

Emergency Medical Services Agency



Optional Scope of Practice Skills Course

January 2006

Contra Costa County Health Services Department
Emergency Medical Services Agency

SESSION OUTLINE

TOPIC: Contra Costa County Optional Scope of Practice Skills Course

SESSION 1: Paramedic Optional Scope of Practice Skills

1. Pediatric Endotracheal Intubation
2. Intraosseous Infusion
3. External Cardiac Pacing

LESSON PLAN

COURSE: “Contra Costa County Optional Scope of Practice Skills”

TOPIC: Session 1

OBJECTIVES: At the completion of the training session, the student shall be able to:

1. Demonstrate the skills in Contra Costa County’s optional scope of practice for paramedics.
2. Identify that BLS maneuvers are the preferred method for initial airway management for pediatric patients.
3. Identify the indications for pediatric intubation.
4. Identify the contraindications for pediatric intubation.
5. Identify the equipment needed to perform pediatric intubation.
6. Demonstrate the procedure for intubating a pediatric patient.
7. Identify the indications for performing an intraosseous infusion.
8. Identify the absolute contraindication of intraosseous infusion.
9. Identify the relative contraindications of intraosseous infusion.
10. Identify the equipment needed to perform an intraosseous infusion
11. Demonstrate the procedure for placing an intraosseous infusion.
12. Identify the possible complications of intraosseous infusion.
13. Identify the indications for external cardiac pacing.
14. Identify the contraindications for external cardiac pacing.
15. Identify the equipment needed to perform external cardiac pacing.
16. Demonstrate the procedure for external cardiac pacing.

MATERIALS NEEDED: Projection Screen
LCD Projector
Computer
Power Point Presentation “Contra Costa County’s Optional Scope of Practice”
1 – Pediatric Intubation Manikin
1 – Set of Oral Airways – 000 – 6
1 – Set of Nasal Airways
1 – Set of Pediatric ET Tubes – 2.5 – 6.0
1 – Laryngoscope handle

- 1 – Laryngoscope blade - #2, 3 MacIntosh
#1, 2, 3 Miller
- 1 – Pediatric Tube Holder
- 1 – Pediatric Magill Forceps
- 1 – Water Soluble Lubricant
- 1 – Pediatric Stylet
- 1 – Suction Unit
- 1 – Stethoscope
- 1 – Infant/Pediatric Bag Valve Mask
- 4 – Box of Gloves
- 4 – Box of Masks
- 1 – Set of Extra Batteries
- 1 – Extra Bulbs
- 1 – Intraosseous Manikin
- 1 – IV of NS 100 cc bag or volutrol
- 1 – 10cc syringe
- 1 – 10cc Normal Saline
- 1 – Pair Sterile Gloves
- 1 – IO Needle
- 1 – Towel
- 1 – Cardiac monitor/defibrillator with pacing capability
- 1 – Adult Manikin
- 1 – Cardiac rhythm generator/simulator
- 1 – Set Pacing Electrodes

Handouts –
CCC Optional Scope of Practice Skills Packet

REFERENCE: Contra Costa County Prehospital Care Manual

I. INTRODUCTION:

Explain:

1. The skills being reviewed and evaluated in this course are the skills in the optional scope of practice for paramedics in Contra Costa County.
2. That BLS maneuvers are the preferred method for initial airway management for pediatric patients.

II. PRESENTATION

1. Pediatric Intubation
 - a. BLS airway
 - b. ALS airway
 - i. indication
 - ii. contraindication
 - iii. equipment
 - iv. procedure

2. Intraosseous Infusion
 - a. indications
 - b. absolute contraindications
 - c. relative contraindications
 - d. equipment
 - e. procedure
 - f. possible complication

3. External Cardiac Pacing
 - a. indications
 - b. contraindications
 - c. equipment
 - d. procedure

III. APPLICATION

Explain with PowerPoint/Video

Explain with Power Point/Video

Explain with PowerPoint/Video

IV. EVALUATION:

Students to demonstrate how to intubate a pediatric patient.

Students to demonstrate how to perform an intraosseous infusion.

Students to demonstrate how to perform external cardiac pacing.

PEDIATRIC ENDOTRACHEAL INTUBATION

BLS maneuvers are the preferred method for initial airway management and are frequently sufficient to maintain the airway. If BLS maneuvers appear ineffective or are unable to be maintained, intubation should be considered.

Indications:

- Patient in cardio pulmonary or respiratory arrest
- Patient with a respiratory rate of 6 or less, or with ineffective respiratory effort

Contraindications:

- Isolated medical respiratory arrest with suspected hypoglycemia or narcotic overdose
- Maxillo-facial trauma with unrecognizable facial landmarks
- Patients experiencing seizures
- Patients with an active gag reflex

Equipment:

OPA: sizes 000 – 6	Water Soluble Lubricant	End-tidal CO2 Detector
Laryngoscope handle	Magill Forceps – Pedi	Stylet – Pedi
Laryngoscope blades: 2 each # 2, 3 MacIntosh	ET Tubes: 3 each 2.5 – 6.0	Towels
# 0, 1, 2, 3 Miller	Extra Batteries	Suction
1” Waterproof Tape	Extra Bulbs	Stethoscope
Tube Holder		Bag-Valve-Masks – Pedi

Procedure:

- 1) Assure an adequate BLS airway.
- 2) Hyperventilate with 100% oxygen using a bag-valve-mask.
- 3) Select appropriate ET tube. If appropriate tube has a cuff, check cuff to ensure that it does not leak; note the amount of air needed to inflate. Deflate tubecuff. Leave syringe attached.
 - a. Insert appropriate stylet, making sure that it is recessed at least one cm. from the distal opening of the ET tube.
 - b. Lubricate the tip of the ET tube
- 4) Assure c-spine immobilization with suspected trauma.
- 5) Insert laryngoscope and visualize the vocal cords.
- 6) Suction if necessary and remove any loose or obstructing foreign bodies.
- 7) CAREFULLY pass the endotracheal tube tip past the vocal cords; remove the stylet; advance the ET tube until the cuff is just beyond the vocal cords; then inflate the cuff. For uncuffed tubes, advance tube no more than 2.5 cm beyond vocal cords (use vocal cord marker line if present on tube).
- 8) Immediately assess tube placement with colorimetric end-tidal CO2 indicator or capnography.
- 9) Following successful confirmation of intubation, auscultation of lungs, epigastrium and observation of chest rise should be done. If chest does not rise, extubate and reintubate.
- 10) Secure the tube with tape of ET holder and ventilate. Mark the TUBE at the level of the lips.

INTRAOSSEROUS INFUSION

Establishing vascular access is often difficult or impossible during life-threatening emergencies in infants and young children. Intraosseous infusion offers an excellent alternative to give drugs or fluids in these situations.

Indications:

- The child is under the age of seven (7) and has no obvious venous access;
- One of the following conditions exists:
 - cardiac or respiratory arrest, impending arrest or unstable dysrhythmia
 - shock or evolving shock, regardless of cause
- After evaluation of potential IV sites, it is determined that an IV attempt would not be successful

Absolute Contraindications:

- Fracture of the tibia

Relative Contraindications:

- Skin infection or burn overlying the area of insertion

Equipment:

- Povidone-based prep solution
- IV of NS attached to volutrol or 100cc bag
- 10/12 cc syringe filled with normal saline
- Sterile gloves
- Intraosseous needle
- 3 cc syringe

Procedure:

- 1) Place the child supine with a rolled towel under the knee, restrain if necessary.
- 2) Use the flat surface of the proximal tibia tubercle. Put on gloves and thoroughly prep the area with the antiseptic solution.
- 3) Introduce the Intraosseous needle slightly angled from perpendicular at a 60 angle, directed towards the foot.
- 4) Pierce the bony cortex using a firm rotary or drilling motion (do not move needle side to side or up and down). A distinct change in resistance will be felt upon entry into the medullary space.
- 5) Remove the stylet and confirm intramedullary placement by injecting, without resistance, 10 cc of normal saline.
- 6) Attach IV tubing to the intraosseous hub.
- 7) Anchor needle to overlying skin with tape.
- 8) If unable to establish on first attempt, make one attempt on opposite leg, no more than two (2) attempts total.
- 9) Monitor pulses distal to area of placement.
- 10) Monitor leg for signs of swelling or cooling temperature, which may indicate infiltration of fluids into surrounding tissue.

Possible Complications:

- Local infiltration of fluids/drugs into the subcutaneous tissue due to improper needle placement
- Cessation of the infusion due to clotting in the needle, or the bevel of the needle being lodged against the posterior cortex
- Compartment syndrome
- Osteomyelitis or sepsis
- Fluid overload
- Fat or bone emboli
- Bony Fracture
- Growth plate injury

EXTERNAL CARDIAC PACING

External cardiac pacing may be performed for the treatment of symptomatic bradycardia. This procedure is required for transport providers and optionally available for first-responder paramedic providers.

Indications:

- Symptomatic bradycardia (heart rate <60 and one or more signs or symptoms below)

Signs and symptoms:

- Blood pressure <90 systolic;
- Shock—Signs of poor perfusion, evidenced by:
 - decreased level of consciousness or decreased sensorium;
 - prolonged capillary refill;
 - cool extremities or cyanosis;
- Chest pain, diaphoresis;
- CHF or acute shortness of breath.

Contraindications:

- Asystole
- Brady-asystolic cardiac arrest
- Hypothermia (relative contraindication) – patient warming measures have precedence
- Children <14 years old (hypoxia/respiratory problems are most likely causes of bradycardia in children and should be addressed.)

Equipment:

- Cardiac monitor/defibrillator with pacing capability
- Pacing electrodes

Procedure:

- 1) Patient assessment and treatment per *Symptomatic Bradycardia* treatment guideline. If IV access not promptly available, proceed to pacing (should not wait to administer atropine/wait for response to treatment).
- 2) Explain procedure to the patient.
- 3) Place pacing electrodes and attach pacing cable to pacing device per manufacturer's recommendations.
- 4) Set pacing mode to demand mode, pacing rate to 80 BPM, and current at zero milliamps (mA).
- 5) As possible/if required, provide patient sedation/pain relief with midazolam or morphine sulfate IV or IM. Patients with profound shock and markedly altered level of consciousness may not require sedation/pain relief initially.
- 6) Activate pacing device and increase the current in 10 mA increments until capture is achieved (pacemaker produces pulse with each paced QRS complex).
- 7) Assess patient for mechanical capture and clinical improvement (BP, pulses, skin signs, LOC).
- 8) Continue monitoring.
- 9) Contact base if any questions or if additional therapy is required.

NOTE:Patients with high grade AV block (second degree type II or third degree block) who do not have symptoms do not require pacing. However, equipment should be immediately available if symptoms arise. Patients with symptoms who respond initially to atropine should have pacing equipment immediately available.

PEDIATRIC ENDOTRACHEAL INTUBATION SKILLS DEMONSTRATION

NAME _____

DATE _____

EVALUATOR _____

SKILL DEMONSTRATION	SKILL COMPLETION CRITERIA	
Patient Assessment	-Identifies patient meets criteria for endotracheal intubation	
Initiates Treatment	-Ensures oxygen delivery equipment is connected to oxygen source -Position patient -Assure patient is oxygenated and ventilated with bag-valve-mask	
Assembles Equipment	-Selects appropriate ET tube -Tests equipment (checks cuff in cuffed tube, check light) -Inserts stylet -Lubricates tip of ET tube -Assures suction functioning	
Prepares Patient	-Position patient – Medical patient sniffing position, Trauma patient in neutral position with in-line manual stabilization -Has partner oxygenate patient 5 – 6 time with bag-valve-mask and 100% oxygen	
Insert Endotracheal Tube	-Opens mouth by applying thumb pressure on chin -Inserts laryngoscope into mouth -Visualizes vocal cords -Suctions if necessary -Passes the endotracheal tube tip past the vocal cords -Removes stylet -Advances the ET tube until the cuff is just beyond the vocal cords; inflates cuff. For uncuffed tubes, advances tube no more than 2.5 cm beyond vocal cords.	
Assess /Monitor Patient	-Confirms tube placement using Colorimetric end-tidal CO2 indicator or capnography -Continues confirmation of tube with auscultation of lungs, epigastrium and observation of bilateral chest rise -Secure tube with tape or ET holder and ventilate -Marks tube at the level of the lips. Record tube position. -Continues to monitor patient and tube placement	

Station Completion Criteria: Student correctly performs, in proper sequence, all identified critical performance steps.

INTRAOSSUEOUS INFUSION SKILLS DEMONSTRATION

NAME _____

DATE _____

EVALUATOR _____

SKILL DEMONSTRATION	SKILL COMPLETION CRITERIA	
Patient Assessment	-Identifies patient meets criteria for intraosseous infusion	
Initiates Treatment	-Evaluates patient for potential IV sites	
Assembles Equipment	-Assures IO equipment ready and available -Assures IV set up is ready for use with volutrol or 100cc bag	
Prepares Patient	-Positions patient supine with a rolled towel under the knee -Restrains patient if necessary. -Finds the flat surface of the proximal tibia tubercle. -Puts on gloves and preps the area with the antiseptic solution	
Insert Intraosseous Infusion	-Introduces the Intraosseous needle slightly angled from perpendicular at a 60 degree angle, directed toward the foot -Pierces the bony cortex using a firm rotary or drilling motion (a distinct change in resistance will be felt upon entry into the medullary space) -Removes the stylet -Confirms intramedullary placement by injecting, without resistance, 10cc of normal saline -Attaches IV tubing to the Intraosseous hub	
Assess /Monitor Patient	-Secures needle to overlying skin with tape -Monitors pulses distal to area of placement. -Monitors leg for swelling or cooling temperature.	

Station Completion Criteria: Student correctly performs, in proper sequence, all identified critical performance steps.

EXTERNAL CARDIAC PACING SKILLS DEMONSTRATION

NAME _____

DATE _____

EVALUATOR _____

SKILL DEMONSTRATION	SKILL COMPLETION CRITERIA	
Patient Assessment	-Identifies cardiac rhythms and patient symptoms that may require pacing	
Initiates Treatment of Symptomatic Brady	-Ensures airway, high flow oxygen -Position of comfort -Establishes IV access TKO -Administers Atropine 0.5 mg IV	
Assembles Equipment	-Prepares AP patches -Assures EKG electrodes are away from pacing electrode site -Confirms and records EKG	
Prepares Patient	-Explains procedure to patient -Considers/outlines sedation options -Bares patient's chest -Wipes electrode sites clean and dry (Does not use alcohol, benzoin or antiperspirant on pacing electrode sites) -Describes additional preparation to patient with excessive hair, damp or oily skin	
Pacing	-Applies pacing electrodes (describes and demonstrates anterior-posterior placement and anterior-lateral placement) -Attaches pacing cable to pacing device/manufacturer's recommendation -Selects lead for most prominent QRS display -Sets pacer to demand mode, rate at 80 and current to 0mA -Activates pacer -Increases current in 10mA increments until capture is achieved	
Reassess /Monitor Patient	-Confirms efficacy of pacing (evaluates pulse, VS, skin signs, LOC, symptoms) -Continues to monitor patient -Discusses other options available for treatment (dopamine, repeat atropine, rapid transport)	

Station Completion Criteria: Student correctly performs, in proper sequence, all identified critical performance steps.