

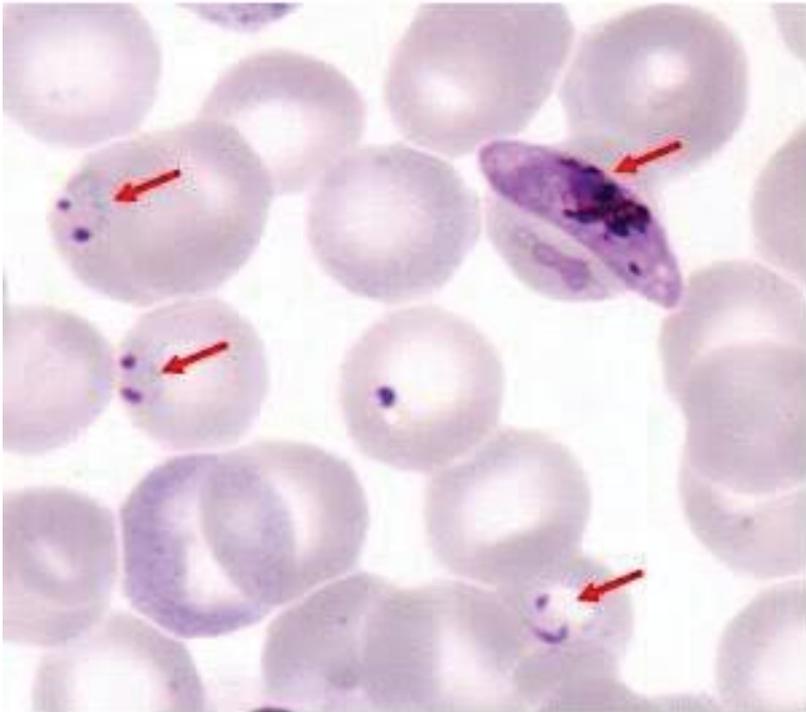
Travel medicine

Fever in returning traveler

- 54-yo man in ED for a 2-wk h/o fevers and chills occurring every 1 to 2 days. He also has a significant HA, muscle pain, and intermittent diarrhea. The patient is an archeology professor who returned 2 weeks ago from a 6-week “dig” in Thailand in Southeast Asia. He received pre-travel prophylactic vaccinations, including combined hepatitis A and B virus vaccines, as well as yellow fever, typhoid, and Japanese encephalitis vaccines. In addition, he completed a regimen of mefloquine for malaria chemoprophylaxis.
- Exam: appears ill but is awake and alert. T 102.9 °F, BP 100/62, P 118, and RR 20. Rest of exam wnl except for mild splenomegaly.
- WBC 8900, platelets 82,000/, and a Hg 10 g/dL. He also has a mildly increased serum indirect bilirubin level and elevated serum ALT & AST.

Fever in returning traveler (cont'd)

Peripheral smear is shown:



Against which of the following malaria species should treatment be initiated in this patient?

- A) *Plasmodium falciparum*
- B) *Plasmodium malariae*
- C) *Plasmodium ovale*
- D) *Plasmodium vivax*

Rash/fever in traveler

- A 19-yo man is evaluated for a sore throat, daily fever, frontal headache, myalgia, and arthralgia of 5 days' duration. He also has severe discomfort in the lower spine and a rash on his trunk and extremities. He returned from a 7-day trip to the Caribbean 8 days ago. The remainder of the history is NC.
- Exam: T 100.9 °F, BP 104/72, P 102, RR 16. His posterior pharynx is notably injected but without exudate. He has a maculopapular rash on his chest, arms, and legs that spares the palms and soles. There is no palpable LAD. The remainder of the examination, is normal.
- Labs: WBC 3100, platelets 85,500, Hg 13.9, ALT 114, AST 154, Tbili 1.2

Rash/fever in traveler

- **Which of the following is the most likely diagnosis?**
 - A. Dengue fever
 - B. Leptospirosis
 - C. Malaria
 - D. Syphilis
 - E. Yellow fever

Fever/diarrhea in traveler

- A 22-yo woman is evaluated for an 8-day history of escalating fever, abdl pain, HA, sore throat, dry cough, and initial constipation followed by frequent loose, watery stools. She returned 2 weeks ago from rural India where she spent the month of July. In preparation for travel, she took atovaquone-proguanil for malaria prophylaxis and had ciprofloxacin in the event of a diarrheal illness. Two weeks before her trip, she received a tetanus, diphtheria, and acellular pertussis vaccination and live oral vaccine for typhoid fever. She has received a complete hepatitis A and B virus vaccine series. She is otherwise healthy and takes no medications.
- Exam: T 103.1 °F, BP 106/72, P 64, RR 16. She has a faint salmon-colored maculopapular rash on the trunk. Cardiopulmonary examination is normal. Splenomegaly but no palpable tenderness is noted on abdominal examination.
- Labs: Hg 10.5, WBC 3150 (55% PMNs, 42% L, 3% M), platelets 106,000, ALT 167, AST 98, Tbili 2.4, NA 130

Fever/diarrhea in traveler (cont'd)

- **Which of the following is the most likely diagnosis?**
 - A. Brucellosis
 - B. Leishmaniasis
 - C. Malaria
 - D. Typhoid fever

Malaria prophylaxis

- A 32-yo woman who is 5 months pregnant undergoes evaluation before international travel. The patient is a photojournalist, and in 3 weeks, she will be traveling to a rural area in Kenya, Africa, on assignment for 10 days. The patient takes a prenatal vitamin. Physical examination, including vital signs, is normal. The patient is given advice on mosquito bite avoidance and insect repellent (DEET).
- **Which of the following is the most appropriate malaria chemoprophylaxis of this patient?**
 - A. Atovaquone-proguanil
 - B. Chloroquine
 - C. Doxycycline
 - D. Mefloquine

Diplopia

- A 35-yo man in ED in April for symptoms of diplopia and difficulty swallowing food and water of 24 hours' duration; his wife is in ED for similar symptoms. The patient and his wife returned to their home in Connecticut 2 days ago from a 7-day Caribbean cruise during which they went snorkeling, ate pork at an island barbeque, and hiked in a forest. ROS neg.
- Exam nl, VSS. The patient is AxO. He has dysphonia and dysarthria, obvious bilateral ocular palsies, an absent gag reflex, and symmetric UE motor weakness without any objective sensory abnormalities. Rest of exam nl.
- **Which of the following is the most likely diagnosis?**
 - A. Botulism
 - B. Guillain-Barre syndrome
 - C. Paralytic shellfish poisoning
 - D. Tick paralysis

Diarrhea in traveler

- 55-yo woman is evaluated for a 1-day history of diarrhea. She has had four liquid stools in the past 24 hours without visible mucus or blood. The patient does not have fever, nausea, vomiting, abdominal pain, or cramping. She returned yesterday from a 2-week trip to Guatemala, where she traveled to rural areas, swam in a local river, and brushed her teeth with tap water.
- Exam: thin and in NAD. VSS. No rash, mmm, bowel sounds are mildly hyperactive, but no focal abd tenderness or peritoneal signs. Rectal examination is nontender with heme-negative brown stool in the vault.
- **Which of the following stool studies should be done next?**
 - A. Culture for bacteria
 - B. Culture for viruses
 - C. Exam for O&P
 - D. Testing for fecal leukocytes
 - E. No diagnostic testing is indicated

Fever/PNA in traveler

- A 27-yo man is hospitalized for fatigue, fever, and chills that developed 48 hours ago after his return from a camping trip in New Mexico. On the day of admission, he developed SOB, pleuritic CP, and a productive cough with blood-streaked sputum. No PMH, takes no meds.
- Exam: mod resp distress. T 101.5 °F, BP 110/65, P 110. O2 sat RA 85%. Cardiopulmonary examination discloses diffuse crackles bilaterally and tachycardia. Rest of exam nl.
- Labs: WBC 17,500 (75% band) nl CMP. CXR: diffuse infiltrates bilaterally.
- Microscopic examination of the blood obtained on admission reveals gram-negative bipolar-staining bacilli.
- **Which of the following is the most likely infectious agent?**
 - A. Legionella pneumophila
 - B. Pseudomonas aeruginosa
 - C. Salmonella enteritidis
 - D. Yersinia pestis

Tick bite

A 22-yo man is evaluated for a skin eruption on his leg. The patient lives in Virginia and is active outdoors. One week ago, he found a black tick on his lower leg, which his roommate removed with a tweezers. Yesterday he developed diffuse myalgia, neck stiffness, and fatigue. These symptoms have persisted, and today he notes erythema at the site of the previously attached tick. On physical examination, temperature is 38.1 °C (100.6 °F); other vital signs are normal. There is no nuchal rigidity.

Skin findings are shown:



Tick bite (cont'd)

- **Which of the following is the most appropriate initial management?**
 - A. *Borrelia burgdorferi* PCR on skin biopsy specimen
 - B. Empiric IV ceftriaxone
 - C. Empiric oral doxycycline
 - D. Serologic testing for Lyme disease

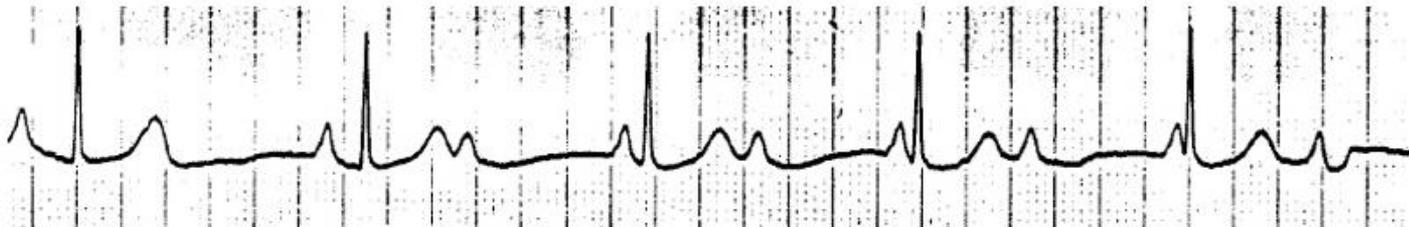
Fatigue and tick bites

- A 72-year-old man is evaluated for fatigue and weakness of 8 months' duration. He is a retired businessman, an avid gardener and recalls many tick attachments over the past several years. He lives in Texas but has traveled extensively throughout the United States.
- The patient was seen in a walk-in clinic 1 week ago and had laboratory testing for Lyme disease. An enzyme-linked immunosorbent assay for *Borrelia burgdorferi* was positive. A Western blot assay was negative for IgG antibodies and positive for IgM antibodies.
- Vital signs are normal. Physical examination findings are unremarkable.
- An electrocardiogram is normal.
- Which of the following is the most appropriate management?
 - A. Initiate additional evaluation for fatigue and weakness
 - B. Repeat serologic testing for *Borrelia burgdorferi* in 1 month
 - C. Treat with ceftriaxone
 - D. Treat with doxycycline

Lyme and the heart

- A 42-year-old man is evaluated for a 3-day history of dyspnea and dizziness. He is training for a marathon and initially attributed his symptoms to overexertion and dehydration. Despite refraining from training and increasing his fluid intake, his symptoms have persisted. He has no chest pain, fever, or cough. Medical history is unremarkable. The patient is a college professor in Rhode Island. He has not noted any tick attachments or antecedent rash.
- He appears well. Temp normal, BP 100/60 mm Hg, and HR 35/min. Other than bradycardia, the remaining physical examination findings are unremarkable.
- Labs: normal CBC, CMP, and cardiac enzyme measurements. EKG below:
- Serologic testing for *Borrelia burgdorferi* is performed. Both the initial enzyme-linked immunosorbent assay and a confirmatory Western blot assay are positive.

- Which of the following is the most appropriate initial treatment?
 - A. Intravenous ceftriaxone
 - B. Oral cefuroxime
 - C. Oral doxycycline
 - D. Placement of a permanent pacemaker
 - E. Observation



Tick bites

- A 56-year-old woman is evaluated in the emergency department in May for a 2-day history of fever, myalgia, and headache. She works as a horse trainer on a farm in Oklahoma and recalls removing at least three ticks from her skin in the past 2 weeks.
- On physical examination, the patient appears ill. Temperature is 39.3 °C (102.7 °F); other vital signs are normal. There is no nuchal rigidity, lymphadenopathy, or rash. Remaining physical examination findings are nonfocal.
- Serologic testing for *Rickettsia rickettsii*, *Anaplasma phagocytophilum*, and *Ehrlichia chaffeensis* is performed

Laboratory studies:

Leukocyte count	14,600/ μ L (14.6×10^9 /L) with 87% neutrophils
Platelet count	136,000/ μ L (136×10^9 /L)
Alanine aminotransferase	177 units/L
Aspartate aminotransferase	211 units/L
Alkaline phosphatase	114 units/L
Creatinine	1.4 mg/dL (123.7 μ mol/L)

- Which of the following is the most appropriate next step in the management of this patient?
 - A. Begin empiric amoxicillin
 - B. Begin empiric doxycycline
 - C. Withhold antibiotics unless a petechial skin rash develops
 - D. Withhold antibiotics while awaiting serologic results

Anemia and tick bite

- A 27-year-old man is evaluated in the emergency department for a 2-day history of fever, weakness, and dark-colored urine. The patient returned yesterday from a 2-week camping trip to Cape Cod, Massachusetts. While there, he developed a target-shaped lesion on his thigh. He was evaluated at a walk-in clinic, where early-stage Lyme disease was diagnosed. He is currently on day 10 of a 14-day course of doxycycline.
- T = 38.5 °C (101.3 °F), BP 122/66 mm Hg, HR 118/min. Lesion on the thigh gone. + jaundiced. The liver is tender and is palpable 5 cm below the costophrenic margin.

Hemoglobin	8.4 g/dL (84 g/L)
Reticulocyte count	10%
Leukocyte count	12,600/ μ L (12.6×10^9 /L)
Platelet count	110,000/ μ L (110×10^9 /L)
Lactate dehydrogenase	675 units/L
Total bilirubin	8.3 mg/dL (145.3 μ mol/L)

- Which of the following pathogens is most likely causing this patient's current findings?
 - A. *Anaplasma phagocytophilum*
 - B. *Babesia microti*
 - C. *Borrelia burgdorferi*
 - D. *Rickettsia rickettsii*
 - E. West Nile virus

Fungal pathogens

Fever and pulmonary infiltrates/LAD

- A 35-yo man in ED for a 6-day history of fever, HA, malaise, myalgia, dry cough, SOB, and vague chest pain. He recently returned from filming a documentary on hibernating Indiana bats in the caves of Ohio. Medical history is noncontributory.
- Exam: T 100.9 °F. Pulm exam discloses a few bilateral wheezes. The remainder of the exam, including vital signs, is normal.
- Hg 10.5 g/dL, WBC 8000/ μ L (53% PMNs, 35% L, and 12% M). HIV neg. CXR shows hilar LAD and interstitial infiltrates. The preliminary blood and sputum cultures are negative for organisms.
- **Which of the following is the most likely diagnosis?**
 - A. Blastomycosis
 - B. Coccidioidomycosis
 - C. Cryptococcosis
 - D. Histoplasmosis

Fever/pulmonary infiltrates/LAD

- A 35-yo man is eval for a 2-wk h/o nonproductive cough and fever. He has a 20-year history of asthma. Three weeks ago, he visited friends in Indiana. He has no dyspnea, hemoptysis, or worsening of his baseline asthma symptoms. His only medication is an albuterol inhaler prn.
- Exam: T 100.4 °F, BP 130/70, P 88, RR 16. Crackles are heard in both lungs.
- Labs: nl WBC and Cr. CXR reveals patchy pulmonary infiltrates with mild hilar LAD.
- **Which of the following is the most appropriate management?**
 - A. Lipid amphotericin B
 - B. Fluconazole
 - C. Itraconazole
 - D. No treatment

Fever/cough/skin nodules

- A 25-yo woman is eval for a 1-week h/o cough and fever, painful nodules on the extensor surfaces of the arms and the legs, and arthralgia of the knees and ankles. Her symptoms developed 3 weeks after she vacationed in the Arizona desert.
- Exam: T 102.2 °F, BP 100/60, P 110, RR 18. Crackles and egophony are heard in the posterior left lower lung field. There is no evidence of joint effusions.

- Findings of the skin exam of lower extremities are shown:



- Labs: ESR 70 and a normal CBC. CXR reveals a dense infiltrate of the left lower lobe and left hilar LAD. Gram stains of sputum are negative.

Fever/cough/skin nodules (cont'd)

- **Which of the following is the most likely diagnosis?**
 - A. Blastomycosis
 - B. Coccidioidomycosis
 - C. Histoplasmosis
 - D. Sporotrichosis

Skin nodule

A 70-yo man is evaluated for a 6-month history of hyperkeratotic skin lesions. The patient lives in Michigan. He is otherwise healthy.

Exam: T normal, BP 150/78, P 8a0, and RR 14. The lungs are clear.

Representative skin lesion on the face is shown:



Skin biopsy shows a pyogranulomatous reaction and broad-based budding yeast. CXR normal.

Skin nodule (cont'd)

- **Which of the following is the most appropriate treatment of this patient?**
 - A. Amphotericin B
 - B. Fluconazole
 - C. Itraconazole
 - D. Surgical excision

Proptosis in pt with DKA

- A 40-yo man in ED with a 1-day h/o HA and epistaxis. He has had DM-1 requiring insulin for 30 years and two episodes of ketoacidosis in the past year.
- Exam: T 96.8 °F, BP 100/70, P 120, RR 22. + Mild proptosis of the R eye with periorbital edema and a black eschar on the inferior turbinate of the R nostril. Skin examination shows no other lesions. Rest of exam normal.
- Labs consistent with diabetic ketoacidosis. Blood cultures neg. CXR normal. CT of the head reveals mild proptosis of the right eye and right ethmoid and maxillary sinusitis with bony erosion. Intravenous amphotericin B is instituted.
- **In addition to treatment of this patient's diabetic ketoacidosis and institution of antifungal therapy, which of the following is the most important next step in treatment?**
 - A. Add piperacillin-tazobactam
 - B. Add posaconazole
 - C. Administer hyperbaric oxygen treatment
 - D. Perform surgical debridement

Other topics

Recurrent infections

- An 18-yo woman is evaluated 4 weeks following hospitalization for her second episode of pneumococcal pneumonia in 18 months. She received the pneumococcal vaccine 20 months ago. The patient was also diagnosed with giardiasis 2 years ago. She also has a history of asthma. Her mother has selective IgA deficiency, and her brother has lymphoma. ROS neg for findings associated with autoimmune disorders, including SLE.
- Exam: VSS. Faint crackles are heard at the post L lung base.
- Labs: Hg 8.6, ab MCV 120, and WBC 6800/ μ L with a nl diff. HIV neg.
- **Which of the following is most likely to establish the diagnosis?**
 - A. Check response to pneumococcal & tetanus vaccines
 - B. Measure CD4 cell count
 - C. Measure serum IgG, IgM, & IgA levels
 - D. Measure total hemolytic complement level

Progressive AMS

- A 62-yo man is admitted with confusion. His wife reports that he is a truck driver, but he has been unable to work for the past 3 weeks because he can no longer follow map directions. Yesterday, she found him putting his clothes in the dishwasher rather than the washing machine. He has insomnia and fatigue but no HA, photophobia, stiff neck, fever, or other localizing symptoms or signs. He has never traveled outside the United States.
- Exam: VSS. \disheveled and is conversant but slow to respond to questions. Myoclonic movements of the upper extremities are noted at rest. Rest of exam nl.
- CBC & CMP wnl. Urine culture neg. LP: CSF WBC 2/ μ l, TP & glucose nl. MRI of the brain shows atrophy appropriate for his age, but no focal lesions.
- **Which of the following is the most likely diagnosis?**
 - A. Cryptococcal meningitis
 - B. Neurosyphilis
 - C. Sporadic Creutzfeldt-Jakob disease
 - D. Tuberculous meningitis

Recurrent fever/rash/abd pain

- A 22-yo man is evaluated for a 1-day history of fever, rash, and abd pain. He has a 5-year h/o recurrent episodes of these symptoms plus occasional joint pain in the knee or hip that resolves spontaneously after several days.
- Exam: T 101.5 °F, BP 120/70, P 70, RR 14. A sharply demarcated, tender, raised, erythematous, warm rash is present over the dorsa of both feet and both anterior legs that extends approximately 10 cm in diameter. There is no inguinal LAD or fluctuance, ulcer, or purulence. Abd exam discloses nl bowel sounds and minimal ttp. Distal pulses nl.
- Labs: WBC 13,000 (80% PMNs, 17% L, and 3% M), platelets 400,000.
- **Which of the following is the most likely diagnosis?**
 - A. Erythromelalgia
 - B. Familial Mediterranean fever
 - C. Staphylococcal cellulitis
 - D. Sweet syndrome

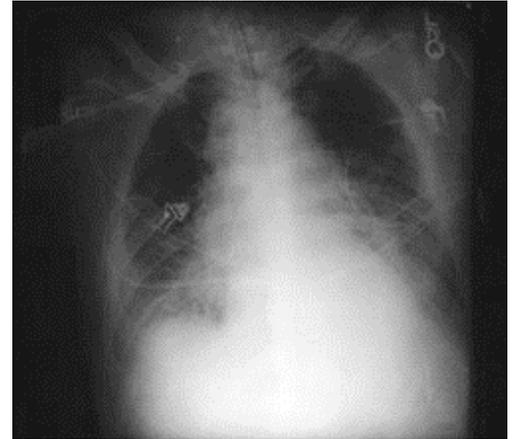
Bioterrorism

Chest pain and fever

A 56-yo man in ED for a 3-day h/o fever, myalgia, dyspnea, and mid-anterior chest discomfort. He works at a local airport as an airplane mechanic where small aircraft are used for crop-dusting nearby fields. Rest of HPI unremarkable.

Exam: T 101.7 °F, BP 94/60, P 115, RR 24. He is confused. The skin is cool and mottled. No rash. Lung exam discloses diminished breath sounds B at the lung bases. Other than distant heart sounds and tachycardia, the cardiac examination is normal. There are no focal neurologic findings.

CXR shown:



Which of the following is the most likely infectious agent?

- A. *Bacillus anthracis*
- B. *Erysipelothrix rhusiopathiae*
- C. *Listeria monocytogenes*
- D. *Nocardia* species

Fever and rash

- A 23-year-old man was admitted to a hospital 2 days ago with a 3-day history of fever, severe HA, and backache, vomiting, and sores in the back of his throat. The patient is a soldier. Yesterday, he developed spots on his hands and face, and today, the spots have spread to his arms and trunk, and he has developed a papular rash on his face and hands; all of the lesions are now at the same stage of development. The patient's nurse, a 28-year-old woman, did not use any personal protective equipment during her first 2 days of his care.
- **Which of the following interventions is most appropriate for the nurse?**
 - A. Acyclovir
 - B. Cidofovir
 - C. Vaccinia vaccination
 - D. Varicella vaccination
 - E. No intervention

Chest pain, cough and fever

- A 52-year-old man is hospitalized because of cough, fever and pleuritic chest pain that developed 2 days after he attended a football game. Family members report that four friends who attended the game with the patient but live in another state have also been hospitalized with pneumonia; one of the friends died yesterday.
- Exam: Pt appears acutely ill. T 38.9 C, BP 102/62, P114/min and RR 28/min. Auscultation reveals egophony of the right chest. Rest of exam is wnl.
- WBC 16,000 with 80% PMNs and 12% bands. CXR shows a dense infiltrate in the RML and RLL with air bronchograms. Blood Cx specimens show no growth after 24 hours.
- **Which of the following is the most likely diagnosis?**
 - A) Inhalational anthrax
 - B) Mycoplasma pneumonia
 - C) Staphylococcal pneumonia
 - D) Tularemia
 - E) Bubonic plague

Blurred vision and slurred speech

- A 29yo woman in ED for blurred vision, diplopia, slurred speech, nasal regurgitation of fluids and bilateral UE weakness. The vision disturbances developed yesterday, and the slurred speech and upper extremity weakness began earlier today. Two other patients with similar symptoms are also being evaluated in the ED.
- Exam: patient is alert, awake, and fully oriented. Speech is fluid but slurred. T 37.0 C, BP 90/60, P 50/min, and RR 12/min. The pupils are dilated, and extraocular movements show bilateral deficits in cranial nerve IV. She cannot abduct her arms against resistance.
- Complete blood count and routine blood chemistry studies are normal. CT scan of the head and LP results are unremarkable.
- **Which of the following is the most likely diagnosis?**
 - A) Botulism
 - B) Guillain-Barre syndrome
 - C) Myasthenia gravis
 - D) Poliomyelitis
 - E) Neuroinvasive West Nile virus disease

Fever and SOB and CP

- A 35-year-old male customs inspector is brought to the ED because of a 2-day history of fever, shortness of breath, and chest pain. He has had no recent known contact with ill persons.
- Exam: patient is diaphoretic and appears acutely ill. He is oriented only to person. T 38.0 C, BP 88/60, P 110/min, and RR 28/min. Coarse bronchial breath sounds are heard.
- The WBC count is 15,000 and CXR shows a widened mediastinum and bilateral pleural effusions.
- A buffy coat Gram stain of a peripheral blood smear shows box car-shaped gram-positive bacilli.
- **Which of the following is the most appropriate treatment?**
 - A) Ciprofloxacin, rifampin, and vancomycin
 - B) Erythromycin, clindamycin and rifampin
 - C) Erythromycin, vancomycin, and rifampin
 - D) Penicillin, rifampin, and vancomycin

Fever and rash

- A 24-year-old medical student is asked to evaluate a 43-year-old fireman who developed fever and chills 2 days ago and a rash 1 day ago. The triage nurse reports that the patient appears ill. He has a T 38.9 C and has a rash that consists of papules and crops of vesicles on the trunk with sparing of the extremities. The US is on a Code Red (high threat) alert, and personnel have been asked to identify anyone with a prodrome consistent with an agent of bioterrorism.
- The medical student has never had chickenpox and has no known exposure to anyone with this infection. His most recent varicella titer was negative and he did not receive the varicella vaccine.
- **In addition to hand hygiene, what precautions should the medical student take when evaluating the patient?**
 - A) Wear gloves and gown
 - B) Wear gloves, a gown and mask
 - C) Wear gloves, a gown and a N95 respirator
 - D) No additional precautions needed

Fever and rash

- A 68 yo woman in ED in December because of a 1-day history of high fever, myalgias, headache, nausea, vomiting, abdominal pain, diarrhea, cough and hemoptysis. The patient took her grandchildren to a basketball game 4 days ago. Her 10-year-old grandson developed a fever this morning. She has not traveled recently. All immunizations are current, and she had a flu shot 2 weeks ago.
- Exam: patient appears extremely ill. T 40 C, P 110/min, RR 24/ min, and BP is 85/55. Jaundice, conjunctival injection, and dry mucous membranes are noted. Petechiae are present on her palate, and a prominent blanching, maculopapular rash and petechiae are noted on her trunk. One area of hemorrhage is present just below the umbilicus.
- Lab studies show WBC 3,000, platelets 10k, AST 684, and ALT 972.
- **Which of the following is the most likely diagnosis?**
 - A) H5N1 avian influenza
 - B) Marburg virus hemorrhagic fever
 - C) Acute fulminant hepatitis A
 - D) Acute fulminant hepatitis B

NTM/TB

MAI

- A 59-yo woman is evaluated for a dry cough with moderate exertional dyspnea, which has remained stable in intensity over the past 7 months. The onset of her resp symptoms does not correlate with any unusual exposures. She has intermittently been treated with oral abx for outpatient PNA without a change in her symptoms. She has no systemic signs or symptoms and otherwise feels well. PMH is unremarkable. She does not smoke. She has lived most of her adult life in the SE United States. She currently takes no meds. On exam, vital signs are normal. Pulmonary auscultation reveals scattered rhonchi. The remainder of the exam, including cardiac exam, is normal. A CT scan of the lungs demonstrates scattered nodular infiltrates, mostly confined to the right middle and bilateral upper lobes. Normal respiratory flora grow from a sputum culture, and although the smear for acid-fast bacilli is negative, the culture eventually grows *Mycobacterium avium complex* by DNA gene-probe testing.

NTM

- **Which of the following is the most appropriate next step in management?**
 - A. Bronchoalveolar lavage
 - B. Clarithromycin, ethambutol, and rifampin
 - C. Repeat sputum acid-fast bacilli smear and culture
 - D. Video-assisted thorascopic lung biopsy
 - E. Observation

MAI

- 27 year old previously healthy woman diagnosed with CAP treated with ceftriaxone. PMH noncontributory. Routine & mycobacterial sputum cx performed. Pt recovers uneventfully over subsequent 2 weeks and f/u CXR shows improvement. Routine sputum cx reveal only normal flora, however after 3 weeks the mycobacterial cx grows 2 colonies of *Mycobacterium avium complex*.
- **Which of the following is the most appropriate next step?**
 - A. Initiate clarithromycin, rifampin, ethambutol?
 - B. Initiate isoniazid
 - C. Initiate isoniazid, rifampin, pyrazinamide, & ethambutol
 - D. No further treatment

Hot tub lung

- 52 yo woman with 2-mo h/o SOB and 1-mo h/o nonproductive cough, with sx progressing. No allergies or exposures to occupational or environmental pulmonary contaminants. PMH unremarkable, only meds H2 receptor antagonist.
- Exam: + dyspneic, otherwise normal except for bruise on R thigh after she slipped on a hot tub
- CXR normal. PFTs with mod obstructive disease with slightly low DLCO. Sputum cx + mycobacteria.
- Which of the following most likely explains this patient's positive sputum culture?
 - A. *Mycobacterium avium complex* hypersensitivity pneumonitis
 - B. Tuberculous pneumonia
 - C. *Nocardia* pneumonia
 - D. *Rhodococcus* pneumonia
 - E. A contaminant in the sputum culture

Surgical complication

- 42 year old woman evaluated for post-op wound infection. 8 weeks ago s/p B augmentation mammoplasty. 6 weeks post surgery, developed violaceous draining nodules at the surgical closure site at R breast. After 7 days dicloxacillin, wound enlarged. Wound cx + normal flora. Pt hospitalized & IV vancomycin/cefepime added without clinical benefit. Second set of wound cx + *Candida albicans*. PMH unremarkable. Exam reveals temp 38°C, BP 105/75, P 84/min, RR 16/min. L breast surgical scar healed and R breast surgical wound partially open and packed along medial half. Lateral ½ of wound is erythematous, with 2 sinus tracts draining purulent material.
- **Which of the followign is the most likely causative agent for her wound infection?**
 - A. fluconazole-resistant *Candida albicans*
 - B. MRSA
 - C. *Mycobacterium abscessus*
 - D. *Mycobacterium tuberculosis*
 - E. *Nocardia asteroides*

Skin nodules

- Previously healthy 26 year old male investment banker in Chicago evaluated with 5 month h/o three asymptomatic nodules on RUE. 2 are on back of his hand and 1 on wrist. First lesion appeared 2 weeks after he injured his R hand on a fish spine while fishing in the ocean in the Pacific Northwest. He has received 3 14-day courses of different antibiotics (amoxicillin, nafcillin, ceftriaxone) without improvement. He continues to feel well and does not have fever, nightsweats, or weight loss.
- Exam: Temp 98.8°F, P 78, BP 120/76. There are 2 firm nontender, erythematous nodules measuring 2cm in diameter on the back of his R hand and a similar nodule measuring 1cm on the back of R wrist. Three nontender LN are palpable in R axilla. Liver and spleen not enlarged.
- **Which of the following is the most appropriate management at this time?**
 - A. Biopsy of nodule
 - B. Fine-needle aspiration of a nodule
 - C. Tuberculin skin test
 - D. Empiric treatment with isoniazid
 - E. Empiric treatment with streptomycin

Lymphadenitis

- 42 year old man with HIV evaluated with 5-week h/o nightsweats, weight loss 5lbs. He moved to New York City from Dominican Republic 3 months ago, when he started HAART. CD4 count prior to initiation was 240 and is now 350, while plasma HIV viral load fell from 500,000 copies/mL to undetectable. He takes no other meds.
- Exam normal except for enlarged R cervical lymph node. CXR normal. LN excised and stains + for AFB.
- **Which of the following is the most likely diagnosis?**
 - A. *Mycobacterium avium complex* infection
 - B. *Mycobacterium marinum* infection
 - C. *Mycobacterium kansasii* infection
 - D. *Mycobacterium tuberculosis* infection
 - E. Immune reconstitution inflammatory syndrome

Complications of silicosis

- 75 year old male retired surface miner has 2 year h/o DOE and 2-month h/o fatigue & weight loss, with dry cough becoming more productive and occ blood-streaked. No fevers or night sweats
- Exam temp 100.9°F, BP 122/75, P 70, RR 14. Exam pertinent for fine inspiratory crackles heard and clubbing.
- CXR with small diffuse pulmonary nodular densities with 5cm mass LUL, 3cm mass with cavitation RUL, and hilar LAD with calcifications. CXR 2 years ago with B pulmonary nodular infiltrates and calcified lymph nodes only.
- **Which of the following diagnostic studies is most appropriate at this time?**
 - A. Fiberoptic bronchoscopy
 - B. Mediastinoscopy and lymph node biopsy
 - C. Cytologic exam of the sputum
 - D. Tuberculin skin testing and sputum for AFB stain and culture
 - E. Pulmonary function testing

TB treatment

- 35 year old man in ED with 1-month h/o chronic cough with blood-tinged sputum. He admits to frequent encounters with commercial sex-workers while visiting Russia, India, & Thailand.
- Exam: Temp 100.9°F, BP 90/50, P 95, RR 30. + Thrush, Crackles over upper lung fields.
- Bilat upper lobe cavitary lesions on CXR. AFB + on direct sputum smear
- **Which of the following is the best treatment option?**
 - A. Ciprofloxacin, pyrazinamide, ethambutol, ethionamide, and cycloserine
 - B. Isoniazid
 - C. Isoniazid & Rifampin
 - D. Isoniazid, rifampin, pyrazinamide, & ethambutol

TB pericarditis

- A 30-yo man is admitted to the hospital with a 1-month history of fever, night sweats, cough, weight loss, and chest pain. The patient is homeless. A diagnosis of pericardial tamponade is established. Pericardiocentesis is performed, following which there is no recurrence of a significant pericardial effusion. Microbiologic examination of pericardial fluid identifies *Mycobacterium tuberculosis*.
- **In addition to four-drug antituberculous therapy, which of the following is the most appropriate next treatment?**
 - A. Indomethacin and colchicine
 - B. Pericardial window
 - C. Prednisone
 - D. Surgical pericardiectomy

TB treatment interruption

- A 25-yo woman undergoes evaluation. Treatment for active pulmonary TB was initiated 6 weeks ago. The mycobacteria were susceptible to all first-line antituberculous agents, and a 2-month course of isoniazid, rifampin, ethambutol, and pyrazinamide was prescribed as initial therapy. However, the patient was lost to follow-up for 3 weeks, during which time she discontinued all medications. On exam, temp is 37.7 °C (99.9 °F), BP is 110/70 mm Hg, pulse is 90/min, and RR is 18/min. The remainder of her exam is normal.
- **Which of the following is the most appropriate management?**
 - A. Continue the same treatment to complete the planned total number of doses, provided all doses are completed within 3 months
 - B. Repeat sputum smear for AFB; if results are negative, treatment can be considered complete
 - C. Restart different treatment with at least 2 new drugs to which the mycobacteria were originally susceptible
 - D. Restart the same treatment from the beginning

Adverse reactions of RIPE

- A 53-yo man is evaluated for a 2-day h/o swelling and pain of the right knee. Active TB was recently diagnosed, and the patient has been treated with isoniazid, rifampin, and pyrazinamide for the past 7 weeks. Ethambutol, which was also started 7 weeks ago, had to be discontinued 1 week ago after the patient experienced decreased visual acuity ascribed to optic neuritis. Mycobacteria are fully susceptible to all first-line antituberculous agents. His PMH also includes HTN for which he takes amlodipine. On exam, vital signs are normal. The right knee is warm, erythematous, and swollen, and he has difficulty bearing weight on this leg because of intense pain. ROM of the knee is restricted and elicits pain. A serum uric acid level obtained today is 10.5 mg/dL (0.62 mmol/L). A CBC reveals a leukocyte count of 14,700/ μ L (14.7×10^9 /L) with 87% PMNs and 13% lymphocytes. An arthrocentesis of the right knee is performed and reveals a synovial fluid WBC count of 30,000/ μ L (30×10^9 /L) (90% PMNs, 10% lymphocytes). Gram stain is negative, but polarized light microscopy reveals intra- and extracellular monosodium urate crystals.
- **Which of the following is most likely responsible for this patient's clinical findings?**
 - A. Amlodipine
 - B. Isoniazid
 - C. Pyrazinamide
 - D. Rifampin

TB meningitis

- A 30-yo man is evaluated for a 3-month h/o fever, night sweats, and HA. The patient has a h/o IVDA and is currently incarcerated. On exam, temp is 38.3 °C (101.0 °F), BP is 110/65 mm Hg, pulse is 95/min, and RR is 20/min. He is oriented but lethargic. Cardiopulmonary and neuro exams are normal. The WBC count is 15,000/ μ L (15×10^9 /L) with 70% PMNs, 20% lymphocytes, and 10% monocytes, and the serum albumin level is 2.3 g/dL (23 g/L). The remaining BMP and results of U/A are normal. LP is performed. Opening pressure is 250 mm H₂O. CSF exam shows a cell count of 400/ μ L (400×10^6 /L) with 95% lymphocytes, a protein level of 200 mg/dL (2000 mg/L), and a glucose level of 20 mg/dL (1.1 mmol/L). CSF PCR is positive for *Mycobacterium tuberculosis*, and CSF culture grows *M. tuberculosis*. Blood culture specimens show no growth. A CT scan of the head reveals basilar meningeal enhancement. Treatment with isoniazid, rifampin, pyrazinamide, and ethambutol and corticosteroids is begun. Mycobacteria are fully susceptible to all four antituberculous agents.
- **Which of the following is the most appropriate treatment duration?**
 - A. 4-6 months
 - B. 9-12 months
 - C. 15-18 months
 - D. 24 months