face<br>□ D. Check the ears for, bleeding, or clear fluids<br>□ E. Check the eyes for any discoloration, unequal pupils, reaction to light, foreign objects and bleeding.<br>□ F. Check the nose for any bleeding or drainage<br>□ G. Check the mouth for loose or broken teeth, foreign objects, swelling or injury of tongue, unusual breath odor, discoloration |

# FRACTURED NOSE

**NOTE: NO TREATMENT REQUIRED**

# CONTINUE PATIENT ASSESSMENT

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| (b) NECK | □ A. Check the neck for DOTS<br>□ B. Inspect for medical ID |

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| (c) CHEST | □ A. Check chest area for DOTS<br>□ B. Feel chest for equal breathing movement on both sides<br>□ C. Feel chest for inward movement in the rib areas during inhalations |

# CONTINUE PATIENT ASSESSMENT

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| (d) ABDOMEN | □ A. Check abdomen (stomach) for DOTS |

# 3 – Inch Wound in the Lower Part of the Abdomen with Protruding Intestines

## DRESSINGS AND BANDAGING – OPEN WOUNDS

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. EMERGENCY CARE FOR AN OPEN WOUND | □ A. Expose wound<br>□ B. Clear wound surface<br>□ C. Control bleeding<br>□ D. Prevent further contamination<br>□ E. Bandage dressing in place after bleeding has been controlled<br>□ F. Keep patient lying still<br>□ G. Reassure the patient<br>□ H. Treat for shock |
| 2. APPLY DRESSING | □ A. Use sterile dressing<br>□ B. Cover entire wound<br>□ C. Control bleeding<br>□ D. Do not remove dressing |
| 3. APPLY BANDAGE | □ A. Do not bandage too tightly<br>□ B. Do not bandage too loosely<br>□ C. Do not leave loose ends<br>□ D. Do not cover the tips of fingers and toes when appropriate<br>□ E. Cover all edges of dressing<br>□ F. Do not cover tips of fingers and toes, unless they are injured<br>□ G. Bandage from the bottom of the limb to the top (distal to proximal) |

**Abdominal Injury**

1. Place on back with legs flexed at the knees (for closed or open wounds)

Additional Steps for Open Abdominal Wounds (Serious or Life Threatening)

1. Apply moist dressing, then an occlusive dressing
2. Cover the occlusive with pads or a towel for warmth

# Continue Patient Assessment

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| (e) PELVIS | □ A. Check pelvis for DOTS<br>□ B. Inspect pelvis for injury by touch (Verbally state inspection of crotch and buttock areas) |

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| (f) LEGS | □ A. Check each leg for DOTS<br>□ B. Inspect legs for injury by touch<br>□ C. Check legs for paralysis (pinch inner side of leg on calf)<br>□ D. Check legs for motion (in a conscious patient; team places hand on bottom of each foot and states "Can you push against my hand?"<br>□ E. Check for medical ID bracelet |

# CLOSED FRACTURE OF THE RIGHT ANKLE

## SPLINTING LOWER EXTREMITY AND ANKLE FRACTURES AND DISLOCATIONS (AIR SPLINT)

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. CARE FOR FRACTURE | □ A. Check for motion and circulation at injured limb's foot |
| 2. IMMOBILIZE FRACTURE | □ A. Grasp leg with one hand just above injury site and other hand just below injury site<br>□ B. Maintain support<br>□ C. Properly apply splint (for ankle or foot, air splint must extend above knee)<br>□ D. Splint should be relatively free of wrinkles<br>□ E. Check for circulation at injured limb's foot prior to inflation<br>□ F. Inflate splint to point that slight dent can be made |
| 3. MONITOR AIR-INFLATED SPLINT | □ A. Check for leaks<br>□ B. Periodically check for increase or decrease in pressure<br>□ C. Monitor pressure in splint with finger tip<br>□ D. Make certain desired pressure is maintained<br>□ E. Reassess for circulation at injured limb's foot |

# 3 – Inch Wound on Left Ankle

## DRESSINGS AND BANDAGING – OPEN WOUNDS

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. EMERGENCY CARE FOR AN OPEN WOUND | □ A. Expose wound<br>□ B. Clear wound surface<br>□ C. Control bleeding<br>□ D. Prevent further contamination<br>□ E. Bandage dressing in place after bleeding has been controlled<br>□ F. Keep patient lying still<br>□ G. Reassure the patient<br>□ H. Treat for shock |
| 2. APPLY DRESSING | □ A. Use sterile dressing<br>□ B. Cover entire wound<br>□ C. Control bleeding<br>□ D. Do not remove dressing |
| 3. APPLY BANDAGE | □ A. Do not bandage too tightly<br>□ B. Do not bandage too loosely<br>□ C. Do not leave loose ends<br>□ D. Do not cover the tips of fingers and toes when appropriate<br>□ E. Cover all edges of dressing<br>□ F. Do not cover tips of fingers and toes, unless they are injured<br>□ G. Bandage from the bottom of the limb to the top (distal to proximal) |

# 3 – Inch Wound on Left Ankle with Bone Protruding

## SPLINTING LOWER EXTREMITY FRACTURES AND DISLOCATIONS (ANKLE)

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. CARE FOR FRACTURED OR DISLOCATED ANKLE | □ A. Check for motion and circulation at injured limb's foot<br>□ B. Immobilize fracture of dislocation with pillow and cravats |
| 2. IMMOBILIZE FRACTURE OF DISLOCATION | □ A. Stabilize limb, lift limb, but do not apply traction<br>□ B. Place three cravats (triangular bandage) under ankle<br>□ C. Place pillow length wise under ankle, on top of cravats (pillow should extend 6 inches beyond foot)<br>□ D. Lower limb, adjust cravats to tie<br>□ E. Tie cravats distal to proximal<br>□ F. Tie fourth cravat at arch of foot<br>□ G. Elevate with blanket or pillow<br>□ H. Reassess for motion and circulation at injured limb's foot |

# Continue Patient Assessment

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| (g) ARMS | □ A. Check each arm for DOTS<br>□ B. Inspect arms for injury by touch<br>□ C. Check arms for paralysis (pinch inner side of wrist)<br>□ D. Check arms for motion (in a conscious patient; team places fingers in each hand of patient and states "Can you squeeze my fingers?"<br>□ E. Check for medical ID bracelet |

# CLOSED FRACTURE OF RIGHT FOREARM 1- INCH ABOVE THE WRIST

**NOTE: TEAMS MAY USE AIR OR RIGID SPLINT**

## SPLINTING UPPER EXTREMITY FRACTURES (AIR SPLINT/VACCUM SPLINT)

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. CARE FOR FRACTURE | □ A. Check for motion and circulation at injured limb's hand |
| 2. IMMOBILIZE FRACTURE | □ A. Grasp arm with one hand just above injury site and other hand just below injury site<br>□ B. Maintain support<br>□ C. Properly apply splint<br>□ D. Splint should be relatively free of wrinkles<br>□ E. Check for circulation at injured limb's hand prior to inflation<br>□ F. Inflate splint to point that slight dent can be made |
| 3. MONITOR AIR-INFLATED SPLINT | □ A. Check for leaks<br>□ B. Periodically check for increase or decrease in pressure<br>□ C. Monitor pressure in splint with finger tip<br>□ D. Make certain desired pressure is maintained<br>□ E. Reassess for circulation at injured limb's hand |

# OR

## SPLINTING UPPER EXTREMITY FRACTURES AND DISLOCATIONS (FRACTURED FOREARM 1 INCH ABOVE THE WRIST – SHORT RIGID SPLINT, KERLIX, OR CRAVATS AND SLING)

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. CARE FOR FRACTURE OF WRIST AND FOREARM AREA | □ A. Check for motion and circulation at injured limb's hand<br>□ B. Immobilization of fracture to wrist and forearm area using a rigid splint |
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| 2. IMMOBILIZING FRACTURE OF WRIST AND FOREARM AREA | □ A. Selection of appropriate rigid splint of proper length<br>□ B. Support affected limb and limit movement<br>□ C. Apply appropriate padding to rigid splint<br>□ D. Place appropriate roller bandage in hand to ensure the position of function<br>□ E. Properly apply splint with appropriate wrap<br>□ F. Apply wrap distal to proximal<br>□ G. Check for motion and circulation at injured limb's hand |
| 3. IMMOBILIZING FRACTURE USING SLING | □ A. Place sling over chest and under arm<br>□ B. Hold or stabilize arm<br>□ C. Triangle should extend behind elbow or injured side<br>□ D. Secure excess material at elbow<br>□ E. Fingertips should be exposed |
| 4. SECURING SLING WITH SWATHE | □ A. Use triangle cravat<br>□ B. Swathe is tied around chest and injured arm<br>□ C. Reassess for motion and circulation at injured limb's hand |

# DISLOCATED LEFT SHOULDER – ANTERIOR

## SPLINTING UPPER EXTREMITY FRACTURES AND DISLOCATIONS (DISLOCATED SHOULDER – ANTERIOR)

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. CARE FOR DISLOCATED SHOULDER | □ A. Check for motion and circulation at injured limb's hand<br>□ B. Immobilize dislocation with appropriate padding, sling and swathe (triangular bandage) |
| 2. IMMOBILIZING DISLOCATED SHOULDER | □ A. Place appropriate padding between arm and chest<br>□ B. place sling over padding and rest arm in position<br>□ C. Hold or stabilize arm<br>□ D. Triangle should extend behind elbow on injured side<br>□ E. Pull sling around neck until hand is elevated and tie on uninjured arm<br>□ F. Secure excess material at elbow<br>□ G. Fingertips should be exposed |
| 3. SECURING SLING WITH SWATHE | □ A. Use triangle cravat<br>□ B. Swathe is tied around chest and injured arm<br>□ C. Reassess for motion and circulation at injured limb's hand |

# Continue Patient Assessment

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| (h) BACK SURFACES | □ A. Check back for DOTS |

**DOTS:** Deformities, Open Wounds, Tenderness and Swelling

****NOTE:** Each critical skill shall be clearly verbalized by the team as it is being conducted. After initially stating what DOTS stands for, the team may simply state "DOTS" when making their check.

## IMMOBILIZATION – LONG SPINE BOARD (Backboard)

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. MOVE THE PATIENT ONTO THE LONG SPINE BOARD | □ A. One First Aid Provider at the head must maintain in-line immobilization of the head and spine<br>□ B. First Aid Provider at the head directs the movement of the patient<br>□ C. Other First Aid Provider control movement of the rest of body<br>□ D. Other First Aid Provider position themselves on same side<br>□ E. Upon command of First Aid Provider at the head, roll patient onto side toward First Aid Providers<br>□ F. Quickly assess posterior body, if not already done<br>□ G. Place long spine board next to the patient with top of board beyond top of head<br>□ H. Place patient onto the board at command of the First Aid Provider at head while holding in-line immobilization using methods to limit spinal movement<br>□ I. Slide patient into proper position using smooth coordinated moves keeping spine in alignment |
| 2. PAD VOIDS BETWEEN PATIENT AND LONG SPINE BOARD | □ A. Select and use appropriate padding<br>□ B. Place padding as needed under the head<br>□ C. Place padding as needed under torso |
| 3. IMMOBILIZE BODY TO THE LONG SPINE BOARD | □ A. Strap and secure body to board ensuring spinal immobilization, beginning at shoulder and working toward feet |
| 4. IMMOBILIZE HEAD TO THE LONG SPINE BOARD | □ A. Using head set or place rolled towels on each side of head<br>□ B. Tape and/or strap head securely to board, ensuring cervical spine immobilization |
| 5. REASSESS | □ A. Reassess PMS (Pulse, Motor, Sensory)<br>□ B. Assess patient response and level of comfort |

## SHOCK

| PROCEDURE | CRITICAL SKILL |
|---|---|
| 1. CHECK FOR SIGNS AND SYMPTOMS OF SHOCK | □ A. Check for pale (or bluish) skin (in victim with dark skin examine inside of mouth and nailbeds for bluish coloration.<br>□ B. Check for cool, clammy skin<br>□ C. Check for weakness |
| 2. TREATMENT | □ A. Keep victim lying down<br>□ B. Cover with blanket to prevent loss of body heat and place a blanket under the patient. (Do not try to place blanket under patient with possible spinal injuries)<br>□ C. Elevate according to injury<br>□ D. Reassure and calm the patient |

**ENVELOPE No. 1 (GIVEN TO TEAM AFTER TEAM HAS PACKAGED PATIENT)**

**PATIENT IS NOT BREATHING AND DOES NOT HAVE A PULSE**

**ENVELOPE No.2 (WHEN TEAM GOES TO THE MANKIN) DO FIVE CYCLES OF CPR THEN PATIENT IS BREATHING AND HAS A PULSE**

## TW0-RESCUER CPR (NO SPINAL INJURY - MANIKIN ONLY)

| PROCEDURES | CRITICAL SKILL |
|---|---|
| 1. RESCUER 1 ESTABLISH UNRESPONSIVENESS | □ A. Tap or gently shake shoulders<br>□ B. Shout, "Are you OK?"<br>□ C. Determine unconsciousness without compromising cervical spine (neck) injury<br>□ D. Say aloud, "Call for help" |
| 2. RESCUER 1 - ESTABLISH AIRWAY | □ A. Kneel at the patient's side near the head<br>□ B. Correctly execute head-tilt/chin-lift maneuver |
| 3. RESCUER 1 - MONITOR PATIENT FOR BREATHING | □ A. Look, listen, and feel for breathing (3-5 seconds) |
| 4. RESCUER 1 - VENTILATE PATIENT | □ A. Place barrier device (pocket mask/shield with one-way valve) on manikin<br>□ B. Give 2 breaths 1 second each<br>□ C. Each breath - minimum of .8 (through .7 liter line on new manikins) |
| 5. RESCUER 1 – CHECK FOR CAROTID PULSE | □ A. Correctly locate the carotid pulse - on the side of the rescuer, locate the patient's windpipe with your index and middle fingers and slide your fingers in the groove between the windpipe and the muscle in the neck<br>□ B. Check for presence of carotid pulse for 5 to 10 seconds<br>□ C. Verbalize absence of pulse |
| 6. RESCUER 2 – POSITION FOR COMPRESSIONS | □ A. Locate the compression point on the breastbone between the nipples<br>□ B. Place the heel of one hand on the compression point and the other hand on top of the first so hands are parallel<br>□ C. Do not rest fingers on the chest<br>Keep heel of your hand on chest during and between compressions |

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| 7. RESCUER 2 - DELIVER CARDIAC COMPRESSION | □ A. Give 30 compressions<br>□ B. Compressions are at the rate of 100 per minute (30 compressions delivered within 23 seconds)<br>□ C. Downstroke for compression must be on or between compression lines<br>□ D. Return to baseline on upstroke of compression |
| 8. RESCUER 1 - VENTILATIONS BETWEEN COMPRESSIONS | □ A. Give 2 breaths 1 second each<br>□ B. Each breath - minimum of .8 (through .7 liter line on new manikins)<br>□ C. Complete breaths and return to compressions in 4-7 seconds (This will be measured from the end of last downstroke to the start of the first downstroke of the next cycle.) |
| 9. CONTINUE CPR FOR TIME STATED IN PROBLEM | □ A. Provide 5 cycles of 30 chest compressions and 2 rescue breaths<br>□ B. To check for pulse, stop chest compressions for 5-10 seconds after the first set of CPR<br>□ C. Rescuer at patient's head maintains airway and looks, listens, and feels for adequate breathing or coughing<br>□ D. The rescuer at the patient's head shall feel for a carotid pulse<br>□ E. If no signs of circulation are detected, continue chest compressions and breaths and check for signs of circulation every three minutes<br>□ F. A maximum of 10 seconds will be allowed to complete ventilations and required pulse checks between sets (this will be measured from the end of the last downstroke to the start of the first downstroke of the next cycle |
| 10. CHANGING RESCUERS | □ A. Change of rescuers shall be made in 5 seconds or less and will be completed as outlined in the problem. Team must switch every 5 cycles in less than 5 seconds. |
| 11. CHECK FOR RETURN OF PULSE | □ A. After providing required CPR (outlined in problem), check for return of pulse (within 10 seconds)<br>□ B. State "Patient has a pulse." |