Endotracheal Intubation – 30.060

INDICATIONS:

A. Impending or actual respiratory/ventilatory failure.
B. Absence of protective airway reflexes.
C. Persistent hypoxemia (O_2 sat < 85%) despite maximal therapy.
D. Present or impending complete airway obstruction (e.g., severe airway burns).

CONTRAINDICATIONS:

A. There are no absolute contraindications. However, in general the primary goals of airway management are adequate oxygenation and ventilation, and these should be achieved in the least invasive manner possible before attempting orotracheal intubation. Least invasive = any situation in which the paramedic finds that a NPA, OPA, BVM, CPAP, or supraglottic device meets the above stated goals.

SPECIAL CONSIDERATIONS:

A. If at all possible, avoid intubation in patients with a predicted difficult airway.
B. In cases when there is a short ETA to hospital (< 10 minutes) or short ETA of more experienced providers (air ambulance), intubation should be deferred.
C. Lack of resources, staff, training, experience, and equipment should be considered a relative contraindication.

COMMENTS:

A. Unconsciousness in and of itself is NOT an indication for advanced airway intervention. Examples could include unconsciousness associated with severe hypoglycemia, dense stroke, head injury, and severe alcohol intoxication.
B. **Orotracheal intubation has been associated with worse outcomes among pediatric patients** and head injured patients when compared to BLS airway maneuvers. Therefore it should be considered relatively contraindicated in these populations.
C. Any attempts at advanced airway management in out of hospital cardiac arrest patients shall not interrupt high performance CPR.
D. Avoidance of peri-procedure (before, during and after) hypoxemia AND hyperventilation is paramount to patient survival.
E. Significant morbidity (dysrhythmia/cardiac arrest) and mortality is associated in patients who are hypoxic, hyperkalemic, acidotic, and/or bradycardic prior to intubation.
F. To avoid airway trauma, morbidity, and mortality, only 2 attempts at intubation shall be performed. At such time, a backup device (NPA/OPA with BVM or supraglottic device) shall be utilized.

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PROCEDURE:

A. Assess airway. LEMON (Look, Evaluate, Mallampati, Obstruction/Obesity, Neck mobility).
B. Position. Open airway and maintain proper patient position (head of bed at 20 degrees if possible). C spine precautions if indicated.
C. Pre-oxygenate. 100% oxygen via NRB or BVM/CPAP when applicable. Oxygenate for at least 3 minutes with high flow oxygen whenever possible.
D. NO DESAT: Apply nasal cannula oxygen with end tidal CO2 monitoring at 6 lpm. If following RSI protocol, increase to 15 lpm after pushing RSI medications (see Endotracheal Intubation RSI protocol).
E. Assemble and check all equipment needed; i.e., monitors, pulse oximetry, end tidal CO2, suction, BVM, video or direct laryngoscope, and backup/alternative airways.
F. RSI per protocol when indicated.

TECHNIQUE:

A. Inspect and clear oropharynx of secretions, foreign body, and dentures.
B. Gently insert blade into oropharynx.
C. Locate landmarks, i.e. epiglottis and cords.
D. Insert appropriate size ETT, inflate cuff, place end tidal device, and assist ventilation with BVM. Avoid hyperventilation.
E. Verify ETT placement:
   (a) Continuous waveform $ETCO_2$
      (i) The gold standard and expectation for every intubation at time of tube placement and for ongoing monitoring of tube dislodgement or blockage
   (b) 5 point auscultation
   (c) chest rise
   (d) oxygen saturation
F. Secure ETT.
G. Document $ETCO_2$ value AND print waveform strip.
H. Note ETT depth at the teeth or gum line.
I. Ventilate with 100% O2 and titrate to appropriate saturation (spO_2 >92%).
J. Reassess complete vitals post procedure.
K. Sedation AND analgesia as needed (see RSI protocol).
L. Stabilize patient's head and neck into midline position to decrease chance of extubation.
M. Continuously monitor $ETCO_2$, oxygen saturations, and breath sounds after each transfer of pt. DO NOT rely solely on monitoring equipment to determine the efficacy of intubation.
N. Re-visualize ETT placement with video or direct laryngoscope if needed.
O. Keep patient warm.

COMPLICATIONS:

A. Hypoxia and/or hypercapnia
B. Vomiting and/or aspiration.
C. Esophageal intubation – unrecognized esophageal intubation is a “never event.”
D. Oral trauma.

DOCUMENTATION:

A. Indication for intubation or why not (e.g., difficult airway determined from assessment).
B. Grading of airway view (Cormack/Lehane view 1-4).
C. Document patient positioning and how pre-oxygenation and passive oxygenation were performed.
D. How placement was verified and ETT depth at lip or teeth.
E. Lowest O2 sat during procedure and total intubation attempts.
F. Print out of capnography waveform following intubation AND print out prior to transfer of patient care.
G. Clear rationale documented of any deviation from protocol.
H. All advanced airway attempts/interventions should be reviewed by the department’s supervising physician/medical director for QA.