The next meeting of PMAC is on:
Monday, March 22, 2010
9:00AM – 11:00AM
Riverside County Regional Medical Center
26520 Cactus Avenue, Moreno Valley
Rooms A1018 and A1021
951/358-5029

1. CALL TO ORDER
   Vice Chairman Kevin Powell

2. PLEDGE OF ALLEGIANCE
   Vice Chairman Kevin Powell

3. ROUNDTABLE INTRODUCTIONS
   Vice Chairman Kevin Powell

4. CHANGES IN MEETING STRUCTURE
   Brian MacGavin

5. APPROVAL OF MINUTES
   January 25, 2010 Minutes (Attachment A)

6. COMMITTEE / TASK FORCE DISCUSSION (90 Minutes)
   This is the time / place in the agenda in which a brief committee report will be given. PMAC members are expected to engage in discussion for about 15 minutes per topic for the purposes of providing improved understanding and recommendations to the EMS Agency.
   6.1 Policies—Scott Moffatt
   6.2 5150s—Christina Bivona-Tellez
   6.3 Interfacility Transfers—Kent McCurdy
   6.4 CQI TAG—Bruce Barton (Attachment B to follow)
   6.5 HEMS CQI—Steve Patterson, MD
   6.6 STEMI—Laura Wallin

7. New Business (5 Minutes)
   Policy Changes—Karen Petrilla (Attachment C)
8. **Unfinished Business (5 Minutes)**
   MCI Policy—Trevor Douville (Handout)

9. **Open Discussion (5 Minutes)**
   This is the time / place in the agenda that committee members and non committee members can speak on items not on the agenda but within the purview of PMAC.
   9.1 Committee Members
   9.2 Non Committee Members

10. **Next Meeting / Adjournment**
    June 28, 2010

Please come prepared to discuss the agenda items. If you have any questions, call Brian MacGavin at (951) 358-5029. PMAC Agendas with attachments are available at our website: [www.rivcoems.org](http://www.rivcoems.org).

The County of Riverside does not discriminate on the basis of disability in admission to, access to, or operations of its programs, services or activities. It is committed to ensuring that its programs, services, and activities are fully accessible to and usable by people with disabilities. If you have a disability and need assistance to attend this meeting, contact Brian MacGavin at (951) 358-5029.
# Prehospital Medical Advisory Committee
## Meeting Minutes
### January 25, 2010

<table>
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<tr>
<th>Attendees</th>
<th>Member</th>
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<tr>
<td>Reza Vaezazizi, MD</td>
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<td>Humberto Ochoa, MD</td>
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<td>Sam Chua, MD</td>
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<td>Mike Markert-Green</td>
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<td>Ann Yoshinaga</td>
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<td>EMT- I/EMT- P Training Programs</td>
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<td>Paul Duenas</td>
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<td>Kent McCurdy</td>
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<td>Bill Herbert</td>
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<td>Kay Schulz</td>
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<td>Art Durbin</td>
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<td>Sabrina Yamashiro</td>
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<td>Michael Wallace</td>
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<td>Debra Costa</td>
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<td>Wayne Ennis</td>
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<td>Jim Price</td>
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<td>Stephen Tumir</td>
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<td>Heidi Anderson</td>
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<td>Maureen Bowlin</td>
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<td>Christina Biovona-Tellez</td>
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<td>Britta Barton</td>
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<td>DOPH – Senior EMS Specialist, PHEPR</td>
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<td>Kevin Shin</td>
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<td>DOPH – EMS Specialist, PHEPR</td>
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I. Call to Order / Pledge Allegiance / Roundtable Introductions

Meeting was called to order at 9:00 AM by the Chair Dr. Reza Vaezazizi.

II. Review of Meeting Minutes

Minutes for October 28, 2009 were reviewed and approved without changes.

III. EMS Agency

A. Ambulance ED Wait Time Report

Chart A indicates that Emergency Department (ED) wait times from April 2009 forward are still on the rise as compared to previous years. Chart B shows the average monthly hours compared to the monthly average ambulance patients received per hospital for 2009. PMAC members discussed the importance to continue communications with hospital representatives in order to reduce ambulance ED wait times.

B. ReddiNet / HAvBED

HavBed drill polls are now being done every other Tuesday and still less than 33 percent of hospitals are participating in the drills. Any hospital representative having difficulties with
logging on should contact Linda Tripoli from ReddiNet. The State EMS Authority will be contacting the EMS Agency in order to report non-compliant hospitals to State Licensing and Certification.

C. Recognition Awards

EMT-P David Lopez, EMT-I Bryce Hubbard and Security Guard Walter Sanchez were recognized for their efforts on a cardiac arrest victim.

EMT-P Rick Stephens was recognized for his compassion in interacting with an Alzheimer’s patient and his family.

D. Data System Request For Proposal (RFP)

Four (4) data system vendors have been selected for the next phase of the RFP process. On Tuesday and Thursday, January 26 and January 28, from 9:00 AM to 4:00 PM these data system vendors will be providing a demonstration of their products. The demonstrations will take place at Riverside County Central Purchasing at 2980 Washington St in Riverside. Letters have been sent to potential users inviting them to attend and to give their input.

E. Trauma System

The State EMS Authority is developing a statewide program in order to regionalize trauma services in California. Riverside County makes up a region with Imperial, Inyo, Mono, San Bernardino, and San Diego Counties. Loma Linda University Medical Center will be hosting our next regional summit on February 25, 2010. Lunch and continuing education credits will be provided at no cost. The progress of this statewide program will be presented at the Trauma Summit in San Francisco on December 7, 2010.

On December 10, 2009, Riverside County Regional Medical Center’s Pediatric ICU received California Children’s Services (CCS) approval.

IV. Public Health

A. H1N1 Vaccination Program

H1N1 flu activity has decreased over the last few months. There have been 2600 confirmed cases and 33 deaths from H1N1 in Riverside County. Vaccination clinics will continue to be held at schools and daycare centers. The State is still sending N95 masks to schools and clinics.

B. Influenza Surveillance Report

Influenza activity levels are within normal range for the Nation, the State, and the County.
V. **Committee/Task Force Reports**

A. **MCI Policy**

The comment period for the MCI policy will end on March 3, 2010 at 1700 hrs. Once the final policy is ready for distribution, there will be multi-agency, multi-disciplinary training consistent with ICS and FIRESCOPE.

B. **5150 Regional Task Force**

A superior court judge in San Bernardino County ruled in favor of Desert Ambulance requiring the author of patients held / transported under 5150 of the Welfare and Institutions Code accompany patients during transport. It is uncertain how this will impact other EMS systems using similar means to transport 5150 patients. In Riverside County, AMR is required by contract to transport 5150 patients. The 5150 Sub-committee will be meeting next Wednesday.

C. **Interfacility Transfer Task Force**

The Interfacility Transfer Task Force committee is almost finished with a draft CCT policy. Once they are done, they will start to work on BLS and ALS interfacility policies. The next meeting will be on Wednesday, February 3, 2010 at the Department of Corrections facility in Rancho Cucamonga. A conference call line has been set up for participants that cannot make it to the meeting. Please contact Kent McCurdy or James Lee if you need the conference line number.

D. **CQI TAG**

Nine of the 14 low frequency / high risk skills have been developed with a two-to-three-page skills matrix for each skill. This entire process should be completed by the end of 2010. Some of these matrices will be reviewed and discussed at the next CQI TAG meeting on March 9, 2010. Drafts are expected to be available to discuss at the next PMAC meeting on March 22.

E. **HEMS CQI**

The group has been making changes to the scoring matrix. This matrix will be used as a retrospective tool to determine if helicopters have been appropriately used for EMS transports in Riverside County. There have been some controversial issues but the group anticipates having the matrix done at their next meeting. Currently the HEMS CQI committee is only reviewing the use of helicopters for 9-1-1 responses but eventually they will review interfacility transfers as well. The State also has a helicopter utilization taskforce working on EMS helicopter utilization guidelines. We need to ensure that our efforts are consistent with the State taskforce’s recommendations.
F. STEMI Presentation

Riverside County’s STEMI system started in 2008. Currently the STEMI Receiving Centers are: Desert Regional Medical Center, Eisenhower Medical Center, Loma Linda University Medical Center, Riverside Community Hospital and San Antonio Community Hospital. Palomar Medical Center in San Diego County will be recognized as a Riverside County STEMI Receiving Center on February 16, 2010. Riverside County EMS providers need to be educated on Palomar Medical Center’s STEMI diversion and ED diversion practices before they utilize them as a STEMI Receiving Center.

Laura Wallin gave a presentation sharing 2008 and 2009 STEMI data. Overall there has been a decrease in door-to-balloon times and false-positive STEMIs.

VI. New Business

The draft of the updated EMS Plan was sent to EMCC members for comment at the January 6 EMCC meeting. EMCC members had decided to send it out for a four (4) week stakeholder comment period. The deadline to send comments to the EMS Agency is February 3, 2010 at 1700 hrs. The draft EMS Plan with the highlighted changes is available on the EMS Agency’s website at www.rivcoems.org.

VII. Old Business

A. Formulation of Policy Review Committee

The EMS Agency is seeking members to form a new committee in order to review and update protocols, policies and procedures. So far only three people have expressed an interest. We need more people to commit to this committee. Anyone interested in participating on this committee, please contact the EMS Agency.

VIII. Open Discussion

A. Constituent Groups – Per Policy 1630

Reminder as of February 1, 2010 our agency will not accept incomplete applications. This is posted on the EMS website.

B. Other

Riverside Community Hospital has received their permit for the helispot which will be located on top of the 14th Street parking structure.

IX. Next Meeting/Adjournment

Monday, March 22, 2010
9:00 AM to 11:00 AM
Riverside County Regional Medical Center, Rooms A1018 and A1021
26520 Cactus Avenue, Moreno Valley, CA
Terminal Performance Objective
To establish and maintain an open airway for spontaneous respiration or to facilitate effective positive pressure ventilation.

While managing a patient’s airway with BLS adjuncts, EMTs and paramedics must:

1. Methodically complete an assessment of the airway and breathing within 30 seconds.
2. Identify inadequate ventilation (minute volume) and/or signs of hypoxia within the first 30 seconds.
3. Manually position the head and mandible of the unconscious patient to open the upper airway.
4. Manually clear blood, vomit and foreign bodies when present.
5. Identify the need for suction or more invasive removal of foreign body.
6. Determine the need for and employ the appropriate BLS airway adjunct.
   a. Select the correct size oropharyngeal (OP) airway for the patient without a gag reflex that requires PPV.
   b. Select the correct size nasopharyngeal (NP) airway for the patient with a gag reflex that requires PPV.
7. Utilize appropriate technique per AHA standards to insert the selected airway within 10 seconds
8. Confirm correct airway placement and immediately initiate PPV with oxygen at 10-15 LPM
9. Effectively evaluates the efficacy of PPV following BLS airway insertion.
10. Limit suction attempts to 10 seconds.
11. Limit interruption of PPV to 30 seconds
12. Consider and treat reversible causes of hypoventilation and hypoxia such as opiate overdose and hypoglycemia
13. Rapidly determines the need for Advanced Life Support (ALS) airway adjuncts when airway patency or ventilations cannot be effectively supported by BLS means.

Critical Success Targets for BLS Airway Management

1. Successful and secure adjunct insertion
2. Effective PPV

System Benchmark
TBD

Applicable Protocols
All 6000 BLS Patient care Policies, 7000 ALS Patient Care Policies, 8000 ALS Pediatric Patient Care Policies and 9000 Appendix Skills Policies that delineate positive pressure ventilation under optional or required treatment.
## Core Competency Requirements to be covered during education/training

1. Patient assessment
2. Airway anatomy & physiology
3. Airway pathophysiology
4. BLS techniques for relief of anatomical or foreign body airway obstruction
5. Manual positioning of the airway
6. Identification for use of BLS airway adjunct indications
7. OPA indications/ contraindications
8. OPA sizing and insertion
9. NPA indications/ contraindications
10. NPA sizing and insertion
11. Evaluation of ventilatory efficacy following BLS airway adjunct insertion
12. Identification and correction of complications of BLS airway management
13. Rapid identification of the need for ALS airway and/or medications when BLS airway adjuncts are ineffective

## Adjunctive Performance Standards

1. Positive Pressure Ventilation
2. Laryngoscopy with FBAO Removal/Magill Forceps (ALS personnel)

## Equipment Requirements

1. Airway mannequin
2. OP Airway
3. NP Airway
4. Lubricant
5. BVM with reservoir and manometer
6. Stethoscope
7. Supplemental oxygen
8. PPE

## Instructor Resource Materials

1. Prehospital Trauma Life Support
2. AHA CPR and BLS Provider Manual
3. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
4. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic

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1 AHA
Terminal Performance Objective
An open unobstructed airway able to support spontaneous respiration or positive pressure ventilation (PPV).

While performing laryngoscopy and use of Magill forceps paramedics must:
1. Methodically complete an assessment of the airway and breathing within 30 seconds.
2. Identify inadequate ventilations and/or signs of hypoxia within the first 30 seconds.
3. Apply appropriate, clinically required technique to manually position the head and mandible of the unconscious patient to-open the upper airway.
   a. Medical - Head tilt/chin lift
   b. Trauma - Jaw thrust or modified chin lift
4. Manually clear blood, vomit and foreign bodies when present.
5. Employ the indicated BLS airway adjunct.
   a. NPA is preferred BLS airway
   b. OPA can be used if the patient does not have a gag reflex
6. Provide positive pressure ventilation (PPV) with oxygen at 10-15 LPM.
7. Determine the presence of a foreign body airway obstruction (FBAO).
8. Perform one (1) cycle of rescue breaths and chest compressions to clear a persistent obstruction.
9. Repeat assessment of airway and breathing to determine if the airway is still obstructed.
11. Appropriately position the patient based on presentation and condition (medical vs. trauma).
12. Use good technique with the laryngoscope to directly visualize anatomical structures of the airway and minimize oral trauma.
13. Recognize and remove a foreign body with the Magill Forceps.
14. Recognize persistent airway obstruction with inability to perform PPV and consider the following:
   a. Rapid transport to the closest most appropriate Hospital and:
      i. Orotracheal intubation in an attempt to relieve the foreign body obstruction
      ii. Needle Cricothyrotomy
15. Reassess airway, breathing and circulation, applying oxygen as clinically indicated (non-rebreather mask or PPV) or returning to cycles of ventilations / compressions as indicated by patient condition.

Critical Success Targets for laryngoscopy and use of Magill Forceps
1. An open unobstructed airway
2. Spontaneous respiratory rate within age appropriate normal limits
3. Ability to perform effective positive pressure ventilation
4. SpO2 of greater than 95%
5. ETCO2 between 30-45 mmHg in the patient with spontaneous circulation

System Benchmark
**Performance Standard**

**PS02**

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**Category** 1 Skill – Low Frequency/High Risk

**Laryngoscopy and Magill Forceps**

**Applies To:**

ALS Provider Agencies

Approval: EMS Medical Director

Humberto Ochoa MD

Approval: EMS Agency Director

Bruce Barton, CCEMT-P

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**TBD**

**Applicable Protocols**

Airway Obstruction (7830), Pediatric Airway Obstruction (8830),

**Core Competency Requirements to be covered during education/training**

1. Assessment of mental status
2. Ensure patient is unconscious prior to using Magill forceps or beginning chest compressions
3. Airway/patient positioning
4. Assessment of airway/breathing
5. Relative benefit of NPA over OPA for patients with suspected reversible airway obstruction
6. Suctioning/clearing oral cavity of debris
7. Performance of BLS FBAO maneuvers per current AHA standards
8. Use of laryngoscope to visualize airway and look for obstruction
9. Use of Magill forceps to grasp/remove obstruction
10. Reassessment of airway/breathing status to determine further action(s)
11. Recognition of complications (Dislodgement, Obstruction, Pneumothorax, Equipment Failure, or DOPE)

**Adjunctive Performance Standards**

1. BLS Airway Adjuncts
2. ALS Airways
3. Positive Pressure Ventilation (PPV)

**Equipment Requirements**

1. Adult advanced airway mannequin
2. Oxygen source
3. Stethoscope
4. Laryngoscope
5. Magill forceps
6. Suction equipment (both rigid and flexible)
7. Personal protective equipment
8. NP/OP Airway
9. BVM w/manometer and reservoir
10. Pulse Oximeter
11. Capnometer/capnography
12. Cardiac monitor

**Instructor Resource Materials**
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1. AHA ACLS Provider Manual
2. AHA PALS Provider Manual
3. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
4. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic

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1 Rosen's Emergency Medicine: Concepts and Clinical Practice (5th edition; Editors Marx, Hockberger, Walls; Author Stephen Thomas and David Brown; Chapter 53: Foreign Bodies; copyright 2002) - If indirect efforts fail to remove foreign bodies from patients in extremis, direct laryngoscopic visualization during intubation may reveal a proximal foreign object that can be removed with Magill forceps. If a foreign body is not visualized on laryngoscopy, the EP may choose to intubate the patient. This may force the foreign body distally, especially if the endotracheal tube tip is passed beyond the carina. Placement of the ET tube into the right mainstem may displace the foreign body into the right bronchus, thus allowing oxygenation and ventilation through the left-sided pulmonary tree when the ET tube is withdrawn back to normal position proximal to the carina.
## Performance Standard

**PS03**

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**Category** | **Skill** – Low Frequency/High Risk

**Positive Pressure Ventilation**

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**Applies To:**

All EMS Provider Agencies

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## Terminal Performance Objective

To establish and maintain adequate airflow (oxygenation and ventilation) to support gas exchange at the cellular level and prevent or reverse tissue hypoxia.

While performing positive pressure ventilation Paramedics and EMTs must adhere to the following performance criteria:

1. Methodically complete an assessment of the airway and breathing within 30 seconds.
2. Identify inadequate ventilations (minute volume) and/or signs of hypoxia within the first 30 seconds.
3. Identify the need for suction or removal of foreign body.
4. Manually position the head and mandible of the unconscious patient to open the upper airway.
5. Select and employ the clinically required BLS airway adjunct.
6. Employ the correct technique to achieve a tight mask seal while maintaining position of the head and mandible to maximize airflow to the lower airway.
7. Correctly apply cricoid pressure (Sellick’s Maneuver).
8. Initiate manual ventilations the clinically required (sized) bag-valve-mask and oxygen at 10-15 LPM within the first 30 seconds.
9. Provide the clinically required ventilatory (minute volume) support for the patient demonstrating the ability to modify tidal volume and/or ventilation rate to achieve chest/diaphragm expansion and full exhalation with each ventilatory cycle.
10. Provide assisted ventilations and oxygen at 10-15 LPM to the conscious patient who is hypoventilating.
11. Ventilate patients with spontaneous circulation (Rescue Breathing) as clinically required:
   a. Ventilate the adult patient once every 5 to 6 seconds (10 – 12 times per minute) with tidal volume (TV) sufficient to produce visible chest rise and fall\(^1\)\(^2\).
   b. Ventilate the pediatric patient once every 3 to 5 seconds (12 – 20 times per minute) with tidal volume sufficient to produce visible chest rise and fall\(^3\) without hyperinflation or gastric insufflation.
   c. Ventilate neonatal patients 40-60 times per minute to maintain a heart rate > 100\(^4\).
12. Ventilate cardiac arrest patients during CPR as clinically required:
   a. Ventilate the adult patient without and advanced airway – Synchronize 2 ventilations with 30 chest compressions. Provide ventilations with enough tidal volume to produce visible chest rise and fall during pauses in compression cycles (Class Ila).
   b. Ventilate the adult patient with an advanced airway in place – Provide 8-10 unsynchronized ventilations per minute with tidal volume sufficient to achieve rise and fall of the chest (Class Ila)

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\(^1\) 2005 American Heart Association (AHA), Circulation, Part 4, Adult Basic Life Support, pp 23-24, Part 7.1 pp 51.
\(^2\) PHTLS, Sixth Edition, Chapter 6, pp 121.
\(^3\) 2005 American Heart Association (AHA), Circulation, Part 11, Pediatric Basic Life Support, pp 158-159.
### Performance Standard

**Category | Skill – Low Frequency/High Risk**

**Positive Pressure Ventilation**

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13. Deliver positive pressure ventilations over a minimum of 1 second to avoid hyperinflation and minimize gastric insufflation, high (peak) airway pressures, pulmonary barotrauma and compromise of venous return to the heart (Class IIa).

14. Avoid hyperventilation to minimize high airway pressures, hypocarbia and cerebral vasoconstriction\(^5\,\text{,}^6\).
   a. Reduce minute volume if ETCO2 < 25mmHg in a patient with spontaneous circulation.

15. Differentiate respiratory pathophysiology and modify BVM technique based upon changes in lung compliance and/or airway resistance to maintain therapeutic airway pressure while minimizing gastric insufflation\(^7\).
   a. Ensure changes in inspiratory and expiratory time ratio (I:E Ratio) is factored into ventilatory cycles allowing for exhalation of each breath prior to delivery of the next breath.

16. Efficiently employ diagnostic tools such as pulse oximetry (target SpO2 is \(\geq\)95%) and auscultation of lung fields to thoroughly assess overall effectiveness of ventilatory support.

17. Immediately identify malfunctioning equipment or ineffective techniques and employs alternative measures to achieve effective ventilations.

18. Maintain effective ventilation and oxygenation throughout the entire Prehospital period of treatment.

19. Maintain calm and effectively lead a team based approach to resuscitation.

20. Rapidly determine the need for Advanced Life Support (ALS) airway adjuncts and/or medications when airway patency or ventilations cannot be effectively supported by BLS means.

21. Document all procedures and patient response to therapy on the PCR.

#### Critical Success Targets for PPV

1. Tight mask seal
2. Chest rise and fall with each ventilation cycle
3. SpO2 of \(>\)95% \(\geq\)98% in patients with spontaneous circulation.
4. ETCO2 between 30 – 45 mmHg in patients with spontaneous circulation.
5. ETCO2 between 15 – 45 mmHg in cardiac arrest patients
6. Limited interruption of PPV (30 seconds max)
7. Management of secretions and other airway obstructions
8. Minimal gastric distension

#### System Benchmark

- Number of patients PPV with chest rise and fall, patient airway, signs of adequate oxygenation.
- Patient arrival at Hospital with spontaneous circulation

\(^5\) PHTLS, Sixth Edition, Chapter 6 et al & Chapter 8, pp 214

\(^6\) AHA Advanced Cardiac Life Support (ACLS), Core Case: Respiratory Arrest pp 23.

\(^7\) 2005 AHA Pediatric Advanced Life Support, Chapters 2 - 3, Recognition and Management of Respiratory Distress and Failure
### Performance Standard PS03

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| Applies To: | All EMS Provider Agencies |

| Approval: | EMS Medical Director Humberto Ochoa MD |
| Signature |

| Approval: | EMS Agency Director Bruce Barton, CCEMT-P |
| Signature |

### Applicable Protocols
All 6000 BLS Patient care Policies, 7000 ALS Patient Care Policies, 8000 ALS Pediatric Patient Care Policies and 9000 Appendix Skills Policies that delineate positive pressure ventilation under optional or required treatment.

### Core Competency Requirements to be covered during education/training on PPV
1. Respiratory A&P and Pathophysiology
2. Assessment of airway and breathing
3. Differentiation between adequate and inadequate respiration
4. Airway Positioning
5. Suctioning
6. Removal of foreign body obstructions
7. Oropharyngeal Airway selection and insertion
8. Nasopharyngeal Airway selection and insertion
9. BVM selection
10. Induction of supplemental oxygen
11. Hand ventilation with a BVM
12. Application of cricoid pressure during PPV
13. Assessment of PPV adequacy and efficacy
14. Airway pressure secondary to PPV – mean versus peak
15. Possible complications of PPV – gastric, pulmonary, cerebral, and cardiovascular complications of over inflation and over ventilation
16. Auscultation and diagnostic differentiation of lung sounds
17. Team Leadership and Patient Safety
18. Use of diagnostic tools

### Adjunctive Performance Standards
1. Laryngoscopy with FBAO Removal/Magill Forceps (ALS personnel)
2. BLS Airway Adjuncts
3. ALS Airways

### Equipment Requirements
1. Manikin
2. NP Airway
3. OP airway
4. Advanced Airways
5. BVM with manometer
6. Stethoscope
7. Supplemental oxygen
8. Magill Forceps
9. Laryngoscope  
10. Pulse Oximeter  
11. Waveform Capnometer  
12. Suction device (both hard and flexible)

Instructor Resource Materials
1. Prehospital Trauma Life Support  
2. AHA CPR and BLS Provider Manual  
3. AHA ACLS Provider Manual  
4. AHA PALS Provider Manual  
5. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care  
6. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic
Terminal Performance Objective

Secure placement of an endotracheal tube (ETT) in the trachea to ensure a patent airway for positive pressure ventilation.

Before performing orotracheal intubation paramedics must:
1. Determine BLS airway adjuncts are inadequate for effective positive pressure ventilation (PPV) and confirm the need for ETI\(^1\).
2. Recognize signs of a difficult airway (signs of Mallampati Class III and IV) and select, prepare and employ the appropriate alternative tools and techniques (e.g. Bougie, Rescue Airway).
3. Correctly assemble all equipment required for ETI within 60 seconds.
4. Provide optimal ventilation and oxygenation to the patient while ETI equipment is prepared.
5. Correctly apply cricoid pressure during PPV.

While performing orotracheal intubation paramedics must:
1. Correctly apply cricoid pressure during intubation attempts.
2. Visualize anatomical structures including the glottic opening (vocal cords) during direct laryngoscopy.
3. Minimize oral trauma during laryngoscopy by utilizing correct technique.
4. Place the appropriately sized ETT securely in the trachea at the correct depth within 30 seconds.
5. Confirm the ETT is in the trachea by:
   a. Direct visualization of the tube passing through the vocal cords
   b. Use of an Esophagal Detector Device (EDD)
6. Immediately re-establish PPV at the clinically required rate and tidal volume (minute volume) and oxygen at 10-15 LPM following ETT placement.
7. Continue procedures for confirming the ETT is in the trachea by simultaneously performing the following\(^3\):
   a. Visualizing symmetrical rise and fall of the chest with PPV
   b. Auscultation over lung fields for confirmation of airflow with PPV.
   c. Auscultation over the epigastrium for the absence of airflow with PPV.
   d. Immediate placement of waveform capnography monitor and confirm the appropriate ETCO2 waveform is present with PPV.
8. Secure the ETT in the trachea at the correct depth with tape or a commercial device.
9. Re-implement effective PPV within 10 seconds following unsuccessful ET attempts.
   a. Employ rescue airway after 2 failed attempts on the patient

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\(^1\) 2005 AHA Guidelines for CPR and ECC, Part 7.1 pp 53.
\(^2\) PHTLS Sixth Edition, Chapter 6, Chapter 8 pp 213-214
b. Passing the laryngoscope past the teeth with the intent of placing an ETT is considered an attempt
10. Stabilize the patients head to avoid movement and possible ETT dislodgement.
11. Efficiently employ post ETT diagnostic tools to thoroughly assess overall effectiveness of ventilatory support
    throughout the duration of respiratory management efforts, including:
    a. Symmetrical rise and fall of the chest with PPV
    b. Monitor pulse oximetry – the target SpO2 is ≥95% if spontaneous circulation is present.
    c. Monitor ETCO2 for appropriate waveform morphology and target CO2 levels.
       i. The target range for ETCO2 level is between 30 – 45 mmHg if spontaneous circulation is present.
       ii. In cardiac arrest metabolic derangements will significantly alter ETCO2 values and waveform
           morphology. Target range for ETCO2 level is > 15mmHg and < 45mmHg during CPR. NEED
           CITATION
    d. Monitor ECG for dysrhythmia due to vagal stimulation or other treatable causes.
    e. Frequent auscultation of lung fields and epigastrium.
    f. Constant evaluation of ventilatory compliance and resistance during PPV
12. Immediately identify malfunctioning equipment, ineffective techniques or changes in post ETI PPV
    compliance/resistance and employ alternative measures to achieve effective ventilations.
13. Reconfirm correct ETT placement each time the patient is moved and before transfer of care to Hospital staff.
    a. Record and print the waveform ETCO2 strip prior to transfer of care to the hospital staff and attach the
       recording strip to the completed PCR
14. Provide direction to personnel that have been delegated management of post ETT PPV.
15. Maintain effective ventilation and oxygenation throughout the entire prehospital treatment period.
16. Maintain calm and effectively lead a team-based approach to resuscitation under all conditions.
17. Accurately document all assessment findings, therapeutic treatments and the patient’s response to therapy
    Complete a Procedure Evaluation Form.

Critical Success Targets for ETI
1. ETT securely placed in the trachea followed by effective PPV
2. Chest rise and fall with each ventilation cycle
3. Ventilatory rate and tidal volume appropriate for patient condition and response
4. SpO2 of ≥95% in patients with spontaneous circulation
5. ETCO2 between 30 – 45 mmHg in patients with spontaneous circulation
6. ETCO2 between 15 – 45 mmHg in cardiac arrest patients
7. Limited interruption of PPV (30 seconds maximum)
### System Benchmark

**ETT Benchmark**

ETT securely placed in the trachea within 2 attempts in 90% of the indicated patients

Recognition of misplaced or dislodged ETT in 100% of the occurrences.

### Applicable Protocols

ALS Guidelines 7060, V-FIB/V-Tach 7250, Asystole 7260, PEA 7270, Burns 7300, Respiratory Arrest 7800, Airway Obstruction 7830

### Core Competency Requirements to be covered during education/training on ETI

1. Respiratory A&P and Pathophysiology
2. Assessment of airway and breathing
3. Techniques for PPV
4. Airway pressure secondary to PPV – mean verses peak
5. Possible complications of PPV – gastric, pulmonary, cerebral, and cardiovascular complications of over inflation and over ventilation
6. Determination of PPV adequacy and efficacy
7. Differentiation between effective and ineffective patient response to PPV via BLS measures
8. Indications and contraindications for ETI
9. Selection of correct equipment required for ETI (e.g., ETT size)
10. Identification of the difficult airway and employment of alternative techniques and tools
11. Laryngoscopy Techniques
12. ETT placement techniques
13. Post-placement ETT monitoring
14. Auscultation and diagnostic differentiation of lung sounds
15. Use of diagnostic tools, e.g., Capnography
16. Recognition of complications (Dislodgement, Obstruction, Pneumothorax, Equipment Failure, or DOPE)
17. Team Leadership and Patient Safety
18. Documentation

### Adjunctive Performance Standards

1. Positive Pressure Ventilation
2. Laryngoscopy with FBAO Removal/Magill Forceps
3. BLS Airway Adjuncts
4. Post ETI Confirmation and Monitoring
5. Rescue Airway
6. Gum Elastic Bougie

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**Performance Standard**

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**Adult Orotracheal Intubation**

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Approval: EMS Agency Director  
Bruce Barton, CCEMT-P

Equipment Requirements

1. Personal Protective Equipment
2. NP/OP Airways
3. BVM
4. Stethoscope
5. Supplemental oxygen
6. Magill Forceps
7. Laryngoscope(s)
8. Laryngoscope Blades (multi sizes)
9. Appropriate size ET tubes
10. Stylet(s)
11. Pulse Oximeter
12. Waveform Capnometer
13. Suction device (both rigid and flexible catheters)
14. Cardiac monitor
15. Difficult Airway Kit/Rescue Airway Kit (including just in time training aids)

Instructor Resource Materials

1. Prehospital Trauma Life Support
2. AHA CPR and BLS Provider Manual
3. AHA ACLS Provider Manual
4. AHA PALS Provider Manual
5. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
6. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic
Terminal Performance Objective

Secure placement of an endotracheal tube (ETT) in the trachea via the nasopharyngeal route to ensure a patent airway for positive pressure ventilation.

Before performing nasotracheal intubation (NTI) paramedics must:

1. Determine BLS airway adjuncts are inadequate for effective positive pressure ventilation (PPV) and confirm the need for NTI\(^1\)^\(^2\).
   a. Confirm signs of impending respiratory failure or hypoxia refractory to BLS management techniques
   b. Confirm the patient is unable to protect their own airway and an ALS adjunct is required, and
      i. Orotracheal intubation is not possible, and
      ii. Rescue airway placement is not possible.
2. Confirm none of the following contraindications for NTI are present.
   a. Apnea
   b. Children less than 30 kg or 14 years of age
   c. Suspected altered level of consciousness from hypoglycemia or overdose of narcotics prior to the administration of Narcan and/or dextrose
3. Carefully consider complications and the risk verses benefit of performing NTI if the following relative contraindications are present:
   a. Head, facial or nasal trauma with possible basilar skull fracture
   b. Blood or fluid draining from the nose or ears
   c. Facial fractures
   d. Battle’s Sign or Raccoons Eyes
   e. Anticoagulant therapy or hemostatic disorder
   f. Laryngeal fracture
4. Correctly assemble all equipment required for NTI within 60 seconds.
   a. Endotracheal tubes used for NTI must be at least 7.0 or larger due to the length of the nasopharyngeal route to the glottis

While performing nasotracheal intubation paramedics must:

1. Provide optimal oxygenation of the patient while NTI equipment is prepared.
2. Prepare the patient by positioning them appropriately and by providing procedural information with a calming manner if they are conscious.
3. Choose nostril and prepare by:
   b. Applying neosynephrine (consider applying to both nares)

\(^1\) 2005 AHA Guidelines for CPR and ECC, Part 7.1 pp 53
\(^2\) PHTLS Sixth Edition, Chapter 6, Chapter 8 pp 213-214.
c. Instilling 2-5 mL viscous lidocaine into nostril (5 mL syringe works well for this) or, alternatively, place a viscous-lidocaine coated NPA in the target nostril. This numbs the nostril and confirms free passage for tube.

d. Allowing time for the medications to work (60 seconds)

4. Minimize trauma to the nares by utilizing correct technique.
   a. Apply cricoid pressure with one hand, insert the ETT into the prepared nares with the other hand and guide it along the curve of the nasopharynx to the glottic opening where maximum airflow can be felt/heard. If resistance is felt do not advance the tube with force, remove it, hyperoxygenate the patient and re-attempt on the other nostril.

5. Place the ETT securely in the trachea by timing the passage of the distal tip/balloon through the glottic opening with the patients’ inspiratory phase.

6. Confirm ETT is in the trachea by:
   a. Air passage through and fogging of the tube
   b. Positive airflow by using the BAAM whistle

7. Immediately establish PPV at the clinically required rate and tidal volume (minute volume) and oxygen at 10-15 LPM following ETT placement.

8. Continue procedures for confirming the ETT is in the trachea by simultaneously performing the following:\n   a. Visualizing symmetrical rise and fall of the chest with PPV
   b. Auscultation over lung fields for confirmation of airflow with PPV.
   c. Auscultation over the epigastrium for the absence of airflow with PPV.
   d. Immediate placement of waveform capnography monitor and confirm the appropriate ETCO2 waveform is present with PPV.

9. Minimize movement of the patients head to avoid NTT dislodgement.

10. Efficiently employ post NTT diagnostic tools to thoroughly assess overall effectiveness of ventilatory support throughout the duration of respiratory management efforts, including:
    a. Pulse oximetry – the target SpO2 is greater than or equal to 95%.
    b. End tidal CO2 capnography or capnometry – the target range is between 30 – 45 mmHg
    c. Cardiac monitor to watch for vagal stimulation and dysrhythmias
    d. Frequent auscultation of all lung fields
    e. Constant evaluation of ventilatory compliance and resistance during PPV
    f. Improvement in the patient’s vital signs and appearance

11. Re-implement effective PPV within 10 seconds following unsuccessful NTI attempts.

12. Immediately identify malfunctioning equipment, ineffective techniques or changes in post NTI PPV compliance/resistance and employ alternative measures to achieve effective ventilations.

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13. Reconfirm correct NTT placement each time the patient is moved and before transfer of care to Hospital staff.
   g. Record and print the waveform ETCO2 strip prior to transfer of care to the Hospital staff and attach the
   recording strip to the completed PCR
14. Provide direction to personnel that have been delegated post NTT PPV.
15. Maintain effective ventilation and oxygenation throughout the entire Prehospital interval.
16. Maintain calm and effectively lead a team-based approach to resuscitation under all conditions.
17. Accurately document all assessment findings, therapeutic treatments and the patient’s response to therapy 100%
   of the time.
18. Complete a procedure evaluation form.

Critical Success Targets for NTI
1. NTT securely placed in the trachea followed by effective PPV
2. Chest rise and fall with each ventilation cycle
3. SpO2 of ≥ greater than or equal to 95%
4. ETCO2 between 30 – 45 mmHg in a patient with spontaneous circulation.
5. Limited interruption of PPV (30 seconds maximum)

System Benchmark

NTT securely placed in the trachea within 2 attempts in 90% of the indicated patients.

Applicable Protocols
7300 Burns, 7320 Heat Illness, 7410 Allergic Reaction, 7820 COPD, Asthma, Bronchospasm, 7850 Acute Pulmonary
Edema, 7910 Traumatic Shock, 7920 Abdominal Trauma, 7930 Chest Trauma

Core Competency Requirements to be covered during education/training on NTI
1. Respiratory A&P and Pathophysiology
2. Assessment of airway and breathing
3. Techniques for PPV
4. Airway pressure secondary to PPV – mean verses peak
5. Possible complications of PPV – gastric, pulmonary, cerebral, and cardiovascular complications of over inflation
   and over ventilation
6. Determination of PPV adequacy and efficacy
7. Differentiation between effective and ineffective patient response to PPV via BLS measures
8. Indications and contraindications for NTI
9. Selection of correct equipment required for ETI (e.g NTT size)
10. NTT placement techniques
11. Post-placement NTT monitoring
12. Auscultation and diagnostic differentiation of lung sounds
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13. Use of diagnostic tools, e.g., Capnography, End-tidal CO2 Device
14. Recognition of complications (Dislodgement, Obstruction, Pneumothorax, Equipment Failure, or DOPE)
15. Team Leadership and Patient Safety
16. Documentation
17. Need to control your patient and their movements

**Adjunctive Performance Standards**
1. Positive Pressure Ventilation
2. BLS Airway Adjuncts
3. Post ETI/NTI Confirmation and Monitoring

**Equipment Requirements**
1. Personal Protective Equipment
2. NP/OP Airways
3. BVM with manometer and reservoir
4. BAAM Whistle
5. EDD – esophageal detection device
6. Stethoscope
7. Supplemental oxygen
8. Neosynephrine
9. Viscous Lidocaine
10. Appropriate size ET tubes
11. Pulse Oximeter
12. Waveform Capnometer
13. Suction device (both rigid and flexible catheters)
14. Cardiac monitor
15. Difficult Airway Kit/Rescue Airway Kit (including just in time training aids)

**Instructor Resource Materials**
1. Prehospital Trauma Life Support
2. AHA CPR and BLS Provider Manual
3. AHA ACLS Provider Manual
4. AHA PALS Provider Manual
5. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
6. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic
Terminal Performance Objective

Secure placement of an endotracheal tube (ETT) in the trachea to ensure a patent open airway for positive pressure ventilation.

Before performing pediatric orotrachael intubation paramedics must:
1. Determine BLS airway adjuncts are inadequate for effective positive pressure ventilation (PPV) and confirm the need for PETI.\(^2\)
2. Recognize signs of a difficult airway (i.e., signs of Mallampatti Class III and IV) and select, prepare and employ the appropriate alternative tools and techniques (e.g., i.e., Rescue Airway for patients greater than 16, height greater than four feet)
3. Correctly assemble all equipment required for PETI within 60 seconds.
4. Provide optimal ventilation and oxygenation (minute volume) to the patient while PETI equipment is prepared.
5. Correctly apply cricoid pressure during PPV as indicated

While performing pediatric orotrachael intubation paramedics must:
1. Place the patient on a pediatric backboard or other device that allows for immobilization of the head following ETT placement.
   a. Consider padding under the body for placement in neutral alignment if the patient has a large occipit
2. Correctly apply cricoid pressure during intubation attempts.
3. Visualize anatomical structures including the glottic opening (vocal cords) during direct laryngoscopy.
4. Minimize oral trauma during laryngoscopy by utilizing correct technique.
5. Place the clinically indicated size ETT securely in the trachea at the correct depth within 30 seconds.
   a. Have a variety of sizes available for back-up
6. Confirm the ETT is in the trachea by;
   a. Direct visualization of the tube passing through the vocal cords
   b. Use of the Esophageal Detector Device (EDD) and/or Toomey syringe
7. Immediately re-establish PPV at the clinically required rate and tidal volume (minute volume) and oxygen at 10-15 LPM following ETT placement.
8. Continue procedures for confirming ETT is in the trachea by simultaneously performing the following\(^3\);
   a. Visualize symmetrical rise and fall of the chest with PPV
   b. Auscultation of bilateral lung fields for confirmation of airflow with PPV.
   c. Auscultation over the epigastrium for the absence of airflow with PPV.

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\(^1\) 2005 AHA Guidelines for CPR and ECC, Part 12 Pediatric Advanced Life Support, pp 168-169
\(^2\) PHTLS, Sixth Edition, Chapter 14 Pediatric Trauma pp 367-369
\(^3\) 2005 AHA Guidelines for CPR and ECC, Part 12 Pediatric Advanced Life Support, pp 168-169
a. Placement of waveform capnography monitor and confirm the appropriate ETCO2 waveform is present with PPV.

9. Secure the ETT in the trachea at the correct depth with tape or a commercial device.

10. Re-implement effective PPV within 10 seconds following unsuccessful ET attempts:
   a. Employ rescue airway after 2 failed attempts on the patient for patients greater than 16 years and taller than four feet
   b. Passing the laryngoscope past the teeth with the intent of placing an ETT is considered an attempt
   c. Only 2 attempts per patient are permitted.

11. Stabilize the patients head to the backboard or other immobilization device to avoid movement and possible ETT dislodgement.

12. Employ post ETT diagnostic tools to thoroughly assess overall effectiveness of ventilatory support throughout the duration of respiratory management efforts, including:
   a. Visualize symmetrical rise and fall of the chest with PPV
   b. Monitor pulse oximetry – the target SpO2 is greater than or equal to 95% if spontaneous circulation is present.
   c. Monitor ETCO2 for appropriate waveform morphology and target CO2 levels.
      i. The target range for ETCO2 level is between 30 – 45 mmHg if spontaneous circulation is present.
      ii. In cardiac arrest metabolic derangements will significantly alter ETCO2 values and waveform morphology. Target range for ETCO2 level is > 15mmHg and < 45mmHg during CPR.
   d. Monitor ECG for dysrhythmia due to vagal stimulation or other treatable causes.
   e. Frequent auscultation of lung fields and epigastrium.
   f. Constant evaluation of ventilatory compliance and resistance during PPV

13. Immediately identify malfunctioning equipment, ineffective techniques or changes in post PETI PPV compliance/resistance and employ alternative measures to achieve effective ventilations.

14. Reconfirm correct ETT placement each time the patient is moved and before transfer of care to Hospital staff.
   a. Record and print the waveform ETCO2 strip prior to transfer of care to the Hospital staff and attach the recording strip to the completed PCR

15. Provide direction to personnel that have been delegated management of post ETT PPV.


17. Maintain calm and effectively lead a team-based approach to resuscitation under all conditions.

18. Accurately document all assessment findings, therapeutic treatments and the patient’s response to therapy

19. Complete a procedure evaluation form.
Critical Success Targets for PETI

1. ETT securely placed in the trachea followed by effective PPV
2. Chest rise and fall with each ventilation cycle
3. Ventilatory rate and tidal volume (Minute Volume) appropriate for patient condition and response.
4. SpO2 of ≥ greater than or equal to 95% in patients with spontaneous circulation
5. ETCO2 between 30 – 45 mmHg in patients with spontaneous circulation.
6. ETCO2 between 15 – 45 mmHg in cardiac arrest patients
7. Limited interruption of PPV (30 seconds maximum)

System Benchmark

ETT securely placed in the trachea within 2 attempts in 90% of the indicated patients.

Applicable Protocols

8220 Bradycardia, 8230 Tachycardia with Pules, 8250 Ventricular Fibrillation/Ventricular Tachycardia, 8260 Asystole, 8270 PEA, 8300 Burns, 8600 Newborn Resuscitation, 8800 Respiratory Arrest , 8810 Respiratory Distress, 8830 Airway Obstruction, 8900 Traumatic Arrest, 8910 Traumatic Shock, 8920 Abdominal Trauma, 8930 Chest Trauma, Appendix 60 Pediatric Intubation,

Core Competency Requirements to be covered during education/training on PETI

1. Respiratory A&P and Pathophysiology
2. Assessment of airway and breathing
3. Techniques for PPV
4. Determination of PPV adequacy and efficacy
5. Airway pressure secondary to PPV – mean versus peak
6. Possible complications of PPV – gastric, pulmonary, cerebral, and cardiovascular complications of over inflation and over ventilation
7. Differentiation between effective and ineffective patient response to PPV via BLS measures
8. Indications and contraindications for ETI
9. Selection of correct equipment required for ETI (e.g ETT size)
10. Identification of the difficult airway and employment of alternative techniques and tools
11. Laryngoscopy Techniques
12. ETT placement techniques
13. Post-placement ETT monitoring
14. Auscultation and diagnostic differentiation of lung sounds
15. Use of diagnostic tools, e.g., Capnography
16. Recognition of complications (Dislodgement, Obstruction, Pneumothorax, Equipment Failure, or DOPE)
17. Team Leadership and Patient Safety
18. Documentation
Adjunctive Performance Standards

1. Positive Pressure Ventilation
2. Laryngoscopy with FBAO Removal/Magill Forceps
3. BLS Airway Adjuncts
4. Post ETI Confirmation and Monitoring
5. Rescue Airway
6. Gum Elastic Bougie

Equipment Requirements

1. Personal Protective Equipment
2. Pediatric backboard and head immobilization device
3. NP/OP Airways
4. BVM with manometer and reservoir
5. Age appropriate size ET Tubes with 2.5 -5.5 uncuffed
6. Broselow tape or Pedi-Wheel
7. EDD – esophageal detection device
8. Stethoscope
9. Supplemental oxygen
10. Magill Forceps
11. Laryngoscope(s)
12. Laryngoscope Blades (multi sizes)
13. Stylet(s)
14. Pulse Oximeter
15. Waveform Capnometer
16. Suction device (both rigid and flexible catheters)
17. Cardiac monitor
18. Difficult Airway Kit/Rescue Airway Kit (including just in time training aids)

Instructor Resource Materials

1. Prehospital Trauma Life Support
2. AHA CPR and BLS Provider Manual
3. AHA PALS Provider Manual
4. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
5. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic
Terminal Performance Objective

Secure placement of a rescue airway in the trachea to facilitate positive pressure ventilation.

Before performing insertion of a Rescue Airway paramedics must:

1. Determine BLS airway adjuncts are inadequate for effective positive pressure ventilation (PPV) and confirm the need for ALS airway placement.
2. Recognize signs of a difficult airway (signs of Mallampatti Class III and IV) and select, prepare and employ the appropriate rescue airway and techniques.
3. Correctly assemble all equipment required for rescue airway insertion within 60 seconds.
4. Ensure optimal ventilation and oxygenation of the patient while rescue airway equipment is prepared.
5. Correctly apply cricoid pressure during PPV.

While performing insertion of a Rescue Airway paramedics must:

1. Minimize oral trauma during insertion by utilizing correct technique.
2. Place the appropriately sized rescue airway securely per the manufacturer’s instructions at the correct depth within 30 seconds.
3. Immediately re-establish PPV with the appropriate rate and tidal volume (minute volume) and oxygen at 10-15 LPM following rescue airway placement.
4. Confirm correct placement by;
   a. Visualizing symmetrical rise and fall of the chest with PPV
   b. Auscultation of bilateral lung fields for confirmation of airflow with PPV.
   c. Auscultation over the epigastrium for the absence of airflow with PPV.
   d. Fogging of the airway tube with PPV.
   e. Placement of waveform capnography monitor and confirm the appropriate ETCO2 waveform is present with PPV.
5. Secure the rescue airway at the correct depth per the manufacturer’s directions.
6. Stabilize the patients head to avoid movement and possible rescue airway dislodgement.
7. Employ post RESCUE AIRWAY diagnostic tools to thoroughly assess overall effectiveness of ventilator support throughout the duration of respiratory management efforts, including:
   a. Visualizing symmetrical rise and fall of the chest with PPV
   b. Monitor pulse oximetry – the target SpO2 is greater than or equal to 95% if spontaneous circulation is present.
   c. Monitor ETCO2 for appropriate waveform morphology and target CO2 levels.
      i. The target range for ETCO2 level is between 30 – 45 mmHg if spontaneous circulation is present.
      ii. In cardiac arrest metabolic derangements will significantly alter ETCO2 values and waveform morphology. Target range for ETCO2 level is > 15mmHg and < 45mmHg during CPR.
d. Monitor ECG for dysrhythmia due to vagal stimulation or other treatable causes.
e. Frequent auscultation of lung fields and epigastrium.
f. Constant evaluation of ventilatory compliance and resistance during PPV

8. Re-implement effective PPV within 10 seconds following unsuccessful placement attempts.
   a. Rapidly transport patients to the closest Emergency Department when rescue airway placement is unsuccessful and airway patency is not secure.

9. Immediately identify malfunctioning equipment, ineffective techniques or changes in post placement PPV compliance/resistance and employ alternative measures to achieve effective ventilations.

10. Reassess rescue airway placement each time the patient is moved and before transfer of care to Hospital staff.
    a. Record and print the waveform ETCO2 strip prior to transfer of care to the Hospital staff and attach the recording strip to the completed PCR

11. Provide direction to personnel that have been delegated management of post RESCUE AIRWAY PPV.

12. Maintain effective ventilation and oxygenation throughout the entire prehospital treatment period.

13. Maintain calm and effectively lead a team-based approach to resuscitation under all conditions.


15. Complete a procedure evaluation form.

Critical Success Targets for use of a rescue airway
1. Rescue Airway securely placed in the trachea followed by effective PPV
2. Chest rise and fall with each ventilation cycle
3. Ventilatory rate and tidal volume (minute volume) appropriate for patient condition and response
4. SpO2 of ≥95% in patients with spontaneous circulation
5. ETCO2 between 30 – 45 mmHg in patients with spontaneous circulation.
6. ETCO2 between 15 – 45 mmHg in cardiac arrest patients
7. Limited interruption of PPV (30 seconds maximum)

System Benchmark

Rescue airway securely placed in the trachea within 2 attempts in 98% of the indicated patients.

Applicable Protocols
ALS Guidelines 7060, V-FIB/V-Tach 7250, Asystole 7260, PEA 7270, Burns 7300, Respiratory Arrest 7800, Airway Obstruction 7830, King Airway (Appendix 25), Multi-lumen Airway Intubation (Appendix 28).
**Performance Standard PS07**

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**Core Competency Requirements to be covered during education/training on use of a Rescue Airway**

1. Respiratory A&P and Pathophysiology
2. Assessment of airway and breathing
3. Techniques for PPV
4. Airway pressure secondary to PPV – mean verses peak
5. Possible complications of PPV – gastric, pulmonary, cerebral, and cardiovascular complications of over inflation and over ventilation
6. Determination of PPV adequacy and efficacy. Note that greater tidal volume may be necessary due to greater dead space in use of rescue airways.
7. Differentiation between effective and ineffective patient response to PPV via BLS measures
8. Indications for use of a rescue airway
9. Selection of correct equipment required for insertion of a rescue airway
10. Identification of the difficult airway and employment of alternative techniques for airway management
11. Rescue airway placement techniques
12. Post-placement airway monitoring
13. Auscultation and diagnostic differentiation of lung sounds
14. Use of diagnostic tools, e.g., Capnography
15. Recognition of complications (Dislodgement, Obstruction, Pneumothorax, Equipment Failure, or DOPE)
16. Team Leadership and Patient Safety
17. Documentation

**Adjunctive Performance Standards**

1. Positive Pressure Ventilation
2. Laryngoscopy with FBAO Removal/Magill Forceps
3. BLS Airway Adjuncts
4. ALS Airways

**Equipment Requirements**

1. Personal Protective Equipment
2. NP/OP Airways
3. BVM with manometer and reservoir
4. Combitube(s) or King Tube(s)
5. Stethoscope
6. Supplemental oxygen
7. Magill Forceps
8. Laryngoscope(s)
9. Pulse Oxymeter
10. Waveform Capnometer
11. Suction device (both rigid and flexible catheters)
12. Cardiac monitor
13. Difficult Airway Kit/Rescue Airway Kit (including just in time training aids)

Instructor Resource Materials
1. Prehospital Trauma Life Support
2. AHA CPR and BLS Provider Manual
3. AHA ACLS Provider Manual
4. AHA PALS Provider Manual
5. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
6. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic
7. Adjunct specific manufacturer guidelines for use
Terminal Performance Objective

Secure placement of an endotracheal tube (ETT) in the trachea to ensure a patent open airway allowing effective positive pressure ventilation throughout the entire prehospital period of care.

After placement, paramedics must continuously maintain the ETT within the trachea by performing all of the following:

1. Verify symmetrical rise and fall of the chest with on-going PPV
2. Auscultate all lung fields to confirm the presence of airflow to the lower airway during PPV
3. Auscultate over the epigastrium to confirm the absence of airflow to the stomach during PPV
4. Utilize an esophageal detection device (EDD) to confirm placement in the trachea
5. Utilize waveform capnography to evaluate for the presence of end tidal carbon dioxide (ETCO2) during PPV\(^1\)\(^2\)
   - Target Range is 30 – 45 mmHg with appropriate waveform morphology in patients with spontaneous circulation
   - Target Range is > 15 mmHg and < 45 mmHg with appropriate waveform morphology for patients in cardiac arrest receiving CPR.
   - Consider ineffective diagnostic readings due patient down time when evaluating ETCO2 in the cardiac arrest patient.
6. Utilize pulse oximetry to evaluate for adequate O2 saturation during PPV
   - Target Range is an SpO2 ≥ 95%
7. Confirm the presence of misting of the ETT during PPV
8. Confirm the absence gastric contents in the ETT during PPV
9. Ensure the ETT remains inserted at the correct depth within the trachea during PPV
10. Stabilize the patients head to avoid movement and possible ETT dislodgement during PPV.
11. Continuously monitor and re-verify tube placement after each and EVERY move, looking for signs of tube dislodgement and migration out of the trachea:
12. Rapidly identify 100% of the occurrences when a ETT is misplaced or a ETT has migrated out of the trachea after placement.
13. Record and print the waveform ETCO2 strip prior to transfer of care to the Hospital staff and attach the recording strip to the completed PCR
14. Once identified as misplaced, or if there is significant doubt of the tube’s placement, remove the tube at once and provide PPV.
15. Re-intubate or consider insertion of a rescue airway if unable to control the airway with BLS adjuncts.

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\(^1\) 2005 AHA Guidelines for CPR and ECC, Part 7.1, pp 54
\(^2\)  PHTLS, Sixth Edition, Chapter 6 pp 135, Chapter
## Critical Success Targets for ETI

1. ETT securely placed in the trachea followed by effective PPV
2. Chest rise and fall with each ventilation cycle
3. SpO2 of >95%
4. ETCO₂ between 30 – 45 mmHg in the patient with spontaneous circulation
5. ETCO₂ between 15 – 45 mmHg in the cardiac arrest patient receiving CPR
6. Limited interruption of PPV (30 seconds maximum)

## System Benchmark

ETT securely placed in the trachea within 2 attempts in 90% of the indicated patients.

## Applicable Protocols

ALS Guidelines 7060, V-FIB/V-Tach 7250, Asystole 7260, PEA 7270, Burns 7300, Respiratory Arrest 7800, Airway Obstruction 7830, King Airway (Appendix 25), Multi-lumen Airway Intubation (Appendix 28).

## Core Competency Requirements to be covered during education/training on post ETT confirmation and monitoring.

1. Rapid assessment of endotracheal tube placement
2. Use of primary verification methods
3. Use of secondary verification methods
4. Positive pressure ventilation
5. Appropriate re-assessment of tube placement after each move
6. Rapid recognition of a misplaced tube
7. Removal of a misplaced tube
8. Alternate techniques for advanced airway management
9. Dislodgement, Occlusion, Pneumothorax, Equipment Failure (DOPE)

## Adjunctive Performance Standards

1. ALS Airways
2. Positive Pressure Ventilation (PPV)

## Equipment Requirements

1. Personal Protective Equipment
2. NP/OP Airways
3. BVM
4. Stethoscope
5. Supplemental oxygen
6. Magill Forceps
7. Laryngoscope(s)
8. Laryngoscope Blades (multi sizes)
9. Appropriate size ET tubes
10. Stylet(s)
11. Pulse Oximeter
12. Waveform Capnography
13. Suction device (both rigid and flexible catheters)
14. Cardiac monitor
15. Difficult Airway Kit/Rescue Airway Kit (including just in time training aids)

**Instructor Resource Materials**

1. Prehospital Trauma Life Support
2. AHA ACLS Provider Manual
3. AHA PALS Provider Manual
4. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
5. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic
Terminal Performance Objective

Relieve intrathoracic pressure resulting from tension pneumothorax to improve cardiac output and allow the return of spontaneous respirations and/or effective oxygenation and ventilation.

Before performing needle thoracostomy paramedics must:

1. Methodically complete an assessment of the airway and breathing within 30 seconds.
2. Verify inadequate ventilation and/or signs of hypoxia within the first 30 seconds.
3. Recognize and differentiate signs and symptoms of tension pneumothorax and associated obstructive shock
   a. Maintain an index of suspicion when assessment reveals blunt or penetrating chest trauma or unexplained respiratory distress and:
      i. Progressively worsening respiratory distress or apnea; and,
      ii. Unilateral decreased or absent breath sounds on the affected side; and,
      iii. Hypotension (systolic BP less than 90 mmHg with signs of poor perfusion)
   1. This includes cardiac arrest (PEA may be the presenting rhythm)
   c. Intubated Patient—Trauma or Medical: maintain a high index of suspicion for progression of tension pneumothorax when assessment reveals the following:
      i. Increasing resistance to PPV
      ii. Progressively diminishing breath sounds (usually unilateral) clinically correlating with sustained injuries
      iii. Waveform Capnography shows reduction in ETCO2 levels in the absence of explainable cause, e.g. ventilatory rate too fast and/or deep
      iv. Paradoxical or uneven movement of the chest wall—lateral discrepancy
4. Confirm the absence of contraindications for the procedure
5. Lift occlusive dressings to relieve intrathoracic pressure before needle thoracostomy

While performing needle thoracostomy paramedics must:

1. Correctly assemble all equipment required for needle thoracostomy within 60 seconds.
2. Ensure PPV and optimal oxygenation of the patient while equipment is prepared.

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1 Prehospital Trauma Life Support, Sixth Edition, 2007
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**Performance Standard PS09**

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a. In the patient requiring respiratory support provide PPV using the lowest pressure necessary to adequately provide for oxygenation and ventilation of the patient. In the critical patient ideal SpO2 values may not be attainable until the pneumothorax is relieved.

b. In the spontaneously breathing patient provide supplemental oxygen appropriate to the patient’s condition.

3. Identify the correct anatomical landmarks and use aseptic technique to prepare the site for the needle insertion
   a. **Inability to identify landmarks is a contraindication for needle thoracostomy**

4. Insert the needle perpendicular (90°) to the chest at the mid clavicular line in the second intercostals space over the top of the 3rd rib on the affected side.

5. Assess for the sound of air rushing out through the needle or catheter, or stop when the pleura has been breached. Remove the IV needle, leaving the catheter in place.
   i. If no air rush or no response to treatment, consider patient’s unique anatomy (i.e., large chest)
   ii. Consider bilateral needle decompression if unrelieved when applied to affected side

6. Secure the catheter to a one-way valve if available.

7. Reassess the patient following the procedure and continue PPV with the appropriate airway adjunct as indicated by the patient’s response to the procedure.

8. Secure the catheter to the chest and continuously monitor for air or blood discharge.

9. Continuously monitor the patient for reoccurrence of tension pneumothorax.

10. Monitor the catheter for development of occlusion and consider a 1-3 ml saline flush to clear a plugged catheter.

11. Provide direction to personnel that are delegated management of post procedure PPV.

12. Maintain effective ventilation and oxygenation throughout the entire prehospital treatment period.

13. Maintain calm and effectively lead a team-based approach to resuscitation under all conditions.

14. Accurately document all assessment findings, therapeutic treatments and the patient’s response to therapy 100% of the time.

15. Complete a Procedure Evaluation Form.

**Critical Success Targets for Needle Thoracostomy**

1. Chest rise and fall with each ventilation cycle (Spontaneous or PPV)
2. SpO2 of ≥95%
3. Improvement in ETCO2 level
4. Signs of improved cardiac output – return of pulses, improved skin color, improved BP, improved LOC

**System Benchmark**

**Number of patients that show improvement in vital signs after procedure.**

**Applicable Protocols**

- Traumatic Arrest (7900), Traumatic Shock (7910), Chest Trauma (7930), Pediatric Traumatic Arrest (8900), Pediatric Traumatic Shock (8910), Pediatric Chest Trauma (8930)
Core Competency Requirements to be covered during education/training on Needle Thoracostomy

1. Respiratory A&P and Pathophysiology
2. Assessment of airway, breathing and circulation
3. Differentiation between adequate and inadequate respiration
4. Needle thoracostomy indications and contraindications
5. Differentiation between a simple pneumothorax and a tension pneumothorax
6. Procedure for Needle Thoracostomy
   a. Required equipment and set up
   b. Patient preparation using aseptic technique
   c. Landmarks - the anterior chest at the mid clavicular line in the second intercostal space just over the top of the 3rd rib on the affected side.
   d. 14 gauge (minimum 2 inch) catheter insertion at a 90’ angle
   e. Advance the catheter over the needle approximately 1-1 1/2 inches listening for a rush of air
   f. Catheter monitoring and security
7. Assessment of PPV adequacy and efficacy
8. Airway pressure secondary to PPV – mean verses peak
9. Possible complications of PPV – gastric, pulmonary, cerebral, and cardiovascular complications of over inflation and over ventilation
10. Auscultation and diagnostic differentiation of lung sounds
11. Team Leadership and Patient Safety
12. Use of diagnostic tools

Adjunctive Performance Standards

1. BLS Airways
2. ALS Airways
3. Positive Pressure Ventilation

Equipment Requirements

1. PPE
2. BVM with manometer
3. BLS Airways
4. 2 inch 14 gauge catheter over needle with 3-5 cc syringe
5. Normal saline for injection
6. Needle thoracostomy kit (optional)
7. Alcohol wipes and betadine swabs
8. Stethoscope
9. Occlusive dressings
10. Gauze sponges
11. One-way valve
12. Cardiac monitor with waveform capnography
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13. Pulse oximeter

**Instructor Resource Materials**

1. Prehospital Trauma Life Support
2. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic

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1 2005 AHA ECC Guidelines Part 10.7, IV 147
Terminal Performance Objective

Electrical capture and control of the mechanical contraction of the heart resulting in adequate cardiac output and tissue perfusion.

Before performing transcutaneous cardiac pacing (TCP) paramedics must:

1. Methodically assesses patient’s ABC’s.
2. Determine the patient is hemodynamically unstable due to bradycardia and is a candidate for immediate TCP by confirming all of the following are simultaneously present:
   a. The patient is exhibiting signs and symptoms of systemic poor perfusion and
   b. Bradycardia (HR < 60) is present on the ECG and
   c. Underlying causes of the dysrhythmia have been considered and reversible causes have been treated and
   d. Confirm no contraindications to TCP are present and
   e. The cardiac monitoring equipment is placed correctly on patient and print a baseline rhythm strip.
3. Strongly consider sedation while preparing TCP equipment.
   a. Use IN/IM route for sedation if IV access is poor and could delay TCP
4. Explain to patient/family what they can expect to feel and to see but do not delay immediately needed treatment.

While performing transcutaneous cardiac pacing (TCP) paramedics must:

1. Apply the ECG monitor/pacer multifunction pads (MFP) firmly to the patient’s clean, bare skin in the correct anatomical locations for maximum electrical current flow through the heart.
2. Identify a patient with a pacemaker or internal cardiac defibrillator (ICD) and place the MFP(s) in alternate position(s) to minimize damage to the device(s) and disruption of current flow through the heart.
3. Correctly place the ECG monitor into pacing mode.
4. Turn PACER on and accurately set initial RATE and CURRENT values for procedure (70 ppm and 20 mA). Gradually increase current until electrical capture is gained. (i.e. Pacer spike generates a QRS complex on the ECG)
5. Confirm mechanical capture by palpating pulses that match pacemaker (70 bpm).
6. Accurately determine and utilize minimum electrical current needed to maintain capture (i.e. decreases current by 5 mA increments until pulses/capture lost, increases current by 5 mA increments until capture/pulses regained).
7. Evaluate the effectiveness of TCP by assessing the patient’s level of consciousness and vital signs for improvement
8. Identify continuing signs and symptoms of poor perfusion (including but not limited to hypotension, altered level of consciousness and/or poor skin signs) despite effective mechanical capture and increase TCP rate in increments of 10 bpm to a max of 100 bpm to increase cardiac output.
9. Provide sedation as needed as clinically required
10. Continuously re-assesses the patient’s vital signs and level of consciousness throughout the prehospital period of treatment.
11. Documents procedure properly, printing paced rhythm strip and attaching it to the PCR.

**Critical Success Targets for TCP**

1. Electrical and mechanical capture
2. Resolution of patient’s bradycardia related signs and symptoms (hypotension, skin signs, level of consciousness, dyspnea/tachypnea, chest pain)

**System Benchmark**

Signs of improved cardiac output (i.e. Improved Level of Consciousness/Mentation, peripheral pulses, BP, skin signs)

**Applicable Protocols**

Bradycardia (7220), Transcutaneous Pacing (Appendix 67)

**Core Competency Requirements to be covered during education/training on TCP**

1. Assessment of patient to determine if appropriate indications are present (hemodynamically unstable bradycardia or AV blocks with wide complexes, or bradyasystolic arrest with base station order), and contraindications (patients under age 12 or asystole).
2. Proper placement of ECG electrodes on patient
3. Proper identification of cardiac dysrhythmia(s) requiring TCP
4. Proper placement of multi-function patches on patient
5. Assessment for and recognition of hemodynamic instability
6. Verbalizes possible treatments for hemodynamically unstable bradycardias OTHER than TCP
7. Explains procedure to patient (where applicable) / Pre-medicates patient (where applicable)
8. Demonstrates proper technique for setting RATE and CURRENT
9. Demonstrates proper technique for gaining electrical capture with minimum required CURRENT
10. Demonstrates/explains concept of mechanical capture
11. Describes how to obtain mechanical capture if not gained with initial electrical capture
12. Cardiac monitoring / rhythm recognition and treatment

**Adjunctive Performance Standards**

N/A

**Equipment Requirements**

1. PPE
2. CPR manikin(s)
3. Stethoscope
4. Cardiac monitor/ECG/Defibrillator
5. ECG Rhythm Generator
6. ECG patches
7. Defibrillation/Multifunction Pads
Performance Standard

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Date: June 2010
Review Date: June 2012

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8. Versed
9. Pre-medication equipment (IV access, IN equipment, IM equipment)

Instructor Resource Materials
1. AHA ACLS Provider Manual
2. AHA PALS Provider Manual
3. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
4. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic
Terminal Performance Objective
Termination of hemodynamically significant tachycardia resulting in restoration of adequate cardiac output and tissue perfusion.

Before performing synchronized cardioversion paramedics must:

1. Assess the patient’s ABC’s
2. Determine the patient is hemodynamically unstable due to idiopathic (non-compensatory) tachycardia and is a candidate for immediate cardioversion:
   a. Confirm the patient is exhibiting signs and symptoms of systemic poor perfusion
   b. Confirm tachycardia (HR > 150 in adults, >180 in children, >220 in infants) is present on the ECG
   c. Confirm underlying causes of the dysrhythmia have been considered and reversible causes have been treated
3. Provide supplemental oxygen in high concentration (10 – 15 lpm)
4. Confirm the ECG monitor leads have been placed appropriately.
5. Differentiate between wide and narrow complex tachycardia
6. Strongly consider sedation for alert patients, but do not delay cardioversion in an unstable patient presenting with signs and symptoms of poor perfusion (hypotension, decreased LOC, chest pain, dyspnea/tachypnea, diaphoresis, pale/cool skin). If IV access is delayed consider faster alternate routes of administration for Versed (IN/IM).
7. Explain to patient/family what they can expect to feel and to see while avoiding delays in treatment.

While performing synchronized cardioversion, paramedics must:

1. Select and prepare the appropriate sites for application of the ECG monitor/defibrillator multifunction pads.
2. Apply the ECG monitor/defibrillator multifunction pads (MFP) firmly to the patient’s clean, bare skin in the correct anatomical locations for maximum electrical current flow through the heart.
3. Identify a patient with a pacemaker or internal cardiac defibrillator (ICD) and place the MFP(s) in alternate position(s) to minimize damage to the device(s) and to avoid disruption of current flow through the heart.
4. Correctly place the ECG monitor/defibrillator in synchronize mode.
5. Confirm the monitor is tracking the R wave for delivery of synchronized current
6. Select the correct energy setting on the ECG monitor/defibrillator
   • Per REMSA protocols
7. Assure everyone is clear from the patient and all possible energy conducting surfaces/contacts.
8. Discharge the defibrillator for synchronized delivery of electrical current
9. Immediately re-assess the patient
10. Perform and print a 12 Lead ECG and attach to PCR
11. Provide treatment based upon re-assessment findings
Critical Success Targets for Synchronized Cardioversion

1. Improvement in patient level of consciousness
2. Improved signs of perfusion
3. Resolution of patient’s tachycardia related signs and symptoms (chest pain)
4. ECG return to normal sinus rhythm or sinus tachycardia
5. Proficient use of the ECG monitor/defibrillator including lead and MFP placement

System Benchmark

TBD

Applicable Protocols

Wide Complex Tachycardia or Ventricular Tachycardia with pulses (7240), Narrow Complex Supraventricular Tachycardia (SVT) (7230), Pediatric Tachycardia with pulses (8230)

Core Competency Requirements to be covered during education/training on synchronized cardioversion

1. Cardiovascular A & P
2. Cardiology – Pathophysiology of Tachycardias
3. Assessment of circulation and recognition of hemodynamic instability
4. Identifications and contraindications for synchronized cardioversion
5. Proper placement of ECG electrodes on patient
6. Proper placement of multi-function patches on patient
7. Patient communication techniques
8. Pre-cardioversion analgesia and sedation
9. Demonstrates proper technique for use of the ECG monitor/defibrillator for cardioversion
10. Post cardioversion cardiac monitoring / rhythm recognition and treatment
11. Reassessment of patient

Adjunctive Performance Standards

Patient Assessment

Equipment Requirements

1. PPE
2. CPR manikin(s)
3. Stethoscope
4. Cardiac monitor/ECG/Defibrillator
5. ECG Rhythm Generator
6. ECG patches
7. Defibrillation/Multifunction Pads
8. Versed
9. Pre-medication equipment (IV access, IN equipment, IM equipment)
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Instructor Resource Materials
1. AHA ACLS Provider Manual
2. AHA PALS Provider Manual
3. 2005 AHA Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
4. NHTSA EMS Educational Instructor Guidelines for EMT and Paramedic
1. This policy sets forth the minimum requirements for such documentation with the intent that provider agencies may add to these minimums to meet the needs of their individual operations.

2. A patient care report (PCR) shall be completed for all patient contacts, except those involved in multi-casualty incidents (as defined in policy #5800, MCI Scene Management) and to which an approved triage tag is assigned. Each service provider rendering patient care shall complete their own PCR.
   2.1 A patient is defined as
   2.1.1 Any person who is encountered by an authorized EMS provider functioning as part of the organized EMS system, and who meets any of the following criteria:
   2.1.1.1 Has a chief complaint.
   2.1.1.2 Makes a request for examination or treatment.
   2.1.1.3 Has signs or symptoms of injury or illness.
   2.1.1.4 Has experienced an event or is in a circumstance or situation that could reasonably lead to illness or injury.
   2.1.1.5 Is disoriented or impaired and meets one of the above criteria.
   2.1.1.6 Has evidenced suicidal intent.
   2.1.1.7 Is dead.
   2.1.1.8 Any person for whom a prehospital care provider has a medically-based index of suspicion for illness or injury.

2.2 A patient contact has occurred when EMS personnel have performed any level of assessment on a patient. This includes a visual assessment.

2.3 A patient care report (PCR) is the legal healthcare record of any patient contact. It is the document, written or electronically generated (ePCR), that describes the assessment and treatment/response of a patient by EMS personnel.

3. A patient care report (PCR/ePCR) shall accurately and completely describe pertinent scene conditions, chief complaint or health problems of the patient, patient assessment(s), any treatment(s) given, response to treatment(s), any changes in the patient’s condition, any advisements given to the patient/family/legal guardian, and his/her disposition.
   3.1 PCRs must contain the following information as mandated by the California Code of Regulations (CCR), Title 22, and the Riverside County EMS Agency:
   • The date and estimated time of incident.
   • The time of receipt of the call (available through dispatch records).
   • The time of dispatch to the scene.
   • The time of arrival at the scene.
   • The time of patient contact.
   • The location of the incident.
   • The patient's: name; age; gender; weight, height, and address.
   • Chief complaint.
   • Mechanism of injury (MOI), if applicable.
   • Vital signs, to include pulse, respirations, blood pressure, skin signs, capillary refill, and, if applicable, temperature.
   • Pain rating (on appropriate pain scale), if applicable.
PATIENT CARE DOCUMENTATION STANDARDS

- Appropriate physical assessment.
- Pertinent medical history and medications taken.
- Allergies.
- The emergency care rendered and the patient's response to such treatment.
- Patient disposition.
- The time of departure from scene.
- The time of arrival at receiving facility (if transported).
- The name of receiving facility (if transported).
- The name(s) and any unique EMS identifying number(s) of personnel directly involved in patient care will be included on their service provider’s PCR.
- Signature(s) of the primary care person, and, if used /applicable, the scribe.
- Entries noting procedures/treatments administered or attempted shall include time of attempt and initials of person rendering care. If the person rendering care is from a different provider, the service provider’s name may be used in place of initials.
- Entries noting any response or lack of response or any change in patient condition must be timed.
- The individual component scores for GCS and APGAR, when utilized.
- If recommended treatments or transport was/were declined, a statement to document the explanation of possible consequences, the patient’s understanding of these consequences, and continued declination after explanation.
- The providers’ unique incident #.
- Name of base hospital contacted and time of contact, if applicable.

3.2 There are rare circumstances wherein all of the above information cannot be obtained. Those circumstances include patient refusal of a hands-on assessment and a patient in police custody where attempting a complete assessment would create a safety hazard for personnel. In such instances, documentation of a visual assessment and whatever additional assessment parameters can be completed will be sufficient, provided an explanation of the situational restrictions is also included.

3.3 Documentation of assessments reported and treatments done prior to the arrival of the specific EMS unit completing the PCR may be listed as “prior to arrival” (PTA) if specific times are unknown.

3.4 BLS providers arriving simultaneously with ALS providers of the same agency are not required to complete their own PCR if ALS personnel assume immediate care. BLS providers arriving on-scene after ALS personnel do not need to complete a PCR unless they are given specific and unique responsibility for patient care in multiple patient circumstances.

4. PCR shall be legible, accurate, and complete.

5. A PCR will give a clear and chronological description of events from first contact to transfer of care.
PATIENT CARE DOCUMENTATION STANDARDS

6. PCRs should be completed by the highest medically authorized person(s) directly involved with that patient’s care.

7. EMS providers will use only a Riverside County approved PCR for all patient documentation.
   7.1 ePCRs will be compliant with the EMS Agency’s data system and include all mandatory data points.

8. Patient care reports are both verbal and written. Patient Care Report forms are legal healthcare documents of patient assessment, treatment, and response to treatment. PCRs shall be as complete as possible before handing a copy to the next care provider. However, when two or more providers are at the scene and patient transport must be expedited, it is expected that if care is transferred, a full verbal report will be given by the non-transporting care provider(s) and a written report will be consigned that is as complete as possible.
   8.1 Information added after-the-fact, whether immediately after transferring patient care responsibilities or completing the PCR away from the scene, must be indicated as having been added after leaving the care of the patient.
   8.2 Once a copy of a handwritten paper report is handed-off, any new PCR created shall be attached to the original, and both filed as part of the patient’s healthcare record by the provider.
   8.2.1 Rewriting restrictions do not apply to the transference of information to an electronic PCR (ePCR).
   8.3 PCRs obtained from first response units shall be taken by the transporting agency and handed off to the receiving hospital along with a copy of the transporting agency’s PCR.

9. PCRs must be retained by the EMS service provider agency for a minimum of seven (7) years, or, for minors, age of majority plus two (2) years, whichever is longer.

10. When requested for purposes of quality review, PCRs will be provided by an EMS service provider to the EMS Agency or the involved base hospital.

11. Timely retrospective review of PCRs is a key component of EMS system improvement. Record review responsibilities shall be incorporated in each service provider’s approved quality improvement (QI) plan and are outlined in policies #2120, EMT-I and First Responder Provider Agencies, and #2140, ALS Provider Agencies. Base hospitals are required to review patient care records as described in policy #2150, Base Hospitals, Title 22, CCR, Section 100169(c)(1), and as incorporated in their EMS agency-approved QI plans.

12. All PCRs generated by EMS personnel contain protected healthcare information. Therefore, all EMS providers shall include a HIPAA compliance program as part of their QI plan. Included in the plan will be policies for the custody and security of PCRs.

13. Provider agencies utilizing electronic PCRs (ePCRs) are required to adopt software that is compliant with the California Emergency Medical Services Information System.
PATIENT CARE DOCUMENTATION STANDARDS

(CEMSIS) or the Riverside County approved EMS data set; data that can be integrated into the EMS data system.
WITHHOLDING RESUSCITATION EFFORTS

1. The purpose of this policy is to determine the roles of prehospital providers in the setting of cardiac arrest and to establish the conditions under which CPR must be initiated, may be withheld, and when CPR can be discontinued.

2. GUIDELINES:
   2.1 EMS personnel do not pronounce death but rather determine death based on predetermined criteria.
   2.2 Field deaths not covered by this policy require assessment by EMS personnel and consultation with the Base Hospital physician for determination of death.
   2.3 EMS personnel are not required to initiate resuscitative measures when death has been determined by using the criteria outlined in this policy or the patient has a valid State “Do Not Resuscitate” medallion, bracelet or form, or an appropriately marked POLST form. If any doubt exists as to whether or not the patient meets criteria begin CPR immediately.
   2.4 Hypothermia resuscitation includes complete re-warming of the patient. The re-warming phase cannot be accomplished in the field setting. All hypothermia patients upon whom CPR is started should be transported with full BLS/ALS efforts. However, submersion drownings one (1) hour or longer as confirmed by public safety may be considered a body recovery, NOT a rescue operation.
   2.5 EMS personnel may contact the Base Hospital for a “Determination of Death” anytime support in the field is desired. To avoid confusion, clearly state the purpose for base contact as part of the initial report.
   2.6 Multi-victim incidents with limited resources are an exception to this policy.
   2.7 In cases where CPR is initiated prior to arrival of EMS personnel, resuscitation efforts may be withdrawn if the patient meets the criteria in Section 3 of this policy.
   2.8 For DNR situations, refer to Policy # 5620, Do Not Resuscitate (DNR).
3. DETERMINATION OF DEATH CRITERIA
EMS personnel do not pronounce death but rather determine death based on the following predetermined criteria:

3.1 Pulselessness (determined at two (2) sites on the body - carotid and either radial or femoral) and;

3.2 Apnea, and;

3.3 One or more of the following:
   3.3.1 Generalized decomposition of body tissues
   3.3.2 Total decapitation
   3.3.3 Total incineration
   3.3.4 Total separation or destruction of heart or brain
   3.3.5 Multiple signs of lifelessness - apnea, pulselessness and the following:
      3.3.5.1 First Responders/EMTs without semiautomatic defibrillators, or using defibrillators without screens or print-out capability:
         • Obvious signs of rigor mortis such as rigidity or stiffening of muscular tissues and joints in the body; and
         • Post mortem lividity
      3.3.5.2 First Responders/EMTs with semiautomatic defibrillators:
         • Any degree of rigor; OR
         • Post mortem lividity and Asystole (flat-line) or Agonal rhythm (flat-line with an occasional blip)* on the monitor for one (1) minute.
      3.3.5.3 EMT-Ps:
         • Any degree of rigor; OR or postmortem lividity, AND
         • Post mortem lividity and documented Asystole or Agonal* rhythm for one (1) minute.

4. TRAUMA DEATHS - A trauma victim who does not meet the “Determination of Death criteria” listed above may be determined to be dead if upon arrival of EMT-P personnel at the scene, the following criteria are met:

4.1 Pulselessness (determined at two (2) sites at the carotid and either radial or femoral); and

4.2 Apnea; and

4.3 Blunt trauma arrest; and

4.4 Asystole or agonal* rhythm for one minute.

* “agonal” is defined as electrical complexes at less than 10/minute none of which produce pulses
WITHHOLDING RESUSCITATION EFFORTS

5. “Trauma Determination of Death” requires assessment by ALS personnel unless patient meets “Determination of Death” criteria (3.3.1 - 3.3.4).

6. ACTIONS:

6.1 Once the patient has been determined to be dead, EMS personnel should notify the local law enforcement agency and the Riverside County Coroner’s office. EMS personnel should remain on scene until released by law enforcement.

6.1.1 If the Coroner’s office releases the body to the mortuary, then the EMT-P should remove and properly dispose of any medical equipment used during the resuscitation attempt. On the Patient Care Report (PCR), the name of the coroner’s investigator who authorized the release of the body should be documented and a copy of the PCR left with the body in a sealed envelope. Units creating electronic PCRs should leave a note/business card with the body, notifying the mortuary where to obtain the PCR.

6.1.2 If the body is going to be turned over to the coroner’s office for their investigation, all medical equipment used during the resuscitation efforts should be left intact and a copy of the PCR left on scene after documenting the name of the coroner’s investigator in a sealed envelope. Units creating electronic PCRs must fax a copy of the PCR to the coroner’s office upon return to their base, and should leave such notification with the body.
PREPRESERVED MEDICAL DEVICES

1. The purpose of this policy is to define when it is appropriate for the EMT-I to assist a patient with their medications and/or medical devices.

2. When requested, EMT-Is with appropriate training may assist patients with their own personal pre-prescribed medications and medical devices, limited to:
   2.1 Epi-pens and epinephrine administration devices, in cases of acute allergic reactions.
   2.2 Glucometers and penlets.
   2.3 Home nebulizers and metered dose inhalers (MDIs) of bronchodilators, in cases of bronchospasm and wheezing.
   2.4 Nitroglycerin tablets or metered dose spray, in cases of acute onset of chest pain/discomfort for patients with chronic angina or diagnosed heart problems.
   2.5 Patient-controlled analgesia administration devices

3. Any assistance given by an EMT-I shall be based on and rendered to the patient only after completion of a patient assessment and medical history, followed by documentation of all action taken.

4. EMT-Is are to inform patients that any treatment rendered by emergency personnel is of a temporary nature only and should be followed by/with a comprehensive medical examination by a licensed practitioner.

5. EMT-Is may assist patients with:
   5.1 Retrieval of medications from storage locations.
   5.2 Site preparation with alcohol or antiseptic wipes at the direction of the patient.
   5.3 Loading/preparation of epipens, penlets, glucose reading or other devices.
   5.4 Assisting with the placement and aiming of medication delivery systems.
   5.5 Application of pressure or bandage.

6. EMT-Is shall not draw up, measure, mix or solely administer any medications and shall not assist with the administration of medication or medical devices that are not prescribed to the patient. Any medication administered must be clearly labeled and identified as belonging to the patient.

7. In cases of assistance with nitroglycerin tablets or spray, the EMT-I shall monitor administration to ensure that doses are given at the prescribed times and in the prescribed amounts. If no specific directions are noted on the prescription, the EMT-I shall ensure that doses are given at five (5) minute intervals and that no more than a total of three (3) doses are given.
   7.1 Blood pressure will be taken and recorded prior to each dose.
   7.2 The EMT-I should not assist with the administration of medication when blood pressure is < 400 90 mmHg systolic OR either the patient complains of or the patient assessment shows an altered level of consciousness.
POISONINGS

BETA BLOCKERS - CALCIUM CHANNEL BLOCKERS

PRIOR TO CONTACT

1. **OXYGEN**
   Regulate flow as clinically indicated.

2. **IV / IO ACCESS**
   TKO. May initiate adult IO with Base Hospital approval.

3. **MONITOR**
   Treat rhythm as appropriate.

4. **ASSESS**
   Based on substance believed to be ingested. Poisonings present special situations. Consider early Base Hospital consult.

**Beta Blockers**

May cause early and often abrupt onset of cardiovascular collapse (bradycardia and hypotension), bronchospasm, respiratory arrest, seizures and hypoglycemia.

Beta blocker drugs include atenolol (Tenormin), acebutolol (Sectral), metoprolol (Lopressor), nadolol (Corgard), oxyprenolol (Trasicor), pindolol (Visken), propranolol (Inderal), satolol (Sotacor), and timolol (Timoptic).

**Calcium Channel Blockers**

Signs and symptoms due mostly to hypo-perfusion include: weakness, dizziness, syncope, coma, profound bradycardia, high degree AV block, poor myocardial contractility and vasodilation. Nausea and vomiting are also common. Angina, confusion and CNS depression may also occur. Nifedipine can cause reflex tachycardia.

Calcium channel blocker drugs include: amlodipine (Norvasc), diltiazem (Cardizem), nifedipine (Procardia, Adalat), nimodipine (Nimotop), and verapamil (Calan, Isoptin).

<table>
<thead>
<tr>
<th>Beta Blockers</th>
<th>Calcium Channel Blockers</th>
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<tbody>
<tr>
<td>1. <strong>ATROPINE</strong> 0.5 mg IVP or IO push. Repeat every 3 - 5 minutes as needed to a maximum .04 mg/kg. for HR &lt; 60 or systolic BP &lt; 90 with serious signs or symptoms. <em>Contact the BH if additional dosing is necessary.</em></td>
<td>1. <strong>ATROPINE</strong> 0.5 mg IVP / IO push. Repeat every 3 - 5 minutes as needed to a maximum of .04 mg/kg for HR &lt; 60 or systolic BP &lt; 90 with serious signs or symptoms.</td>
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<tr>
<td>2. <strong>ALBUTEROL</strong> via nebulizer using 2.5mg in 3 ml saline. Repeat as needed for bronchospasm.</td>
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<tr>
<td>3. <strong>MIDAZOLAM</strong> 2 mg slow IVP/IO push. Titrate additional doses as needed for seizure control in 1 mg increments to a maximum dose of 5 mg. <strong>OR</strong> 2 mg IN (in appropriate concentration) <strong>OR</strong> 5 mg IM (in appropriate concentration) if IV or IO line cannot be established.</td>
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# POISONINGS

## BETA BLOCKERS - CALCIUM CHANNEL BLOCKERS

<table>
<thead>
<tr>
<th>BASE HOSPITAL ORDERS</th>
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<tr>
<td>For either Beta Blockers or Calcium Channel Blockers:</td>
</tr>
<tr>
<td>1. ACTIVATED CHARCOAL</td>
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<tr>
<td>2. GLUCAGON</td>
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<td>3. EPINEPHRINE</td>
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BRADYCARDIA

Bradycardia is characterized by a decrease in the rate of atrial depolarization due to slowing of the sinus node. The rhythm is regular or slightly irregular. Heart rate slows as the child ages, and is relative to activity level. Generally, a heart rate < 60 beats per minute in children is considered bradycardic. QRS complexes are normal, each preceded by a P wave.

NOTE: Most bradycardia in children is due to hypoxia.

PRIOR TO CONTACT

1. OXYGEN
   100% by non-rebreather mask. If intubated, ventilate with 100% oxygen.
   NOTE: Most bradycardia in children is due to hypoxia.

2. MONITOR
   Assess rhythm.

3. IV / IO ACCESS
   Fluid boluses at a rate of 20 ml/kg, as needed. Reassess after each bolus administration.

4. ASSESS
   For:
   • Heart rate: < 60 beats per minute in infants and children
   • Signs of poor perfusion or respiratory distress (delayed capillary refill, diminished distal pulses, cool extremities, altered level of consciousness).

   If heart rate < 60 beats/minute:
   A. CPR
   B. Epinephrine 0.01 mg/kg of 1:10,000 IVP / IO push or 0.1 mg/kg of 1:1,000 via ET tube. Repeat as needed every 3 - 5 minutes at the same dose.

BASE HOSPITAL ORDERS

1. ATROPINE
   0.02 mg/kg IVP / IO push or 0.04 mg/kg via ET tube. Minimum dose of 0.1 mg. Maximum single dose 0.5 mg.

2. TCP
   for patients 13 y/o or older
   If no improvement seen after atropine, initiate TCP beginning at 70 ppm and 20mA. Consider medicating with midazolam prior to procedure.
## OPERATIONS: Pediatric Treatment Protocols (ALS)

### TRAUMA

## EXTREMITY TRAUMA

### PRIOR TO CONTACT

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<tr>
<td>1.</td>
<td>SECURE AIRWAY</td>
<td>As appropriate.</td>
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<tr>
<td>2.</td>
<td>SPINAL IMMOBILIZATION</td>
<td>As appropriate.</td>
</tr>
<tr>
<td>3.</td>
<td>OXYGEN</td>
<td>Regulate flow as clinically indicated.</td>
</tr>
</tbody>
</table>
| 4. | DRESS & SPLINT | - Control bleeding with direct pressure and/or pressure dressing.  
- Check neuro-vascular status prior to and after each extremity manipulation.  
- Cover exposed bone with saline soaked gauze.  
- Splint dislocation in position found.  
- Return injured extremities (non-dislocated) to anatomic position as resistance and pain allow.  
- Grossly angulated long bone fractures may be reduced with gentle unidirectional traction for splinting.  
- If partial amputation, splint in anatomic position and elevate the extremity.  
- Place completely amputated parts in saline soaked sterile dressings and seal into a sterile, dry container or bag. Place container or bag on ice, if possible. |
| 5. | IV ACCESS | May be TKO but with macrodrip tubing for patients with no signs of shock. For patients with signs of shock, administer fluid boluses at a rate of 20 ml/kg as needed. Reassess patient after each bolus administration. Consider 2nd IV line. |
| 6. | DRAW BLOOD SAMPLE | Assess for low blood sugar in children. |

### REFER TO POLICY 8500, ALTERED LEVEL of CONSCIOUSNESS.

| 8. | MORPHINE | In cases of isolated extremity trauma without multisystem mechanism (e.g., sports injuries, trip with a fall, but not elevated falls or TCs, etc), 0.1 mg/kg slow IVP to a maximum 5 mg, for excruciating pain. For the purposes of medication administration in this policy, extremity trauma is defined as those cases of injury where the limb itself and/or the appendicular skeleton (shoulder or pelvic girdles) may be injured -- ex: dislocated shoulder, hip fracture or dislocation. *Repeat doses require base hospital contact.* |