Asthma

- Estimated 500,000 hospitalizations and 5000 deaths annually
- Two thirds of asthma cases diagnosed <18 years old
- The most common cause of hospitalization for children in the United States

- Acute Phase
  - Antigens contact mast cells in submucosa and mediators are released
  - Inflammatory reaction occurs
    - Bronchoconstriction, mucosal edema, increased mucous production
- Subacute (Late) Phase – 6-24 hours later
  - Recruited cells from acute phase activated
  - Persistent pattern of inflammation leads to further edema

- Historical Risk Factors for Death
  - Previous Severe Exacerbations (intubation, ICU admission)
  - ≥ 2 Hospitalizations in past year for asthma
  - ≥ 3 ED visits in past year for asthma
  - Hospitalization/ED visit in past month for asthma
  - > 2 canisters of albuterol per month
  - Recent use/withdrawal of systemic corticosteroids
  - Poor perception of symptoms or severity
- Social Risk Factors for Death
  - Low Socio-Economic Status or Inner-City Residence
  - Illicit Drug Use
  - Major Psychosocial Problems
- Comorbidity Risk Factors for Death
  - Cardiovascular Disease
  - Other Chronic Lung Disease
  - Chronic Psychiatric Disease

- Albuterol
  - Children – 0.15mg/kg (2.5mg minimum) q20 mins x 3 then 0.15 – 0.3mg/kg (max 10mg) q1-4 hrs as needed or 0.5mg/kg/hr continuously
  - Adults – 2.5 – 5mg q20 mins x 3 then 2.5 – 10mg q1-4 hrs as needed or 10-15mg continuously
  - MDI with spacer for mild to moderate exacerbations as effective as nebulizer with proper coaching
- Ipatropium
  - For Severe Exacerbations
  - 0.5mg q20 mins x 3 then as needed
  - No longer recommended for admitted patients
  - Not considered first line therapy
- Systemic Corticosteroids
  - Use within 1 hour reduces hospital admission
  - Oral prednisone as effective as IV methylprednisolone

  - Child – 0.5mg/kg BID (max 60mg/day)
  - Adult – 40-80mg/day – may divide into 2 doses
- Inhaled Corticosteroids
  - Symptoms >2 days per week
  - Nighttime awakening >2x per month
  - Albuterol use >2 days per week
  - Albuterol use >1 time on any one day
  - Reduce risk of relapse events and ED visits
- Disposition
  - PEF improvement to ≥70% expected and sustained 1 hour after treatment – Discharge
  - If after treatment, PEF <40%, PCO2 ≥42mmHg, or severe symptoms persist – ICU
  - PEF 40-69% after treatment, admit to floor or discharge
    - Decision based upon risk factors, history, patient compliance, patient comfort

COPD

- IV, O2, Monitor (of course!)
- Provide O2 to keep spO2 ≥90% (or paO2 ≥ 60mmHg
  - Don't give too much oxygen – respiratory drive related to hypoxia, not hypercarbia
- Albuterol
  - SABA preferred agents
  - Patients probably have underlying cardiovascular disease
- Systemic Corticosteroids
  - 30-40mg prednisone daily for 7-10 days
- Antibiotics
  - Consider in patients with increased sputum volume and/or sputum purulence, or if mechanical ventilation required
  - Provide coverage for P. aeruginosa in patients with severe exacerbations
- Admission indications
  - Failure of exacerbation to respond to treatment
  - Significant comorbidities
  - Frequent exacerbations
  - Newly occurring arrhythmias
  - Insufficient home support
  - Severe underlying COPD