Non-Invasive Ventilation (NIV) Guideline

Goals
Improved Oxygenation and Ventilation
Stabilize/Improve pH (respiratory acidosis)
Reduce Work of Breathing
Avoid (Re)Intubation

Indications
COPD exacerbation – Grade I
CHF / Cardiogenic Pulmonary Edema – Grade I
DNI patients – if accept therapy – Grade I
+/- Pneumonia – only if low volume secretions and able to clear – Grade II
Prevention Post-Operative Respiratory Complications – Grade II
Post-Operative Respiratory Failure – Grade II

Contraindications
Severe altered mental status
Inability to clear secretions
Inability to protect airway (cough, gag)
High risk for aspiration
UGI bleeding
*Post-Extubation Respiratory Failure – do not use, may increase mortality, no decrease in re-intubation rate

Interface
1st Line – Face mask – improved oxygenation and ventilation
2nd Line – Nasal mask – improved tolerance (claustrophobia), improved clearance of secretions

Predictors of Success / Failure
Improvement in Oxygenation / Ventilation within 1 hour
Decreased Respiratory Rate
Small Air Leak
Good patient coordination/cooperation

Indicators of Failed NIV and Need for (Re)Intubation
No improvement or stabilization of O2/CO2 within 2 hours
Worsening tachypnea or increased work of breathing
Declining mental status or agitation
Inability to clear secretions or increased secretion burden / need for suctioning
Inability to tolerate mask or ventilator
NIV Modes

1) Spontaneous/Timed (S/T) Mode – standard NIV mode
   - CPAP – set single continuous (CPAP) pressure
   - BIPAP – set inspiratory (IPAP) and expiratory (EPAP/PEEP) pressure
     - Also set backup/emergency RR (8 or 10), do not depend on this value for ventilation, if patient is not breathing above set rate → intubate

2) Average Volume Assured Pressure Support (AVAPS) Mode – similar to APV in intubated patient
   - Set EPAP/PEEP, TV, and RR (machine will adjust IPAP support needed to achieve set TV)
     - Requires close monitoring for achievement of tidal volumes and compliance/tolerance of patient

Pearls

1) Start with low pressures in NIV virgins, titrate up pressure as needed after achievement of patient compliance with mask and ventilator
2) Titrate pressure support until you see a decrease in the patient’s work of breathing and RR, goal RR 20s or less
3) Reassess at set intervals (10m, 30m, 1hr) after initiation, if no improvement in 1-2 hours → intubate patient
4) Utilize Respiratory Therapists to help with ventilator settings and evaluation of success/failure