**History**
- Birth defect (tracheal atresia, tracheomalacia, craniofacial abnormalities)
- Surgical complications (damage to phrenic nerve)
- Trauma (post-traumatic brain or spinal cord injury)
- Medical condition (bronchopulmonary dysplasia, muscular dystrophy)

**Signs and Symptoms**
- Transport requiring maintenance of a mechanical ventilator
- Power or equipment failure at residence

**Differential**
- Disruption of oxygen source
- Dislodged or obstructed tracheostomy tube
- Detached or disrupted ventilator circuit
- Cardiac arrest
- Increased oxygen requirement / demand
- Ventilator failure

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**Pearls**
- Always talk to family / caregivers as they have specific knowledge and skills.
- If using the patient’s ventilator bring caregiver knowledgeable in ventilator operation during transport.
- Always use patient’s equipment if available and functioning properly.
- Continuous pulse oximetry and end tidal CO2 monitoring must be utilized during assessment and transport.
- Unable to correct ventilator problem: Remove patient from ventilator and manually ventilate using BVM. Take patient’s ventilator to hospital even if not functioning properly.
- Typical alarms:
  - Low Pressure / Apnea: Loose or disconnected circuit, leak in circuit or around tracheostomy site.
  - Low Power: Internal battery depleted.
  - High Pressure: Plugged / obstructed airway or circuit.
- **DOPE**: Displaced tracheostomy tube / ETT, Obstructed tracheostomy tube / ETT, Pneumothorax and Equipment failure.

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**Ventilator Emergencies**

1. **Problem with Airway, Ventilation or Oxygenation**
   - NO
   - YES
     - Oxygenation saturation ≥ 90 % (Preferably ≥ 94 %) (Ask Caregiver: What is baseline saturation for patient)
     - Or
     - EtCO2 35 – 45 mmHg
       - YES
       - Correct cause
       - NO
       - Detached Oxygen Source
         - Detached Ventilator Circuit
           - YES
           - Transport on patients ventilator and maintain current settings
           - NO
           - Cause corrected
             - YES
             - Notify Destination or
               - Contact Medical Control
             - NO
           - NO
           - NO
           - NO
           - Remove patient from ventilator and manually ventilate with BVM

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**AR 9**

Any local EMS System changes to this document must follow the NC OEMS Protocol Change Policy and be approved by OEMS