CASE 1
A 70 year-old woman presents with pain in her hands and wrists for 9 months. Her hands are stiff in the morning for 15 minutes. She has pain with sewing and typing. She has not noticed swelling. Her vital signs are normal. Her bilateral proximal interphalangeal joints are tender to palpation and have bony enlargements. The first carpometacarpal joints are also tender and have bony squaring bilaterally. Her metacarpal squeeze test is negative. The remainder of the exam is normal.

Which of the following studies should be done to establish the diagnosis?

A) ANA
B) Uric acid
C) Radiography of the hands
D) Rheumatoid factor
E) No additional studies are needed

CASE 2
A 68 year-old man with a history of HTN and gout presents for his annual exam. He was a past smoker for 20 years but quit 30 years ago. He drinks one glass of red wine daily. He exercises regularly. He has no specific complaints. He gets his flu shot annually and he received his pneumococcal vaccine 3 years ago. He had a normal colonoscopy 7 years ago. He is on amlodipine and allopurinol. His vital signs are normal and his physical exam including cardiopulmonary, abdomen, prostate and peripheral pulses are all unremarkable.

Which of the following screening tests is most appropriate for this patient based on most evidence of benefit?

A) CT Coronary Calcium Imaging
B) Prostate Specific Antigen
C) Thyroid Stimulating Hormone
D) Abdominal Ultrasound
E) Exercise Treadmill Test

CASE 3
A 20 year old woman with a history of SLE diagnosed 2 years earlier presents to the emergency department with fatigue and fevers to 100.5 for several days.

Home medications include metoprolol succinate 25mg daily, lisinopril 10mg daily, prednisone 15mg daily, hydroxychloroquine 200mg daily, azathioprine 50mg daily, and dapsone 100mg daily.

Initial evaluation reveals a young woman in no acute distress. Vital signs are notable for a temperature of 100.5, heart rate of 60, blood pressure 110/70, respiratory rate of 16, and an oxygen saturation of 80% on room air. Oxygen saturation increases to 88% on Chest X-ray and CT scan of the chest are unremarkable. CBC reveals a WBC 5.42, Hct 29.5% (at her baseline), PLT 273. Chemistry panel is unremarkable.

Oxygen saturation remains 88% on 100% oxygen by nonrebreather mask; simultaneous arterial blood gas shows a pH of 7.38, PCO2 32, PO2 527 on 100% oxygen.

The next best step in management is:

A) Endotracheal intubation and mechanical ventilation
B) Transfuse 2 units PRBCs
C) Treat with hyperbaric oxygen
D) Stop the dapsone
E) Treat with bactrim and prednisone
CASE 4
A 37 year old woman with no significant past medical history presents to the emergency department with 2 days of nausea, vomiting, and abdominal pain. Her only medication is acetaminophen, which she has been taking for low back pain. She has not been taking any calcium supplements.

Labs reveal calcium 15.4, phosphate 4.9, creatinine 2.0. Her PTH level is low and her PTH-RP is undetectable.

All of the following would be appropriate initial therapy in the acute setting EXCEPT:

A) Hydration with normal saline
B) Zolendronate 4mg IV
C) Furosemide 40mg IV
D) Calcitonin 4 units/kg IM
E) Ondansetron 1mg IV

CASE 4 – Part II
CT scan of the chest, abdomen, and pelvis reveal diffuse lytic lesions in the spine, pelvis, long bones, and ribs. No other abnormalities are noted. Additional workup demonstrates a normal serum protein electrophoresis, normal serum angiotensin converting enzyme (ACE) level, and a mildly elevated LDH of 410.

The most likely diagnosis is:
A) Multiple myeloma
B) Sarcoidosis
C) Metastatic breast cancer
D) Diffuse large B-cell lymphoma
E) Langerhans Cell Histiocytosis

CASE 5
A 32 year old man with no PMH presents with low-grade fevers, anorexia, headache, and neck stiffness of 4 days’ duration, which started shortly after a dental procedure. The night prior to presentation, he had one episode of emesis and a worsening posterior headache. This morning, his wife noticed that he seemed “not quite himself” and was “walking into walls”, prompting her to bring him into the Emergency department. In the ED, he undergoes the following head imaging.

What is the most likely diagnosis and best next management choice?

A) Meningitis; Treatment with Ceftazidime, Vancomycin and micafungin
B) Meningitis; Treatment with Ceftriaxone, vancomycin, and ampicillin
C) Brain abscess; Treatment with Ceftazidime, Vancomycin and micafungin, and acyclovir
D) Ruptured brain abscess; Treatment with Ceftriaxone, vancomycin and ampicillin with neurosurgery consultation if symptoms do not improve with 48h of antibiotics
E) Ruptured brain abscess; Treatment with Ceftriaxone, vancomycin and ampicillin with emergency neurosurgery consultation
CASE 5 – Part II

Which of the following is not indicated in the management/workup of this patient?

A) Blood culture  
B) Consideration of ventricular drainage  
C) Serial lumbar punctures to evaluate opening pressure  
D) TTE with bubble study  
E) Careful physical examination of the sinuses and tympanic membranes

CASE 6

A 30 year-old woman with ulcerative colitis and autoimmune hepatitis complicated by cirrhosis, ascites, and esophageal varices presented with dyspnea and left-sided back pain. Abdominal US showed minimal ascites and CT revealed the following:

CASE 6 (cont)

Which of the following would not be appropriate in the evaluation and management of this pleural effusion?

A) Thoracentesis  
B) Chest tube  
C) Diuretics  
D) TIPS (transjugular intrahepatic portosystemic shunt)  
E) Evaluation for liver transplantation

CASE 7

A 56 year-old woman with hypertension presents to the Emergency Department with abdominal pain in the left-lower quadrant and no bowel movements for several days. Her medications include hydrochlorothiazide and omeprazole. Her vital signs, including her blood pressure, are normal. Exam is not revealing. Abdominal CT suggests constipation without any other etiologies. The CT also shows a 3.5cm right adrenal lesion.

All of the following tests for the evaluation of this adrenal lesion are appropriate except?

A) Dexamethasone suppression test  
B) Plasma aldosterone and renin  
C) 24 hour urine fractionated metanephrines and catecholamines  
D) Cosyntropin stimulation test  
E) Adrenal protocol CT or MRI

CASE 8

A 42 year-old man with a history of morbid obesity status-post bariatric surgery with 75 pound weight loss presents for a follow-up visit. He complains of 5 years of progressive gait instability and numbness and weakness in his distal extremities. He now has trouble holding a cup and his handwriting is deteriorating. His family history is unremarkable. He takes high vitamin supplements including B-complex and zinc.

On exam, he has an unsteady gait, Romberg’s sign, spasticity in the bilateral lower extremities, bilateral hyperreflexia and Babinski’s sign. There is impaired vibration and position sense in the feet. Pain and temperature sensation in the lower extremities are normal. His labs reveal leukopenia, neutropenia, normocytic anemia, high serum zinc and low ceruloplasmin. B12, folate, homocysteine, and methylmalonic acid levels are normal.

CASE 8 (cont)

Which of the following is the most likely cause of his condition?

A) Vitamin B12 deficiency  
B) Paraneoplastic polyneuropathy  
C) Copper deficiency  
D) Vitamin B6 toxicity  
E) Lead toxicity
CASE 9

A 56 year-old woman presents with dyspnea on exertion and fatigue for 2 months. She has a history of hypertension and Stage 4 chronic kidney disease. She has no nausea, vomiting, anorexia, or chest pain. Her weight is stable and she is compliant with a renal diet. Her medications include furosemide and lisinopril. Her health care maintenance is up-to-date including a recent colonoscopy.

On exam, her BP is 118/62. BMI is 24. Her conjunctivae are pale. Her cardiac and lung exams are unremarkable. She has 1+ lower extremity edema. Labs reveal hemoglobin 9.6, MCV 92, eGFR 18, ferritin 190, iron 57, TIBC 257, and transferrin saturation is 22%. Urinalysis reveals 1+ protein. Stool is guaiac negative and treatment with erythropoietin is begun. Four weeks later, her fatigue and exercise tolerance has improved and her hemoglobin is now 12.6 and transferrin saturation is 22%.

CASE 9 (cont)

What is the most appropriate next step in the management of this patient?

A) Stop erythropoietin
B) Stop lisinopril
C) Change lisinopril to HCTZ
D) Add IV ferrous gluconate
E) Schedule EGD

CASE 10

A 44 year old man is brought to the emergency department after brief loss of consciousness at work lasting for ~30 seconds. He has had a 5-day history of dyspnea on exertion and chest pain. On the morning of presentation, he had difficulty walking to work because of shortness of breath and worsening chest pain.

On presentation, EKG demonstrates 1mm ST segment elevations in lead I, II, and aVL. Labortory values are notable for a troponin-T of 0.22, normal CK and CKMB, WBC 4.1, Hct 22%, plt 11. LDH is elevated at 1300, and PT and PTT are normal.

A peripheral blood smear is shown.

CASE 10 (cont)

The most appropriate initial treatment for this condition is:

A) Platelet transfusion
B) Cardiac catheterization
C) Rituximab
D) IVIG
E) Plasma exchange

CASE 11

A 42 year old man presents to the emergency department 1 week after developing chest pain. 1 week ago, he developed severe left-sided chest pain in the setting of cocaine use. The chest pain persisted for 1 day and then resolved. He has not had further chest pain.

His EKG in the emergency department is shown below:

Cardiac biomarkers are notable for a normal CK and CK-MB and an elevated troponin at 13.2.

CASE 11 (cont)

The best next step in management is:

A)Echocardiogram
B)Anticoagulation with heparin
C)Urgent cardiac catheterization
D)Clopidogrel
E)Pharmacologic stress test
CASE 12
A 28 year old woman with no PMH presents with nausea and vomiting after completing her first marathon. She was able to complete the marathon and thereafter immediately rehydrated. She took four 200mg ibuprofen tablets and was at a post-marathon party when she started to feel ill, saying unusual things to her friends such as, “I made a terrible mistake” and “I am drowning”. Her friends brought her to the Emergency department. On exam, she is tired appearing, mildly confused and has an otherwise nonfocal neurological exam. Her JVP is 6cm.

What is the best next step in the workup and management of this patient?
A) Administration of 1L of Normal Saline
B) Encouraging PO rehydration with an electrolyte replacement sports drink
C) STAT electrolyte panel
D) Administration of hypertonic saline at a rate of 1cc/kg/h
E) Check an ibuprofen level

CASE 13
A 36 year-old woman with depression, mild asthma, and obesity presents with 3 weeks of a non-productive cough. She also has paroxysms of coughing and post-tussive vomiting. She denies significant wheezing. She works at a day care. She got her vaccinations as a child. Vital signs, lung exam, complete metabolic panel, and CXR are unremarkable.

The best treatment at this time would be?
A) Albuterol inhaler
B) Azithromycin
C) Prednisone
D) Anti-tussive agents
E) Admission to the hospital for IV antibiotics

CASE 14
A 25 year-old man who recently moved to the US from France (and had not seen physicians there) presented with a headache, and on imaging was found to have a superior sagittal sinus thrombosis. On exam, he was noted to be tall and thin, and have pectus excavatum and arachnodactyly. No murmurs were appreciated on exam.

Which of the following tests would you expect to be abnormal in this patient?
A) Activated protein C resistance
B) Fibrillin 1 mutation
C) Protein S activity
D) Homocysteine level
E) Prothrombin G20210A mutation

CASE 15
A 38 year-old woman with a history of diffuse cutaneous systemic sclerosis presents with lower extremity edema for one week. Her baseline blood pressures are 120-140/70-80. She is on nifedipine and omeprazole.

On exam, she is afibrile. Her HR is 98 and BP is 170/100. She has skin thickening over the face, hands, arms, chest and abdomen. There are telangiectasias on her face and palms. Her cardiac exam is notable for an S4. Her lungs are clear. She has 2+ LE edema. Her labs reveal hemoglobin 9.8, platelets 95, BUN 40, creatinine 2.4, albumin 3.4, urinalysis shows 2+ protein and 10 RBCs/HPF. A blood smear shows 2+ schistocytes.

Along with admitting the patient to the hospital, what is the most appropriate next step in management?
A) Increase the nifedipine dose
B) Begin captopril
C) Start oral labetalol
D) Begin IV methylprednisolone
E) Start oral prednisone

CASE 16
A 36 year old man presented to his primary care physician with a week-long history of severe pain in his left Achilles tendon. Over the past few days, he has also developed pain and swelling in his fingers and toes (see photos). He has been having difficulty walking and bearing weight. Of note, two weeks ago, he developed a week-long course of diarrhea accompanied by chills and sweats following a weekend camping trip.

The most appropriate treatment is:
A) Ceftriaxone 1g IV
B) Solumedrol 1000mg IV
C) Prednisone 60mg PO
D) Indomethacin 50mg PO
E) Observation
CASE 17
A 39 year-old woman of Greek descent presents to the emergency department after experiencing a brief loss of consciousness while at work. Workup in the emergency department reveals a WBC 4, Hct 20%, Plt 207. She notes that she had a viral syndrome 1 week ago, which subsequently resolved. She has no history of bleeding. She recently moved into a new house 3 months ago. She notes that she has had a propensity to chew ice for the past 1 year. She has no family history of anemia.

Additional workup reveals:
- MCV 55
- Iron x assay, Ferritin 1, TIBC 400
- ESR 8
- Normal haptoglobin, LDH, B12, and folate levels.

Blood smear shows microcytic, hypochromic cells of varying shapes.

Of note, CBC 3 years ago showed a HCT of 28% with an MCV of 85.

CASE 17 (cont)
The most likely diagnosis is:
A) Thalassemia
B) Iron deficiency anemia
C) Lead toxicity
D) Hemolysis
E) Anemia of chronic disease

CASE 18
A 19 year old man with no significant PMH presents complaining of a new, nonproductive cough of 5 months duration. He was seen by his PCP when the cough began, was diagnosed with “bronchitis”, and was treated with a course of antibiotics. His symptoms did not improve and the cough has worsened and is now accompanied by dyspnea and wheezing. He feels dyspneic on exertion and often coughs with exertional activity. Exam is notable for an O2 saturation of 91% on RA and scattered expiratory wheezes. WBC is 15.6K/uL with an absolute eosinophil count of 1890/uL. ROS is notable for a 25 pound weight loss in the last five months. His social history is notable for marijuana use.

What is the most likely diagnosis?
A) Asthma
B) Chronic bronchitis
C) Churg Strauss
D) Allergic bronchopulmonary aspergillosis
E) Invasive aspergillosis

CASE 18 – Part II
All of the following are reasonable next steps in the workup and treatment of this patient except?
A) Start prednisone at a dose of 0.5-1mg/kg/day
B) Check strongyloides serology
C) Check an IgE level and consider initiation of Omalizumab (anti-IgE)
D) Encourage patient to stop marijuana usage
E) Check for FIP1L1-PDGFR alpha translocation

CASE 19
A 64 year-old man with hypertension presented with RUQ pain for 3 days. Labs show ALT 927, AST 1048, alkaline phosphatase 132, total bilirubin 5.7, WBC 8.62, Hct 42.5, platelets 270, albumin 3.5, and INR 1.1. He denied acetaminophen ingestion and chronic alcohol use. Hepatitis A IgM, hepatitis B surface antigen, and hepatitis B core IgM were negative. Hepatitis C viral load was 5,041,727 with genotype 1b. Anti-neutrophil antibody, anti-smooth muscle antibody, and testing for herpes simplex virus, cytomegalovirus, and Epstein-Barr virus were negative. RUQ ultrasound showed no cirrhosis or hepatomegaly, and patent portal and hepatic veins with normal direction of flow. He later admitted to recent IV heroin use. The best management of this patient at this time is?
A) Monitor hepatitis C viral load in 3 months and consider treatment if virus not cleared
B) Interferon and ribavirin
C) Interferon and lamivudine
D) NAC (N-acetylcysteine)
E) Prednisolone

CASE 20
A 27 year-old woman originally from Brazil who is 25 weeks pregnant (G1P0) presents with dyspnea, blood tinged-sputum, and pleuritic chest pain. Her HR was 137, BP 96/53, and O2 saturation 82% on RA. Exam reveals diffuse rales in bilateral lung fields and a soft diastolic rumble at the apex. Echocardiogram revealed a normal ejection fraction, a diffusely thickened mitral valve, moderate-severe mitral stenosis, and pulmonary artery systolic pressure. She was intubated for respiratory support. Fetal ultrasound was reassuring.

The most appropriate regimen for medical management is:
A) Beta-blockers and gentle diuresis
B) Digoxin
C) Dopamine
D) Ace-inhibitors
E) Hydralazine and nitrates
CASE 21

A 29 year-old woman presents to the emergency department with sore throat, fever, and recurrent hematuria.

She was in her usual state of health until one month ago, when she developed a sore throat and a fever of 101°F. The following day, she noticed frank blood in her urine and went to the emergency department. She was diagnosed with a presumed urinary tract infection and given a 7 day course of cephalixin. After several days of antibiotics, her fevers resolved and her urine cleared. She remained in good health until 1 week ago, when she again developed fever, sore throat and bloody urine, and returned to the emergency department. She notes a similar episode about 3 years ago.

CASE 21 (cont)

Urinalysis was notable for 3+ blood and 2+ protein Urine sediment showed 493 dysmorphic red blood cells. No casts were seen. Laboratory values were notable for a creatinine of 3.4. Complements were normal. Renal ultrasound showed no evidence of obstruction, hydronephrosis, or perinephric fluid collections.

Which of the following is the most likely diagnosis:

A) Post-streptococcal glomerulonephritis
B) IgA nephropathy
C) Carcinoma of the bladder
D) Urinary tract infection
E) Nephrolithiasis

CASE 22

A 30 year old woman with no PMH was incidentally found to have a hyper-pigmented, linear lesion on her left arm following travel to Hawaii.

CASE 22 (cont)

Which activity mostly likely led to the development of this physical exam finding?

A) Handling fish in a salt-water tank
B) Squeezing limes while making mojitos
C) Applying sunscreen containing PABA
D) Handling thorned roses
E) Injection drug use