

ADVANCED SKILL MODULE 1

Dual Lumen Non-Visualized Advanced Airway

First Responder: 10/01

Revised 11/05

Revised 8/06

At the end of this lesson, the First Responder student will be able to:

COGNITIVE OBJECTIVES

1. Describe legal constraints in the use of dual lumen non-visualized advanced airways by the First Responder
2. Describe and list the proper body substance isolation equipment required when inserting or removing dual lumen non-visualized advanced airways
3. Describe the anatomy of the upper and lower airway.
4. Describe the relationship between the larynx, epiglottis, pharynx, esophagus, and trachea
5. Define "Gag Reflex" and "Cough Reflex". Describe the differences between them.
6. Discuss the role and scope of airway adjuncts and their relationship to the dual lumen non-visualized advanced airway:
 - Oropharyngeal airways
 - Nasopharyngeal airways
 - Suction devices
 - Oxygen delivery devices such as nasal cannula, non-rebreather mask, pocket mask, and bag-valve mask.
7. Define the "Modified Jaw Thrust" maneuver and its relationship to the dual lumen non-visualized advanced airway
8. Describe indications and contraindications for the use of dual lumen non-visualized advanced airways
9. Describe and define the various components and accessory devices of the dual lumen non-visualized advanced airway
10. Describe the correct methods of determining airway cuff integrity
11. Describe patient positioning for advanced airway insertion
12. Describe airway insertion and intubation techniques
13. Define cuff inflation procedures
14. Describe methods of determining proper intubation of the airway
15. Describe the actions to be taken if tracheal intubation occurs
16. Describe the actions to be taken if proper airway intubation cannot be determined

17. Describe ventilation procedures using a dual lumen non-visualized advanced airway and bag-valve-mask with supplemental oxygen
18. Describe indications for removal of the dual lumen non-visualized advanced airway
19. Describe the proper technique for removal of the dual lumen non-visualized advanced airway device
20. Discuss local medical protocol governing use of dual lumen non-visualized advanced airway devices

AFFECTIVE OBJECTIVES

At the end of this lesson the First Responder student will be able to:

22. Explain the value of performing advanced airway insertion
23. Explain the "dead space" concept resulting in improved air exchange when using a dual lumen non-visualized advanced airway
24. Explain the need to ventilate patients prior to insertion and immediately following confirmed intubation of the dual lumen non-visualized advanced airway
25. Explain the need to have proper patient positioning and available suction during airway insertion and/or removal
26. Explain the need to determine the presence or absence of breath sounds following dual lumen non-visualized advanced airway insertion
27. Explain the need to determine the presence or absence of epigastric sounds following dual lumen non-visualized advanced airway insertion

PSYCHOMOTOR OBJECTIVES

At the end of this lesson the First Responder student will be able to:

28. Demonstrate technique for determining airway cuff integrity
29. Demonstrate the proper patient positioning for airway insertion
30. Demonstrate the ventilation procedures to be used prior to airway insertion
31. Demonstrate dual lumen non-visualized advanced airway insertion and positioning technique
32. Demonstrate cuff inflation procedures

33. Demonstrate methods for determining proper airway intubation
34. Demonstrate ventilating the patient using the dual lumen non-visualized advanced airway and the bag-valve-mask with supplemental oxygen
35. Demonstrate the ventilation technique in the event of tracheal intubation
36. Demonstrate the removal procedures for the dual lumen non-visualized advanced airway

PREPARATION

Motivation: Dual lumen non-visualized advanced airways provide an improved means of airway management and artificial ventilation which can not be accomplished with any other device currently available to the First Responder

Prerequisites: BLS, Preparatory, Lessons 2-1, 2-2 and 2-3

MATERIALS

AV Equipment: Utilize various audio-visual materials related to airway management. The continuous design and development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to assure the objectives of the curriculum are met and the content of materials does not significantly depart from established state, regional, or local protocols governing the use of dual lumen non-visualized advanced airways.

EMS Equipment: Oral airways, nasal airways, suction units, suction catheters, bag-valve-masks with reservoir, oxygen tanks, oxygen regulators, dual lumen non-visualized advanced airways with appropriate adjunct devices, intubation manikins, stethoscopes, appropriate manikin lubricant

TRAINING PERSONNEL

Primary Instructor: One First Responder Instructor knowledgeable in the use of dual lumen non-visualized advanced airways and approved by the training center physician medical director or the service medical director.

Assistant Instructor: The instructor to student ratio should be 1:6 for all psychomotor skill practice and practical evaluation. Individuals used as teaching assistants must be knowledgeable in the use of the dual lumen non-visualized advanced airway being taught as well as in the use of all basic airway management devices and techniques.

Recommended Minimum Time to Complete: Three Hours

PRESENTATION

Declarative (What)

- I. Legal Issues
 - A. s. 146.50(6m)(a), Wis. Stats., as amended by Act 251 - Wisconsin Laws of 1993
 - B. HFS 113 - Use of Advanced Airways by First Responders
- II. Personal Protection and Body Substance Isolation Techniques
 - A. Bloodborne and airborne pathogen considerations
 - B. Areas to protect during advanced airway insertion and removal include:
 - 1. Hands
 - 2. Eyes
 - 3. Nose and mouth
 - C. Minimum protective equipment recommended:
 - 1. Goggles or appropriate eye protection
 - 2. Gloves
 - 3. Mask when splashing or blood splatter is likely - (Consider HEPA mask for airborne pathogens)
 - 4. Gowns when known or suspected danger of infection is present
- III. Anatomy
 - A. "Deadspace" concept
 - 1. Definition: Deadspace is that portion of tidal volume which is not available for gas exchange. Specifically, it is that air which fills the naso and oropharynx, trachea, larynx, bronchi, and bronchioles.
 - 2. Tidal Volume: The volume of air inspired and expired in a single resting breath
 - a. The impact of dual lumen non-visualized advanced airway use on deadspace and tidal volume
 - b. The impact on ventilation
 - B. Review of "Gag Reflex" vs. "Cough Reflex"
- IV. Dual lumen non-visualized advanced airway
 - A. Indications
 - 1. Cardiac arrest from any cause
 - 2. Respiratory arrest with no gag reflex
 - 3. Unconscious patient with inadequate respirations and no gag reflex
 - B. Contraindications
 - 1. Patients under four feet in height (review manufacturer's literature for correct size and placement)
 - 2. Known or suspected obstruction of the larynx or trachea
 - 3. Active gag reflex

4. Caustic substance ingestion
5. Known or suspected esophageal disease
- C. Component Parts and Accessories
 1. The advanced airway
 - a. Primary (blue) and secondary (clear) ventilation tube
 - b. Pharyngeal and distal cuffs
 - c. Pilot balloons
 - d. Inflation valves
 2. Accessories
 - a. 140 ml syringe
 - b. 20 ml syringe
 - c. Water soluble lubricant

V. Emergency Medical Care

- A. Body Substance Isolation - take appropriate body substance isolation precautions
- B. Patient Assessment
 1. Reconfirm original assessment
 - a. Pulseless Non-breather (PNB)
 - b. Absent or inadequate ventilations with no gag reflex
 - c. Other conditions as per medical direction
 2. Inspect upper airway for visual obstructions, teeth, dentures, etc.
- C. Medical Direction - Contact medical control physician if required by local protocols
- D. Advanced Airway Use
 1. Prepare Device
 - a. Insure all necessary accessories readily available
 - 1) Advanced airway
 - 2) Syringes - pre-drawn to proper setting
 - 3) Water soluble lubricant
 - 4) Oxygen and ventilation delivery device
 - 5) Suction device
 - 6) Stethoscope
 - b. Determine cuff integrity
 - 1) Inflate pharyngeal and distal cuffs
 - 2) Disconnect syringes
 - 3) Inspect cuffs, valves and pilot balloons
 - 4) Deflate both cuffs
 - c. Lubricate as necessary - use water soluble lubricant
 2. Prepare Patient
 - a. Ventilate minimum of 30 seconds
 - b. Position the patient – supine with head in the neutral position
 - c. Remove oropharyngeal or nasopharyngeal airway if previously inserted
 - d. Tongue-Jaw Lift
 - e. Trauma or suspected trauma considerations

3. Insertion of Advanced Airway
 - a. Insert with airway curvature in same direction as the normal anatomical curvature of the pharynx
 - b. Hold tongue out of the way - insert gently but firmly until proper position per manufacturer recommendation (black rings on the advanced airway should be positioned between the patient's teeth)
 - c. **DO NOT USE FORCE** - if advanced airway does not insert easily - withdraw and reattempt
 - 1) Ventilate between attempts
 - 2) Maximum of three attempts
 - 3) Suction as necessary between attempts
 - d. Inflate Cuffs
 - 1) Inflate pharyngeal cuff through line #1 (blue) with 100 ml of air using the large syringe. Advanced airway may move slightly during cuff inflation. Remove syringe.
 - a) Insure proper position
 - b) Insure pilot balloon indicates and maintains proper inflation pressure
 - 2) Inflate distal cuff through line #2 (white) with 15 ml of air using the small syringe. Remove syringe.
 - a) Insure pilot balloon indicates and maintains proper inflation pressure
 - e. Ventilate through primary (blue) tube
4. Confirmation of proper advanced airway position
 - a. Auscultate breath sounds
 - 1) High axillary
 - 2) Bilaterally
 - b. Auscultate for epigastric sounds
 - c. Esophageal/Tracheal Intubation
 - 1) Breath sounds present bilaterally with epigastric sounds absent (esophageal intubation)
 - a) Continue to ventilate through primary (blue) tube
 - 2) Breath sounds absent with epigastric sounds present
 - a) Discontinue ventilating through primary (blue) tube
 - b) Ventilate through secondary (clear) tube
 - c) Reassess position by auscultation
 - d) If confirmed tracheal intubation, continue to ventilate through clear tube
 - 3) Breath and epigastric sounds absent (Unknown intubation)
 - a) Immediately deflate cuffs (blue/pharyngeal then white/distal)

- b) Slightly withdraw advanced airway to eliminate glottic occlusion
 - c) Reinflate cuffs (blue then white)
 - d) Ventilate and reassess position
 - e) If confirmed esophageal intubation, ventilate through blue tube
 - f) If confirmed tracheal intubation, ventilate through clear tube
 - 4) Breath sounds and epigastric sounds absent following repositioning
 - a) Immediately deflate cuffs (blue/pharyngeal then white/distal)
 - b) Extubate
 - c) Suction as necessary
 - d) Insert oropharyngeal or nasopharyngeal airway
 - e) Ventilate
 - 5) Reattempt intubation
 - a) Each attempt should not exceed 30 seconds
 - b) Ventilate before each attempt
 - c) A total of three attempts
 - d) Suction as necessary
- 4. Removal of Advanced Airway
 - a. Indications
 - 1) Patient regains consciousness
 - 2) Protective gag reflex returns
 - 3) Ventilation is inadequate
 - b. Contact medical control per protocol
 - 1) Do not delay removal when unable to contact medical control
 - 2) Contact medical control as soon as possible
 - c. Operating suction and emesis collection ready
 - d. Position patient
 - 1) Place on side
 - 2) Spinal injury considerations
 - e. Deflate pharyngeal cuff through line #1 (blue)
 - f. Deflate distal cuff through line #2 (white) and
 - g. Immediately withdraw airway with a smooth and steady motion while maintaining normal curvature of the pharynx
 - h. Suction as necessary
 - i. Monitor patient's airway and breathing closely, suction as needed
 - j. Continue ongoing respiratory assessment and treatment

VI. Special Considerations

- A. Patients with laryngectomies
 - 1. Advanced airways can not be used

APPLICATION

Procedural (How)

1. Demonstrate the use of body substance isolation equipment for airway insertion.
2. Use diagrams to illustrate how multi-lumen airways isolate and protect a patient's airway.
3. Use diagrams to illustrate the relationship of multi-lumen airways to the larynx, epiglottis, pharynx, esophagus, and trachea.
4. Show examples of why physical size is a factor in airway use and intubation.
5. Demonstrate how multi-lumen airways minimize "dead-space" thereby improving ventilation assistance.
6. Demonstrate patient positioning for non-visualized airway insertion.
7. Demonstrate preparation of the dual lumen non-visualized advanced airway.
8. Demonstrate ventilation techniques using basic airway adjuncts and the bag-valve mask with supplemental oxygen.
9. Demonstrate methods of determining cuff integrity.
10. Demonstrate insertion of the non-visualized airway.
11. Demonstrate cuff inflation procedures/sequence.
12. Demonstrate methods of determining advanced airway position.
13. Demonstrate methods and locations for auscultating breath sounds.
14. Demonstrate methods for dealing with tracheal intubation.
15. Demonstrate method of attaching and using ventilation delivery devices with the dual lumen non-visualized advanced airway.
16. Describe the procedure when proper non-visualized airway intubation cannot be determined.
17. Demonstrate repositioning of airway to prevent occlusion of the glottic opening (when using advanced airway)
18. Demonstrate removal technique for dual lumen non-visualized advanced airways.

Contextual (When, Where, Why)

Every patient must have a patent airway via which s/he receives appropriate ventilatory assistance during those times s/he can not support sufficient respiratory processes. The State of Wisconsin has recognized the need for First Responders to have available an advanced airway capable of providing a readily obtainable patent airway in a manner impossible to achieve using basic airway adjuncts.

The First Responder must recognize that a thorough knowledge of basic airway and resuscitation techniques is absolutely essential to success in using more advanced airway techniques. It must also be recognized that the use of the airway is tied tightly to physician participation in medical control and will play a major role in the success of early defibrillation efforts.

The First Responder using a dual lumen non-visualized advanced airway must determine if the use of the device is appropriate, and if so, when its use will be most advantageous in the course of patient care. S/he must provide an assessment capable of determining the patient's ability to tolerate the airway and, once the airway is in place, whether it is properly positioned and functioning. Lastly, the First Responder may be required to determine if removal of the device is appropriate and whether alternative airway adjuncts should be used.

STUDENT ACTIVITIES

Auditory (Hear)

1. The student should hear and become accustomed to normal and abnormal breath sounds.
2. The student should hear a bag-valve-mask being used in combination with a non-visualized airway to ventilate a patient.

Visual (See)

1. The student should see audio-visual aids or materials depicting the anatomy of the respiratory system.
2. The student should see audio-visual aids or manikins illustrating the proper positioning and functioning of the dual lumen non-visualized advanced airway.
3. The student should see all dual lumen non-visualized advanced airway component parts and accessories used in insertion, maintenance, and removal.
4. The student should see the proper method of preparing the airway for insertion.
5. The student should see the proper method of inserting the airway.
6. The student should see the proper method of cuff inflation.
7. The student should see the proper method of attaching ventilation devices to the dual lumen non-visualized advanced airway.
8. The student should see the proper method of using a bag-valve-mask in combination with a dual lumen non-visualized advanced airway to ventilate a patient.
9. The student should see the proper position in which to auscultate breath and epigastric sounds to determine proper advanced airway position.
10. The student should see the proper technique for repositioning the airway in cases of suspected epiglottal occlusion.
11. The student should see how to properly extubate.

Kinesthetic (Do)

1. The student should practice the use of body substance isolation equipment during airway insertion.
2. The student should practice the use of basic airway adjuncts and patient airway maneuvers.
3. The student should practice placing patients in the proper position for airway insertion.
4. The student should demonstrate and practice properly preparing the dual lumen non-visualized advanced airway for insertion.
5. The student should demonstrate and practice ventilation techniques using basic airway adjuncts and the bag-valve-mask.

6. The student should demonstrate and practice insertion of the dual lumen non-visualized advanced airway(s).
7. The student should demonstrate and practice proper methods of determining advanced airway position using auscultation.
8. The student should demonstrate and practice insertion of the dual lumen non-visualized advanced airway as part of instructor generated airway management scenarios.
9. The student should demonstrate and practice the proper method of dealing with tracheal intubation.
10. The student should demonstrate and practice repositioning of the airway when occlusion of the epiglottis is suspected.
11. The student should demonstrate and practice how to properly ventilate the patient using the dual lumen non-visualized advanced airway and a bag-valve-mask.
12. The student should demonstrate the proper removal technique, including suctioning, for dual lumen non-visualized advanced airway.

INSTRUCTOR ACTIVITIES

1. Supervise student activities.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content. (Provide remediation as necessary.)
4. Direct and supervise instructor aides in practical skills development activities.
5. Provide overall quality assurance.
6. Maintain individual student performance records for dual lumen non-visualized advanced airway training and evaluation.

Evaluation

Confirm students have met the minimum cognitive and affective objectives of this lesson and have attained mastery of the psychomotor objectives of this lesson.

Remediation

Identify students or groups of students who are having difficulty with this subject content. Complete remediation as appropriate to insure student competency in the cognitive, affective, and psychomotor learning objectives of this lesson.

NON-VISUALIZED AIRWAY

PROVIDER NAME: _____ PROVIDER NO. _____

Non-visualized airway placement to establish control of the patient's airway may be performed by any trained and certified First Responder or licensed EMT affiliated with a certified first responder service or licensed ambulance service provider approved to use the non-visualized advanced airway protocol.

1. INDICATIONS:
 - A. Cardiac arrest from any cause
 - B. Respiratory arrest with no gag reflex
 - C. Unconscious patient with inadequate respiration and no gag reflex
2. Non-visualized airways approved for use by in State of Wisconsin include:
 - A. ETC combitube
3. CONTRAINDICATIONS: DO NOT use on patient if...
 - A. Patient is under five (5) feet in height for Combitube, under four (4) feet tall for Combitube SA (if using other device comply with manufacturer's recommendations for sizing)
 - B. Patient has an active gag reflex
 - C. Patient has known or suspected esophageal disease
 - D. Patient has history of ingesting a caustic substance
 - E. Patient has known or suspected foreign body obstruction of the larynx or trachea
4. PREPARE FOR INSERTION OF THE NON-VISUALIZED AIRWAY
 - A. Contact medical control physician for authorization (if required by local protocol or may delete)
 - B. Maintain ventilation with an oropharyngeal airway and bag-valve-mask
 - C. Take appropriate body substance isolation precautions
 - D. Determine and select appropriate airway for size of patient
 - E. Prepare the non-visualized airway
 - 1) Determine cuff integrity per manufacturer's directions
 - 2) Lubricate as necessary
 - 3) Insure all necessary components and accessories are at hand
 - F. Prepare the patient
 - 1) Reconfirm original assessment
 - 2) Inspect upper airway for visible obstructions and remove
 - 3) Pre-oxygenate the patient
 - 4) Position the patient's head in a neutral position

5. AIRWAY INSERTION should be accomplished according to the manufacturer's directions
 - A. Ventilate the patient
 - B. Confirm airway placement by auscultating breath sounds (high axillary and bilaterally) and epigastric sounds
 - 1) Esophageal placement where breath sounds are present bilaterally with epigastric sounds absent
 1. Ventilate through primary tube
 - 2) Tracheal placement where breath sounds are absent and epigastric sounds are present
 1. Ventilate through secondary tube and reassess placement
 - 3) Unknown placement where both breath sounds and epigastric sounds are absent
 1. Deflate cuffs and adjust placement. Reassess placement
 2. Extubate
 - C. Continue ongoing respiratory assessment and treatment

6. TUBE REMOVAL
 - A. Indications
 - 1) Patient regains consciousness
 - 2) Protective gag reflex returns
 - 3) Ventilation is inadequate
 - B. Contact medical control per protocol
 - 1) Do not delay removal when unable to contact medical control
 - C. Remove as per manufacturer's directions
 - D. Monitor airway and respirations closely, suction as needed
 - E. Place the patient on high flow oxygen and assist with ventilation as needed

7. Transport promptly as available

Approved by:

Medical Director (Print)

Medical Director Signature

Date

NAME: _____

Advanced Non-Visualized Airway

		YES	NO
Takes or verbalizes body substance isolation precautions			
Directs partner to insert simple airway adjunct and hyperventilate patient			
Note: Evaluator reports patient has no gag reflex, is being ventilated adequately, and has equal bilateral breath sounds.			
Checks integrity of pharyngeal cuff			
Checks integrity of distal cuff			
Refills syringes			
Verbalizes lubricating distal tip of airway			
Directs partner to remove simple airway adjunct and step aside			
Performs tongue-jaw lift			
Inserts advanced airway to proper depth			
Inflates pharyngeal cuff and removes syringe			
Inflates distal cuff and removes syringe			
Attaches bag-valve-mask to primary tube and directs partner to hyperventilate patient			
Auscultates high axillary and epigastric sounds			
Troubleshoots and ventilates	Breath sounds present, epigastric sounds absent		
	Breath sounds absent, epigastric sounds present		
	Breath sounds and epigastric sounds present		
	Breath sounds and epigastric sounds absent		
Reconfirms tube placement after troubleshooting			
Note: Evaluator reports bilateral breath sounds are present, epigastric sounds are absent after troubleshooting.			
Secures tube			
Note: Evaluator reports return of gag reflex.			
Directs partner to position patient on side			
Verbalizes contacting medical control for permission to remove airway			
Deflates pharyngeal, then distal cuffs			
Removes advanced non-visualized airway			
Verbalizes suctioning pharynx as necessary			

DATE: _____ EVALUATED BY: _____

PASS _____ FAIL _____ RETEST _____

COMMENTS: _____

ADVANCED SKILL MODULE 2

Epinephrine Administration

EpiPen Auto-injector

**First Responder: 10/01
Revised 11/05**

First Responder Advanced Skill Module 2
Epinephrine Administration: Auto-injector

At the completion of this lesson, the First Responder student will be able to:

COGNITIVE OBJECTIVES

1. Recognize the patient experiencing an allergic reaction.
2. Describe the emergency medical care of the patient with an allergic reaction.
3. Describe the mechanisms of allergic response and the implications for airway management.
4. Establish the relationship between the patient with an allergic reaction and airway management
5. State the generic and trade names, medication forms, dose, administration, action, indications, and contraindications for use of the epinephrine auto-injector.
6. Evaluate the need for medical direction in the emergency medical care of the patient with a severe allergic reaction.
7. Differentiate between the general category of those patients having a localized allergic reaction and those patients having an allergic reaction requiring immediate medical care, including immediate use of epinephrine via auto-injector.
8. Explain proper storage and inventory quality assurance techniques for maintaining epinephrine auto-injectors.

AFFECTIVE OBJECTIVES

9. Explain the rationale for administering epinephrine using an auto-injector.

PSYCHOMOTOR OBJECTIVES

10. Demonstrate the emergency medical care of a patient experiencing an allergic reaction.
11. Demonstrate the proper use of epinephrine auto-injectors.
12. Demonstrate the assessment and documentation of patient response to epinephrine administration.
13. Demonstrate proper disposal of equipment.

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Epinephrine Administration: Auto-injector

14. Demonstrate completion of a pre-hospital care report for patients with allergic emergencies.

PREPARATION

Motivation: The ability to recognize and manage severe allergic reactions is possibly the only thing standing between the patient and imminent death.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment

MATERIALS

AV Equipment: Utilize various audio-visual materials relating to allergic emergencies. The continuous design and development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to assure they meet the program objectives.

EMS Equipment: Epinephrine auto-injector, Epinephrine auto-injector trainers, blood pressure cuff and stethoscope

PERSONNEL

Primary Instructor: One First Responder instructor knowledgeable in the physiology of severe allergic reactions and the use of epinephrine auto-injectors, and approved as an epinephrine instructor by the training center medical director or the service medical director.

Assistant Instructor: The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors must be knowledgeable in the use of epinephrine auto-injectors. These instructors must also be approved as epinephrine instructors by the training center medical director.

Recommended Minimum Time to Complete: Three Hours

PRESENTATION

Declarative (What)

I. Legal Issues

- A. s. 146.50(6m)(a), Wis. Stats., as amended by Act 251 - Wisconsin Laws of 1993
- B. HFS 113 – Epinephrine Administration (EpiPen Auto-injector) by First Responders

II. Personal Protection and Body Substance Isolation Techniques

- A. Bloodborne pathogen considerations
- B. Areas to protect during epinephrine administration:
 - 1. Hands
- C. Minimum protective equipment recommended:
 - 1. Gloves
 - 2. Gowns when known or suspected danger of infection is present
- D. Disposal of sharps

III. Allergic Reactions

- A. Definition - an exaggerated immune response to any substance.
- B. Possible causes
 - 1. Insect bites/stings - bees, wasps, etc
 - 2. Food - nuts, crustaceans, etc.
 - 3. Plants
 - 4. Medications
 - 5. Others
- C. Signs and Symptoms
 - 1. Skin
 - a) Patient may state s/he has a warm tingling feeling in the face, mouth, chest, feet and hands
 - b) Itching
 - c) Hives
 - d) Red skin (flushing)
 - e) Swelling to the face, neck, hands, feet and/or tongue
 - 2. Respiratory
 - a) Patient may state s/he feels a tightness in the throat and/or chest
 - b) Cough
 - c) Rapid breathing
 - d) Labored breathing
 - e) Noisy breathing

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- f) Hoarseness
- g) Stridor
- h) Wheezing (audible without stethoscope)
- 3. Cardiac
 - a) Increased heart rate
 - b) Decreased blood pressure
- 4. Other
 - a) Itchy, watery eyes
 - b) Headache
 - c) Sense of impending doom
 - d) Runny nose
 - e) Decreasing mental status
- D. Assessment findings that reveal shock (hypoperfusion) or respiratory distress indicate the presence of a severe allergic reaction

IV. Epinephrine auto-injector

- A. Medication name
 - 1. Generic - Epinephrine
 - 2. Trade - Adrenalin
- B. Medication form - liquid administered via auto-injector needle and syringe system
- C. Care & storage of auto-injectors
 - 1. Stored securely to avoid rolling and/or jarring of the device(s)
 - 2. Stored away from light
 - 3. Stored away from temperature extremes
 - 4. Inspected as part of a regular maintenance process
- D. May be administered only according to local protocol
 - 1. Direct voice contact with medical control
 - 2. Standing orders
- E. The following minimums must be carried:
 - 1. Two (2) - Epipens (0.3 mg)
 - 2. Two (2) - Epipen Juniors (0.15 mg)
- F. Indications for use
 - 1. Acute allergic reactions
- G. Contraindications
 - 1. No absolute contraindication in life threatening emergencies
 - 2. Special considerations:
 - a. Hypertension
 - b. Underlying cardiovascular disease
 - c. Coronary insufficiency
 - d. Pregnancy
 - e. Underlying respiratory disease
 - 1) COPD
 - 2) Pulmonary edema
 - 3) Pneumonia
 - f. Diabetes

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- g. Certain medications:
 - 1) Beta blockers (i.e. Inderal)
 - 2) MAO Inhibitor (Parnate, Nardil)
- H. Actions of Epinephrine
 - 1. Dilates the bronchioles
 - 2. Constricts blood vessels
- I. Side effects
 - 1. Increases heart rate
 - 2. Pallor
 - 3. Dizziness
 - 4. Chest Pain
 - 5. Headache
 - 6. Nausea
 - 7. Vomiting
 - 8. Excitability, anxiousness
- V. Emergency Medical Care
 - A. Body Substance Isolation – take appropriate body substance isolation precautions.
 - B. Patient Assessment
 - 1. Patient has come in contact with substance that causes an allergic reaction and complains of respiratory distress or exhibits signs and symptoms of shock (hypoperfusion).
 - a. Perform initial assessment
 - b. Perform focused history and physical exam
 - 1) History of allergies?
 - 2) What was patient exposed to? And when?
 - 3) How were they exposed?
 - 4) What effects?
 - 5) Progression?
 - 6) Interventions?
 - c. Assess baseline vitals and SAMPLE history
 - d. Administer oxygen if not done in initial assessment.
 - e. Determine the need for epinephrine administration as appropriate intervention
 - 2. Patient has contact with substance that causes allergic reaction without signs of respiratory distress or shock. (Hypoperfusion)
 - a. Continue with focused assessment
 - b. A patient not wheezing or without signs of respiratory compromise or hypotension **should not** receive epinephrine.
 - C. Medical Control
 - 1. Contact medical control physician if required by local protocols
 - 2. Report assessment findings - including:
 - a. Estimated age and weight
 - b. Respiratory status
 - 1) Evidence of respiratory distress (wheezing, stridor)
 - 2) COPD, pulmonary edema, pneumonia

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- c. Pertinent medical history
 - 1) Underlying respiratory disease
 - 2) Underlying cardiovascular disease
 - 3) Pregnancy
 - 4) Hypertension
 - 5) Diabetes
 - 6) Medications taken by patient
3. Specifically request implementation of epinephrine protocol
4. Repeat physician order to medical control
- D. Administration of Epinephrine
 1. Explain procedure to patient and obtain consent (where possible)
 - a. **If the patient has a prescribed preloaded epinephrine auto-injector available:**
 - 1) Insure prescription is for patient
 - 2) Expiration date has not passed
 - 3) Medication has not discolored & contains no particulates
 - b. **If the patient does not have a prescribed preloaded epinephrine auto-injector**
 - 1) Determine appropriate dosage
 - a) Adult - (Over 60 lbs.)
One auto-injector (0.3 mg) [Epipen]
 - b) Child - (20 - 60 lbs)
One auto-injector (0.15 mg) [Epipen Junior]
 - 2) Determine expiration date has not passed
 - 3) Determine medication has not discolored & contains no particulates
 2. Prepare to administer injection
 - a. Hold auto-injector in fist keeping fingers and thumb off either end
 - b. Remove safety cap for the auto-injector
 - c. Place tip of auto-injector against lateral aspect of patient's thigh, midway between **waist** and **knee**
 3. Administer injection
 - a. Push the injector firmly against the patient's thigh until the injector activates
 - b. **DO NOT** place thumb on end of injector
 - c. Hold injector in position until medication is injected (10 seconds)
 - d. Remove device and gently massage injection site to distribute medication and speed absorption
 - e. Dispose of injector in biohazard container
 4. Record activity and time of injection
 - a. Name of patient
 - b. Drug, dosage & route of administration
 - c. Site and time of administration

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- d. Name of First Responder & authorizing medical control physician if applicable
- 5. Reassess and record vitals after two minutes
 - a. Consider ALS interaction & continue to monitor
 - b. Reassess vital signs regularly
- E. Reassess Patient
 - 1. ALS interaction where appropriate
 - 2. Continued focused assessment of airway, breathing and circulatory status
 - a. Patient's condition does not improve or continues to worsen
 - 1) Decreasing mental status
 - 2) Increasing breathing difficulty
 - 3) Decreasing blood pressure
 - 4) Obtain medical direction
 - a) Additional epinephrine per medical control
 - b) Treat for shock (hypoperfusion)
 - c) Prepare to initiate Basic Cardiac Life Support measures – CPR - AED
 - d) Prepare to initiate advanced airway support measures
 - b. Patient's condition improves. Provide supportive care
 - 1) Oxygen
 - 2) Treat for shock (hypoperfusion)

VI. Special Considerations

- A. These patients may initially present with airway/respiratory compromise or airway/respiratory compromise may develop as the allergic reaction progresses.
- B. The airway should be managed according to principles identified in the airway management lessons presented earlier

APPLICATION

Procedural (How)

The instructor will demonstrate the following:

- 1. An initial and focused patient assessment with specific emphasis toward severe allergic reactions.
- 2. Communications technique in defining and describing the patient's condition during contact with medical control.
- 3. Communications technique and terminology in requesting, obtaining, and recording epinephrine protocol decisions.

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4. Proper technique in preparing for injection using an auto-injector including dosage selection, review of expiration date, and visualization of medication for clarity.
5. Hand position for holding the auto-injector device and delivering the injection
 - a. Fully grasping the barrel of the device with thumb wrapped over fingers, keeping clear of either end of the device
 - b. Removal of safety cap of auto-injector
 - c. Stabilization of the extremity using the other hand
6. Place tip of the device against the patient's thigh.
 - a. Lateral aspect of thigh
 - b. Midway between **waist** and **knee**.
7. Pushing the injector firmly against the thigh until the injector activates.
8. Holding the injector in place until the medication has been injected.
9. Withdrawal and disposal of the injector device in a biohazard container.
10. Massaging of the injection site to distribute medication and speed absorption.
11. Recording of the events as per state approved protocols.

Contextual (When, Where, Why)

The First Responder will be able to assist patients experiencing severe allergic reactions by the administration of epinephrine via auto-injectors. The First Responder may assist in the administration of the patient's personally prescribed auto-injector or may, as part of a licensed first responder service approved by the EMS Section to carry and administer epinephrine via auto-injector, administer epinephrine in compliance with state protocol. This will make a significant difference in the treatment of those patients exposed to an allergic agent.

The administration of epinephrine should be performed as soon as possible following appropriate identification of those conditions necessitating its use and approval by a medical control physician.

STUDENT ACTIVITIES

Auditory (Hear)

1. The student should hear the assessment findings differentiating between minor and severe allergic reactions.
2. The student should hear the wheezing and/or crowing breath sounds associated with respiratory distress brought about a severe allergic reaction.

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3. The student should hear the appropriate communications exchange between medical control and the field First Responder in requesting, receiving, and recording permission for the use of an auto-injector for the administration of epinephrine.
4. The student should hear the steps for proper care and storage of epinephrine auto-injectors.
5. The student should hear the steps required to appropriately administer epinephrine using an auto-injector.

Visual (See)

1. The student should see various audio-visual aids showing the assessment findings relative to severe, moderate, and minor allergic reactions.
2. The student should see an actual adult epinephrine auto-injector (Epipen) and an actual child epinephrine auto-injector. (Epipen Junior)
3. The student should see the instructor demonstrate the appropriate steps in using an auto-injector and medical control governing its use.
4. The student should see various audio-visual aids or materials showing the assessment findings of major allergic reactions and the appropriate use of the auto-injector.

Kinesthetic (Do)

1. The student should practice the correct way to use an epinephrine auto-injector.
2. The student should practice role play treatment of a patient experiencing an allergic reaction.
3. The student should practice reassessment and documentation relative to the use of the auto-injector.

INSTRUCTOR ACTIVITIES

1. Provide quality assurance review of training assistant skill standards.
2. Supervise student practice.
3. Reinforce student progress in cognitive, affective, and psychomotor domains.
4. Redirect students having difficulty with content.

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5. Insure all students successfully complete all applicable written and practical competencies.
6. Record and maintain student training records

Evaluation

Written: Develop evaluation instruments, scenario reviews, handouts, and other written examination instruments to determine if students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the First Responder students during role playing, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of psychomotor objectives of this lesson.

Remediation

Identify students or groups of students who are having difficulty with this subject content. Complete remediation.

SEVERE ALLERGIC REACTIONS

PROVIDER NAME: _____ PROVIDER NO. _____

I. FIRST RESPONDER OR AMBULANCE SERVICE EPINEPHRINE AUTO-INJECTOR - For patient exhibiting signs of severe allergic reaction (itching, hives, airway swelling and hypotension) and complains of respiratory distress or exhibits signs and symptoms of shock (hypoperfusion):

- A. Perform initial assessment.
- B. Obtain patient history and perform physical exam
 - 1. History of allergies?
 - 2. What was patient exposed to and how exposed?
 - 3. Effects and progression?
 - 4. Interventions (previous injection)?
- C. Assess baseline vital signs and SAMPLE history.
- D. Administer oxygen (if not already done during initial assessment).
- E. Use extreme caution with any patient over the age of 50 or any patient with cardiac history.
- F. Epinephrine may be administered as needed by standing orders.

Print Medical Director Name

Medical Director Signature

Date

- OR -

Epinephrine may be administered only after direct communication with Medical Control.

Print Medical Director Name

Medical Director Signature

Date

- G. If Epinephrine administration indicated, verify medication to be given is correct dosage, is clear and not discolored
- H. Describe procedure to patient and obtain consent if possible
- I. Administer epinephrine and dispose of injector properly
- J. Record actions and reassess patient in two minutes
- K. Continue to reassess and monitor patient. Provide care and interventions as necessary. Transport when available.
- L. Dose may be repeated in 20 minutes (10 minutes if conditions appear to be life-threatening) with physician authorization.

If epinephrine protocol not approved, continue with assessment and care.

II. Patient has contact with substance that causes allergic reactions **without** signs of respiratory distress or shock (hypo perfusion):

- A. Continue with focused assessment
- B. A patient not wheezing and/or without signs of respiratory compromise or hypotension **should not** receive epinephrine
- C. Perform ongoing assessment and record actions. Provide care and interventions as necessary. Transport when available
- D. Report any changes to medical control

III. Dosage

- A. Adults: (>60 pounds) 0.3 mg epinephrine 1:1000 IM (one EpiPen® Adult)
- B. Children: (<60 pounds) 0.15 mg epinephrine 1:2000 IM (one EpiPen Junior®)

Approved by:

_____	Medical Director (Print)
_____	Medical Director Signature
_____	Date

ADVANCED SKILL MODULE 3

Spinal Stabilization

First Responder 10/05
Revised 11/05

At the completion of this lesson, the First Responder student will be able to:

COGNITIVE OBJECTIVES

1. State the components of the nervous system.
2. List the functions of the central nervous system.
3. Define the structure of the skeletal system as it relates to the nervous system.
4. Relate mechanism of injury to potential injuries of the head and spine.
5. Describe the implications of not properly caring for potential spine injuries.
6. State the signs and symptoms of a potential spine injury.
7. Describe the method of determining if a responsive patient may have a spine injury.
8. Relate the airway emergency medical care techniques to the patient with a suspected spine injury.
9. Describe how to stabilize the cervical spine.
10. Discuss indications for sizing and using a cervical spine stabilization device.
11. Establish the relationship between airway management and the patient with head and spine injuries.
12. Describe a method for sizing a cervical spine stabilization device.
13. Describe how to log roll a patient with a suspected spine injury.
14. Describe how to secure a patient to a long spine board.
15. List instances when a short spinal stabilization device should be used.
16. Describe how to immobilize a patient using a short spinal stabilization device.
17. Describe the indications for the use of rapid extrication.
18. List steps in performing rapid extrication.
19. State the circumstances when a helmet should be left on the patient.

20. Discuss the circumstances when a helmet should be removed.
21. Identify different types of helmets.
22. Describe the unique characteristics of sports helmets.
23. Explain the preferred methods to remove a helmet.
24. Discuss alternative methods for removal of a helmet.
25. Describe how the patient's head is stabilized to remove the helmet.
26. Differentiate how the head is stabilized with a helmet compared to without a helmet.

AFFECTIVE OBJECTIVES

At the completion of this lesson, the First Responder student will be able to:

27. Explain the rationale for stabilization of the entire spine when a cervical spine injury is suspected.
28. Explain the rationale for utilizing stabilization methods apart from the straps on the cots.
29. Explain the rationale for utilizing a short spine stabilization device when moving a patient from the sitting to the supine position.
30. Explain the rationale for utilizing rapid extrication approaches only when they indeed will make the difference between life and death.
31. Defend the reasons for leaving a helmet in place for transport of a patient.
32. Defend the reasons for removal of a helmet prior to transport of a patient.

PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the First Responder student will be able to:

33. Demonstrate opening the airway in a patient with suspected spinal cord injury.

34. Demonstrate evaluating a responsive patient with a suspected spinal cord injury.
35. Demonstrate stabilization of the cervical spine.
36. Demonstrate the four person log roll for a patient with a suspected spinal cord injury.
37. Demonstrate how to log roll a patient with a suspected spinal cord injury using two people.
38. Demonstrate securing a patient to a long spine board.
39. Demonstrate using the short board stabilization technique.
40. Demonstrate procedure for rapid extrication.
41. Demonstrate preferred methods for stabilization of a helmet.
42. Demonstrate helmet removal techniques.
43. Demonstrate alternative methods for stabilization of a helmet.
44. Demonstrate completing a prehospital care report for patients with spinal injuries.

PREPARATION

Motivation: Injuries to the head and spine are extremely serious and may result in severe permanent disability or death if improperly treated or missed in the assessment.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment, Illness and Injury

MATERIALS

AV Equipment: Utilize various audio-visual materials relating to injuries of the head and spine. The continuous design and development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to assure meeting the objectives of the curriculum.

EMS Equipment: Long spine board, short spine stabilization device, cervical stabilization devices, helmet, head stabilization device, blanket roll, two inch tape.

PERSONNEL

Primary Instructor: One First Responder instructor knowledgeable in head and spinal injuries.

Assistant Instructor: The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in head and spinal emergencies and treatment.

Recommended Minimum Time to Complete: Three hours

PRESENTATION

Declarative (What)

- I. Legal
 - A. s. 146.50(6m)(a), Wis. Stats., as amended by Act 251 - Wisconsin Laws of 1993
 - B. HFS 113 – Spinal Immobilization by First Responders

- II. Personal Protection and Body Substance Isolation Techniques
 - A. Bloodborne and airborne pathogen considerations
 - B. Areas to protect during spinal immobilization:
 - 1. Hands
 - 2. Eyes
 - 3. Nose and mouth
 - C. Minimum protective equipment recommended:
 - 1. Goggles or appropriate eye protection
 - 2. Gloves
 - 3. Mask when splashing or blood splatter is likely - (Consider HEPA mask for airborne pathogens)
 - 4. Gowns when known or suspected danger of infection is present

- III. Anatomy
 - A. Nervous System
 - 1. Components
 - 2. Actions
 - B. Skeletal System
 - 1. Functions
 - 2. Components
 - a. Skull
 - b. Spinal column
 - 1) Bones
 - 2) Surrounds and protects the spinal cord

- IV. Stabilization Devices
 - A. Cervical spine stabilization devices
 - 1. Indications
 - a. Any suspected injury to the spine based on mechanism of injury, history or signs and symptoms.

- b. Use in conjunction with short spinal immobilization devices and long spine boards.
 - 2. Sizing
 - a. Various types of rigid cervical stabilization devices exist, therefore, sizing is based on the specific design of the device.
 - b. An improperly sized stabilization device has a potential for further injury.
 - c. Do not obstruct the airway with the placement of a cervical stabilization device.
 - d. If it doesn't fit use a rolled towel and tape to the board and manually support the head. An improperly fit device will do more harm than good.
 - 3. Precautions
 - a. Cervical stabilization devices alone do not provide adequate in-line stabilization.
 - b. Manual stabilization must always be used with a cervical stabilization device until the head is secured to a board.
 - B. Short spinal stabilization devices
 - 1. Several different types of short spinal stabilization devices exist.
 - a. Vest type devices
 - b. Rigid short board
 - 2. Provides stabilization and immobilization to the head, neck and torso.
 - 3. Used to stabilize non-critical sitting patients with suspected spinal injuries.
 - C. Long Spine Boards (Full body spinal stabilization devices)
 - 1. Several different types of long board stabilization devices exist.
 - 2. Provide stabilization and immobilization to the head, neck and torso, pelvis and extremities.
 - 3. Used to stabilize patients found in a lying, standing, or sitting position.
 - 4. Sometimes used in conjunction with short spinal stabilization devices.
- V. Emergency Medical Care
 - A. Body Substance Isolation - take appropriate body substance isolation precautions
 - B. Patient Assessment
 - 1. Initial patient assessment.
 - a. Establish and maintain in-line stabilization.
 - 1) Place the head in a neutral in-line position unless the patient complains of pain or the head is not easily moved into position.
 - 2) Place head in alignment with spine.
 - 3) Maintain constant manual in-line stabilization until the patient is properly secured to a backboard with the head immobilized.
 - b. Control bleeding.

- 1) Do not apply pressure to an open or depressed skull injury
 - 2) Dress and bandage open wound as indicated in the treatment of soft tissue injuries
 - c. Consider ALS interaction
 - d. Assess pulse, motor and sensation in all extremities.
 - e. Assess the cervical region and neck.
2. Mechanism of injury
 - a. Compression
 - 1) Falls
 - 2) Diving accidents
 - 3) Motor vehicle accidents
 - b. Excessive flexion, extension, rotation
 - c. Lateral bending
 - d. Distraction - Pulling apart of the spine
 - 1) Hangings
 - e. Maintain a high index of suspicion
 - 1) Motor vehicle crashes
 - 2) Pedestrian - vehicle collisions
 - 3) Falls
 - 4) Blunt trauma
 - 5) Penetrating trauma to head, neck, or torso
 - 6) Motorcycle crashes
 - 7) Hangings
 - 8) Diving accidents
 - 9) Unconscious trauma victims
 - a) Obtain information from others at the scene to determine information relevant to mechanism of injury or patient mental status prior to the First Responder's arrival.
3. Signs and symptoms
 - a. Pain, tenderness or deformity in the area of injury
 - 1) Pain associated with moving
 - a) Tell the patient not to move
 - b) Do not ask the patient to move to try to elicit a pain response.
 - c) Do not move the patient to test for a pain response.
 - 2) Pain independent of movement or palpation
 - a) Along spinal column
 - b) Lower legs
 - c) May be intermittent - ask
 - (1) Does your neck or back hurt?
 - (2) Where does it hurt?

- 3) Lack of pain does not rule out the possibility of spinal column or cord damage.
 - b. Soft tissue injuries associated with trauma
 - 1) Inspect for contusions, lacerations, punctures, penetrations, swelling.
 - a) Head and neck to cervical spine
 - b) Shoulders, back or abdomen - thoracic, lumbar
 - c) Lower extremities - lumbar, sacral
 - c. Numbness, weakness or tingling in the extremities
 - 1) Assess equality of strength of extremities
 - a) Hand grip
 - b) Gently push feet against hands
 - d. Inability to walk, move extremities or feel sensation - ask
 - 1) Can you move your hands and feet?
 - 2) Can you feel me touching your fingers?
 - 3) Can you feel me touching your toes?
 - e. Incontinence
 4. Complications
 - a. Inadequate breathing effort
 - b. Paralysis
 - C. Stabilization (It is important to note that patients are moved only to treat or stabilize and only with sufficient personnel to accomplish the objective.)
 1. Apply a rigid, cervical stabilization device.
 - a. Properly size the cervical stabilization device. If it doesn't fit use a rolled towel and tape to the board and have rescuer hold the head manually.
 - b. An improperly fit stabilization device will do more harm than good.
 2. If found in a lying position, immobilize the patient to a long spine board
 - a. Position the device.
 - b. Move the patient onto the device by log rolling.
 - 1) One First Responder must maintain in-line stabilization of the head and spine.
 - 2) First Responder at the head directs the movement of the patient.
 - 3) One to three other First Responders control the movement of the rest of the body.
 - 4) Quickly assess posterior body if not already done in focused history and physical exam.
 - 5) Position the long spine board under the patient.
 - 6) Place patient onto the board at the command of the First Responder holding in-line stabilization using a slide, proper lift, log roll or scoop stretcher so as to limit movement to the minimum amount possible. Which method to use must be decided based upon the situation, scene and available

- resources.
- 7) Pad voids between the patient and the board.
 - a) Adult
 - (1) Under the head
 - (2) Voids under torso. Be careful of extra movement.
 - b) Infant and child - pad under the shoulders to the toes to establish a neutral position.
 - 8) Immobilize torso to the board.
 - 9) Immobilize the patient's head to the board.
 - 10) Secure the legs to the board.
 - 11) Reassess pulses, motor and sensation and record.
3. If the patient is found in a sitting position in a chair, immobilize with a short spine stabilization device.
- a. Position device behind the patient.
 - b. Secure the device to the patient's torso.
 - c. Evaluate torso fixation and adjust as necessary without excessive movement of the patient.
 - d. Evaluate and pad behind the patient's head as necessary to maintain neutral in-line stabilization.
 - e. Secure the patient's head to the device.
 - f. Slide a long board under the patient and rotate and lower him to it. Make sure board is secure. If not possible, lower patient to the long spine board.
 - g. Reassess pulses, motor and sensory in all extremities and record.
4. If the patient is found in a standing position, immobilize the patient to a long board.
- a. Position the device behind patient with one rescuer behind the board manually stabilizing patient's head.
 - b. Move the patient onto the device by:
 - 1) One rescuer on each side of the patient, one additional rescuer at the foot facing the patient.
 - 2) The rescuers on both sides of the patient reach with the hand closest to the patient under the arm to grasp the board, and use the hand farthest from the patient to secure the head.
 - 3) Once the position is assured, they place the leg closest to the board behind the board and begin to tip the top backward. The rescuer at the foot of the board secures the board and the patient to prevent them from sliding, and the board is brought into a level horizontal position.

D. Reassess Patient

VI. Special Considerations

- A. Rapid extrication
 - 1. Indications
 - a. Unsafe scene
 - b. Unstable patient condition warrants immediate movement and transport.
 - c. Patient blocks the First Responder's access to another, more seriously injured, patient.
 - d. Rapid extrication is based on time and the patient, and not the First Responder's preference.
 - 2. Procedure - refer to training on Lifting and Moving the Patient
- B. Helmet removal
 - 1. Special assessment needs for patients wearing helmets.
 - a. Airway and breathing.
 - b. Fit of the helmet and patient's movement within the helmet.
 - c. Ability to gain access to airway and breathing.
 - 2. Indications for leaving the helmet in place
 - a. Good fit with little or no movement of the patient's head within the helmet.
 - b. No impending airway or breathing problems.
 - c. Removal would cause further injury to the patient.
 - d. Proper spinal stabilization could be performed with helmet in place.
 - e. No interference with the First Responder's ability to assess and reassess airway and breathing.
 - 3. Indications for removing the helmet
 - a. Inability to assess and/or reassess airway and breathing.
 - b. Restriction of adequate management of the airway or breathing.
 - c. Improperly fitted helmet allowing for excessive patient head movement within the helmet.
 - d. Proper spinal stabilization cannot be performed due to helmet.
 - e. Cardiac arrest.
 - 4. Types of helmets:
 - a. Sports
 - 1) Typically open anteriorly
 - 2) Easier access to airway
 - b. Motorcycle
 - 1) Full face
 - 2) Shield
 - c. Other
 - 5. General rules for removal of a helmet.
 - a. The technique for removal of a helmet depends on the actual type of helmet worn by the patient.
 - b. Take eyeglasses off before removal of the helmet.
 - c. One First Responder stabilizes the helmet by placing his hands on each side of the helmet with the fingers on the mandible to prevent

- movement.
 - d. Second First Responder loosens the strap.
 - e. The second First Responder places one hand on the mandible at the angle of the jaw and the other hand posteriorly at the occipital region.
 - f. The First Responder holding the helmet pulls the sides of the helmet apart and gently slips the helmet halfway off the patient's head then stops.
 - g. The First Responder maintaining stabilization of the neck repositions, slides the posterior hand superiorly to secure the head from falling back after complete helmet removal.
 - h. The helmet is removed completely.
 - i. If a helmet is removed in the field it should be transported with the patient to the receiving facility.
 - j. The First Responder then can proceed with spinal stabilization as indicated in the spinal stabilization section.
- C. Infants and children - immobilize the infant or child on a rigid board appropriate for size (short, long or padded splint), according to the procedure outline in the spinal stabilization section. Special considerations:
1. Pad from the shoulders to the heels of the infant or child, if necessary to maintain neutral stabilization.
 2. Properly size the cervical stabilization device. If it doesn't fit, use a rolled towel and tape to the board and manually support head. An improperly fit stabilization device will do more harm than good.

APPLICATION

Procedural (How)

1. Show diagrams or illustrations of the nervous system anatomy.
2. Show diagrams or illustrations of the structure of the skeletal system as it relates to the nervous system.
3. Show audio-visual aids or materials of related mechanism of injury to potential injuries of the head and spine.
4. Show audio-visual aids or materials of potential signs and symptoms of a potential spine injury.
5. Demonstrate the method of determining if a responsive patient may have a spine injury.
6. Demonstrate the airway emergency medical care techniques for the patient with a suspected spinal cord injury.
7. Demonstrate methods for sizing various cervical spine stabilization devices.
8. Demonstrate rapid extrication techniques.
9. Demonstrate how to stabilize the cervical spine.
10. Demonstrate how to immobilize a patient using a short spinal stabilization device.
11. Demonstrate how to log roll a patient with a suspected spine injury.
12. Demonstrate how to secure a patient to a long spine board.
13. Demonstrate the preferred methods to remove sports, motorcycle and various other helmets.
14. Demonstrate alternative methods for removal of a helmet.
15. Demonstrate how the head is stabilized with a helmet compared to without a helmet.
16. Demonstrate how the patient's head is stabilized in order to remove a helmet.
17. Demonstrate sudden airway emergency medical care with helmet on.

Contextual (When, Where, Why)

For every patient who is involved in any type of traumatic incident in which the mechanism of injury and/or signs and symptoms indicate a possible spinal injury, complete spinal stabilization must be conducted. Critically injured or ill patients may be rapidly moved only with spinal stabilization techniques utilized. A short backboard or spinal stabilization device will be used on non-critically injured patients at the scene prior to movement of the patient. However, when patients present with life threats, or the scene is unsafe for the First Responder, the patient is moved by a rapid extrication technique. Failure to immobilize the spine or treat the head injured patient will lead to increased patient morbidity and mortality.

STUDENT ACTIVITIES

Auditory (Hear)

1. Simulations in which stabilization techniques are needed and performed.
2. Simulations in which patients present with head injuries.

Visual (See)

1. The student should see audio-visual aids or materials of the nervous system anatomy.
2. The student should see audio-visual aids or materials of the structure of the skeletal system as it relates to the nervous system.
3. The student should see audio-visual aids or materials of mechanism of injury related to potential injuries of the head and spine.
4. The student should see audio-visual aids or materials of signs and symptoms of a potential spine injury.
5. The student should see a demonstration of the method of determining if a responsive patient may have a spine injury.
6. The student should see a demonstration of the airway emergency medical care techniques for the patient with a suspected spine injury.
7. The student should see a demonstration of the methods for sizing various cervical spine stabilization devices.
8. The student should see a demonstration of rapid extrication techniques.

9. The student should see a demonstration of how to stabilize the cervical spine.
10. The student should see a demonstration of how to immobilize a patient using a short spinal stabilization device.
11. The student should see a demonstration of how to log roll a patient with a suspected spinal injury.
12. The student should see a demonstration of how to secure a patient to a long spine board.
13. The student should see a demonstration of the preferred methods to remove sports, motorcycle and various other helmets.
14. The student should see a demonstration of alternative methods for removal of a helmet.
15. The student should see a demonstration of how the head is stabilized with a helmet compared to without a helmet.
16. The student should see a demonstration of how the patient's head is stabilized in order to remove a helmet.
17. The student should see various types of long backboards.
18. The student should see various types of vest type stabilization devices.
19. The student should see various types of short backboards.
20. The student should see various types of helmets.
21. The student should see a demonstration of stabilization of an infant or child patient on a long backboard.

Kinesthetic (Do)

1. The student should practice opening the airway in a patient with suspected spinal cord injury.
2. The student should practice evaluating a responsive patient with a suspected spinal cord injury.
3. The student should practice stabilization of the cervical spine.
4. The student should practice using the short board stabilization technique.

5. The student should practice the four person log roll for a patient with a suspected spinal cord injury.
6. The student should practice how to log roll a patient with a suspected spinal cord injury using two people.
7. The student should practice securing a patient to a long spine board.
8. The student should practice helmet removal techniques.
9. The student should practice the procedure for rapid extrication.
10. The student should practice the preferred methods for stabilization of the helmet.
11. The student should practice alternative methods for stabilization of the helmet.
12. The student should practice preferred methods for stabilization of the head.
13. The student should practice alternative methods for stabilization of the head.
14. The student should practice completing a prehospital care report for patients with head and spinal injuries.
15. The student should practice the use of cervical stabilization devices, rolls and short boards for immobilizing the infant or child patient.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content.

EVALUATION

Practical: Evaluate the actions of the First Responder students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

REMIEDIATION

Identify students or groups of students who are having difficulty with this subject content. Complete remediation.

ENRICHMENT

What is unique in the local area concerning this topic? Complete enrichment sheets from the instructor's course guide and attach with lesson plan.