HIV and Other STDs

HIV DIAGNOSIS

HIV Diagnosis

- A 33-year-old woman undergoes routine evaluation. She is interested in pregnancy and is concerned about being treated for HIV infection. She has had no known sex partners with HIV infection. She has no history of sexually transmitted infections, has never been pregnant, and is sexually active only with her husband of 8 years. Her only medication is a prenatal vitamin. Physical examination is normal.
- Which of the following is the most appropriate next step in the management of this patient

- A. HIV antigen/antibody combination assay
- B. HIV antibody Western blot assay
- C. HIV nucleic acid amplification test
- D. No testing indicated

HIV Diagnosis

- A 45-year-old female is evaluated because of an abnormal HIV test. The patient presented after an ankle sprain, and was tested routinely through the ER. The patient is asymptomatic. She has been married for 16 years, and has three children. Her husband and children are well. She and her husband have a monogamous sexual relationship, and neither spouse has ever used illicit drugs. The patient has never received a transfusion.
- On physical examination, she appears anxious but well. Examination is normal.

Lab results:

HIV antigen/antibody combination assay: **Positive**
HIV-1/2 differentiation assay: **Negative**

- Which of the following is the most appropriate management at this time?

- Check HIV ELISA
- Check HIV Western blot testing
- Check HIV viral load testing (HIV Qualitative TMA)
- Begin highly active antiretroviral therapy now
- Do nothing, the patient does not have HIV

Diagnosis

- A 20-year-old man is evaluated at an emergency room for a 10-day history of sore throat, headache, fever, and myalgias. Two days ago, he developed a rash on his trunk and abdomen. He had been previously healthy and has not had any contact with ill persons. He has been tested for HIV infection several times, most recently 8 months ago; all results were negative. On physical examination, temperature is 38.6 °C (101.4 °F). There are several *small* ulcers on the tongue and buccal mucosa and cervical and supraclavicular lymphadenopathy. A faint maculopapular rash is present on the trunk and abdomen. A rapid plasma reagin test is ordered.

- Which of the following diagnostic studies should also be done at this time?
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- HSV PCR
- CD4 cell count measurement
- Epstein Barr nuclear antigen (EBNA)
- HIV RNA viral load measurement

HIV TREATMENT

HIV Treatment Question

- A 45-year-old man is diagnosed with HIV infection after routine testing. The patient is asymptomatic. Medical history is unremarkable, and he takes no medications. On physical examination, he appears healthy. Vital signs and general examination are normal.
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- Laboratory studies:
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- CD4 cell count 450 cells/uL
- Plasma HIV RNA viral load 25,000 copies/mL
- Serum aspartate aminotransferase 63
- Serum alanine aminotransferase 85
- Serum alkaline phosphatase 88
- Serum total bilirubin 0.9
- Antibodies to hepatitis C virus (anti-HCV) Negative
- Hepatitis B surface antigen (HBsAg) Positive
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- Which of the following is the most appropriate anti retroviral therapy at this time?
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A) Delay treatment until the patient becomes symptomatic

B) Delay treatment until the patient's HIV RNA viral load exceeds 100,000 copiesjmL

C) Delay treatment until the patient’s CD4 count declines below 350 cells/uL

D) Begin treatment with zidovudine, didanosine, and nelfinavir

E) Begin treatment with dolutegravir, emtricitabine, and tenofovir

Medications for HIV

- A 56-year-old man undergoes a routine evaluation. Medical history is significant for HIV infection for which he has taken emtricitabine, tenofovir, and atazanavir boosted with ritonavir for the past 3 years. He has tolerated his antiretroviral therapy without difficulty and is currently asymptomatic. Physical examination and vital signs are normal except for scleral icterus.

- Laboratory studies:
- Alanine aminotransferase 35 U/L
- Aspartate aminotransferase 20 UjL
- Total bilirubin 4.0 mg/dl
- Direct bilirubin 1.2 mg/dl
- Hepatitis B surface antigen Non reactive
- Anti-hepatitis B surface antigen reactive
- Hepatitis B core IgG positive
- Hepatitis B core IgM negative
- Hepatitis C antibody Non reactive
- CD4 cell count 600 cells/uL
- HIV Viral load < 48 copies/ml

- Which of the following is the most likely cause of this patient's hyperbilirubinemia?
- AIDS cholangiopathy
- Atazanavir
- Autoimmune hemolytic anemia
- Common bile duct stone
- Hepatitis B

HIV Treatment Question

- A 22-year-old woman has tested positive for HIV during a routine pregnancy evaluation. She is 14 weeks gestation and is otherwise asymptomatic. Her medical history is unremarkable, and her only medication is a prenatal vitamin. On physical examination, vital signs are normal. No lymphadenopathy, thrush, or skin lesions are noted. The remainder of the examination is normal.
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- Hemoglobin is 10 g/dL. HIV antibody screening and confirmatory testing are positive. CD4 cell count is 900/µL, and HIV RNA viral load is 1800 copies/mL. Rapid plasma reagin and hepatitis B serologies are negative. HIV genotyping shows no resistance mutations. The remaining laboratory studies are unremarkable.

- Which of the following is the most appropriate management?
-
- A. Begin tenofovir, emtricitabine, and efavirenz now
- B. Begin zidovudine, lamivudine, and lopinavir-ritonavir now
- C. Treat if CD4 count falls below 500 cells/uL
- D. Treat with IV zidovudine during labor and perform C-section

HIV Treatment Question

- A 22-year-old woman has tested positive for HIV during a routine **pregnancy** evaluation. She is 14 weeks gestation and is otherwise asymptomatic. Her medical history is unremarkable, and her only medication is a prenatal vitamin. On physical examination, vital signs are normal. No lymphadenopathy, thrush, or skin lesions are noted. The remainder of the examination is normal.
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MANAGEMENT OF HIV PATIENTS ON MEDICATIONS

Question

- A 35-year-old woman from Zambia with HIV infection comes for a follow-up office visit. She was diagnosed 7 years ago when she presented with cryptococcal meningitis. Her baseline CD4 cell count was 350 cells/uL, and an HlV RNA viral load of 105,000 copies/mL. Highly active antiretroviral therapy (tenofovir, lamivudine, and efavirenz) was begun. Initially, her CD4 cell count increased to 550, and her plasma HlV RNA viral load became undetectable. However, she began a new job 1 year ago and started missing appointments. At a follow-up visit 4 months ago, her viral load increased to 660 copies/mL, and at today's visit the viral load is 8800 copies/mL. Her CD4 cell count remains stable at 550, and she continues to be asymptomatic. She now acknowledges occasionally missing medication doses.

- Which of the following is the appropriate management at this time?
- A. Continue the current regimen
- B. Substitute raltegravir for efavirenz
- C. Add raltegravir to be current regimen
- D. Order an HlV genotype resistance assay
- E. Recommend a drug holiday until she becomes symptomatic

Management of Patients on HIV Medications

- A 50-year-old man with a 20 year history of HIV infection comes for an initial evaluation after moving to a new state. He has a remote history of cryptococcal meningitis 20 years ago but is otherwise asymptomatic. The patient has taken numerous antiretroviral agents. He had previously been taking a salvage regimen of darunavir, ritonavir, tenofovir, emtricitabine and raltegravir, but ran out of this 4 months ago when he lost his job.

- The patient generally feels well except for fatigue. Physical examination is normal. Results of a CD4 cell count, plasma HIV RNA viral load, and HIV genotype resistance assay are pending.

- In addition to the genotype resistance assay result, which of the following is most important for determining future antiretroviral regimens?

- The current viral load
- The CD4 cell count nadir
- The presence of symptoms
- The duration of HIV infection
- The history of use of antiretroviral agents

HIV Treatment

- A 56-year-old man is evaluated during a routine follow-up visit. He is currently taking antiretroviral therapy with tenofovir, emtricitabine and raltegravir. The patient has been adherent to his medication regimen. He is presently asymptomatic, feeling well, and having no problems with his medications. The physical examination is normal.
- Laboratory studies show an HIV RNA viral load of 300 copies/mL, with repeated results indicating 800 copies/mL. The CD4 cell count is normal. The remaining laboratory tests, including complete blood count, serum chemistries, and liver enzymes, are normal.
- Which of the following is the most appropriate next step in the management of this patient?

- A. Perform HIV genotype and continue present medication regimen pending results
- B. Continue present medication regimen and follow up in 4 weeks
- C. Discontinue present medication regimen and perform resistance testing in 1 week
- C. Discontinue present medication regimen and repeat CD4 cell count and HIV RNA viral load in 4 weeks

HIV Treatment

- A 57-year-old man with HIV presents for routine follow-up. He has a history of multidrug-resistant HIV infection, but he has been responding well to his current antiretroviral regimen for the past 2 years. The patient follows a healthy diet and exercise regimen. He currently smokes cigarettes . He has no family history of heart disease. Medications are tenofovir, emtricitabine, raltegravir, and ritonavir-boosted darunavir.
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- Physical examination is unremarkable.
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- Laboratory studies:

- Alanine aminotransferase 26 units/L
- Aspartate aminotransferase 34 units/L
- Cholesterol Total 250
- LDL 165
- HDL 35
- Triglycerides 256
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- Which of the following is the most appropriate management?

- A.Encourage strict dietary lipid restriction and recheck lipid panel in 6 months
- B.Start atorvastatin
- C.Start fenofibrate
- D.Start simvastatin

POST-EXPOSURE PROPHYLAXIS

Post-Exposure Prophylaxis

- A 26-year-old male medical resident is inserting a central line in a patient with HIV and hepatitis C. The patient does not have hepatitis B infection. He sustains a needle stick results in a deep injury on the resident's left hand. The resident is seen immediately, and the wound is washed. Results of the source patient's CD4 cell count, plasma HIV RNA viral load, and hepatitis C RNA viral load are pending.

- In addition to counseling, which of the following is most appropriate for the resident?

  - A. No additional measures are required
  - B. Begin tenofovir within *2* hours of the needle-stick injury
  - C. Begin tenofovir/emtricitabine and raltegravir within *2* hours of the needle-stick injury
  - D. Begin tenofovir/emtricitabine and raltegravir plus interferon alfa within 2 hours of the needle-stick injury

OPPORTUNISTIC INFECTIONS

Opportunistic Infection

- A 47 year old male with HIV infection develops painful swallowing associated with substernal chest pain and a dry mouth. He has been non-adherent to medications due to IV methamphetamine use. During treatment, his plasma HIV RNA viral load was reduced but never became undetectable, and his highest CD4 cell count was 200 cells/uL 2 years ago. On physical examination the patient appears dehydrated and ill. Temperature is 37.2 °C (98.9 °F), pulse rate is 106/min, respiration rate is 18/min, and blood pressure is 94/54 mm Hg. Arterial oxygen saturation is 97% by pulse oximetry with the patient breathing room air. The skin is tented and dry. The mouth is dry, and white patches are seen diffusely on the posterior oropharynx and dorsal tongue. Cardiopulmonary and abdominal examinations are normal. He is unable to swallow any oral medications due to severe pain.

- Laboratory studies:
- Blood urea nitrogen 60 mg/dL
- Serum creatinine 1.8 mg/dL

- Which of the following is the most appropriate at this time?

- Oral itraconazole solution
- Intravenous fluconazole
- Intravenous amphotericin B
- Nystatin swish and swallow
- Intravenous micafungin

Pneumonia and AIDS

- A 32-year-old man with AIDS and a recent CD4 cell count of <10 cells/uL is admitted to the hospital with a 2-week history of fever and chills, a nonproductive cough, and gradually worsening dyspnea at rest and on exertion. He is not taking any medications, including highly-active antiretroviral therapy, over the past several years.
- On physical examination, temperature is 38.3 °C (101.0 'F), blood pressure is 100/68 mm Hg, pulse rate is 110/min, and respiration rate is 18/min. Cardiopulmonary examination discloses tachycardia with no murmur and diffuse crackles throughout all lung fields. The alveolar-arterial oxygen gradient is 50 mm Hg. A chest radiograph shows bilateral interstitial pulmonary infiltrates. An induced sputum sample shows few leukocytes and no predominant organism. Bronchoscopy is scheduled.

- Which of the following is the most appropriate empiric treatment for this patient!

- Ceftriaxone and azithromycin
- Isoniazid, rifampin, pyrazinamide, and ethambutol
- Trimethoprim·sulfamethoxazole
- Trimethoprim·sulfamethoxazole and prednisone

Diarrhea and HIV

- A 26-year-old woman with two children in day care is evaluated in the office for loose stools of 2 days duration. She has HIV-1 infection, with a CD4 cell count of 650 cells/uL and an undetectable HIV RNA viral load. Her children are HIV negative and also have diarrhea. They are being evaluated by the public health department for cryptosporidiosis. On physical examination, she appears comfortable and is at her baseline weight of 80 kg. Temperature is normal. The blood pressure is 112/78 mm Hg, and the pulse rate is 76/min, neither of which changes on standing. The remainder of the examination is normal. Stool is brown and negative for blood.

- Which of the following is *the* most appropriate next step?
  - Order a bacterial stool culture, C.difficile toxin, stool WBC, Cryptosporidium/Giardia antigen
  - Treat patient only with ciprofloxacin/metronidazole
  - Treat patient and family with paromomycin
  - Treat with loperamide symptomatically

Opportunistic Infection: Eyes

- A 28-year-old man with AIDS, new diagnosis, presents with blurry vision in the R eye x 2 weeks. He reports floaters as well. He denies any eye pain or redness. His CD4 count is <10 cells/uL. General physical examination is unremarkable. Funduscopic examination shows yellow white retinal lesions and cotton-wool exudates involving the macula of the right eye.

- Which of the following antiviral agents is most appropriate at this time?

- IV Acyclovir
- Oral Valacyclovir
- IV Ganciclovir
- Oral penciclovir

Opportunistic Infections: Eyes

- 40 year old man with AIDS has a 1 day h/o of blurred vision in the R eye and a several-hour h/o acute loss of vision on the R. For the past 6 months he has been on HAART. Most recent CD4 count 355, and HIV RNA 15,000 copies/mL. He does not want to change therapy. Med history otherwise unremarkable.
- Exam: vitals stable. Ophthalmologic exam discloses pupils equal and reactive to light. R fungus shows localized area of hemorrhagic necrosis of the fovea. There are no cotton-wool exudates and no uveal disorders.

- After hospitalization, which of the following IV agents is most appropriate

- Pyrimethamine plus oral sulfadiazine
- Acyclovir
- Ganciclovir
- Penicillin
- A corticosteroid

Opportunistic Infection: Brain

- A 40-year-old woman presents to the emergency department for a 2-week history of headache and malaise. She has a history of IV drug abuse and tested positive for HIV recently. On physical examination, temperature is 37.5, other vital signs are stable. Her neck is supple, and neurologic examination reveals no focal deficit.

- Laboratory studies:
- Serologic testing for HIV antibodies Positive
- CD4 cell count <10 cells/uL
- HIV viral load 150,000 copies/ ml

- Lumbar puncture is performed. Cerebrospinal fluid results are as follows:
- Appearance Clear
- Leukocyte count 0 with 100% lymphocytes
- RBC 0
- Protein 65 mg/dl
- Glucose 65 mg/dl
- Gram stain Negative
- Cryptococcal antigen Positive

- In addition to oral flucytosine, which of the following is the most appropriate initial parenteral treatment?

- Amphotericin B
- Caspofungin
- Fluconazole
- Voriconazole
- Mannitol

Opportunistic Infection: Brain

- A 40-year-old woman presents to the emergency department for a **2-week history of headache** and malaise. She has a history of IV drug abuse and tested positive for HIV recently. On physical examination, temperature is 37.5, other vital signs are stable. Her neck is supple, and neurologic examination reveals no focal deficit.

- Laboratory studies:
- Creatinine 0.8 mg/dL, BUN 20 mg/dL
- CD4 cell count **<10 cells/uL**
- HIV viral load 150,000 copies/ ml

- Lumbar puncture is performed. Opening pressure is 34 mmHg. Cerebrospinal fluid results are as follows:
- Appearance Clear
- Leukocyte count **0 with 100% lymphocytes**
- RBC 0
- Protein 65 mg/dl
- Glucose 65 mg/dl
- Gram stain Negative
- **Cryptococcal antigen Positive**

- In addition to oral flucytosine, which of the following is the most appropriate initial parenteral treatment?

- Amphotericin B
- Micafungin
- Fluconazole
- Voriconazole
- Mannitol

Cryptococcal Meningitis

- Gradual onset of headaches
- Diagnose with serum and CSF cryptococcal antigen, fungal cultures
- Treat with IV amphotericin B + flucytosine, followed by fluconazole
- CSF pressure management

Opportunistic Infection: Brain

- A 35year-old man with HIV presents with a 4-week history of progressive left lower extremity weakness and inability to walk. He was diagnosed with HIV 1 year ago but never presented for appointments and has never been treated. His CD4 count 1 year ago was 100 cells/uL. On physical examination today, he appears cachectic and chronically ill. He is afebrile and vital signs are otherwise unremarkable. Significant findings include thrush, left lower extremity weakness and 3+ Achilles and patellar reflexes on the L, otherwise normal.. MR brain shows a hyperintense lesion in the R frontoparietal region in the subcortical and periventricular white matter on T2-weighted imaging.
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- Laboratory studies:
- Hemoglobin 10 g/dL
- Hematocrit 29.5
- Leukocyte count 3.4
- Platelet count 108

- Lumbar puncture is performed; cerebrospinal fluid examination shows the following:
- Opening pressure Normal
- Leukocyte count 5/L with 95% lymphocytes and 3% neutrophil
- Red blood cell count 1/rL
- Protein 65 mg/dL
- Glucose 60 mg/dL
- Cryptococcal antigen Negative
-
- Polymerase chain reaction is positive for polyomavirus JC and negative for Epstein-Barr virus.

- Which of the following is the most appropriate treatment at this time?
- Highly active antiretroviral therapy
- Intravenous cidofovir
- Intravenous acyclovir
- Intravenous dexamethasone and radiation therapy

Malignancy HIV

- A 28-year-old man is evaluated for a skin lesion on his right lower leg for 4 week. He is asymptomatic otherwise and is not taking any medications.
- On physical examination, the patient appears well; vital signs are normal. HIV testing is positive. There is a 1 cm, raised, nontender, violaceous lesion on the left lower extremity. A chest radiograph is normal. He denies any rectal bleeding, and guiaic testing is negative. A biopsy of the lesion is obtained, demonstrating Kaposi sarcoma.

- Whlch of the following *is* the most appropriate treatment at this time?

- Begin intralesional vinblastine injections
- Begin doxirubicin chemotherapy
- Begin highly active antiretroviral therapy
- Begin radiation therapy
- Continue to monitor CD4 cell count and HIV RNA viral load

HIV-Renal

- A 54-year-old African American man with history of HIV presents for new-onset lower extremity edema. He has never taken antiretroviral agents over concern of side effects. The most recent laboratory studies from 1 month earlier show a CD4 cell count of 300 cells/uL and an HIV RNA viral load of 105,000 copies/mL.
- On physical examination, temperature is normal, blood pressure is 145/90 mm Hg, pulse rate is 84/min. Funduscopic, cardiopulmonary, and abdominal examinations are normal. He has bilateral pitting edema in the lower extremities extending to the knees bilaterally.

- Laboratory studies:
- Creatinine 2.4 mg/dL
- Blood urea nitrogen 38 mg/dL
- Albumin 2.8 g/dL
- Urinalysis 4+ protein; 2 to 3 erythrocytes/hpf; 1to 2 leukocytes/hpf
- Urine protein/creatinine ratio 4.2 mg/mg
- Renal ultrasound shows enlarged echogenic kidneys with no evidence of hydronephrosis.

- Which of the following is the most likely diagnosis?

- Acute interstitial nephritis
- HIV-associated nephropathy
- IgA nephropathy
- Postinfectious glomerulonephritis

HIV Fever

- A 23-year-old man with AIDS presents with fever x 1 week. He was recently admitted with pneumonia and found to have pulmonary tuberculosis 6 weeks ago. He was newly diagnosed with HIV infection during that admission, with a CD4 count of <10 cells/uL and HIV viral load of >750,000 copies/mL. He was started on a regimen consisting of isoniazid, rifabutin, pyrazinamide, and ethambutol and an antiretroviral regimen consisting of tenofovir, emtricitabine, and darunavir/ ritonavir are initiated. On physical examination, temperature *is* 38.3 °C (101.0 °F); the remaining vital signs are normal. There is an enlarged, fluctuant, and tender right supraclavicular lymph node that was not present during the previous admission. The skin, mucosal, and cardiopulmonary examinations are normal, and there is no evidence of hepatosplenomegaly.
- A repeat CD4 cell count at today's visit is 200 cells/uL, and the HIV RNA viral load is 2000 copies/mL. A chest radiograph shows no changes from prior infiltrates.

- Which of the following is the most likely diagnosis?

- *Mycobacterium avium* infection
- Immune reconstitution inflammatory syndrome
- Kaposi sarcoma
- Non-Hodgkin lymphoma

OTHER SEXUALLY TRANSMITTED INFECTIONS

Syphilis

- A 28-year-old man undergoes follow-up evaluation in the clinic. He has HIV infection and is taking antiretroviral therapy with dolutegravir, tenofovir and emtricitabine. He has had two sexual partners within the past 6 months but does not use condoms consistently. He has no medication allergies.
- Physical examination is normal. His neurologic examination is normal, and he denies symptoms of headaches, hearing loss or vision blurring.
- A comprehensive metabolic profile is normal. The CD4 cell count is 700 cells/µL, HIV RNA viral load is undetectable, and the serum rapid plasma reagin titer is 1:32 compared with negative results 6 months ago. Results of serum fluorescent treponemal antibody absorption testing are positive.

- Which of the following is the most appropriate treatment?

- A. Aqueous crystalline penicillin G intravenously for 10 days
- B. Intramuscular benzathine penicillin G weekly for three doses
- C. Oral doxycycline for 14 days
- D. Single-dose intramuscular benzathine penicillin G

Syphilis

- A 40-year-old man who has sex with men, no past medical history presents with a 2-week history of headache and hearing loss to the ER. General examination, including a detailed neurologic examination, is unremarkable. HIV testing is positive. Serum RPR is positive at 1:256, and treponemal antibody testing is positive. A CT scan of the brain is normal. Lumbar puncture is performed:

- Leukocyte count 40 (80% lymphocytes)
- Glucose Normal
- Protein Normal
- VDRL Positive

- The patient had a documented episode of angioedema after a penicillin injection 1 year ago.

- Which of the following is the most appropriate management at this time?

- Begin IM penicillin weekly x 3 weeks
- Obtain tests for the major penicillin determinant
- Hospitalize for desensitization in preparation for IV penicillin therapy
- Begin doxycycline now
- Begin ceftriaxone now

Herpes

- A 40-year-old woman is evaluated for chronic, nonhealing, painful erosive genital lesions. The lesions have been treated with intravenous acyclovir, 15 mg/kg three times daily, for 14 days. The patient has HIV, with CD4 of 250 cells/uL. Physical examination discloses multiple erosive lesions surrounding the vaginal introitus. Viral culture is positive for herpes simplex virus type *2* that is resistant to acyclovir.

- Which of the following is the most appropriate treatment?

- Famciclovir
- Foscarnet
- Penciclovir
- Valacyclovir

Herpes Again

- A 46-year-old man undergoes follow-up evaluation for recurrent genital herpes simplex virus infection. He presented 2 weeks ago with painful vesicles on the shaft of the penis, his 4th episode in the past year. He was treated with valacyclovir and reports resolution of the lesions today. He has a history of HIV and is taking antiretroviral therapy. His last CD4 count was 600 cells/uL.
- Which of the following is the most appropriate therapy to prevent symptomatic genital herpes simplex virus reactivation?

- A. Cidofovir
- B. Acyclovir
- C. Foscarnet
- D. Valganciclovir