**Supplementary material 2.** Pre-intervention exam

1. A 42-year-old woman presents with progressive shortness of breath of 5 days duration. She has a history of chronic renal failure and is on hemodialysis. Vital signs include a blood pressure 95/50, pulse 110, respirations 24, and oxygen saturation 95% on room air. An ECG is obtained. While waiting for chest radiography, she becomes increasingly pale and dusky, and her systolic pressure progressively decreases to 70 mmHg with only transient response to intravenous fluid resuscitation. What is the most effective definitive treatment?
   1. Calcium gluconate, sodium bicarbonate, insulin and glucose
   2. Dobutamine
   3. Pericardiocentesis
   4. Thrombolytic therapy

Answer: C

1. Which of the following is the most common arrhythmia in patients with pulmonary embolism (PE)?
   1. Multifocal atrial tachycardia
   2. Sinus tachycardia
   3. Atrial fibrillation
   4. Sinus rhythm with atrial premature contractions
   5. Ventricular fibrillation

Answer: B

1. Which of the following is a common contributing factor in the development of mesenteric ischemia?
   1. Atrial fibrillation
   2. Campylobacter jejuni infection
   3. Celiac disease
   4. von Willebrand disease

Answer: A

1. A 46-year-old man presents with chest pain 8 hours after having an upper endoscopy for dysphagia. Esophageal perforation is suspected and a screening chest x-ray is ordered. Which of the following is likely to be found on physical examination?
   1. Diffusely diminished heart sounds
   2. Decreased breath sounds at lung bases bilaterally
   3. Shock
   4. A crunching sound upon cardiac auscultation
   5. A rigid, tender abdomen

Answer: D

1. The most common dysrhythmia in hypothyroid cardiovascular disease is:
   1. Atrial fibrillation
   2. Long QT syndrome
   3. Junctional escape rhythm
   4. Sinus rhythm with left or right bundle branch block
   5. Sinus bradycardia

Answer: D

1. A 3-year-old girl swallows a button battery. Plain radiographs demonstrate that the battery is lodged in the esophagus. Which of the following is the most appropriate next step in management?
   1. Expectant management
   2. Endoscopic removal
   3. Ipecac for therapeutic emesis
   4. Activated charcoal
   5. Whole bowel irrigation

Answer: B

1. A 36-year old man presents with fever and abdominal pain. He is on hemodialysis. Which of the following organisms should treatment be directed against?
   1. Escherichia coli
   2. Fungus
   3. Proteus
   4. Staphylococcus epidermidis

Answer: A

1. A patient has the following results from a hepatitis serology panel: HbsAg, negative; anti-HBs, positive; anti-HBc, positive; anti-HCV, negative. Based on these results, what can be inferred about his viral hepatitis status?
   1. He has been exposed to hepatitis B
   2. He has been vaccinated against hepatitis B
   3. He has chronically active hepatitis B
   4. He has chronically active hepatitis C

Answer: A

1. Acalculous cholecystitis…
   1. May occur in patients with acquired immune deficiency syndrome (AIDS) and Cryptosporidium infection
   2. Represents half of all cases of acute cholecystitis
   3. Is most common in patients with hemolytic anemia
   4. Responds to oral ursodeoxycholic acid therapy
   5. Tends to have a more benign course than calculous cholecystitis

Answer: A

1. Cold allodynia, the sensation of pain or dysesthesia when coming into contact with cool or cold objects (often called cold reversal) is virtually pathognomonic for which of the following causes of acute food poisoning?
   1. Scombroid
   2. Shigellosis
   3. Clostridium perfringens
   4. Ciguatera
   5. Bacillus anthracis

Answer: D

1. An elderly patient with atherosclerotic heart disease and congestive heart failure who complains about abdominal pain is at high risk for which of the following conditions?
   1. Sigmoid volvulus
   2. Mesenteric Ischemia
   3. Cholecystitis
   4. Diabetic Gastroparesis
   5. Cecal volvulus

Answer: B

1. The most common cause of death in patients with toxic epidermal necrolysis (TEN) is
   1. Electrolyte abnormalities
   2. Respiratory failure
   3. Sepsis
   4. Dehydration
   5. Ventricular dysrhythmias

Answer: C

1. Assuming no allergies, which of the following is TRUE for all patients with thyroid storm?
   1. Give aspirin to control fever
   2. Administer propranolol to block the adrenergic drive
   3. Give propylthiouracil (PTU) 1 h before iodide therapy
   4. Draw free T4/TSH levels before and 1 h after administering antithyroxine
   5. Avoid steroids because these increase conversion of T4 to T3

Answer: C

1. A 50-year-old man presents with nausea and vertigo. Vital signs are within normal limits. Physical examination reveals nystagmus but is otherwise normal. The pharmacologic agent most appropriate for treating these symptoms is:
   1. Haloperidol
   2. Lorazepam
   3. Meclizine
   4. Ondansetron

Answer: C

1. A 22-year-old man presents with left-sided facial and periorbital pain after a fight. Which of the following examination findings may be present?
   1. Hypoesthesia over the maxilla
   2. Inability of upward gaze
   3. Enophthalmos
   4. Periorbital emphysema
   5. All of the above

Answer: E

1. What is the appropriate intervention for itching associated with a blood transfusion?
   1. Acetaminophen
   2. Acute hemolytic workup
   3. Diphenhydramine
   4. Observation

Answer: C

1. A 64-year-old woman is brought in by emergency services (EMS) with a chief complaint of “anaphylaxis”. The patient has a known peanut allergy and inadvertently ingested some ground nuts in a dish prepared by a friend. She has a known history of coronary artery disease and is on metoprolol. Her symptoms do not respond to epinephrine, corticosteroids, or antihistamines. She is intubated but remains hypotensive and unstable. Which of the following may be of benefit?
   1. Calcium chloride
   2. Atropine
   3. Glucagon
   4. Nebulized albuterol
   5. Terbutaline

Answer: C

1. Which of the following statements is true regarding acute traumatic retinal detachments?
   1. Most detachments can be visualized on standard fundoscopy
   2. 80% of detachments occur within 24 h of the traumatic event
   3. Most detachments originate in the inferotemporal quadrant
   4. Visual outcome depends on the extent of involvement of the

optic disc

* 1. Sudden onset of pain is a prominent feature

Answer: C

1. Which is not a cause of ST segment elevation?
   1. Benign early repolarization
   2. Pericarditis
   3. Bundle branch block
   4. Left ventricular aneurysm
   5. Cardiac tamponade

Answer: E

1. A 14-year-old boy has right hip and knee pain for 3 weeks. He denies trauma, fevers, or chills. His vital signs are normal. He is holding his right hip in mild external rotation. The most likely diagnosis is:
   1. Transient synovitis of the hip
   2. Slipped Capital Femoral Epiphysis (SCFE)
   3. Legg-Calve-Perthes (LCP) disease
   4. Septic Arthritis
   5. Hip avulsion fracture

Answer: B

1. Which of the following is one of Kanavel’s cardinal signs of flexor tenosynovitis?
   1. Symmetrical swelling of the digit
   2. Tenderness to palpation of the volar aspect of the digit
   3. Pain upon passive extension of the digit
   4. Maintenance of the digit in a flexed posture
   5. All of the above

Answer: E

1. A 50-year-old man presents with fever, dry cough, headache and loss of appetite with nausea, vomiting and watery diarrhea. He has been taking amoxicillin for 4 days but says he is feeling worse. Past medical history is COPD. Laboratory analysis reveals hyponatremia and elevated liver enzymes. Which of the following is the most likely diagnosis?
   1. Legionnaire disease
   2. Psittacosis
   3. Q fever
   4. Tularemia

Answer: A

1. The most common sexually transmitted organism in the United States is
   1. T. pallidum
   2. C. trachomatis
   3. Neisseria gonorrhea
   4. Herpes simplex virus
   5. H. ducreyi

Answer: B

1. A 38- year-old woman presents to the ED complaining of throat irritation and a 3-week history of episodic spastic cough. The cough is worse at night and she is occasionally so forceful that she vomits after she coughs. Her teenage son who has had a similar illness for 6 weeks without abating accompanies her. She is a nonsmoker. What is the most likely cause of her illness?
   1. Corynebacterium diphtheriae
   2. Legionella pneumophila
   3. Bordetella pertussis
   4. M. pneumoniae
   5. S. pneumoniae

Answer: C

1. A 46-year-old woman presents to the emergency department with a cough, fever, and dyspnea. Her chest x-ray shows a left sided effusion. You initiate empiric treatment for community-acquired pneumonia, and perform a diagnostic thoracentesis because of the size of the effusion and her declining respiratory status. Which of the following results on pleural fluid compels you to perform urgent tube thoracostomy?
   1. pH<7.0
   2. Malignant cells
   3. Protein consistent with exudative effusion
   4. Amylase-elevated
   5. Gram stain negative

Answer: C

1. A 25-year-old man with schizophrenia presents with acute agitation. According to a family member who is present, he was seen by a psychiatrist during the previous week and diagnosed with schizophrenia. He is extremely agitated, tachycardic, diaphoretic, febrile and exhibits muscle rigidity. Which of the following is the most appropriate next step in management?
   1. Acetaminophen
   2. Lorazepam
   3. Amantadine
   4. Bromocriptine
   5. Haloperidol

Answer: B

1. Which of the following is the most important factor in determining the chance of spontaneous passage of a kidney stone?
   1. Composition of stone
   2. Size of the stone
   3. Degree of pain
   4. Degree of nausea
   5. Age of the patient

Answer: B

1. Which of the following is the most common cause of acute respiratory distress syndrome?
   1. Sepsis
   2. Near drowning
   3. Multiple blood transfusions
   4. Multiple blunt trauma
   5. Pancreatitis

Answer: A

1. The most reliable early indicator of shock in a pregnant patient after blunt abdominal trauma is
   1. Hypotension
   2. Elevated lactate
   3. Tachycardia
   4. Peritoneal signs on examination
   5. Cool, clammy skin

Answer: B

1. Which of the following is the most effective therapy for acute arsenic poisoning?
   1. Activated charcoal
   2. Ipecac
   3. Dimercaprol
   4. Penicillamine
   5. Deferoxamine

Answer: C

1. Which of the following is true regarding neck trauma?
   1. Platysma violation requires wound exploration in the emergency department
   2. All patients with suspected esophageal injury should receive barium contrast esophagram
   3. Zone II injuries are most amendable to surgical exploration
   4. All neck wounds should be probed to determine the depth of the wound and integrity of vital structures
   5. Impaled objects should always be removed in patients with penetrating neck trauma

Answer: C

1. A 25-year-old man complains of pain and swelling in the hand and forearm, perioral numbness, and vomiting after trying to catch a rattlesnake. Blood pressure is 90/60 mmHg. All of the following are appropriate therapies except
   1. Fluid resuscitation
   2. Administration of 10 vials of antivenin
   3. Measurement of coagulation factors and platelets
   4. Immediate fasciotomy of the arm
   5. Pain medication

Answer: D

1. A 56-year-old man presents with generalized fatigue, weakness and vomiting. He tells you that he has taken an overdose of his doxepin medication. His BP is 155/95 and his EKG demonstrates a regular, wide-complex tachycardia. Which of the following is the most appropriate next step in management?
   1. Cardioversion at 50 J
   2. Lidocaine
   3. Procainamide
   4. Sodium bicarbonate
   5. Propafenone

Answer: D

1. Which of the following best characterizes the typical chest x-ray findings seen in PCP infection?
   1. Normal chest x-ray
   2. Diffuse bilateral interstitial infiltrates
   3. Hilar lymphadenopathy
   4. Pneumothorax
   5. Pleural effusions
   6. Answer: B
2. A 75-year-old woman presents to the ED for evaluation of meningitis. She has had 12 hours of acute onset of headache, stiff neck, and fever. Physical examination demonstrates a febrile patient in moderate distress with nuchal rigidity and severe photophobia. A lumbar puncture is performed with the following results:
   1. CSF WBC 700 cells per mL, 80% neutrophils, 20% lymphocytes
   2. CSF glucose: decreased
   3. CSF protein: elevated
   4. CSF Gram Stain: no organisms seen
   5. On the basis of these results, the presumptive diagnosis of bacterial meningitis is made. Which of the following is the most appropriate therapy?
   6. Dexamethasone alone
   7. Ceftriaxone alone
   8. Vancomycin alone
   9. Ceftriaxone and dexamethasone
   10. Ampicillin, ceftriaxone and dexamethasone

Answer: E

1. A 44-year-old man presents with hypotension after a motor vehicle collision. His chest x-ray is normal. Pelvis x-ray shows an open-book pelvis fracture. Which of the following is the most important next step in management?
   1. Foley catheterization
   2. CT scan of the abdomen and pelvis
   3. Tightening a bedsheet around the pelvis
   4. ED thoracotomy
   5. Inlet and outlet radiographs of the pelvis

Answer: C

1. A 9-month-old infant is brought to the emergency department with a bruise on his thigh suffered from falling out of his high chair. Radiographs reveal a midshaft femur fracture. Which of the following is the most likely contributing factor?
   1. Child abuse
   2. Osteogenesis imperfecta
   3. Bone tumor
   4. Bone cyst
   5. Hypocalcemia

Answer: A

1. A 56-year-old man presents with tremor, anxiety, tachycardia and hypertension. He has a past medical history of chronic renal insufficiency. He reports heavy alcohol use, but has not had a drink in the last 2 days. Which of the following is the most appropriate next step in management?
   1. Haloperidol
   2. Lorazepam
   3. Chlordiazepoxide
   4. Diphenhydramine
   5. Droperidol

Answer: B

1. Which of the following constitutes definitive treatment for ethylene glycol poisoning?
   1. Ethanol drip
   2. Fomepizole
   3. Pyridoxine
   4. Thiamine
   5. Dialysis

Answer: E

1. Which of the following agents in overdose most closely mimics opioid poisoning?
   1. Clonidine
   2. Diphenhydramine
   3. LSD
   4. Yohimbine

Answer: A