

# Book of LEAFS



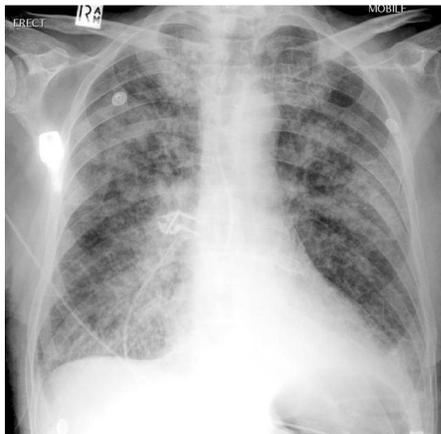
# Learner Edition

## Learning Enhancement Assessment Formative 1

Weeks 1-2

### Ventilatory Management

1. A 45 year old male s/p motor vehicle crash and right hemicolectomy, is on a ventilator: SIMV, Rate 10, PEEP 5 FiO<sub>2</sub> 100%. He has a respiratory rate of 30. Vital signs: P110, RR 30, BP 110/60, Temp 38.5F. His ABG is 7.46/pCO<sub>2</sub> 25/pO<sub>2</sub> 55/HCO<sub>3</sub> 20/Base Excess -2/oxygen saturation 80%. What is the next best step to improve oxygenation?
  - A. Increase ventilator rate
  - B. Add pressure support
  - C. Increase PEEP
  - D. Change ventilator mode to Assist Control
2. What is primary acid base problem?
  - A. Acute respiratory acidosis
  - B. Acute respiratory alkalosis
  - C. Acute metabolic acidosis
  - D. Acute metabolic alkalosis



3. Here is CXR:  
What is most likely diagnosis?
  - A. Bilateral pneumonia
  - B. Acute cardiogenic pulmonary edema
  - C. COVID-19
  - D. Acute Respiratory Distress Syndrome
4. What is Berlin Stage referring to?
  - A. Pneumonia
  - B. ARDS
  - C. Acute pancreatitis
  - D. Acute Pulmonary Edema



5. What is the PaO<sub>2</sub>/FiO<sub>2</sub> ratio?
  - A. 100
  - B. 550
  - C. 55
  - D. 200
6. Give the above PaO<sub>2</sub>/FiO<sub>2</sub> ratio, what Berlin stage is this patient?
  - A. 1
  - B. 2
  - C. 3
  - D. 4



## Learning Enhancement Assessment Formative 2

### *Weeks 3-4*

1. What is the definition of Minute Ventilation?
2. What is average minute ventilation?
3. What is Noninvasive Ventilation or NPPV?
4. What are typical settings to start NPPV?
5. What diseases would be useful for NPPV?
6. When would one use high flow oxygen therapy?



### Learning Enhancement Assessment Formative 3

#### Weeks 5-6

1. What is transpulmonary pressure?
  - A. Difference in pressure between the right and left lung.
  - B. Difference in pulmonary pressure between the trachea and the distal bronchiole
  - C. Difference in pressure between the outside air and the distal bronchiole
  - D. Difference in pressure between the esophagus and the plateau airway pressure
2. What is a common side effect from propofol?
  - A. Hypoxemia
  - B. Hypocalcemia
  - C. Metabolic acidosis
  - D. Anemia
3. What is the main receptor difference between propofol and dexmedetomidate?
4. Which neuromuscular blockade is depolarizing?
5. What is a common side effect from prolonged neuromuscular blockade?
6. What are indications for using adult ECMO?
7. What is quoted survivability for adult ECMO?
8. What is main advantage of using VA ECMO over VV ECMO?



## Learning Enhancement Assessment Formative 4

### Weeks 7-8

1. What is best way to wean from mechanical ventilation?
  - A. Gradually turn down rate every day, no matter what stage patient is in.
  - B. Daily Spontaneous Awakening trial (SAT) and Spontaneous Breathing Trial (SBT)
  - C. Put patient in Continuous Positive Airway Pressure and ask to follow commands
  - D. Put patient on T-Piece and observe
2. What are other tests which could be done to assess for readiness for liberation from mechanical ventilation?
3. What is a spontaneous breathing trial?
4. What is the Yang-Tobin or Rapid Shallow Breathing Index?
5. What values from the RSBI indicate that the patient likely could be liberated from mechanical ventilation?
6. What are barriers to ventilator liberation or weaning?
7. A nurse calls you to bedside because there is a sudden increase in peak airway pressure on the ventilator which occurred within 5 minutes on a trauma patient. Patient had rib fractures. What physical exam practice would be beneficial?
  - A. Listen to bilateral breath sound
  - B. Monitor abdomen
  - C. Check neck for crepitus
  - D. Assess blood pressure
8. What are common causes of increased peak airway pressure in a trauma patient?
9. What are other common causes of sudden increase peak airway pressure on other patients?
10. What is difference I peak and plateau pressure?
11. Which causes more barotrauma, peak or plateau pressure?
12. In a patient on pressure controlled ventilation, what parameter would tell you that there is loss of pulmonary compliance?



## Learning Enhancement Assessment Formative 5

### *Weeks 9-10*

1. What is the most common reason for endotracheal intubation in non-trauma patient?
2. When should a Cricothyroidotomy be done in a trauma patient?
3. Where is the cricothyroid membrane?
4. When should a tracheostomy be completed?
5. Where is a tracheostomy usually placed?
6. What method is the best method of confirming airway placement?
7. What is the snap test for assessment of arterial line?
8. What problem will an underdamped hemodynamic monitor cause (usually arterial lines)? How does that affect the readings?
9. What problem does an overdamped hemodynamic monitor cause?
10. What does a pulmonary artery catheter measure that a central venous pressure monitor does not measure?
11. What physiologic variable does a pulmonary capillary wedge pressure measure by proxy?
12. What are complications of pulmonary capillary wedge pressure?
13. What are complications of central venous lines?
14. At what level does the transducer need to sit at?



## Learning Enhancement Assessment Formative 6

### *Weeks 11-12*

1. A patient is brought in after a trauma. He is a 20 year old male, was in a high speed motor vehicle crash, has obvious deformities to bilateral femurs, has distended abdomen. His blood pressure is 70/palp and heart rate is 140. Is he in shock?
2. What type of shock is this patient likely in?
3. What are the 4 classes of shock?
4. What are the two main types of obstructive shock?
5. In septic shock, what is the main cause of hypotension?
6. In hypovolemic shock, what is the main cause of hypotension?
7. In neurogenic shock, what is the main cause of hypotension?
8. In septic shock, what are elements of the 1 hour bundle?
9. How is sepsis screened for?
10. What are elements of the sepsis screen?
11. What makes a positive sepsis screen?
12. What is confirmatory sepsis score?
13. What is the best way to improve outcomes in sepsis?
14. What types of infections in ICU have to be reported to CMS?



## Learning Enhancement Assessment Formative 7

### *Weeks 13-14*

1. What are new diagnostic criteria for sepsis?
2. What are elements of qSOFA?
3. What are the older definitions of sepsis, or SIRS?
4. What are hemodynamic and vital signs alterations in early sepsis?
5. What is the early pathophysiologic trigger for sepsis?
6. What is the pathophysiology of vasodilatation in sepsis?
7. What are the steps in Early Goal-Directed Therapy in sepsis?
8. What is the one hour sepsis bundle?
9. What are common infections causing sepsis in SICU patients?
10. What are risk factors for fungal sepsis?



## Learning Enhancement Assessment Formative 8

### Weeks 15-16

1. Regarding the classes of hemorrhagic shock, what is the first class of shock in which the patient is usually hypotensive?
2. What is a massive transfusion protocol?
3. What are triggers for activation of a massive transfusion protocol?
4. When a patient is hypotensive in the ED after penetrating torso trauma, what is the target blood pressure?
5. What are pharmaceutical adjuncts to stopping bleeding in the trauma bay?
6. What are the lethal triad in a bleeding trauma patient and the lethal diamond?
7. What conditions seen in the surgical ICU would lead to hypovolemic shock, separate from hemorrhage?
8. When blood plus component therapy is used, what is the optimal ratio of packed red blood cells to components?
9. What are advantages of whole blood use for hemorrhage?
10. What is the first sign of a transfusion reaction seen if a patient is in the OR?
11. What are signs of transfusion reaction?
12. What is treatment for hemolytic blood transfusion reaction?
13. What is TRALI?
14. What is TACO?



## Learning Enhancement Assessment Formative 9

### *Weeks 17-18*

1. What are the four classes of shock?
2. When does neurogenic shock occur?
3. When does “spinal shock” occur?
4. What is treatment of neurogenic shock?
5. What are elements of oxygen delivery?
6. What are elements of oxygen consumption?
7. What is the usually percent oxygen in blood returning to the right side of the heart?
8. Regarding cardiogenic shock, what are common causes?
9. What are some common cardiac assist devices?
10. What are common indications for use for cardiac assist devices?



## Learning Enhancement Assessment Formative 10

### *Weeks 19-20*

1. What are indications for workup for patient for cardiac assessment for noncardiac surgery?
2. What are three scoring systems which can assess preop cardiac or mortality risk of preop patients in the surgical ICU?
3. Which two scores take into account the type of surgery being done?
4. You have a 21 year old trauma patient with blunt trauma, s/p spleen embolization. Urine output is down to .3cc/kg/hour. Normal blood pressure, pulse 100. What is the most likely cause of oliguria? What would be a reasonable first treatment?
5. Case: There is a 75 year old male in the ICU. He is POD 5 s/p IM rod of femur, left tibia-fibula fracture fixation. He has had oliguria for 2 days, urine output tapering down to .3cc/kg/hour from original 2cc/kg/hour. Bun/Creatinine are 30/2.5. What are some tests to assess this rise in Bun/Creat?
6. What are indications for acute dialysis in the ICU?



## Learning Enhancement Assessment Formative 11

### Weeks 21-22

1. Case: You have a 21 year old male in the ICU s/p ATV crash, who sustained a severe traumatic brain injury with bilateral frontal contusions. He is Hospital Day 7. His sodium has decreased to 127, despite a normal saline infusion and recent 1.8% saline infusion. What tests would you order? Urine output is 1.5 cc/kg hour.
2. What is his fluid status likely to be?
3. Suppose you find out that his urine sodium is 149. What would his diagnosis likely be?
4. Case: There is an 80 year old female in the ICU s/p lung nodule removal. She is on a ventilator, history of mild COPD. Her sodium is 128, asymptomatic. How would you work her up?  
If her urine sodium was 15, what is her most likely diagnosis?
5. What electrolyte disturbance is most common after massive transfusion
6. Case: While rounding in ICU, you note that your patient who had been going into renal failure now has Bun/Creatinine of 7/5.0, and potassium has risen to 6.5. What are first steps to assess patient?
7. What can be done to rapidly bring down potassium?
8. What can get rid of potassium from body?
9. What conditions are associated with hypophosphatemia? When is hypophosphatemia likely to occur?
10. What conditions are associated with hyperphosphatemia?
11. Case: You have a 65 year old male, not an alcoholic, who on the morning of hospital day 4 in the ICU has difficulty holding attention during conversations, and does not know where he is. When asked if a stone can float on water, he answered "Yes," what are some diagnoses you might work up?
12. When using the CAM-ICU score on a patient, if a patient had a GCS of 14, passes the letter attention test, has a RASS score of 0 (zero) and answers the disorganized thinking test correctly, is the CAM-ICU positive, indicating delirium?
13. What if the same patient had a GCS of 14, does not pass the letter attention test, still has a RASS of 0, and misses 2 out of 4 questions on the disorganized thinking test? What is the CAM-ICU score and does this patient have delirium?
14. What tests would you order on a patient who is 65, in the ICU, with new onset altered mental status and delirium?
15. What are steps the ICU environment can take to prevent delirium?



## Learning Enhancement Assessment Formative 12

### *Weeks 23-24*

1. What are the different types of bleeds that occur in traumatic brain injury? Where do they occur? Which one is the most rapidly expanding and why?
2. For how long do we usually treat for seizure prophylaxis in traumatic brain injury to prevent early seizures?
3. What is the significance of anisocoria in an unconscious patient?
4. What cerebral perfusion pressure would be optimal to maintain in an adult? In a child?
5. How do you calculate cerebral perfusion pressure?
6. Which nutrition is best in the ICU for prevention of infections?
7. How soon should you start enteral nutrition in the ICU?
8. What are the main steps in treating enterocutaneous fistulas in the adult in the ICU?



### Learning Enhancement Assessment Formative 13

#### *Weeks 25-26*

1. What are common ways to estimate calorie needs in the ICU population?
2. What disease/conditions in the ICU patients might lead to need for increased calories?
3. How are protein needs estimated in the ICU? What are some ways that protein needs could be assessed more specifically.
4. What nutrients are difficult for the hepatic insufficiency patient to metabolize or regulate?
5. What nutrients are difficult for the renal patient to metabolize or regulate?
6. Regarding feeding tubes in the typical SICU patient, who does not have extensive abdominal surgery, (example, a traumatic brain injury patient), is there any proven difference in outcomes whether the patient is fed into the stomach or the small intestine? (Read the SCCM/Aspen guidelines)
7. How does the nutrition prescription need to be modified in a burn patient? Septic patient?



## Learning Enhancement Assessment Formative 14

### Weeks 27-28

1. What are risk factors for pneumonia in the SICU?
2. Regarding ventilator associated pneumonia, what are risk factors for a patient to get a VAP?
3. What is in the VAP prevention bundle?
4. What are the most common organism in surgical patients causing pneumonia in the ICU?
5. When should an intensivist suspect a systemic fungal infection in the ICU? What are risk factors?
6. When should you workup a fever in the SICU? (Check SCCM guidelines)
7. What are risk factors for bloodstream infections in the ICU?
8. What radiology findings should lead one to suspect NSTI in a patient?
9. What physical findings should lead one to suspect NSTI in a patient?
10. What are associated diseases commonly found with NSTI?
11. What score is used to assess NSTI in patients?
12. What is the best first treatment for NSTI after antibiotics?
13. Regarding sepsis, what is the current definition of sepsis?
14. How do you assess for qSOFA?
15. What is in the one hour bundle for sepsis?
16. How soon should you infuse antibiotics in a patient who is diagnosed with sepsis?
17. What are the old criteria for sepsis? CMS uses these.



## **Learning Enhancement Assessment Formative 15**

*Weeks 29-30*

1. What organisms are common in catheter associated urinary tract infections in the ICU?
2. What organisms are common in pneumonias in the SICU?
3. What organisms are common for bloodstream infections? What are risk factors for bloodstream infections in the ICU?
4. What are common risk factors exist in SICU patients for fungal infections? Should you treat for fungal infections when you suspect or wait for a positive culture?



## Learning Enhancement Assessment Formative 16

### *Weeks 31-32*

1. What are some common viral infections that might occur in a surgical patient in the SICU?
2. If a patient is diagnosed with COVID 19, should you put off elective surgery?
3. What is optimal timing for tracheostomy in a ventilated patient recovering from COVID-19?
4. What medication is available for COVID-19 patients requiring oxygen?
5. What ICU adjuncts to ventilation can assist with treating hypoxemic patients with COVID-19?



## Learning Enhancement Assessment Formative 17

### *Weeks 33-34*

1. What is the optimal blood glucose for diabetic patients in the SICU?
2. What measures can be taken for patients with very high glucose (e.g. 500)
3. How does one switch from an insulin drip to intermittent daily insulin?
4. When should one suspect adrenal insufficiency in the ICU?
5. How does one test for adrenal insufficiency?
6. In a patient in shock, whom you suspect adrenal insufficiency, what is the best early treatment?
7. What are symptoms of hyperthyroidism in the ICU?
8. If a patient is in thyroid storm in the ICU, what are steps in treatment?
9. What effect does hypothyroidism have on weaning from ventilator?



## Learning Enhancement Assessment Formative 18

### Weeks 35-36

1. What are the 4 types of shock?
2. Regarding trauma patients, and the 4 types of hemorrhagic shock, which class is the first class of shock in which the patient is usually hypotensive? How much percentage blood loss is this usually?
3. When deciding to do massive transfusion, the "ABC: criteria are often used. What are the ABC criteria?
4. What is critical administration transfusion threshold? What is reaching critical administration threshold correlate with?
5. When transfusing trauma patients, what ratio of PRBC:FFP:Platelets is the best to adhere to?
6. What type of shock is septic shock?
7. What is neurogenic shock?
8. How is neurogenic shock treated?



## Learning Enhancement Assessment Formative 19

### Weeks 37-38

1. In the ICU, there is a 37 year old male with grade IV hepatic injury and no other abdominal injuries. He was sent up from ED, got 2 units of PRBC and is in ICU for monitoring. His hemoglobin drops 4 units at first check, and his blood pressure dropped to the 90s. What is best first treatment? Would you do any labs? What is ultimate treatment?
2. The same patient as above, got a specific treatment in a cath lab. Two weeks later, he is still in ICU for pulmonary contusion. Suddenly he has what appears to be an upper GI bleed, with hematochezia. An EGD shows blood coming from his ampulla of Vater. What is the likely diagnosis and how is it treated?
3. What are signs of intestinal injury on CT scan?
4. A patient had an exploratory laparotomy, colectomy, splenectomy for trauma. He had received 7 liters of crystalloid at the outlying facility prior to arrival. At your hospital he received 4 units PRBC and 4 units FFP plus platelets in the operating room. His abdominal was closed primarily. About 4 hours postoperatively, the patient has increased peak airway pressures on the ventilator, hypotension and oliguria. What is the most likely diagnosis? How can you assess this at bedside? What is best treatment if patient is difficult to ventilator and his hypotensive?
5. What are common signs of spinal cord injury in the ED?
6. In the ICU, there is a patient with C5 level spinal cord injury. He was given 4 liters crystalloid in the ED, his CVP is 15, but still hypotensive. What is next best treatment?
7. A patient with traumatic brain injury has repeated episodes of fever, tachycardia, diaphoresis with sweating, and agitation. What is likely diagnosis? How is this treated?



## Learning Enhancement Assessment Formative 20

### *Weeks 39-40*

1. Regarding a patient with a burn greater than 20% BSA, what is current Parkland formula for fluid resuscitation? What endpoints of resuscitation would you monitor?
2. What are indications for rib fracture fixation in the ICU?
3. Regarding pulmonary contusion, what is best way to treat hypoxemia?



## Learning Enhancement Assessment Formative 21

### *Weeks 41-42*

1. Regarding massive casualty incidents, what is civilian damage control, compared to military damage control?
2. What are ways a surgeon could take care of more patients during an MCI in the hospital?
3. Regarding surgical patients in the SICU, what are some predictive scoring systems to assess risk of emergency surgery?
4. Which patients are at risk for DVT/PE in the SICU?
5. What are preventive measures for DVT/PE in the SICU?
6. How long after typical traumatic brain injury does one wait for chemical DVT prophylaxis?
7. What are complications of DVT prophylaxis in the SICU?
8. If platelets drop below 100K, what are alternative chemoprophylaxis regimens for prevention of DVT?
9. How does one diagnose heparin induced thrombocytopenia?



## **Learning Enhancement Assessment Formative 22**

### *Weeks 43-44*

1. Regarding postop care of vascular patients, what is an objective measure of peripheral arterial flow?
2. Regarding geriatric patients, what are factors which increase delirium?
3. What are risk factors for post-intubation swallowing dysfunction?



### Learning Enhancement Assessment Formative 23

#### *Weeks 45-46*

1. What is sensitivity when discussing lab or test results, especially for assessment of biological conditions, e.g. screening tests for coronavirus, or other pathogens?
2. What is specificity?
3. What is positive predictive value?
4. What is negative predictive value?
5. Does positive predictive value of a test vary depending on populations?
6. What has highest level of evidence, an open-label randomized study, or a double blind randomized study?
7. What does randomization add to a study regarding interpretation of the results?



## Learning Enhancement Assessment Formative 24

### *Weeks 47-49*

1. What is the Post ICU Syndrome, or PICS:
2. What are risk factors for PICS?
3. What can be done in the SICU to minimize PICS?
4. Regarding pediatric trauma patients, how does one assess blood pressure in a child younger than 15?
5. What is the dose of blood transfusion?
6. What is a typical fluid bolus in a pediatric patient?