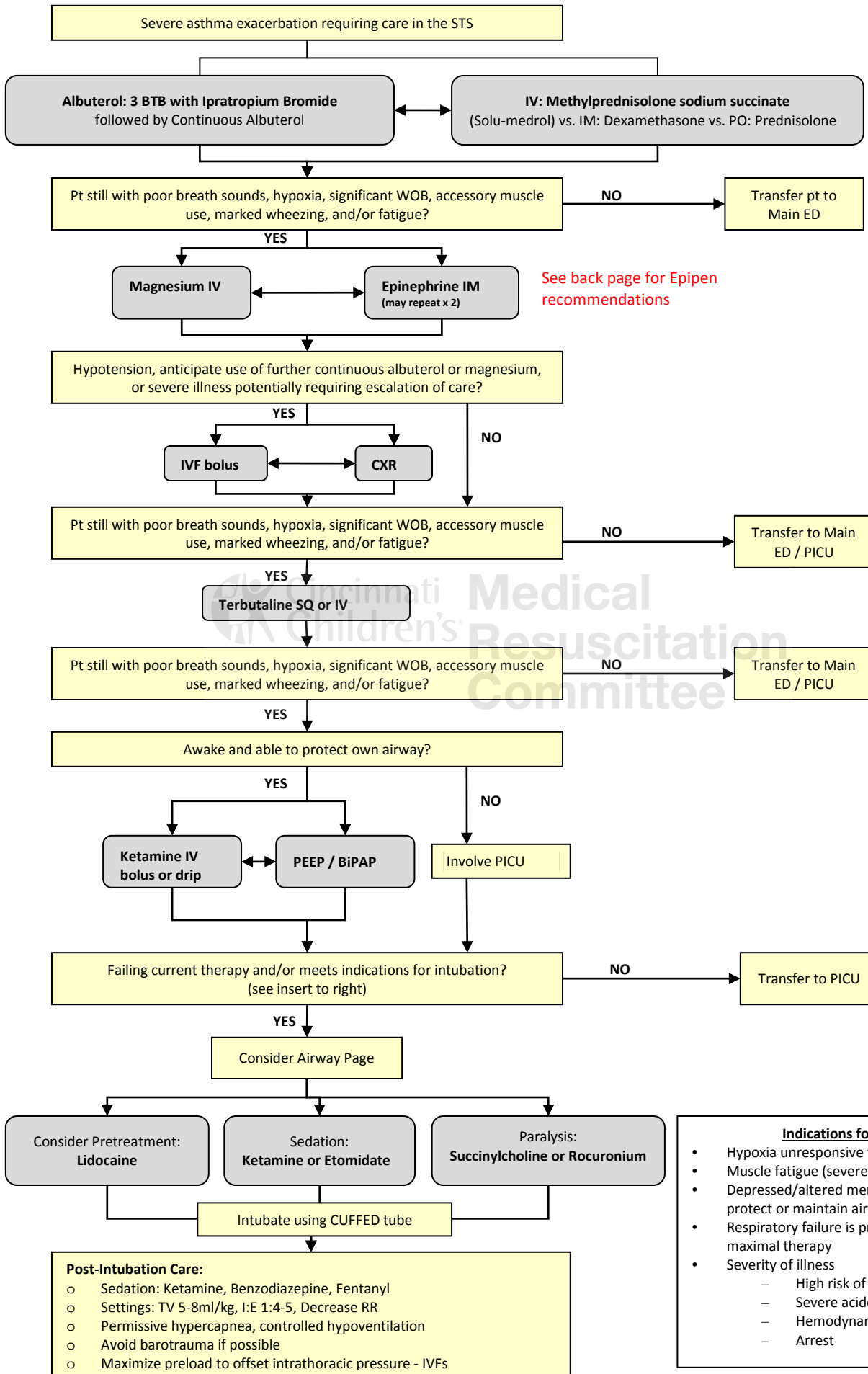


Therapy of Severe Status Asthmaticus in the STS



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- Indications for Intubation**
- Hypoxia unresponsive to other interventions
 - Muscle fatigue (severe, unremitting WOB)
 - Depressed/altered mental status, inability to protect or maintain airway
 - Respiratory failure is progressing despite maximal therapy
 - Severity of illness
 - High risk of death
 - Severe acidosis
 - Hemodynamic instability
 - Arrest

Post-Intubation Care:

- Sedation: Ketamine, Benzodiazepine, Fentanyl
- Settings: TV 5-8ml/kg, I:E 1:4-5, Decrease RR
- Permissive hypercapnea, controlled hypoventilation
- Avoid barotrauma if possible
- Maximize preload to offset intrathoracic pressure - IVFs

Status Asthmaticus

Definition

- A prolonged and severe asthma attack that does not respond to standard treatment (bronchodilators and steroids)

Standard Therapies

- **Albuterol** administered continuously (AFTER 3 BTB albuterol treatments with 3 doses of 0.5mg ipratropium bromide)
- **Corticosteroids:**
 - Methylprednisolone sodium succinate (Solumedrol): 2mg/kg bolus dose (max 125mg) IV
 - If no IV access: Dexamethasone: 0.6mg/kg (max 10mg) IM or Prednisolone: 1mg/kg (max 60mg) PO

Additional Therapies

- **Magnesium IV**
 - Proposed mechanism: smooth muscle relaxation at bronchial level
 - 50mg/kg (max 2gm) infused over 20 min, consider concurrent NS bolus
- **Epinephrine IM** (nonspecific beta-agonist, alpha-agonist)
 - 1:1000 preparation: 0.01mg/kg (max 0.3-0.5mg q20 min x 3)
 - **Order Epi-Pen Jr (0.15 mg of epi) for patient weighing 10-25 kg (this is per the Kemp and Sicherer articles; dosing in Lexi-comp)**
 - **Order Epi-Pen (0.3 mg of epi) for patients weighing 25 kg or more**
 - **In kids <10 kg, use the 1:10,000 concentration IM as described in the code book (for dilution reasons)**
 - **IM, not SQ** – evidence supports more rapid absorption and higher plasma levels of epi when administered IM in thigh compared to SQ or IM in arm
- **Terbutaline** (Beta₂ agonist)
 - Intravenous: 0.01mg/kg bolus (max 0.4mg for child < 12 yrs, 0.75mg in adolescent) infused over 5 min
 - Subcutaneous: 0.01mg/kg (max 0.25mg); may repeat Q 15 minutes for 3 doses
 - Continuous infusion: start at 1mcg/kg/min, titrate by 1mcg/kg/min, usual effective range 3-6 mcg/kg/min
 - Ordered from pharmacy in Epic, takes considerable amount of time to prepare, as multiple vials must be broken open to prepare proper bolus dose and drip
 - Not compatible with Magnesium in same IV

Alternate Therapies

- **Ketamine**
 - Direct smooth muscle relaxant (bronchodilator effects)
 - Use therapeutically or for light sedation, anxiolysis, application of BiPAP, etc:
 - Bolus dose: 0.5-1mg/kg (max 100mg) IV
 - Continuous IV infusion: start at 1-2 mg/kg/hr and titrate to effect, max 8mg/kg/hr (ordered from pharmacy in Epic)
 - IM (no IV access): 3-7mg/kg
- **PEEP/BiPAP** (in conscious patient able to protect airway)
 - Direct bronchodilator effect, reduces WOB and energy expenditure
 - Obtain BIPAP tote and apparatus if possible
 - Can provide CPAP with mapleson bag as pt breathes spontaneously while continuous albuterol is administered via T-piece
- **IVFs – Normal Saline or Lactated Ringer**
 - For current or anticipated hypotension from magnesium, albuterol, dehydration, or increased intra-thoracic pressure from obstructive process, etc
 - Goal: increase preload, especially if considering intubation

Intubation (Caution: Avoid if at all possible due to risk of complications and difficulty with ventilation)

- **Pretreatment**
 - Lidocaine 1mg/kg (max 100mg) IV: may minimize bronchoconstriction
- **Sedation/Induction**
 - Ketamine IV:
 - Induction dose: 1-2mg/kg (max 100mg)
 - Continuous IV infusion: start at 1-2mg/kg/hr; titrate to effect
 - Etomidate is also an acceptable choice if there is no suspicion of sepsis
- **Paralysis**
 - **Evidence supports RSI** with sedative and paralytic to maximize chances of success on first attempt; acceptable alternative would be ketamine alone with succinylcholine drawn up / ready for administration in case of laryngospasm
 - Succinylcholine or rocuronium per code book dosage
- **Intubation** – most experienced operator should intubate with a cuffed ETT, anticipating deterioration and need for high pressures
- **Post-Intubation management**
 - Sedation w/ ketamine vs. Benzodiazepine + Fentanyl (non-histamine-releasing opioid)
 - Controlled hypoventilation: Tidal volume 5-8 mL/kg, instead of normal 10mL/kg
 - Decrease I-to-E ratio to allow prolonged expiration (1:4 or 1:5)
 - Decreased ventilation rate to avoid air stacking, and to maximize expiratory time
 - Complications: pneumothorax, hypotension, arrest (have low threshold for repeat CXR if patient decompensates)