Chapter 8 Airway Management and Ventilation

Airway management and ventilation are the _____ and most critical steps in the initial assessment of every patient you will encounter.

Respiratory Problems

Airway Obstruction

The _____ is the most common cause of airway obstruction.

Other Causes:

- Foreign bodies
- _____
- Laryngeal spasm and edema
- _____

The Tongue as an Airway Obstruction

Inadequate _____ volume respirations can compromise adequate oxygen intake and carbon dioxide removal

Respiratory System Assessment

Primary Assessment

- Is the airway _____ ?
- Is breathing adequate?
- Look, listen, and feel.
- If patient is not breathing, open the airway and _____ ventilations as necessary.

Look.

Listen.

Feel.

Bag-valve-mask ventilation

Secondary Assessment: Focused History

- _____
- Symptom development
- Associated symptoms
- Past medical history
- _____ history
- Does anything make symptoms better or worse?

Physical Examination

Inspection

- Skin _____

- Patient's position
- _____
- Modified forms of respiration
- Rate
- _____

16 ☐ Modified Forms of Respiration

- _____ : forceful exhalation of a large volume of air
- Sneezing: sudden, forceful exhalation through the nose
- Hiccoughing (Hiccups): sudden inspiration cased by spasm of the diaphragm with spastic closure of the glottis
- _____ : slow, deep, involuntary inspiration
- Grunting: a forceful expiration that occurs through closed epiglottis

17 ☐ Abnormal Respiratory Patterns (1 of 2)

- _____ respirations
  - Deep, slow or rapid, gasping; common in diabetic ketoacidosis.
- _____ respirations
  - Progressively increasing tidal volume, followed by a declining volume, separated by periods of apnea at the end of expiration indicating terminal illness or _____ injury

18 ☐ Abnormal Respiratory Patterns (2 of 2)

- _____(Ataxic) Respirations:
  - Repeated episodes of gasping ventilations separated by periods of apnea, indicating increased intracranial pressure
- Central Neurogenic _____
  - Deep, rapid respirations, indicating increased intracranial pressure
- _____ Respirations
  - Shallow, slow, or infrequent breathing indicating brain anoxia

19 ☐ Ausculation

- Listen at the mouth and nose for adequate air movement.
- Listen with a _____ for normal or abnormal air movement.

20 ☐ Position for auscultating breath sounds.

21 ☐ Palpation

- Palpate chest wall for tenderness, _____ , abnormal motion, crepitus, and subcutaneous emphysema.
- Assess compliance of lungs.

22 ☐ Non-Invasive Respiratory Monitoring

23 ☐ Pulse Oximetry

- A measurement of hemoglobin oxygen saturation in the _____ tissues

- Will detect problems with oxygenation _____ than monitoring other vitals
- Measures the oxygen _____ percentage (SaO2)

24 ☐ Pulse Oximeter

25 ☐ Capnography
- The measurement of exhaled carbon _____ concentration
- Devices are called End Tidal Carbon Dioxide (ETCO2) Detectors
- Used to determine correct placement of _____ airways
- Disposable or reusable units are available
- Accuracy is good but _____ cardiac arrest will lower ETCO2 levels

26 ☐ Colorimetric End-Tidal CO_2 Detector

27 ☐ Electronic End-Tidal CO_2 Detector

28 ☐ Combined devices check pulse oximetry, $ETCO_2$ blood pressure, pulse, respiratory rate, and temperature.

29 ☐ Waveform Capnography
- Provides monitoring of _____ effectiveness
- < _____ mmHg has been shown to have no chance of ROSC
- < _____ mmHg indicates ineffective compressions
- Sharp increase can indicate ROSC
- These readings based on patients properly intubated with ETT
- Post-cardiac arrest target range for PETCO2 for patient who achieves ROSC is _____ - _____ mm Hg

30 ☐ Waveform Capnography

31 ☐ Esophageal Detector Device (EDD)
- Determines correct placement of _____ intubation tubes
- May be rigid or _____ type syringe
- If bulb refills easily, tube placement is _____
- Trachea is rigid, esophagus is _____

32 ☐ Esophageal Detector Device

33 ☐ An esophageal intubation detector-bulb style.

34 ☐ If the bulb does not refill, the tube is _____ placed.

35 ☐ If bulb refills easily upon release, it indicates _____ placement.

36 ☐ Manual Airway Maneuvers

37 ☐ Personal Protective Equipment

38 ☐ Head Tilt/Chin Lift

39 ☐ Jaw-Thrust Maneuver

40 ☐ Modified Jaw Thrust in Trauma

41 ☐ Jaw-Lift Maneuver

42 ☐ _____ Maneuver (Cricoid Pressure)

43 ☐ Airway before applying Sellick's

44 ☐ Airway with Sellick's applied (note compression on the esophagus)

45 ☐ Basic Mechanical Airways

46 ☐ Basic Mechanical Airways

- _____ Airway
- _____ Airway

47 ☐ Nasopharyngeal airway, inserted

48 ☐ Advanced Airway Management

49 ☐ Endotracheal Intubation

50 ☐ Endotracheal intubation is clearly the _____ method of advanced airway management in prehospital emergency care.

51 ☐ Equipment Needed

- _____(with blades)
- Endotracheal Tube (ETT)
- 10cc syringe
- _____
- BVM
- Suction Device
- _____ Block
- _____ Forceps
- Tape or commercial securing device

52 ☐ Engaging Laryngoscope Blade and Handle

53 ☐ Activating Laryngoscope Light Source

54 ☐ Laryngoscope Blades

- Macintosh Blades: _____ Blades
- Miller Blades: _____ Blades
- Sizes from _____ to _____

55 ☐ Macintosh (Curved) Blades

- Designed to fit into the _____
- When lifted _____ , blade elevates the tongue, and indirectly the epiglottis, allowing you to see the glottic opening (vocal cords)
- Permits more room for visualization
- Less trauma to _____

56 ☐ Placement of Macintosh blade into Vallecula

57 ☐ Miller (Straight) Blades

- Designed to fit under the _____
- Lifts the epiglottis directly
- Preferred in _____
- Preferred in adults with large _____

58 ☐ Placement of the Miller blade under the epilglottis

59 ☐ Endotracheal Tubes

- Lengths range from 12 cm to 32 cm
- BVM or other ventilation devises connects to proximal end
- Most have _____ to seal the trachea
- Tube Diameters range from _____mm to _____mm
  - 2.5mm to 4.5mm are normally _____
  - Tubes from 5.0 and larger are _____

60 ☐ Endotracheal Tubes

- Pilot _____ indicates whether the distal cuff is inflated
- Pilot balloon is normally inflated with _____cc of air from a syringe
- Normal Adult Sizes
  - Females: _____ to _____mm
  - Males: _____ to _____mm

61 ☐ Other Equipment

- _____ : malleable plastic covered wire used to direct the ETT by bending the distal end
- 10mL syringe: used to inflate cuff
- Tube-Holding Devices: used to secure tube
- Magill Forceps: scissor-style clamps used to remove foreign bodies or direct ETT
- Lubricant: _____ soluble solution (KY)
- _____
- Bite Block (oral airway or commercial device)

62 ☐ Endotrol ETT

63 ☐ ETT, Stylet, and Syringe, Unassembled

64 ☐ ETT and Syringe

65 ☐ ETT, Stylet, and Syringe, Assembled for Intubation

66 ☐ Magill Forceps

67 ☐ Endotracheal Intubation Indications

- Respiratory or cardiac arrest.
- Unconsciousness _____ gag reflex.
- Risk of _____ .
- Obstruction due to foreign bodies, trauma, burns, or _____ .
- Respiratory insufficiency due to disease.
- Pneumothorax, hemothorax, hemopneumothorax with _____ difficulty.

68 ☐ Advantages of Endotracheal Intubation

- Isolates trachea and permits complete control of _____ .
- Impedes gastric _____ .
- Eliminates need to maintain a mask seal.
- Offers direct route for suctioning.
- Permits administration of some _____ .

69 ☐ Disadvantages of Endotracheal Intubation

- Requires considerable training and experience.
- Requires specialized _____ .
- Requires direct _____ of vocal cords.
- Bypasses _____ airway's functions of warming, filtering, and humidifying the inhaled air.

70 ☐ Complications of Endotracheal Intubation

- Equipment _____
- _____ breakage and soft tissue lacerations
- Hypoxia
- _____ intubation
- Endobronchial intubation
- Tension pneumothorax

71 ☐ Orotracheal Intubation

72 ☐ Orotracheal Intubation Procedure (1 of 5)

Position patient supine

- _____ with 100% oxygen
- Prepare Equipment
  - Check handle and light on blade, close handle
  - Inflate cuff and check for _____
  - Insert _____ and bend as needed (do not allow stylet to be exposed on distal end of ETT)

- Lubricate as needed
- Prepare suction equipment

73 ☐ Orotracheal Intubation Procedure (2 of 5)

Remove _____ if present

- Place in "_____ position". Flex neck forward and head backward
- Hold larngoscope in _____ hand
- Have partner apply _____ maneuver (cricoid pressure)
- Insert blade into right side of mouth and sweep tongue

74 ☐ Orotracheal Intubation Procedure (3 of 5)

- Move blade to _____
  - Advance Macintosh until distal end is at base of the tongue in valucula
  - Advance Miller until the distal end is under the epiglottis
- Lift the handle slightly upward and and toward the feet at _____° Angle
  - Do not pry on _____
  - Observe for vomitus, fluids, or foreign bodies
  - _____ as needed

75 ☐ Orotracheal Intubation Procedure (4 of 5)

- Adjust blade until landmarks are visible
- Hold ETT in _____ hand and advance through right corner of mouth
- Visualize tube passing through the vocal _____ with cuff advancing 1-2cm past cords
- Hold tube in place and remove blade
- Use BVM to ventilate in tube
- Inflate cuff with _____ to _____cc of air

76 ☐ Orotracheal Intubation Procedure (5 of 5)

- Check for proper tube placement
  - _____ Both Lungs
  - Ausciltate Over _____
- Attach ETCO2 Monitor
- Hyperventilate the patient
- Secure tube
- Document tube _____
- Recheck tube _____ periodically

77 ☐ _____ patient.

78 ☐ _____ equipment.

79 ☐ Apply _____ Maneuver and Insert Laryngoscope.

80 ☐ Visualize _____ and Insert the ETT Between the

Vocal Cords until top of cuff is just below the vocal cords..

81 _____ visualized through laryngoscopy

82 _____ cuff, ventilate, and Auscultate.

83 Confirm Placement With an _____ Detector.

84 _____ tube.

85 _____ ETT placement.

86 Continuously _____ and reconfirm the placement of the endotracheal tube.

87 Assuring Proper Placement

- The most reliable confirmation of tube placement is _____ of tube passing through cords
- Presence of bilateral lung sounds
- Absence of breath sounds over epigastrium
- _____ end-tidal CO2
- Presence of _____ in tube
- Absence of vomitus in tube
- Absence of vocal sounds

88 Key Points in Intubations

- Limit attempts to _____ seconds or less. If unable to intubate, hyperventilate before reattempting
- Advance distal cuff no more than 1-2cm past vocal cords to avoid Endobronchial intubation
- Check lung sounds in _____ lungs AND epigastric sounds
- Have suction ready before attempting
- If unsuccessful after 2nd attempt, consider alternative airway device (king airway or combi-tube)
- _____ the tube

89 Lighted Stylet for Endotracheal Intubation

90 Insertion of Lighted Stylet ETT

91 Lighted Stylet ETT in Position

92 Transillumination of a Lighted Stylet

93 Blind (Digital) Intubation

- Prepare as normal
- Insert bite block
- Insert left middle and index fingers into mouth and “walk” hand down midline and palpate _____
- Advance tube pushing with right hand

- Use middle and index finger to direct ETT between epiglottis and your _____
- Attach BVM and continue as normal

94 ☐ Blind Orotracheal Intubation by Digital Method

95 ☐ Digital Intubation
- Insert your middle and _____ fingers into patient's mouth

96 ☐ Digital Intubation
- Walk your _____ and palpate the patient's epiglottis.

97 ☐ Digital Intubation—Insertion of the ETT

98 ☐ Endotracheal Intubation with In-line Stabilization

99 ☐ Hyperventilate patient and apply c-spine stabilization.

100 ☐ Apply Sellick's Maneuver and intubate.

101 ☐ Ventilate Patient and Confirm Placement.

102 ☐ Secure ETT and Apply a Cervical Collar.

103 ☐ Reconfirm Placement.

104 ☐ Rapid Sequence Intubation
- AKA pharmacologically assisted intubation (PAI)
- RSI: giving _____ to sedate and temporarily paralyze a patient to facilitate intubation
- A patient who needs intubation may be awake. RSI paralyzes the patient to facilitate endotracheal intubation.

105 ☐ The Pediatric Airway
- Smaller and more _____ than an adult.
- Tongue proportionately larger.
- Epiglottis floppy and round.
- Glottic opening higher and more _____ .
- Vocal cords slant upward, and are closer to the base of the tongue.
- Narrowest part is the _____ cartilage.

106 ☐ Pediatric ET Sizes
- ETT Size in mm =

(Age in years + 16)

_____

- Alternative method: use an ETT the size of the infant's little finger

107 ☐ Pediatric ETT Sizes (Page 498)

108 ☐ Endotracheal Intubation in a Child

109 ☐ Hyperventilate the child.

110 ☐ Position the head.

111 ☐ Insert the laryngoscope.

112 ☐ Insert ETT and ventilate the child.

113 ☐ Confirm placement and secure ETT.

114 ☐ Nasotracheal Intubation May be Useful in Some Situations:

- Possible _____ injury
- Clenched _____
- Fractured jaw, oral injuries, or recent oral surgery
- Facial or airway swelling
- _____
- Arthritis preventing sniffing position

115 ☐ Nasotracheal Intubation Not Recommended in Some Situations:

- Possible _____ fractures
- Suspected basilar _____ fracture
- Deviated septum or nasal destruction
- Cardiac or respiratory arrest

116 ☐ Advantages of Nasotracheal Intubation

- The head and neck can remain in _____ position.
- It does not produce as much gag response and is better tolerated by the awake patient.
- It can be secured more easily than an orotracheal tube.
- The patient cannot _____ the ETT.

117 ☐ Disadvantages of Nasotracheal intubation

- More difficult and _____ -consuming to perform than orotracheal intubation.
- Potentially more _____ for patients.
- May kink or clog more easily than an orally placed tube.
- Poses a greater risk of _____
- Improper _____ is more likely when performing blind nasotracheal intubation.
- Blind nasotracheal intubation requires that the patient be _____ .

118 ☐ Nasotracheal Intubation

- Prepare patient and equipment
- Select the larger _____
- Apply topical anesthesia
- Insert with bevel facing the _____
- Listen for respiratory sounds
- Advance with next _____ breath

- Inflate and confirm placement

119 ☐ Blind Nasotracheal Intubation

120 ☐ Field Extubation

- _____ done

If needed to be done:

- Suction oropharynx
- Deflate cuff
- Turn head or roll onto side if possible
- Remove ETT upon _____ or cough
- Be prepared for _____
- Provide _____
- Reassess patient

121 ☐ Esophageal Tracheal CombiTube (ETC)

122 ☐ Advantages of CombiTube (1 of 2)

- Provides alternate airway control when conventional intubation techniques are unsuccessful or unavailable.
- Insertion is rapid and easy and does not require _____ of the larynx or special equipment.
- Pharyngeal balloon anchors the airway behind the hard _____ .
- Patient may be _____ regardless of tube placement.

123 ☐ Advantages of CombiTube (2 of 2)

- Significantly diminishes gastric _____ and regurgitation.
- Can be used on _____ patients, since the neck can remain in neutral position during insertion and use.
- If tube is placed in _____ , gastric contents can be suctioned for decompression through the distal port.

124 ☐ Disadvantages of CombiTube (1 of 2)

- Maintaining adequate _____ seal is difficult on some CombiTubes.
- Suctioning _____ secretions is impossible when the airway is in the esophagus.
- Cannot be used in conscious patients or in those with a gag reflex.
- Cuffs can cause esophageal, tracheal, and hypopharyngeal ischemia.
- Pt must be at least _____’ tall

125 ☐ Disadvantages of CombiTube (2 of 2)

- Does not isolate and completely protect the _____
- Cannot be used in patients with _____ disease or caustic ingestions.

- Cannot be used with _____ patients.
- Placement of CombiTube is not foolproof—errors can be made if assessment skills are inadequate.

126 ☐ Placing a CombiTube (1 of 3)

- Hyperventilate the patient
- Check equipment
  - Inflate and check _____
- Place patient's head in _____ position
- Lubricate as needed
- Insert the CombiTube gently in _____ using tongue-jaw-lift maneuver until teeth are between 2 black lines

127 ☐ Placing a CombiTube (2 of 3)

- Inflate pharyngeal cuff with _____ cc of air and distal cuff with _____ - _____ cc of air
- Ventilate through the longer _____ port with BVM (#1)
- Check lung sounds
- If lung sounds present, tube is in the _____ , continue to ventilate

128 ☐ Placing a CombiTube (3 of 3)

- If lung sounds absent, ventilate through the shorter _____ port (#2)
- If lung sounds now present, the tube is in the _____
- Attach _____
- _____ tube

129 ☐ More on the CombiTube

- _____ tube may be placed through port #2 if in esophagus
- Drugs can be given down tube if in the _____ (Port #2)
- You **must** know where the tube is placed!
  - Many physicians and ER personnel are NOT familiar with the CombiTube

130 ☐ ETC Airway—Tracheal Placement

131 ☐ ETC Airway—Esophageal Placement

132 ☐ Other Intubation Devices

- Laryngeal mask airway (_____)
- Pharyngo-tracheal lumen airway (_____)
- _____ gastric tube (EGTA)
- Esophageal _____ airway (EOA)

133 ☐ Laryngeal Mask Airway

134 ☐ Pharyngo-Tracheal Lumen Airway (PtL)

135 ☐ Advantages of the PtL Airway

- Can function in either the _____ or esophageal position.
- No face _____ to seal.
- Does not require direct visualization.
- Can be used in trauma patients, since the neck can remain in neutral position during insertion and use.
- Helps protect the trachea from upper airway bleeding and _____ .

136 ☐ Disadvantages of the PtL Airway (1 of 2)

- Does not isolate and completely protect the _____ from aspiration.
- The oropharyngeal balloon can _____ out of the mouth anteriorly, partially dislodging the airway.
- _____ around the PtL is extremely difficult, even with the oropharyngeal balloon deflated.

137 ☐ Disadvantages of the PtL Airway (2 of 2)

- Cannot be used in _____ patients or those with a gag reflex.
- Cannot be used in pediatric patients.
- Can only be passed _____ .

138 ☐ Esophageal Gastric Tube Airway (EGTA)

- The EGTA is a _____ tube. A cuff just proximal to the distal, open port blocks air to the esophagus.

139 ☐ Esophageal Obturator Airway

- The EOA is a hollow tube with a _____ end and a distal cuff intended to block air from the esophagus.

140 ☐ Contraindications to EOA Insertion

- Age less than _____ years.
- Height less than _____ feet or more than _____ feet, 7 inches.
- Possible ingestion of _____ poisons.
- History or esophageal disease or _____ .

141 ☐ King Airway

142 ☐ King Airway

- Single _____ esophageal device
- Used by all levels
- Primary airway device for many _____

- _____ device for Intermediates and Paramedics; if unable to intubate

143 ☐ King Airway

144 ☐ Advantages/Disadvantages of King Airway
- Only _____ ventilation port
  - No need to determine placement
  - Placement is _____ only; very slim chance of tracheal placement
- Allows placement of _____ tube (in LTS-D)
- No ET route for _____
- Will not help with obstructed airways

145 ☐ Types
- King Airway _____:
  - No port for gastric tube
- King Airway _____ :
  - Has port for gastric tube

146 ☐ King Airway Types
- LT-D
- LTS-D

147 ☐ Adult King Airway Sizes

1 ☐
- Size 3
  - _____-_____’ Tall
  - _____ flange
  - Inflation: 40-55cc’s
- Size 4
  - _____-_____’ Tall
  - _____ Flange
  - Inflation: 50-70cc’s

2 ☐
- Size 5
  - Over _____’ Tall
  - _____ Flange
  - Inflation: 60-80cc’s

148 ☐ Pediatric Airway Sizes
- Available only in LT-D
- Size 2
  - _____-_____” Tall
  - _____ flange
  - Inflation: 25-35cc’s
- Size 2.5
  - _____-_____” Tall
  - _____ flange

– Inflation: 30-40cc's

149 ☐ Indications

- For EMTs
  - Unconscious and no _____ reflex
  - 1st line airway control device
- For Intermediates and Paramedics
  - After unsuccessful _____ attempts
  - _____ or "Backup" device

150 ☐ Contraindications

- Conscious with gag reflex
- Under _____" tall (2' 11")
- Ingestion of _____ substances
- Patients with known _____ disease

151 ☐ Procedure (1 of 6)

- Select appropriate size based on patient's _____
- Test cuffs (remove air)
- Apply _____ -based lubricant
- Pre-oxygenate
- Position patient in "_____ " or neutral position

152 ☐ Procedure (2 of 6)

- Holding the King at the connector with _____ hand, hold the patient's mouth open and apply chin lift unless contraindicated due to _____ and/or Spinal immobilization

153 ☐ Procedure (3 of 6)

- With the King rotated laterally _____-_____ degrees, such that the blue orientation line is touching the corner of the mouth, introduce tip into the mouth and advance behind the base of the tongue, **Never** _____ **the tube into position**

154 ☐ Procedure (4 of 7)

- As the tip passes under tongue _____ tube back to midline (blue orientation line faces chin).
- Without exerting excessive force, advance the King until base of connector aligns with _____ or gums.

155 ☐ Procedure (5 of 7)

- _____ the cuffs based on the listed volumes for the tube size used.
- Attach BVM and verify placement by ***ALL*** of the following criteria:
  - Rise and fall of _____
  - Bilateral breath sounds
  - Absent _____ sounds

– CO2 measurement (capnography)

156 ☐ Procedure (6 of 7)

- If ventilation is difficult, _____ out very slightly until ventilation is performed easily.
- Re-verify placement
  - Lung sounds, absent epigastric sounds, etc
- _____ Tube

157 ☐ Procedure (7 of 7)

- If there is any question about the proper placement of the King Airway, _____ the cuffs and remove the airway, Ventilate the patient with BVM for 30 seconds and repeat insertion procedure
- Continue to _____ the patient for proper airway placement throughout prehospital treatment and transport

158 ☐ Key Points

- Must guess the patient's _____
- Lubricate
- At ALS level, introduction may be aided with _____
- Not used for any patient under 35" tall
- Use is ***required*** by SPEMS
- Attach _____ if an adult in cardiac arrest

159 ☐ Foreign Body Removal Under Direct Laryngoscopy

160 ☐ Direct visualization of the Larynx with a Laryngoscope may enable the removal of an obstructing foreign body

161 ☐ Foreign Body Removal with Direct Visualization and Magill Forceps

162 ☐ Surgical Airways

163 ☐ The only indication for a surgical airway is the _____ to establish an

airway by any other method.

164 ☐ Anatomical Landmarks for _____

165 ☐ Needle Cricothyrotomy (1 of 3)

- Position patient
- Palpate _____ portion of the thyroid cartilage and cricothyroid cartilage. The indention between the two is the cricothyroid membrane
- Attach a large bore IV needle to a 10 or 20mL syringe
  - Adults: _____ or _____ gauge
  - Pediatrics: _____ or _____ gauge

166 ☐ Needle Cricothyrotomy (2 of 3)

- Insert needle into cricothyroid membrane at _____ , at 45° angle toward the feet
- Advance the needle no more than _____cm, then aspirate with the syringe
- After placement confirmed, hold needle still and advance catheter. Withdraw needle
- Secure catheter

167 ☐ Needle Cricothyrotomy (3 of 3)

- If needed ventilate with _____ jet ventilations
- Use of _____ will work with adapter from a small ETT

168 ☐ Locate/Palpate _____ Membrane.

169 ☐ Proper Positioning for Cricothyroid Puncture

170 ☐ Advance the _____ With the Needle.

171 ☐ Cannula properly placed in trachea

172 ☐ _____ Ventilation with Needle Cricothyrotomy

173 ☐ Surgical (Open) Cricothyrotomy (1 of 2)

- Locate _____ membrane
- Clean the area with _____ -containing solution if time permits
- Stabilize the cartilages with one hand, while using a scalpel in the other hand to make a 1 to 2 cm _____ incision over the membrane
- Make a 1cm incision in the _____ plane through the membrane

174 ☐ Surgical (Open) Cricothyrotomy (2 of 2)

- Insert _____ into the membrane and spread it open
- Insert a _____ ETT (6.0 to 7.0) or tracheostomy tube
- Inflate the cuff
- Confirm placement
- _____ the tube

175 ☐ Locate Cricothyroid _____ .

176 ☐ Stabilize _____ and Make a 1–2 cm Skin Incision Over Cricothyroid Membrane.

177 ☐ Make a _____ cm horizontal incision through the cricothyroid membrane.

178 ☐ Using a _____ Hemostat, Spread Membrane Incision Open.

179 Insert an ETT (6.0) or _____ (6.0).

180 _____ the cuff.

181 _____ Placement.

182 Ventilate.

183 Secure tube, reconfirm placement, _____ patient.

184 Patients with Stoma Sites

- Patients who have had a laryngectomy or tracheostomy breathe through a _____ .
- There are often problems with excess _____ , and a stoma may become plugged.

185 Tracheostomy Cannulae

186 Suctioning

- Anticipating _____ when managing an airway is the key for successful outcomes.
- Be prepared to suction all airways to remove blood or other secretions and for the patient to _____ .

187 Suctioning Techniques

- Wear protective eyewear, gloves, and face mask.
- _____ the patient.
- Determine depth of catheter insertion.
- With suction off, insert catheter.
- Turn on suction and suction while removing catheter (no more than _____ seconds).
- _____ the patient.

188 Tracheobronchial Suctioning

- Suctioning through the ETT to remove secretions or mucous plugs
- Use _____ technique
- Use only soft-tip catheter
- Insert tip until _____ is felt
- Apply suction for _____-_____ seconds while pulling out
- _____-_____cc of sterile water may need to be injected prior to suctioning

189 Gastric Decompression (1 of 3)

- Common problem with ventilating a nonintubated patient is gastric distention.
- Occurs when the procedure's high _____ trap air in the stomach.
- Once patient has gastric distention, you should place a tube in the stomach for gastric decompression, using either the _____ or orogastric approach.

190 ☐ Gastric Decompression (2 of 3)

To place a nasogastric or orogastric tube:

- Prepare patient's head in _____ position while preoxygenating.
- Determine length of tube insertion by measuring from epigastrum to the angle of the jaw, then to the tip of the _____ .
- If patient is awake, suppress the gag reflex with a topical _____ applied into the posterior oropharynx or with IV lidocaine.

191 ☐ Gastric Decompression (3 of 3)

- Lubricate the distal tip of the gastric tube and gently insert into the nares and along the nasal floor, or into the oral cavity at midline. Advance tube gently, and if patient is awake, encourage _____ to facilitate tube's passage.
- Advance to predetermined mark on tube.
- Confirm placement by _____ .
- Apply _____ and note gastric contents that pass through the tube.
- Secure the tube in place.

192 ☐ Oxygenation

193 ☐ Get This……..Never withhold _____ from any patient for whom it is indicated

194 ☐ Oxygen Delivery Devices

- Nasal cannula: up to _____% O2 @ 6 lpm
- Venturi mask: adjustable from _____-_____%
- Simple face mask: _____-_____% @ 6 to 10 lpm
- Partial rebreather mask: up to _____% @10 lpm
- Nonrebreather mask > _____% @ 15 lpm
- Small-volume nebulizer
- Oxygen humidifier

195 ☐ Ventilation Methods

- Mouth-to- _____
- Mouth-to-nose
- Mouth-to- _____
- Mouth-to- _____
- Bag-valve device
- _____ valve device
- Automatic transport _____

196 ☐ Bag-valve-mask with built-in _____ $ETCO_2$ detector

197 ☐ Ventilation of Pediatric Patients

- Mask seal can be more difficult.
- Bag size depends on age and size of child.
- Ventilate according to current _____ .
- Obtain _____ rise and fall with each breath.
- Assess adequacy of _____ by observing chest rise, listening to lung sounds, and assessing _____ improvement.

198 ☐ Demand Valve and Mask

199 ☐ Portable Mechanical Ventilator

200 ☐ ResQPod

201 ☐ ResQPOD

- ResQPOD is an Impedance _____ Device (ITD)
- Provides "Perfusion on Demand" (_____) by regulating pressures in the thorax during states of hypotension
- AHA 2005 Guidelines designated the ITD as a Class IIa recommendation (highest recommendation) for adult patients in cardiac arrest
  - Higher recommendation than any _____

202 ☐ How It Works (1 of 3)

- During normal CPR, air flows in and out of chest during _____
- Compression increases pressure in the lungs, which forces small _____ of air out of the open airway
- As the chest recoils during the decompression phase, a slight _____ sucks the small puff of air back into the airway in an effort to equalize the intra- and extrathoracic pressures.

203 ☐ How It Works (2 of 3)

- An ITD temporarily blocks, or _____ , the airway immediately after the compression when exhalation releases the puff of air
- Chest recoil proceeds normally, but air cannot rush into the airway to equalize the pressure
- The rapidly expanding intrathoracic space pulls _____ into the heart from the great vessels resulting in improved blood return (pre-load) to the heart

204 ☐ How it Works (3 of 3)

- Prevents unnecessary air from entering the _____ during CPR
- As the chest recoils, the vacuum (negative pressure) in the thorax is greater
- This vacuum pulls more blood back into the heart, _____ blood flow
- Increases cardiac output, BP, and _____ rates

205 ☐ Benefits of the ResQPOD

- _____ blood flow to the heart
- Increases brain blood flow by 50%
- Doubles systolic BP
- Increases survival rates
- Increases likelihood of successful _____
- Beneficial in all arrest rhythms
- Circulates drugs more effectively
- Timing _____ for ventilations

206 ☐ Indications

- _____ in cardiac arrest
  - Onset of puberty
  - Not for use in infants and _____
- NOT indicated for apneic patients with a heart beat; only cardiac arrest
  - No _____ =No ResQPOD

207 ☐ Use on a BVM or Mouth to Mask

- Connect to face mask, remove light _____
- Open airway
- Establish/MAINTAIN a tight seal. Best accomplished with 2 rescuers
- Connect BVM
- _____ compression per light flash
- Ventilate after each 30 compressions (_____ light flashes)

208 ☐ Use With ET or King Airway

- _____ placement
- Connect to airway device and BVM, remove light tab
- Perform _____ compressions
- Ventilate with every light flash (_____/min)

209 ☐ Key Points of ResQPOD

- Used only on adults in _____ arrest
- If patient regains pulse and/or spontaneous respirations, _____ the ResQPOD, but continue to ventilate as needed
- MUST maintain a constant seal if using with BVM only

210 ☐ Other Points

- These are expensive ($_____ each) so do not open unless you are going to use it.
- They do have _____ dates