Popular Topics for the Boards

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Themes

- Propofol Infusion Syndrome
- Decisional Capacity
- Autopsy Permission/Role of the HCP
- Refractory Shock
- Disputes among surrogates/no HCP
- Hepatic Dysfunction in the ICU
- Delirium

Case 1

- You are consulting on an intubated 54 year old man with a history of alcohol abuse, who was admitted 3 days ago after being found unresponsive. His initial evaluation showed pneumonia. His course has been significant for a transient episode of seizures yesterday. You have been asked to comment on a persistent acidosis.

Case 1, Continued

- His current exam
  - VS: Temp 101.5, HR 117, BP 90/50, RR 26, O2 sat 94%
  - Vent settings: volume cycled AC with TV 550 x 18, PEEP 8, FIO2 65%
  - Chest: bibasilar rales, left greater than right
  - Heart: tachycardia, no murmurs
  - Neck: 14 cms JVD
  - Abd: mild RUQ tenderness without guarding
  - Ext: + pedal edema

Case 1, continued

- His current meds include
ceftazidime,
linezolid,
propofol,
fentanyl,
omeprazole,
dalteparin,
inhaled albuterol
Case 1, continued

• His current labs include
  • WBC 14 with 8% bands
  • Bicarb 15
  • BUN 68, creat 2.1
  • Calcium 8.4 (ionized 0.95)
  • ABG: 7.25/pCO2 24/pO2 91

Case 1, continued

• The differential of this patient’s acidosis includes which of the following?
  – Cardiogenic shock
  – Septic shock
  – Mesenteric ischemia
  – Propofol infusion syndrome

Case 1, continued

• You suspect that propofol infusion syndrome may be contributing to the patient’s symptoms. Which combination of results would support this diagnosis? (Choose the best answer)
  – A. Triglycerides 950, CK 7500, troponin 0.40, pH 7.23, lipase 300, lactate 4.5
  – B. Triglycerides 100, CK 300, troponin 0.35, pH 7.25, lipase 95, lactate 2.4
  – C. Triglycerides 100, CK 250, troponin 0.08, lipase 80, lactate 4.8
  – D. Triglycerides 400, CK 450, troponin 0.07, pH 7.28, lipase 2950, lactate 3.3
  – E. Triglycerides 250, CK 3300, troponin 0.02, pH 7.32, lipase 80, lactate 1.8

Propofol Infusion Syndrome – Take Home Points

• More common with high dose propofol
• More common with concurrent neurologic disorders
• Very elevated triglycerides are the laboratory hallmark
  – May be indicated by “lipemic serum”
• Involves multiple organs

General Idea for the Boards:

• Watch for indications that an iatrogenic problem may be involved in the problem presented in the question.

Case 2

• You are the attending physician for a 74 year old woman who was admitted 3 weeks ago with severe sepsis. Her course has had multiple complications. Her adult daughter, who is her health care proxy, her husband state that they feel that the patient would want to continue full aggressive treatment of her illness.
Case 2

- You are the attending physician for a 74 year old woman who was admitted 3 weeks ago with severe sepsis. Her course has had multiple complications. Her adult daughter, who is her health care proxy, her husband state that they feel that the patient would want to continue full aggressive treatment of her illness.
- This morning you receive an email from the night nurse, who writes that, for the past week, the patient has been having episodes of agitation during which she pulls at her IV lines and tracheostomy tube. This behavior is new, and the night nurse is convinced that the patient is trying to refuse medical treatment.

Case 2, continued

- Patient’s current exam
  - VS Temp 99.2, HR 105, BP 115/65, RR 24, O2 sat 94% on FIO2 35%
  - Chest: Bibasilar rales; Heart: Irreg Irreg; Abd: soft, +BS; Ext: 1+ pedal edema; Neuro: Awake, responds appropriately to Y/N questions, follows 1-step commands; strength 3 - 4/5 bilat upper and lower ext, MAE

Case 2, continued

- Patient’s current meds include
  - metoprolol
  - inhaled albuterol/ipratropium
  - ceftriaxone
  - famotidine
  - dalteparin
  - trazodone
  - lorazepam

Case 2, continued

- Of the following, the best next course of action would be:
  A. Ethics consult since the HCP is not acting on the patient’s wishes
  B. Assessing the patient’s ability to communicate and her decision-making capacity
  C. Writing for increased lorazepam for overnight sedation since she hasn’t been sleeping well at night
  D. Evaluating the patient for causes of delirium
  E. Consulting psychiatry to evaluate for depression

Decisional Capacity – Take Home Points

- Intertwined with informed consent
- Requires
  - Understanding and remembering choices
  - Understanding consequences
  - Being able to rationally consider choices
    • May not arrive at the “right” choice
  - A careful bedside assessment can be used
- Sliding scale
- Diagnosis of dementia per se does not rule out decisional capacity
General Point for the Boards
• Be prepared for ethics and decisional capacity questions - look for an option that preserves a patient’s autonomy

Case 3
• You are on service at a Boston teaching hospital
• Your patient, an 85 year old man who had been admitted from his assisted living facility for sepsis, died earlier today from refractory shock. The source of his sepsis was never determined.
• The patient’s family consists of a wife, two sons, a daughter, and three grandchildren. His wife has visited very rarely since she has limited mobility. His two sons, one of whom is the health care proxy, have visited every day. The patient’s daughter lives in another state. She and her three children visited during the first week of the patient’s hospitalization, and then returned home.
• Both sons are at the patient’s bedside at the time of his death, and agree to give permission for the autopsy. One son is eager for an autopsy to, “find out what that nursing home did wrong”. However, the other son disagrees, saying it is against their religion.

What is true about the permission for the autopsy?

A The autopsy cannot proceed since a patient’s family must give unanimous consent
B Since the cause of sepsis was not determined and one of the patient’s family has raised the issue of negligence by the assisted living facility, the case must be referred to the medical examiner.
C The autopsy cannot proceed since the next of kin has not given permission
D The autopsy can proceed since the health care proxy has given permission
E Since there is disagreement among the family regarding the autopsy, the case must be referred to the medical examiner

Autopsy Permission/Roles of HCP
– Take Home Points
• Authority for granting permission for autopsy varies state by state
   – Only a few states grant this to the HCP
   – Generally the next of kin gives permission
• Medical examiner always has the authority to perform an autopsy
• The authority of the HCP ceases with the patient’s death

General Point for the Boards
• Be prepared for a couple of questions on health care proxies, including limits to their authority, when and how a health care proxy makes decisions, and who is eligible to be a health care proxy.

Case 4
• You admitted a 58 yr old woman with severe shock early this morning. Her PMH is significant for DM, CAD, Afib, and PVD.
• By afternoon, she has been treated with 12L NS, mechanical ventilation, broad spectrum antibiotics (vancomycin, azithromycin, cefepime, and flagyl), pressors (norepinephrine, phenylephrine, and vasopressin).
• On this therapy, her MAP is now 55.
Case 4, continued

• Which of the following would be least indicated at this point?
  A  Evaluating for autopeep
  B  Checking a bladder pressure
  C  Evaluating the pulse pressure difference
  D  Checking the CVO2 sat
  E  Checking an abdominal CT

Refractory Shock – Take Home Points

• Refractory shock is defined as persistent hypotension requiring high dose pressors (norepinephrine > 0.25 microgm/kg/min or dopamine > 15 microgm/kg/min or epinephrine > 0.25 microgm/kg/min) to keep MAP > 60 despite at least 2.8 – 4.2 L NS or LR (for 70 kg) or 1.4 – 2.1 L starch
• Look for iatrogenic issues
• May be caused by second problem
• Refractory shock carries a high associated mortality (approximately 40% for sepsis, up to 90% for cardiac shock)

General Point for Boards

• When confronted with a difficult management problem, look for a choice that appears practical and promotes patient safety.

Case 5

• You are on service at a Boston teaching hospital
• One of your patients is a 58yo diabetic woman who was admitted 2wks ago with urosepsis
• Her initial shock has resolved, and she is tolerating PS 12/5 for vent support
   Renal is advising starting dialysis
• Her course has been complicated by ATN
   She is oliguric, and becoming volume overloaded
   Renal is advising starting dialysis

Family Meeting

• You review your patient’s situation
• She has no written healthcare proxy
• Present at the meeting
  – Husband (separated)
    • She saw a news program on dialysis a year ago and said she’d never want it
  – Sister
    • Reports a recent conversation where the patient wanted her to be the HCP
    • She states that her sister would definitely want dialysis because “she is a fighter”
  – 2 brothers
    • No opinion regarding patient’s wishes, but both confirm she was independent prior to current illness and enjoyed her quality of life
• During the meeting
  – Her husband states he should be the HCP
  – Her sister presents a living will from 5yr ago
  • Specifies no mechanical support if terminal illness

What is true about decision-making for this patient?

A. As the legal next of kin, patient’s husband is her HCP
B. Her sister should be her health care proxy, since that reflects the patient’s most recently stated wishes
C. The patient’s advance directive should be used to guide decision-making
D. A legal guardian may be required for this patient
E. Since there is no HCP, decisions require a consensus among her family members
**Healthcare Proxy – Take Home Points**

- A Health Care Proxy (HCP) has the same authority as a decisionally capable patient
  - Treatment decisions, not necessarily research (varies by state)
- Healthcare proxy uses "substituted judgment" as a basis for decisions
  - Most often uses "known or probable" wishes
  - Other standards: "best interests", "clear and convincing evidence"
- State-specific guidelines if no written proxy
  - Most states use "next of kin" as default proxy
  - 7 states do not have defined hierarchy
- Authority applies only to healthcare matters
  - Significant limits in some states
  - Sometimes can be specifically directed to consent to autopsy

*Adapted from C. Sabatino and E. Wood, “Decision-Making and Advance Directives – Nuts & Bolts, National Aging and Law Conference, December 2010*

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**General Point for Boards**

- Be prepared for questions regarding end of life issues, ethics, surrogate decision making
  - Since state law guides these areas, look for general principles
  - Especially autonomy

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**Case 6**

- You are the attending for a 56yo man, h/o DM, COPD, and significant alcohol (4 – 8 beers/night) use who was admitted 14 days ago for pneumonia.
- Exam findings include VS: Temp 100.5, HR 105, BP 85/56; spider angiomas on the trunk, scleral icterus, and mild diffuse abdominal tenderness, 1+ pedal edema
- Laboratory findings include WBC 12K, AST 190, ALT 230, Alk phos 200, and T Bili 3.2
- Meds include
  - vancomycin
  - levofloxacin
  - heparin SQ
  - simvastatin
  - omeprazole
  - lorazepam PRN
  - albuterol/ipratropium

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**The least likely cause would be**

- Simvastatin
- Vancomycin
- Levofloxacin
- Sepsis due to ventilator-associated pneumonia
- Cholecystitis

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**Acalculous Cholecystitis**

- Prevalence in critically ill patient approximately 1% (up to 4% reported in AML)
- More common in men, MSOF, prolonged critical illness
  - Generally associated with critical illness, but can occur as an outpatient
- Requires percutaneous drainage (treatment of choice) or cholecystectomy
- Diagnosis may require HIDA scan
  - US can be helpful but frequently nondiagnostic
- Gangrene associated in approximately 20 - 40%
- Mortality 20 – 40% despite therapy

Hepatic Dysfunction in the ICU – Take Home Points

• Most common cause of hyperbilirubinemia in the critically ill is sepsis
• Medications are frequent offenders
  – Antibiotics
  – Antifungals
  – Rituximab
  – Statins
• Prior ethanol use can predispose toward toxicity even if no known cirrhosis
• Fulminant hepatic failure on or shortly after admission
  – Look for acetaminophen
  – Consider Hepatitis A
• RUQ US is initial imaging modality of choice for hepatic dysfunction

General Board Point

• Organ dysfunction arising during admission – think iatrogenic and infectious causes

Case 7

• You are asked to see a 78 year old man, PMH COPD and Afib, admitted to the step-down unit 4 days ago.

Case 7, continued

• Since then, he has had intermittent periods of confusion and agitation, which are worse at night.

Case 7: Exam

• His current exam:
  – VS: Temp 100.9, HR 110, BP 115/65, RR 24, O2 sat 92% on 6L. He is using accessory muscles on inspiration
  – Chest has left basilar rales; Heart is irregularly irregular; Extremities show trace pedal edema

Case 7, Meds

• His current meds:
  – Levofloxacin,
  – Inhaled albuterol/ipratropium,
  – Prednisone,
  – Coumadin,
  – Lorazepam,
  – Digoxin,
  – Famotidine
Case 7, continued

- You suspect delirium. Which of the following medications has a significant chance of contributing to or worsening delirium in this patient?
  A. Levofloxacin
  B. Famotidine
  C. Lorazepam
  D. Digoxin
  E. Albuterol/ipratropium

Delirium in the ICU

- Delirium can be prevented by adequate sedation
- Medication-associated delirium is less significant than other types of delirium
- Delirium is an independent risk factor for mortality in the ICU
- Mechanical ventilation does not increase the risk of delirium
- The hallmark of delirium is a waxing/waning mental status with intermittent agitation

Delirium in the ICU – Take Home Points

- Prevalence can increase to 80% in mechanically ventilated older patients
- Agitation is frequent, but can also have hypoactive delirium
- Bedside scales are useful in assessing
  - Confusion Assessment Measurement-ICU (Ely Ely et al., JAMA 2001; vol 286, pp 2703 - 2710)
- Many characteristics in the ICU contribute to delirium
  - Meds
  - Sleep disruption
  - Restraints
  - Poor external cues
  - Pain

General Board Point

- Expect several questions on delirium – especially in relation to prognosis and iatrogenic contributing factors

Summary

- Delirium is common, and is frequently multifactorial. Consider medications, particularly sedatives. Delirium increases the risk of in-patient death.
- Prolonged (>48hr), high-dose (>5mcg) propofol can be associated with propofol infusion syndrome (PRIS). Lipemic serum and elevated triglycerides usually precede PRIS.
- The health care proxy uses substituted judgment to make decisions regarding medical therapy for an incapacitated patient. The role of health care proxy ceases with the patient’s death.
- Decisional capacity is a continuum. Bedside testing can be helpful. Impaired cognition does not always preclude decisional capacity.
- Refractory shock may have multiple contributing factors, including complications of therapy
- Surrogate decision making for patients without a Health Care Proxy is guided by state law. Advance directives are not a panacea

Disclosures

- None