Board Review: Day 4

Moderator: Roy M. Gulick, MD

Faculty: Drs. Bloch, Gandhi, Kotton, Maldarelli, Saag, and Whitley

7/28/2026

#46 An 86-year-old female is admitted with right wrist pain and fever.

She was hospitalized the preceding week for pyelonephritis with urine cultures growing *Escherichia coli*, with negative blood cultures. She was discharged on a 7-day course of ciprofloxacin.

She lives with her granddaughter and 2 cats.

The wrist was aspirated with 23,000 WBC/mm^3 (94% neutrophiles) but negative Gram stain and crystal exam.

#46 Empiric vancomycin and ceftriaxone were started, and she was taken to the operating room for right wrist arthrotomy with finding of purulent fluid in the midcarpal and radiocarpal joints.

On hospital day 2 she continued to be febrile with ongoing right wrist pain. On hospital day 3, she noted new onset of left wrist pain. Imaging shows chondrocalcinosis of the wrist.

Cultures from the arthrocentesis, operative cultures, and blood cultures are all no growth at 72 hours.

#46 What is the most likely cause of her polyarticular arthritis?

A. *E. coli* bacteremia with secondary septic arthritis
B. *Borrelia burgdorferi* infection
C. *Bartonella henselae* infection
D. Parvovirus B19 infection
E. Calcium pyrophosphate deposition disease

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D. Parvovirus B19 infection
E. Calcium pyrophosphate deposition disease**

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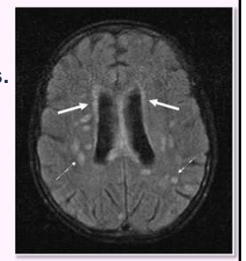
BOARD REVIEW DAY 4

#47 A 32-year-old female with HIV infection (viral load 100,000/ml, and a CD4 count below 10 cells/mm^3) has failed all available ART regimens.

Her mother brings her to the clinic because of confusion for 1-2 weeks. She is afebrile, oriented x 1, and slow to respond.

She has nystagmus and cranial nerve VI palsy on the right.

The contrast enhanced MRI image (shown below) is read as showing ventriculitis (i.e., inflammation of the ependymal lining of the lateral cerebral ventricles).



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BOARD REVIEW DAY 4

#47 Which PCR of CSF would most likely provide the most likely diagnosis?

A. JC virus
B. Epstein-Barr virus
C. Cytomegalovirus
D. Human herpesvirus 6
E. Human herpesvirus 8

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BOARD REVIEW DAY 4

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#48 A 43-year-old man with HIV on a dolutegravir-based regimen with excellent virologic response (CD4 720 cells/µL, HIV RNA <20 copies/mL repeatedly for years) presents for routine follow-up and is found to have a CD4 count of 456 cells/µL and viral load 10,000 copies/ml.

He states he has not missed a single dose of his antiretrovirals and did not start any new medications.

One month ago, he started a nutritional supplement from a health food store called "Vitamin-Mineral Boost" that he started before he goes to bed, the same time as he takes his antiretrovirals.

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BOARD REVIEW DAY 4

#48 What is the most likely cause of his elevated viral load level?

A. Poor adherence
B. Taking the antiretrovirals with food
C. Calcium/magnesium in the nutritional supplement
D. Vitamin B6 in the nutritional supplement

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BOARD REVIEW DAY 4

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BOARD REVIEW DAY 4

#49 A 53-year-old man has received CAR CD19 T cell therapy with axicabtagene ciloleucel (Yescarta - a CD19-directed genetically modified autologous T cell immunotherapy) for refractory diffuse large B cell lymphoma (DLBCL). He had failed prior regimens of standard chemotherapy.

Seven days after infusion of the axicabtagene ciloleucel (Yescarta), he developed fever to 38.3°C, hypotension, hypoxemia, pulmonary infiltrates, and oliguria.

On physical examination, other than his vital signs there are no new findings other than diffuse crackles. He has a port in place that looks unremarkable.

His absolute neutrophil count in 50 cells/µl.

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#49 Which of the following would most accurately describe how to distinguish septic shock from a CAR-T cell cytokine release syndrome in this patient?

A. IL-1 level
B. IL-6 level
C. CH50
D. C reactive protein
E. There is currently no clinical or laboratory test that will distinguish sepsis from CAR-T cytokine release syndrome

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BOARD REVIEW DAY 4

#49 Which of the following would most accurately describe how to distinguish septic shock from a CAR-T cell cytokine release syndrome in this patient?

A. IL-1 level
B. IL-6 level
C. CH50
D. C reactive protein
E. There is currently no clinical or laboratory test that will distinguish sepsis from CAR-T cytokine release syndrome**

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BOARD REVIEW DAY 4

#50 A 62-year-old man with newly diagnosed HIV infection (HIV RNA 326,000 copies/ml, CD4 205 cells/μL) starts antiretroviral therapy with tenofovir alafenamide (TAF)/emtricitabine/bictegravir. At 3 months, he had an HIV RNA is <20 copies/ml and CD4 211 cells/μL.

At 6 months, HIV RNA <20 copies/ml and CD4 203 cells/μL.

He's concerned about his CD4 cell count.

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BOARD REVIEW DAY 4

#50 What do you recommend?

A. Continue present ART regimen
B. Change TAF/emtricitabine to ABC/lamivudine
C. Change bictegravir to darunavir/ritonavir
D. Add darunavir/ritonavir
E. Start filgrastim (G-CSF)

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#50 What do you recommend?

A. Continue present ART regimen**
B. Change TAF/emtricitabine to ABC/lamivudine
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BOARD REVIEW DAY 4

#51 A 46-year-old man with HIV infection is seen for fever and hypotension. For the past 4 months, he has been receiving treatment for disseminated histoplasmosis.

He initially was treated with amphotericin B and is now taking itraconazole. His urine *Histoplasma* antigen is being monitored and has recently been negative. He is also receiving antiretroviral therapy according to guideline recommendations.

He has been feeling weak and tired but generally has been doing well.

Yesterday he had surgery under conscious sedation with propofol for an impacted and infected wisdom tooth. The night of surgery he developed fever and was given vancomycin and ceftriaxone by the surgical team.

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BOARD REVIEW DAY 4

#51 This morning he was hypotensive and experienced abdominal pain. He is now on pressors.

- His temperature is 101.8°F; pulse 122/minute, BP 84/62 mmHg.
- He has mild, diffuse abdominal tenderness but no rebound, has audible bowel sounds and is otherwise unremarkable
- His leukocyte count is 6,120 cells/µl with 72% neutrophils, 23% lymphocytes and 5% eosinophils
- His sodium is 125 mEq/L; potassium is 5.7 mEq/L; creatinine is 1.9 mg/dL; HCO_3 is 20 mEq/L
- Blood cultures are negative at 18 hours
- Piperacillin- tazobactam has been started for the possibility of sepsis from an oral source

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BOARD REVIEW DAY 4

#51 Which of the following would be the most helpful addition to his regimen to reverse his hypotension and abdominal pain?

A. Dantrolene
B. Caspofungin
C. Liposomal amphotericin B
D. Voriconazole
E. Hydrocortisone

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BOARD REVIEW DAY 4

#51 Which of the following would be the most helpful addition to his regimen to reverse his hypotension and abdominal pain?

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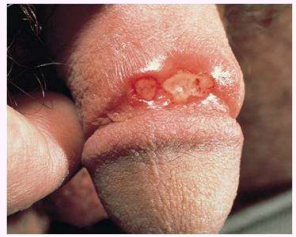
BOARD REVIEW DAY 4

#52 An 18-year-old man presents with a history of malaise, low-grade fevers, and new-onset painful genital lesions seen in the picture below. The pain is significant.



He had unprotected sexual intercourse with a female partner 2 weeks earlier. Neither he nor his partner has traveled outside the United States. He is HIV uninfected by recent rapid test.

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BOARD REVIEW DAY 4

#52 Which of the following diagnostic tests is most likely to yield the specific diagnosis?

A. Serum RPR
B. Antibody to herpes simplex virus-1 and -2
C. Darkfield microscopy
D. PCR for herpes simplex virus
E. Bacterial culture

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BOARD REVIEW DAY 4

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B. Antibody to herpes simplex virus-1 and -2
C. Darkfield microscopy
D. PCR for herpes simplex virus**
E. Bacterial culture

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#53 A 67-year-old man is admitted with confusion, headache and fever for 1 day. He has a history of polymyalgia rheumatica for which he takes prednisone 30 mg/day and trimethoprim-sulfamethoxazole single strength tablet daily *for Pneumocystis* prophylaxis. He was hospitalized 6 months previously for *Escherichia coli* bacteremia with no source identified.

He lives in rural Georgia with his wife and 3 dogs.

On exam his temperature is 103°F. He inconsistently responds to questions with yes/no answers only. He resists passive flexion of the neck.

BOARD REVIEW DAY 4

#53 A CBC returns with a WBC of 26 x 10^9/L (90% segmented neutrophils, 8% lymphocytes, 2% eosinophils).

Urinalysis is bland. A lumbar puncture is performed with 977 WBC/μl (95% neutrophils), glucose of 25 mg/dL and protein of 130 mg/dL.

Blood and CSF cultures grow pan-susceptible *Enterococcus faecalis*.

BOARD REVIEW DAY 4

#53 In addition to starting treatment with ampicillin and ceftriaxone, what additional work-up is indicated?

A. Contrasted CT scan of the abdomen and pelvis
B. Colonoscopy
C. PET scan
D. Quantitative immunoglobulin levels
E. Serology for *Strongyloides stercoralis*

BOARD REVIEW DAY 4

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D. Quantitative immunoglobulin levels
E. Serology for *Strongyloides stercoralis***

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#54 A 40-year-old woman from Taiwan who was recently visiting her daughter in the US developed fever, epigastric pain, and nausea.

One week later, she was brought to the emergency department because of confusion and fever. On examination, her temperature was 101°F. She had right upper quadrant abdominal tenderness.

An abdominal CT scan showed a 10 cm hypoattenuated liver lesion (below).

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#54 An aspirate was performed; the culture showed mucoid colonies of an aerobic, Gram-negative rod with a positive string test. Her daughter likes to serve raw oysters and has a cat.

BOARD REVIEW DAY 4

#54 Which of the following is the most likely organism?

A. *Vibrio parahaemolyticus*
B. *Aeromonas* species
C. *Fusobacterium necrophorum*
D. *Pasteurella multocida*
E. *Klebsiella pneumoniae*

BOARD REVIEW DAY 4

#54 Which of the following is the most likely organism?

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B. *Aeromonas* species
C. *Fusobacterium necrophorum*
D. *Pasteurella multocida*
E. *Klebsiella pneumoniae***

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#55 A 33-year-old male who has multiple sexual partners had unprotected anal intercourse for the first time last night. This new partner mentioned after the interaction that he does have HIV infection, and he "usually" takes his drugs.

In the past, you have seen the patient every 3 months for HIV testing, and he has been HIV negative to date and has never had a sexually transmitted infection.

You perform a rapid HIV test which is negative.

The patient has no symptoms other than severe anxiety, and no new physical findings.

Routine laboratory values are normal.

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BOARD REVIEW DAY 4

#55 What would you recommend with regards to post exposure management and reducing risk of HIV infection?

A. No testing or therapy unless the patient has findings consistent with acute HIV infection

B. Follow the patient with monthly HIV antibody tests for 6 months but no therapy if he remains negative

C. Follow the patient with monthly HIV antigen/antibody tests but no therapy if he remains negative

D. Treatment with tenofovir alafenamide/emtricitabine for 12 weeks and periodic HIV serologic testing during and after prophylaxis

E. Treatment with bictegravir/tenofovir alafenamide/emtricitabine for 4 weeks (28 days) and periodic serologic testing and periodic HIV serologic testing during and after prophylaxis

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BOARD REVIEW DAY 4

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D. Treatment with tenofovir alafenamide/emtricitabine for 12 weeks and periodic HIV serologic testing during and after prophylaxis

E. **Treatment with bictegravir/tenofovir alafenamide/emtricitabine for 4 weeks (28 days) and periodic serologic testing and periodic HIV serologic testing during and after prophylaxis****

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BOARD REVIEW DAY 4

#56 A 45-year-old woman undergoes a third kidney transplant.

She is highly sensitized (has HLA antibodies that put her at higher risk of rejection) and is thus maintained on high doses of immunosuppression. Her regimen includes belatacept, mycophenolate mofetil, and prednisone.

Her donor was cytomegalovirus (CMV) IgG positive, she was CMV IgG negative (D+R-) and she was maintained on valganciclovir prophylaxis.

She now has a rising CMV viral load (44,000 IU/ml plasma) on treatment dose valganciclovir (900 mg twice a day).

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#56 She feels a bit fatigued and has some diarrhea, with no visual changes or other symptoms.

Her transplant doctors are reluctant to reduce immunosuppression further.

Genotyping of CMV in her peripheral blood showed a A594V mutation in the UL97 gene, which has been associated with high-level resistance to ganciclovir.

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BOARD REVIEW DAY 4

#56 What would you recommend to treat her CMV disease?

A. High dose valacyclovir 8 grams/day
B. CMV immunoglobulin
C. High dose intravenous ganciclovir
D. Maribavir
E. Letermovir

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BOARD REVIEW DAY 4

#56 What would you recommend to treat her CMV disease?

A. High dose valacyclovir 8 grams/day
B. CMV immunoglobulin
C. High dose intravenous ganciclovir
D. Maribavir**
E. Letermovir

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BOARD REVIEW DAY 4

#57 A 54-year-old man living with HIV on tenofovir alafenamide (TAF)/emtricitabine/bictegravir has difficulty refilling his medications and decides to take them every other day.

On his next follow-up visit, 3 months later, his HIV RNA is 2320 copies/ml.

A repeat viral load is 4544 copies/ml, and a genotype shows reverse transcriptase M184V and integrase G140S and G148H substitutions.

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#57 What do you recommend?

A. Continue present ART regimen
B. Obtain integrase phenotype
C. Change bictegravir to darunavir/ritonavir
D. Add darunavir/ritonavir to current regimen
E. Double the bictegravir dose

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BOARD REVIEW DAY 4

#57 What do you recommend?

A. Continue present ART regimen
B. Obtain integrase phenotype
C. Change bictegravir to darunavir/ritonavir**
D. Add darunavir/ritonavir to current regimen
E. Double the bictegravir dose

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BOARD REVIEW DAY 4

#58 A 41-year-old male with HIV presents for initial evaluation. His CD4 count is 141 cells/µl (9%), HIV viral load 111,580 copies/µL, CrCl 90 cc/min.

He also reports a recent history of injecting drug use with heroin, which is being treated with methadone maintenance for which he is on a stable dose.

The patient reports previous attempts at treatment with antiretroviral but was poorly adherent but now feels ready to resume treatment. No resistance mutations are found on HIV genotyping, and you decide to initiate TAF/FTC + DRV/r given the high barrier to resistance.

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#58 The patient and his counselor at the shelter where he lives report that he is adherent to the regimen prescribed by his health care team.

Ten days after initiating treatment the patient returns to your office. He reports abdominal cramping, diarrhea, rhinorrhea, piloerection and irritability.

Here is a photo of his piloerection:

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#58 What is the most likely cause of his symptoms?

A. IRIS
B. Enteric bacterial pathogen (*Salmonella* species, *Shigella* species, *Campylobacter* species)
C. Drug interaction
D. Darunavir toxicity
E. Influenza

BOARD REVIEW DAY 4

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D. Darunavir toxicity
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BOARD REVIEW DAY 4

#59 A 29-year-old female developed her first bout of meningitis at age 24. Since then, she has had 3 other episodes. Each is associated with headache, stiff neck, and photophobia. Each has been treated with appropriate doses of antibiotics and resolved over several days, and all cerebrospinal fluid (CSF) cultures have been negative.

Her last CSF results at the time of an acute episode revealed a WBC of 230/mm^3 (92% lymphocytes with some large and atypical appearing cells), normal glucose, and protein of 110 mg/dL.

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#59 All routine bacterial cultures and Gram stains have been negative.

The patient has been well otherwise but has a history of both oral and genital herpes simplex infections, and a remote history of treated syphilis.

She has refused permission for a human immunodeficiency virus test in the past.

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#59 This young woman's recurrent meningitis is most likely due to which of the following?

A. Herpes simplex virus type 2
B. Varicella zoster virus
C. Cytomegalovirus
D. *Treponema pallidum*
E. Human immunodeficiency virus

BOARD REVIEW DAY 4

#59 This young woman's recurrent meningitis is most likely due to which of the following?

A. **Herpes simplex virus type 2****
B. Varicella zoster virus
C. Cytomegalovirus
D. *Treponema pallidum*
E. Human immunodeficiency virus

BOARD REVIEW DAY 4

#60 A 35-year-old patient with substance use disorder from New York City with HIV/AIDS was seen in clinic for a 1-cm slightly tender, erythematous draining skin nodule on his left thigh.

Pus squeezed from the lesion was negative on Gram stain but had unbranched bacilli on acid-fast smear.

The patient failed to keep his next clinic appointment but appeared again 8 weeks later with four more lesions on the same extremity.

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#60 He had not lost weight, reported no fever, and did not seem more ill than on prior visits.

Acid-fast cultures grown at 35°C on Middlebrook 7H11 agar and an automated broth system from his last visit had been reported negative for mycobacteria.

Routine culture grew scant *Staphylococcus epidermidis*.

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#60 Which of the following is the most likely causative organism?

A. *Mycobacterium leprae*
B. *Mycobacterium ulcerans*
C. *Mycobacterium chelonae*
D. *Mycobacterium haemophilum*
E. *Mycobacterium malmoense*

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BOARD REVIEW DAY 4

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D. ***Mycobacterium haemophilum*****
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