Mechanical Ventilation (Invasive)

Patient Care Goals

1. Maintain adequate oxygenation
2. Maintain adequate minute ventilation and capnography targets based on patient pathophysiology
3. Prevent or limit risk of short- and long-term invasive airway and ventilator-associated complications including barotrauma, pneumothorax, aspiration, over-ventilation

Patient Presentation

Inclusion Criteria

Adult patients with invasive airway requiring mechanical ventilation

Exclusion Criteria

1. Interfacility transfer patients with established vent settings
2. Patients with suspected untreated pneumothorax or large airway injury
3. Patients in cardiac arrest

Patient Management

Assessment

1. Confirm airway placement with ventilation and auscultation over epigastrium and assess for symmetric bilateral lung sounds
2. Verify that airway (ETT, SGA) is securely held in place (by holder or other method)
3. Assess oxygen delivery and confirm that FiO_2 meets patients' needs and maintains desired oxygen saturation (SpO_2)
    a. If oxygen will be needed during transport calculate the duration of supply needed (O_2 tank time (min) = tank pressure (psi) x tank conversion factor/flow rate (L/min)
4. Assess blood pressure to assure SBP greater than 90 mmHg or resuscitate to SBP >=90 mmHg or MAP >=60 mmHg
5. Assess mental status, level of consciousness, Richmond Agitation Sedation Scale (RASS) or similar sedation score

Treatment and Interventions

1. Set up ventilator and circuit, program initial ventilator settings as below. Suggested general guidelines for adults with EMS initiation of mechanical ventilation:
    a. Consider and modify based on any underlying acute or chronic lung pathology (COPD, asthma, CHF)
    b. Volume mode is generally preferred initially in adults
    c. Select an appropriate ventilator mode: Assist Control (AC) is acceptable for most patients