

- ii.  $\text{SPO}_2$  of  $\geq 94\%$ . Chronic COPD patients tolerate hypoxia better, and an  $\text{SPO}_2$  of 90% may relieve their symptoms and be adequate
- iii. Normalization of respiratory rate (decreased tachypnea)
- iv. Normalization of  $\text{EtCO}_2$ . This means a downward trend in a patient with increased  $\text{EtCO}_2$ . Patients who have end stage COPD may have chronically elevated  $\text{EtCO}_2$  as high as 50s–60s, and thus tolerate elevated  $\text{EtCO}_2$  better so normalization may not be a good target
- b. The key to successful use of NIV in a patient who has not used it before is coaching and explanation of the process and reassurance of the patient
- c. For any patient on NIV, focus on maintaining a continuous mask seal is essential to maximizing the positive impact of PEEP, particularly at higher levels. Breaking the circuit or removing the mask should be meticulously avoided, as the significant atelectasis will occur which will take time to reverse
- d. Nebulized medications may be administered through a CPAP or BiPAP mask. A specialized T-connector with a spring valve assembly is required to allow maintenance of positive airway pressure
- 8. Orotracheal/Endotracheal intubation (ETI)
  - a. Checklist use and use of protocolized interventions to optimize the patient physically and physiologically have been shown to both improve success rates of orotracheal intubation as well as decrease peri-intubation complications. Preparation should also include a promptly available plan for alternate airway placement if ETI unsuccessful.
  - b. Endotracheal tube sizes (cuffed tubes preferred in pediatrics)

Age	Size (mm) Uncuffed	Size (mm) Cuffed
Premature	2.5	
Term to 3 months	3.0	
3–7 months	3.5	3.0
7–15 months	4.0	3.5
15–24 months	4.5	3.5
2–15 years	$[\text{age}(\text{yrs.})/4]+4$	$[\text{age}(\text{yrs.})/4]+3.5$
>15 years		7.5 female 8.0 male

- c. Approximate depth of insertion = (3) x (endotracheal tube size)
- d. In addition to preoxygenation, apneic oxygenation (high-flow oxygen by nasal cannula) may prolong the period before hypoxia during an intubation attempt
- e. Positive pressure ventilation after intubation can decrease preload and subsequently lead to hypotension
- f. Significant attention should be paid to adequate preoxygenation to avoid peri-intubation hypoxia and hypoxic cardiac arrest
- g. Routine use of cricoid pressure is not recommended in pediatric or adult intubation
- h. Prompt suctioning of soiled airways before intubation attempt may improve first pass success and limit morbidity and mortality
- i. Confirm successful placement with waveform capnography. Less optimal methods of confirmation include bilateral chest rise, bilateral breath sounds, and maintenance of