SafeTec Training Services

Advanced Airway Management for the EMT-Basic
Objectives

- Review anatomy relevant to airway management
- Relate key differences in airway structures and how they influence successful bag mask ventilation (BMV)
- Describe the process of opening the airway and maintaining it
- Describe the indications, limitations, proper sizing, and contraindications of BLS airway adjuncts
Objectives

- Define the MOANS BMV assessment mnemonic
- Describe BURP and Sellick's Maneuver
- Describe proper BVM use including proper ventilatory rates, depth, and cadence
- Describe the RODS extraglottic device assessment mnemonic
- Describe indications, limitations, sizing, and contraindications of extraglottic airway devices
“Airway management is the foundation on which the resuscitation process rests.”
- Ron Walls, MD
“There are few more important tasks in emergency medicine than airway management. Whatever method is used must be effective, for the problem airway does not allow the luxury of waiting until the “physician” arrives, or until the problem has cured itself.”

- Charles E. Stewart, MD, FACEP
Airway Anatomy Affecting BMV

- Facial structures
  - Nasal bones
  - Maxilla
  - Mandible
  - Teeth
- Upper Airway structures
  - Tongue
  - Epiglottis

- Lower airway structures
  - Trachea
  - Bronchi
  - Lungs
Airway Anatomy Affecting BMV
Airway Anatomy Affecting BMV

- Frontal bone
- Zygomatic bone
- Nasal bone
- Maxilla
- Mandible
Airway Anatomy Affecting BMV

- Hard palate
- Tongue
- Trachea
- Esophagus
- Vocal fold
- Epiglottis
- Palatine tonsil
- Soft palate
Airway Anatomy Affecting BMV

Lungs

Left main stem bronchus

Bronchi

Bronchioles

Diaphragm

Left lung

Pleura

Left lobes
Predicting Difficult BMV

MOANS

- Mask Seal
- Obesity
- Aged
- No Teeth
- Stiff Lungs
Mask Seal
Obesity
Aged
No Teeth
Stiff Lungs

Diagram showing the heart and lungs with labels for main pulmonary artery, left atrium, right atrium, right ventricle, left ventricle, and lungs. There are two insets: one showing normal pulmonary arterial vessels with blood flows freely, and another showing vessels with pulmonary hypertension where blood flow is constricted.
**BMV Technique**

**Two Points**

- Open the airway
- Keep it open!
- Basic adjuncts
- Good mask seal
BMV Technique
BMV Technique
BMV Technique
BMV Technique

Key BMV Points

- Maintain an open airway by practicing good technique
- Pull the mandible into the mask – do not push the mask into the mandible
- Avoid providing high pressure during ventilations
  - Longer inspiratory times (slow ventilations)
  - Smaller tidal volumes
- Optimal airway opening
**Key BMV Points**

- Provide ventilations at a proper rate and cadence
  - “squeeze, release, release”
- Use one-handed technique over squeezing the bag against your body
  - Recommended TV = 500ml
- Use a basic airway adjunct
- Don’t forget the O’s!!
Basic Airway Adjuncts

NPA Key Points

- Must be properly sized
- Does not intubate the trachea
- May cause septum trauma
- May induce a gag reflex
- Relatively contraindicated in the head injured patient
  - Risk vs. Benefit
Basic Airway Adjuncts
Basic Airway Adjuncts

OPA Key Points

- Must be properly sized
- Does not intubate the trachea
- May cause oral trauma
- Contraindicated in the patient with an intact gag reflex
Basic Airway Adjuncts
Basic Airways Insertion
Sellick’s Maneuver

**Key Points**

- Data both supports and questions its efficacy
- May reduce gastric insufflation during low to moderate BMV
- May impair ventilation by partially obstructing the upper airway
- May obscure glottic visualization during intubation
Sellick’s Maneuver
BURP Technique

**BURP Key Points**

- **B**ackward, **U**pward, **R**ightward, **P**ressure
- May aid the provider during intubation
- **I**s NOT **S**ellick’s
“PEEP Show” - Still With Me??
Extraglottic Devices

- Devices that sit “outside” of the glottis
  - Supraglottic
  - Infraglottic
- Used as “rescue” airway devices
- Used as a single attempt device in known difficult airway or confined space situations
- Do not intubate the trachea
  - **Esophageal Tracheal Combitube**
- Becoming popular over BMV for EMT’s secondary to ease of insertion, success rates, and ventilatory compliance
Airway Anatomy Affecting EGD’s

- Facial structures
  - Maxilla
  - Mandible
- Upper Airway structures
  - Tongue
  - Epiglottis

- Lower airway structures
  - Trachea
  - Bronchi
  - Lungs
Airway Anatomy Affecting EGD’s

- Hard palate
- Tongue
- Trachea
- Esophagus
- Epiglottis
- Palatine tonsil
- Soft palate
- Vocal fold
Airway Anatomy Affecting EGD’s

- Lungs
- Left main stem bronchus
- Bronchi
- Bronchioles
- Diaphragm
- Left lung
- Pleura
- Left lobes
Predicting Difficult EGD Placement

RODS

- Restricted mouth opening
- Obstruction at the larynx
- Disrupted/distorted airway
- Stiff Lungs
Restricted Mouth Opening
Obstruction at the Level of Larynx
Disruption/Distorted Airway

PLB = primary left bronchus; PRB = primary right bronchus

Figure 2 - Endoscopy imaging showing the airway rupture (arrow)
Disruption or Distortion
Extraglottic Devices for EMT’s
## Extraglottic Devices for EMT’s

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Laryngeal Mask Airways

**LMA Unique (LMNA)**
- #1 Neonate; up to 5kg
- #1.5 Infant; 5-10kg
- #2 Infant/Children; 10-20kg
- #2.5 Children; 20-30kg
- #3 Children; 30-50kg
- #4 Adults; 50-70kg
- #5 Adults; 70-100kg

Possible to place ETT

**LMA Fastrach - ILMA**
- #3 Children; 30-50kg
- #4 Adults; 50-70kg
- #5 Adults 70-100kg
Laryngeal Mask Airways

**Cookgas Air Q**

- 1.5 pediatric
- 2.5 Children/Adults 20-50kg
- 3.5 Adults 50-70kg
- 4.5 Adults 70-100kg

Made to accept ETT

Preparation/insertion similar to LMA Unique
Laryngeal Mask Airways

**AMBU Aura Straight**

- 1 <5kg
- 1.5 5-10kg
- 2 10-20kg
- 2.5 20-30kg
- 3 30-50kg
- 4 50-70kg
- 5 70-100kg
- 6 >100kg

Possible to place ETT

Preparation/insertion similar
to LMA
Laryngeal Mask Airways Insertion

General Insertion Guidelines

- Visually inspect the device
- Place the device on a hard surface with collar down. Inflate the cuff and then deflate – ensure the cuff is not folded. Lubricate both sides of the cuff.
- Open the airway – jaw lift preferred. Grasp device like a pencil and insert. Maintain posterior portion of the cuff on the palate to avoid folding. Follow natural curvature of the airway.
- Inflate with the recommended amount of air or until there is no air leak.
LMA Unique Insertion

Fig. 1
LMA Unique Insertion

Fig. 2
LMA Unique Insertion

Fig. 3
LMA Unique Insertion

Fig. 4
LMA Unique Insertion

Fig. 5
LMA Unique Insertion

Fig. 6
LMA Fastrach Insertion

Fig. 2
LMA Fastrach Insertion

Fig. 3
Esophageal Tracheal Combitube

- Two sizes
  - 37F SA (small adult) for patients from 4’ to 5.5’ tall
  - 41F patients 5.5’ or taller
- NO “PEDIATRIC” SIZE
Combitube Insertion

- Perform jaw lift
- Insert in a midline position – allow the device to follow the natural curvature of the airway
- Inflate #1 port with proper amount of air
- Inflate #2 port with proper amount of air
- Attempt ventilation via #1 port – if unable to ventilate attempt use of port #2
King LTD

- #2; 35”-45” or 12-25kg
- #2.5; 41”-51” or 25-35kg
- #3; 4’-5’
- #4; 5’-6
- #5; >6’
King LTD Insertion

- Perform jaw lift
- Angled approach to place device under the base of tongue
- Rotate device midline so blue guide marks face the pt’s chin
- Gently insert device until it seats
- Inflate with proper amount of air
Summary

- BMV is the mainstay of basic airway management and needs to be constantly practiced and honed as it may be the only skill that effectively exchanges gas.
- EGD’s are becoming increasingly popular for EMT use secondary to their ease of use and documented success.