Northwest Community EMS System - Airway Mgmt w/ Intubation

AIRWAY

BSI/PPE
 Gloves Goggles Mask

Airway Opening
 Head tilt & Chin lift maneuver (modified jaw thrust PRN)
 Suction mouth w/ rigid/Yankaur tip PRN
 Size OPA: front of teeth to angle of jaw
  Use tongue blade to depress tongue and insert
 Size NPA: tip of nose to earlobe
  Lubricate well and insert (straight down) along floor of nostril
 Size & insert oral (OP) or nasal (NP) airway
 (NP: don't need to remove, in place if >1 ETI attempt needed)
 Consider use of OPA and bilateral NPA
 Apply mask over nose and mouth (without occluding nostrils)
 Maintain mask face seal w/ thumb & index finger
 Maintain open airway by lifting chin w/ middle, ring & 5th finger

BREATHING

 Pre-oxygenate for 3 min - with capnography sensor on BVM
 If pt spontaneously breathing: attempt preoxygenation w/ NRB mask to prevent gastric distention from BVM
 Squeeze bag over 1 sec, just to see chest rise (~400-600 mL)
 Avoid high pressure (opens esophagus-causes gastric distention)

2 Person BVM Ventilation

 # 1 Hold mask over nose & mouth w/ thumb & index finger or thumb aspect of hands (thenar eminence)
 holds airway open w/ middle, ring & 5th finger under jaw
 # 2 Use one hand to squeeze the bag and
 consider use of cricoid pressure w/ other hand

 Ventilate at 10/min (1 every 6 sec)
 Asthma/COPD ventilate @ 6-8/min
 Avoid hyperventilation (rate, volume, or pressure)

 Confirm BVM connected to oxygen @ 15 LPM
 Attach to ECG monitor
 Obtain O_2 saturation reading ASAP (if pulse present)

PREPARATION

Assess for difficult intubation
Have everything ready BEFORE placing blade in pts mouth

Equipment
 Suction: connect Yankeur, turn on to ✓
 Alternative airway: King LTSD airway in sight
Laryngoscope
 Attach blade to handle
 Check light source (bright & tight)
ET tube
 Choose correct size ETT (women 7-8, men 8-9)
 Insert & shape stylet
 Check cuff (while in pkg) & leave syringe attached
 Apply lubricant
Confirmation & Securing
 EDD
 Capnography (already attached to BVM)
 Stethoscope (put around your neck)
 ETT holder (place under pts neck)
 c-collar or lat head immobilizer
Medications PRN
 Head injury / ↑ ICP: Lidocaine – per SOP
 Pain: Fentanyl - per SOP
Drug-Assisted
 Midazolam – per SOP
 Etomidate – per SOP
 Benzocaine – whenever midazolam/etomidate used, unless CI

INTUBATE

 Place head in sniffing position, unless contraindicated
 (head extended, neck flexed – earlobe horizontal w/ sternum)
 Pad ~8-10 cm (4") under occipital/head, unless contraindicated

 Remove ETT from pkg and hold in (R) hand
 (so don't have to look away to pick up tube when cords visualized)
 Open mouth w/ cross-finger technique

 PRN: External laryngeal manipulation (ELM) of thyroid cartilage
 PRN: (R) sided cheek/lip retraction - request assistant to perform

 Assistant to monitor pts
 (1) HR, (2) ECG, (3) O2 sat, (4) elapsed time during procedure

 Insert curved blade from (R) side of mouth, sweep tongue to (L)
 NOTE: Every insertion of blade into pts mouth is considered an "intubation attempt" Limit/maximum 2 attempts per patient
 Lift upward and forward (without tilting blade backward on teeth)
 Curved blade inserted into valeculla; straight blade lifts epiglottis
 Visualize vocal cords (anterior to/above posterior cartilage)
 Pass tube from (R) side of mouth through vocal cords
 (not straight down blade)

 If not passed within 30 sec of apnea:
 (1) Remove ETT & Re-oxygenate X 30 sec
 (2) Consider change: PM, Pt position, Blade, Meds, King LT
 If not passed 2nd attempt: reoxygenate x 30 sec & use King LT
 NOTE: Do NOT need 2 unsuccessful ETI attempts to use King LT airway (e.g, unable to visualize cords, poor pt access)

 Pass tube until cuff disappears beyond vocal cords
 ~19-23 cm @ front teeth/gums (ETT size X 3)
 While holding ETT in place
 remove laryngoscope blade from mouth and stylet from ETT

CONFIRM

 Attach EDD and aspirate for - ease of air return
 If EDD resistance: attempt direct visualization ETT thru vocal cords
 Attach bag-valve device w/ capnography to ETT
 Ventilate and auscultate (1st) over stomach for –
 absence of gastric sounds (listen to gastric before lung sounds)
 Ventilate and auscultate (R), then (L), mid-axillary line and anterior (L) & (R) chest for - equal breath sounds
 If absent: Remove ETT &
 Re-oxygenate for 30 sec prior to re-attempting ETI
 If difficulty hearing / confirming breath sounds:
 consider inflating cuff to minimize air leak and listen
 Note $ETCO_2$ number & waveform
 Ventilate at 10/min (1 every 6 sec);
 unless asthma/COPD (ventilate @ 6-8/min)
 Avoid hyperventilation (rate & depth), squeeze bag over 1 sec, watch for chest expansion

SECURE

 Inflate ETT cuff with ~4-10mL air (until no air leak heard)
 Remove syringe
 Note ETT depth cm @ front teeth/gums
 Secure ETT in place w/ tube holder
 Lateral head immobilization - apply (c-collar or lat head immob)
 Insert OP airway as bite block - PRN
 Suction ETT w/ soft suction catheter - PRN

REASSESS

Frequently to detect displacement and complications
(esp after pt mvmt or pt status/condition changes)
 $EtCO_2$ HR Lung sounds
 O_2 sat BP

Northwest Community EMS System

Procedure **Endotracheal Intubation (ETI) – Bougie Assisted**

Introduction

- This procedure is to supplement, not replace, the ETI procedure
- Refer to ETI procedure for additional details
- Compared to ET tube (ETT), the boogie's narrow diameter (~5 mm) allows improved visualization, and curved upward tip facilitates easier passage into glottic opening

Indications

- Anticipated difficult ETI, may be used for first attempt
- Inability to visualize vocal cords or second intubation attempt
- Requires visualization of either epiglottis (minimum) or posterior cartilage (preferable)

Contra-indication

Inability to visualize either epiglottis or posterior cartilage

Caution

Laryngeal or tracheal injury – can exacerbate trauma

Equipment

- "Bougie" also known as "endotracheal tube introducer," "eschmann stylet," "gum-elastic bougie"
  - Disposable, single-use, flexible with shape retention
  - Size: 15 Fr, 60-70 cm, coude tip (coude = curved)
- ETT: avoid too large of tube, gap between bougie and ETT can hinder advancement

Procedure

1. Prepare patient and equipment per standard ETI procedure
2. Remove bougie from package
   a. Note markings and orientation of upturned coude tip
   b. If needed, straighten bougie and curve distal end (~1" from tip) at 35-40° angle
3. Grip bougie like pencil w/ curved tip facing upward in right hand (laryngoscope in left hand)
   a. Caution: Minor rotation of bougie can significantly change orientation and location of tip and prevent placement and confirming clicking sensation (described below)
4. Visualization & Insertion
   a. Insert gently; avoid forceful insertion - can cause tracheal trauma/perforation
   b. Epiglottis: insert bougie directed midline - under epiglottis
   c. Posterior cartilage: insert bougie directed midline - above posterior cartilage
5. Confirmation
   a. Clicking/vibration sensation felt (60-95% cases) when bougie tip rubs against tracheal rings; note – to be felt, tip must be directed anteriorly
   b. Bougie will stop advancing and resistance ("hold-up") will be felt 25-40 cm at teeth because of distal airway narrowing
   c. If inserted into esophagus - no clicking/vibration is felt and tip easily advances well beyond 40 cm
6. Intubator maintains view with laryngoscope and firm hold onto bougie
   a. Maintain bougie 25 cm @ teeth
   b. Keep laryngoscope in place to allow ETT to pass under tongue
7. Assistant advances ETT (with lubricated tip) into proper position
   a. With bougie tip placed in trachea, assistant places ETT over bougie and advances ETT
   b. As ETT reaches intubators fingers, assistant takes over hold on bougie while intubator continues advancing ETT toward glottic opening
   c. Counter-clockwise rotation of ETT facilitates insertion through vocal cords into larynx
8. Once ETT cuff passes beyond vocal cords, while firmly holding ETT in place, carefully remove bougie
9. Confirm, secure and reassess per ETI procedure