MEDICAL KNOWLEDGE OBJECTIVES

A. Acute GI bleeding (CDIM Case #6)

1. Describe differential diagnosis of acute upper and lower GI bleed
2. Describe the important elements to focus on during the initial assessment of the patient
3. Develop an appropriate evaluation and treatment plan
    a. What is appropriate IV access?
    b. Understand who should requires IV fluids
    c. Understand when blood and blood product transfusion is indicated
    d. Understand who requires ICU level of care

B. Acute pulmonary edema (CDIM Case #10)

1. Describe the differential diagnosis of acute shortness of breath
2. Describe the etiologies of acute cardiogenic and non-cardiogenic pulmonary edema
3. Describe the important elements to focus on during the initial assessment of the patient
4. Develop an appropriate evaluation and treatment plan
    a. ABG, cardiac enzymes, BNP, Chest X-Ray, EKG
    b. Understand who requires ICU level of care
    c. Understand when to try BiPAP vs proceed directly to intubation

C. Respiratory Distress (CDIM Case #11)

1. Describe the differential diagnosis of acute respiratory distress
2. Define the clinical criteria for ARDS
3. Describe the important elements to focus on during the initial assessment of the patient
4. Understand the mechanisms of hypoxemia
5. Develop an appropriate evaluation and treatment plan
    a. Understand who requires ICU level of care
    b. Understand when to try BiPAP vs proceed directly to intubation

D. Mechanical Ventilation

Some review cases: https://courses.washington.edu/med610/mechanicalventilation/cases.html

1. Understand indications and contraindications for non-invasive ventilation
2. Understand indications for mechanical ventilation
3. Understand the different modes of mechanical ventilation (volume control vs pressure control vs SIMV)
4. Describe what needs to be set on a ventilator (example: tidal volume, respiratory rate, FiO2 and PEEP) and what initial settings should be on a “typical” patient
5. Calculate airways resistance and respiratory system compliance and understand the differential diagnosis for an elevated airways resistance or a decrease in respiratory system compliance.
6. Describes option for sedation when a patient is on the ventilator

7. Understand strategies for improving hypoxemia
8. Understand strategies to reduce auto-PEEP
9. Understand the process for weaning a patient from mechanical ventilation

E. Shock (CDIM Case #16)

1. Understand the four major categories of shock, pathophysiology and different etiologies
2. Understand physical exam findings and other studies which can help differentiate the different causes of shock
3. Understand the basic principles of pulmonary artery catheter and indications for its use
4. Define SIRS, sepsis, severe sepsis and septic shock
5. Understand what information a mixed venous O2 saturation gives you and what can be done to increase it.
6. Understand the basic treatment of each type of shock
7. Understand the pharmacodynamics properties of vasopressors and know which vasopressors are first and second line in septic shock.
8. Describe the different hemodynamic profiles (CVP, pulmonary capillary wedge pressure, cardiac output, systemic vascular resistance and mixed venous O2 sat) for each type of shock

F. Ethics

1. Demonstrate an understanding of informed consent and refusal, the appropriate use of surrogate decision makers, the use of advanced directives, living wills, and durable power of attorney for health care and strategies for the resolution of ethical conflicts.
2. Be able to articulate the distinction between killing and letting die and its relevance in the withholding and withdrawal of life-sustaining technology.
3. Understand when it is appropriate to use all available technology to sustain a life and when it is appropriate to limit treatment.
4. Understand the principle of justice and the use of resources in an intensive care setting.
5. Understand the differences in ethical decision making if the patient is an adult or a child.
6. Have an awareness of ethical implications of common technologies used in the ICU (mechanical ventilation, artificial feeding and hydration, dialysis, etc.)

G. Acid Base

For review, see Dr. Dilling's lecture on acid-base physiology:
https://www.youtube.com/watch?v=e9GSixzIeFk&lc=z13dinuoukqchl5qp04cj3ybezfzvfyqdtg0k

1. Understand the basics of interpreting an ABG
2. Understand the differential diagnosis of a high anion gap metabolic acidosis and a non-gap metabolic acidosis
3. When looking at an ABG, be able to differentiate between an acute verses a chronic respiratory acidosis

H. Nutrition (review online case)

1. Describe the biochemical changes that occur following trauma, sepsis, or burns and compare with normal physiology.
2. Understand the basic methods of assessing a patient's nutrition status
3. Describe the different routes of nutrition, the risks associated with them, and when is most appropriate to use them.
4. Understand the basics of the different tube feed formulations
5. Define refeeding syndrome and understand how to manage it.
6. Understand what to do if a patient has "high residuals" with tube feeding
7. Discuss the consequences of poor nutrition on patient survival and outcomes.

I. Cardiology (CDIM Case #3, 4). See also Dr. John Lopez's lecture

1. ACS/ Chest Pain Evaluation:
    a. Recognize the critical importance of early diagnosis and treatment of acute MI.
2. Understand Management strategies for
    a. ST Elevation MI
    b. Non-ST Elevation MI
3. Be familiar with the early post MI management and pre-discharge evaluation.
4. Be able to describe approaches to treatment of Cardiogenic Shock
5. Understand physiology and treatment of the patient with Severe Aortic Stenosis
6. Discuss the approach to initial diagnosis and treatment of arrhythmias encountered in the ICU

J. Drug Withdrawal (CDIM case #16)

1. History findings that identify patients admitted for reasons other than detoxification at risk for withdrawal from alcohol or other substances of abuse
2. The symptoms and physical exam findings of different stages of alcohol withdrawal
3. The timing of and risk factors for alcohol withdrawal seizures and delirium tremens (DTs)
4. Non-pharmacologic treatment of alcohol withdrawal, including modifying environmental stimuli
5. The need for early, aggressive treatment of withdrawal to prevent the development of complications
6. The indications for short-term nicotine replacement therapy in medical inpatients unable leave the ward to smoke but uninterested in smoking cessation
7. The impact on hospital length-of-stay and discharge planning in initiating methadone therapy for narcotic withdrawal