a. NIV options include continuous positive airway pressure (CPAP), bilevel positive airway pressure (BiPAP), bilevel nasal CPAP, and high flow oxygen by nasal cannula (HFNC)
b. NIV can also be used to improve oxygenation pre-intubation in some patients with respiratory failure

6. **Supraglottic airways (SGA)**: Consider the use of an appropriately sized SGA if BVM (with OPA/NPA) alone is not effective in maintaining oxygenation and/or ventilation. This is especially important in children as prehospital endotracheal intubation is an infrequently performed skill in this age group and has not been shown to improve outcomes over prehospital BVM or SGA
7. **Endotracheal intubation**
   a. When less-invasive methods (two-person BVM, SGA placement) are ineffective or inappropriate, consider endotracheal intubation to maintain oxygenation and/or ventilation. Other indications may include potential airway obstruction, severe inhalation burns, multiple traumatic injuries, altered mental status with loss of normal protective airway reflexes
   b. Optimize patient for first-pass success with pre-procedure resuscitation, preoxygenation, positioning, sedatives and paralytics as indicated by patient presentation
      i. A bougie may be a helpful adjunct to successful airway placement, especially when video laryngoscopy is unavailable and the glottic opening is difficult to visualize with direct laryngoscopy
      ii. For experienced EMS clinicians, video laryngoscopy may enhance intubation success rates and should be used when available
   c. Monitor clinical signs, pulse oximetry, cardiac rhythm, blood pressure, and waveform capnography for the intubated patient
   d. For adults, the largest tube size possible should be placed in the patient to limit difficulty with mechanical ventilation and high airway pressures. Absent significant airway swelling or underlying anatomic abnormalities, initial tube size (internal diameter in millimeters) for adult females should be 7.5, adult males 8.0. For pediatrics, cuffed tubes are now recommended
8. **Post-intubation management**
   a. Inflate endotracheal tube cuff with minimum air to seal airway. An ETT cuff manometer can be used to measure and adjust the ETT cuff pressure to the recommended 20 cmH_20 pressure
   b. Confirm placement of advanced airway (endotracheal tube, SGA) with waveform capnography (most reliable), absent gastric sounds, and bilateral breath sounds
   c. Secure tube manually. Once proper position is confirmed, secure the tube with tape, twill, or commercial device
      i. Note measurement of tube at incisors or gum line and assess frequently for tube movement/displacement using continuous waveform capnography and visual inspection
      ii. Cervical collar and/or cervical immobilization device may help reduce neck movement and risk of tube displacement
   d. Continuously monitor correct airway placement with waveform capnography during treatment and transport, paying particular attention to reassessing after each patient movement
   e. Manual ventilation (see above for rate and tidal volume guidance)
   f. **Mechanical ventilation** should be considered following advanced airway placement