HIV in Hospitalized Patients

HIV infection remains a critical challenge in hospitalized patients, presenting as a new diagnosis, a complication of existing disease, or through opportunistic infections. This guide provides physician assistant (PA) students with a comprehensive framework to evaluate, diagnose, and manage HIV in the hospital setting, with case scenarios to apply the knowledge.

Introduction and Pathophysiology

Human Immunodeficiency Virus (HIV) is a retrovirus that primarily targets CD4+ T lymphocytes, leading to progressive immune deficiency. If untreated, HIV infection can advance to Acquired Immunodeficiency Syndrome (AIDS), characterized by severe immunosuppression and increased susceptibility to opportunistic infections (OIs) and malignancies. HIV is transmitted through contact with infected body fluids, including blood, semen, vaginal fluids, and breast milk. The virus integrates its genetic material into the host's DNA, allowing replication and spread.

The natural history of HIV infection includes:

- **Acute HIV Infection:** Occurs 2-4 weeks post-exposure, often presenting with flu-like symptoms. Characterized by high viral load and a rapid, transient decline in CD4 count.
- **Clinical Latency:** An asymptomatic phase lasting years, during which the virus continues to replicate, and CD4 counts gradually decline.
- **AIDS:** Defined by a CD4 count <200 cells/μL or the presence of AIDS-defining conditions. Marked by severe immunosuppression and high risk of OIs.

Understanding HIV's impact on the immune system is crucial for recognizing clinical presentations and managing complications in hospitalized patients. During acute illnesses, CD4 counts may be falsely low due to immune activation or redistribution, necessitating repeat testing in the outpatient setting to establish a true baseline.

Evaluation

Definition:

HIV is a retrovirus causing progressive immune deficiency, potentially leading to AIDS if untreated.

History:

- **Symptoms:** Fever, weight loss, night sweats, chronic diarrhea, oral thrush, or recurrent infections (e.g., pneumonia, herpes zoster).
- **Risk Factors:** Unprotected sex, IV drug use, blood transfusions (pre-1985), occupational exposure, or maternal transmission.
- **Systemic Symptoms:** Lymphadenopathy (lymphoma, TB), neurologic symptoms (cryptococcal meningitis, toxoplasmosis), or vision changes (CMV retinitis).
- **Medication History:** Antiretroviral therapy (ART) adherence, prior resistance, OI prophylaxis (e.g., trimethoprim-sulfamethoxazole [TMP-SMX] for Pneumocystis jirovecii pneumonia [PCP]).

Physical Exam:

- **General:** Cachexia, fever, lymphadenopathy.
- **Skin:** Kaposi sarcoma (purple lesions), seborrheic dermatitis, molluscum contagiosum.
- **Mouth:** Oral thrush, hairy leukoplakia (Epstein-Barr virus [EBV]), gingivitis.
- **Neurologic:** Focal deficits (toxoplasmosis), confusion (cryptococcal meningitis), peripheral neuropathy (ART toxicity).
- **Eyes:** Retinal hemorrhages, exudates (CMV retinitis).
- **Lungs:** Crackles, hypoxia (PCP, TB).

Initial Labs:

- **HIV Testing:** 4th generation HIV test (p24 antigen + antibodies); HIV RNA PCR (if acute HIV suspected).
- **CD4 Count:** Assess immune status (<200 cells/μL = AIDS risk). Note: CD4 counts may be falsely low during acute illnesses due to immune activation; repeat in outpatient setting to confirm baseline.
- **Viral Load:** Measure virologic control (undetectable = <20 copies/mL).
- **CBC:** Anemia (marrow suppression, chronic disease), leukopenia (HIV, OIs).
- **CMP:** Renal/hepatic function (ART toxicity, HCV co-infection).
- **Serologies:** HCV, HBV, syphilis (RPR), toxoplasma IgG.

Cultures/Imaging:

- **Blood Cultures:** Mycobacterium avium complex (MAC), fungal (cryptococcus, histoplasma).
- **Sputum:** Acid-fast bacilli (AFB) smear/culture (TB), PCP PCR.

- **CSF:** Cryptococcal antigen, India ink (cryptococcus), cell count, glucose, protein.
- **Imaging:** Chest X-ray/CT (PCP, TB), brain MRI (toxoplasmosis, lymphoma).

Causes of Hospitalization

HIV-Related:

- **Acute HIV Infection:** Mononucleosis-like syndrome (fever, rash, pharyngitis), often missed.
- **AIDS-Defining Illnesses:** Opportunistic infections (PCP, cryptococcal meningitis), malignancies (Kaposi sarcoma, lymphoma).
- **ART Complications:**
  - **Toxicity:** Tenofovir (renal failure), efavirenz (neuropsychiatric), abacavir (hypersensitivity).
  - **Resistance:** Non-adherence, prior treatment failure → Detectable viral load.
- Opportunistic Infections (OIs):
  - **PCP:** CD4 <200 cells/μL, dyspnea, hypoxia.
  - **Cryptococcal Meningitis:** CD4 <100 cells/μL, headache, fever.
  - **Toxoplasmosis:** CD4 <100 cells/μL, focal neuro deficits.
  - **MAC:** CD4 <50 cells/μL, fever, weight loss.
  - **CMV Retinitis:** CD4 <50 cells/μL, vision loss.
  - **TB:** Any CD4, cough, fever, weight loss.

Non-HIV-Related:

- **Trauma/Surgery:** HIV patients may be admitted for unrelated reasons (e.g., fractures, appendicitis).
- **Co-Infections:** HCV/HBV (cirrhosis, hepatocellular carcinoma [HCC]), syphilis (neurosyphilis).
- **Other:** Cardiovascular disease, diabetes (increased risk with chronic HIV).

Diagnostic Workup

Step 1: Confirm HIV Status:

- **New Diagnosis:** 4th generation HIV test (positive → Confirm with HIV RNA PCR).
- **Acute HIV:** HIV RNA PCR (viral load >10,000 copies/mL), negative antibody test (window period).
- **Known HIV:** Review CD4 count, viral load, ART history.

Step 2: Assess Immune Status:

- **CD4 Count:** <200 cells/μL → Risk of OIs; <50 cells/μL → Risk of CMV, MAC. May be falsely low in acute illness; repeat outpatient.
- **Viral Load:** Detectable (>20 copies/mL) → Poor control, risk of resistance.

Step 3: Screen for OIs:

- **PCP:** Hypoxia, CXR (ground-glass opacities), bronchoalveolar lavage (BAL) with GMS stain.
- **Cryptococcal Meningitis:** CSF cryptococcal antigen, India ink.
- **Toxoplasmosis:** Brain MRI (ring-enhancing lesions), Toxoplasma IgG.
- **MAC:** Blood cultures, bone marrow biopsy (if fever, weight loss).
- **CMV:** Fundoscopic exam (retinitis), CMV PCR (viremia).
- **TB:** Sputum AFB smear/culture, CXR (cavities, miliary pattern).

Step 4: Additional Labs/Imaging:

- **Malignancy:** CT/PET (lymphoma, Kaposi sarcoma), biopsy.
- **Co-Infections:** HCV RNA, HBV surface antigen, RPR.
- **Metabolic:** Lipid panel (ART-induced dyslipidemia), glucose (insulin resistance).

Diagnostic Approach Table

Category	Key Labs/Tests	Diagnosis	Notes
Acute HIV	HIV RNA PCR, 4th gen test	Acute HIV: Viral load >10,000 copies/mL	Negative antibody test in window period
AIDS	CD4 count, OI evaluation	AIDS: CD4 <200 cells/μL, AIDS-defining OI	Repeat CD4 outpatient if low in acute illness
OI	CSF antigen, BAL, blood cultures	PCP: GMS stain positive, hypoxia	CD4 <200 cells/μL; start TMP-SMX
ART Resistance	Viral load, genotypic resistance	Resistance: Detectable viral load on ART	Consult ID for regimen change
Malignancy	CT/PET, biopsy	Kaposi Sarcoma: Purple skin lesions	Often with HHV-8 co-infection

Diagnosis

Acute HIV:

- **Presentation:** Fever, rash, pharyngitis, lymphadenopathy (2-4 weeks post-exposure).

- **Diagnosis:** HIV RNA PCR (positive), 4th gen test (may be negative early).

AIDS:

- **Criteria:** CD4 <200 cells/µL or AIDS-defining illness (e.g., PCP, Kaposi sarcoma). CD4 may be falsely low in acute illness; repeat outpatient.
- **Diagnosis:** CD4 count, screen for OIs (e.g., sputum for PCP, CSF for cryptococcal antigen).

Opportunistic Infections:

- **PCP:** Hypoxia, ground-glass opacities on CXR, BAL with GMS stain.
- **Cryptococcal Meningitis:** CSF cryptococcal antigen positive, India ink showing budding yeast.
- **Toxoplasmosis:** Ring-enhancing lesions on MRI, Toxoplasma IgG positive.
- **MAC:** Blood cultures positive, fever, weight loss.
- **CMV Retinitis:** Retinal hemorrhages/exudates on fundoscopy.
- **TB:** AFB smear/culture positive, cavitary lesions on CXR.

ART Failure:

- **Virologic Failure:** Viral load >200 copies/mL after 6 months of ART.
- **Immunologic Failure:** CD4 count decline despite ART.
- **Clinical Failure:** New OI or malignancy despite ART.

Opportunistic Infections and Kaposi Sarcoma

Opportunistic infections (OIs) are a leading cause of morbidity and mortality in patients with advanced HIV infection. The risk for specific OIs increases as CD4 counts decline. Kaposi sarcoma, an AIDS-defining malignancy, is also prevalent in HIV patients with low CD4 counts.

Table: Major Opportunistic Infections and Kaposi Sarcoma in HIV

Condition	CD4 Threshold	Clinical Presentation	Physical Exam Findings	Diagnostic Studies
Pneumocystis jirovecii Pneumonia (PCP)	<200 cells/µL	Insidious onset of dyspnea, non-productive cough, fever, fatigue	Tachypnea, hypoxia, fine crackles or clear lungs	- CXR: bilateral interstitial infiltrates - HRCT: ground-glass opacities - BAL: GMS or DFA stain for Pneumocystis - Elevated LDH
Cryptococcal Meningitis	<100 cells/µL	Subacute headache, fever, altered mental status, nausea, vomiting	Meningeal signs (nuchal rigidity, photophobia), papilledema, cranial nerve palsies	- CSF: Elevated opening pressure, low glucose, high protein, lymphocytic pleocytosis - CSF CrAg+, India ink+, fungal culture - Serum CrAg may be positive
Toxoplasmosis	<100 cells/µL	Focal neurological deficits (e.g., hemiparesis, seizures), headache, confusion	Focal neurological signs, altered mental status	- Brain MRI: multiple ring-enhancing lesions, often in basal ganglia - Toxoplasma IgG+ - Response to empirical therapy
Mycobacterium avium Complex (MAC)	<50 cells/µL	Fever, night sweats, weight loss, diarrhea, abdominal pain	Hepatomegaly, splenomegaly, lymphadenopathy	- Blood cultures: MAC+ - Bone marrow biopsy: granulomas - CT abdomen: hepatosplenomegaly, lymphadenopathy
Cytomegalovirus (CMV) Retinitis	<50 cells/µL	Floaters, blurred vision, visual field defects; often unilateral initially	Fundoscopy: hemorrhagic retinitis with "brushfire" appearance	- Ophthalmologic exam - CMV PCR in blood or vitreous fluid
Tuberculosis (TB)	Any CD4	Cough (>2 weeks), hemoptysis, fever, night sweats, weight loss	Cachexia, lymphadenopathy, abnormal lung sounds	- Sputum AFB smear, culture, NAAT - CXR: upper lobe infiltrates, cavitations - CT for miliary TB
Kaposi Sarcoma	Any CD4, often <200 cells/µL	Painless purple or red skin lesions, often on face, legs, or oral mucosa; may involve lungs, GI tract	Purple macules, papules, or nodules; lymphedema if extensive	- Skin biopsy: spindle cells, HHV-8 staining - CT/PET for visceral involvement - Bronchoscopy for pulmonary lesions

Immune Reconstitution Inflammatory Syndrome (IRIS)

Definition:

IRIS is an exaggerated inflammatory response to a pre-existing infection or antigen following ART initiation, driven by rapid immune recovery.

Types:

- **Unmasking IRIS:** A previously undiagnosed infection becomes clinically apparent (e.g., new cryptococcal meningitis symptoms post-ART).
- **Paradoxical IRIS:** Worsening of a known, treated infection (e.g., worsening TB symptoms despite therapy).

Risk Factors:

- Low CD4 count at ART initiation (<50 cells/μL).
- High viral load (>100,000 copies/mL).
- Rapid immune recovery after ART.
- Pre-existing OIs, particularly TB, cryptococcal meningitis, and MAC.

Clinical Presentation:

- **Timing:** Typically occurs within 2-12 weeks after starting ART, though can occur later.
  - **Symptoms:**
    - **TB-IRIS:** Worsening cough, fever, night sweats, new or enlarging lymph nodes, pleural effusions.
    - **Cryptococcal Meningitis IRIS:** Increased intracranial pressure, new or worsening headache, seizures, cranial nerve deficits.
    - **MAC-IRIS:** Fever, lymphadenitis, abdominal pain, hepatosplenomegaly.
    - **Kaposi Sarcoma IRIS:** Worsening or new skin lesions, lymphedema, pulmonary involvement.
    - **General Features:** Fever, localized inflammation, or systemic symptoms depending on the underlying infection.

Physical Exam Findings:

- **TB-IRIS:** Enlarged, tender lymph nodes (e.g., cervical, mediastinal), respiratory distress, pleural effusion signs (decreased breath sounds).

- **Cryptococcal Meningitis IRIS:** Papilledema (elevated ICP), meningeal signs (Kernig's/Brudzinski's sign), focal neurological deficits.
- **MAC-IRIS:** Tender lymphadenopathy, hepatosplenomegaly, abdominal tenderness.
- **Kaposi Sarcoma IRIS:** New or worsening purple skin lesions, lymphedema, respiratory distress if pulmonary involvement.
- **General:** Fever, tachycardia, signs of systemic inflammation.

Diagnostic Studies:

- **TB-IRIS:** CXR/CT showing new infiltrates, pleural effusions, or lymphadenopathy; sputum AFB may remain positive.
- **Cryptococcal Meningitis IRIS:** CSF analysis (elevated opening pressure, worsening pleocytosis), brain MRI (new edema, mass effect).
- **MAC-IRIS:** CT abdomen (lymphadenopathy, organomegaly), persistent positive blood cultures.
- **Kaposi Sarcoma IRIS:** Skin biopsy (if new lesions), CT/PET for visceral progression, bronchoscopy if pulmonary symptoms.
- **General:** Rising CD4 count, decreasing viral load (indicating immune recovery).

Treatment

General Principles:

- Continue ART unless contraindicated (e.g., severe toxicity, inability to take oral medications).
- Treat OIs aggressively with specific therapy; adjust ART timing to reduce IRIS risk.
- Consult ID for complex cases (e.g., resistance, OIs, IRIS).

Specific Treatments:

- Acute HIV:
  - **ART:** Start immediately (e.g., bictegravir/tenofovir alafenamide/emtricitabine, 1 tab PO daily).
  - **Counseling:** Adherence, safe sex practices, partner notification.
- AIDS/OIs:
  - **PCP:** TMP-SMX 15-20 mg/kg/day IV/PO (TMP component) x 21 days; add prednisone 40 mg PO BID (days 1-5) if PaO2 <70 mmHg.
  - **Cryptococcal Meningitis:** Amphotericin B 0.7-1 mg/kg/day IV + flucytosine 100 mg/kg/day PO x 2 weeks, then fluconazole 400 mg PO daily x 8 weeks.
  - **Toxoplasmosis:** Pyrimethamine 200 mg PO x 1, then 50-75 mg/day + sulfadiazine 1-1.5 g PO q6h + leucovorin 10-25 mg PO daily x 6 weeks.

    - **MAC:** Clarithromycin 500 mg PO BID + ethambutol 15 mg/kg/day PO; add rifabutin if severe.
    - **CMV Retinitis:** Ganciclovir 5 mg/kg IV q12h x 14-21 days, then valganciclovir 900 mg PO daily.
    - **TB:** RIPE (rifampin 10 mg/kg/day, isoniazid 5 mg/kg/day, pyrazinamide 15-30 mg/kg/day, ethambutol 15-25 mg/kg/day) x 2 months, then rifampin + isoniazid x 4 months; adjust for ART interactions.
- Kaposi Sarcoma:
    - **ART:** Initiates immune recovery, often sufficient for limited disease.
    - **Chemotherapy:** Liposomal doxorubicin 20 mg/m² IV q2-3 weeks for advanced disease.
    - **Radiation:** For localized, symptomatic lesions.
- IRIS:
    - **Continue ART:** Do not stop unless life-threatening (e.g., severe CNS involvement).
    - **Treat Underlying OI:** Ensure adequate therapy (e.g., antifungals for cryptococcal meningitis).
    - **Anti-Inflammatory Therapy:** Prednisone 1-2 mg/kg/day for 1-2 weeks, then taper (e.g., for severe TB-IRIS or cryptococcal IRIS with increased ICP).
    - **Supportive Care:** Manage fever, pain, and complications (e.g., CSF drainage for elevated ICP).
- ART Failure:
    - **Resistance Testing:** Genotypic resistance testing (if viral load >500 copies/mL).
    - **Switch Regimen:** Consult ID; switch to regimen with 2-3 active drugs (e.g., dolutegravir + darunavir/ritonavir).
- Prophylaxis:
    - **PCP:** TMP-SMX 1 DS tab PO daily (CD4 <200 cells/μL).
    - **Toxoplasmosis:** TMP-SMX 1 DS tab PO daily (CD4 <100 cells/μL).
    - **MAC:** Azithromycin 1200 mg PO weekly (CD4 <50 cells/μL).
- Key Tips:
    - **ART Timing:** Delay ART 4-6 weeks in cryptococcal meningitis/TB to reduce IRIS risk; start within 2 weeks for other OIs (e.g., PCP).
    - **Monitor Toxicity:** Tenofovir (renal), efavirenz (CNS), abacavir (hypersensitivity—HLA-B*5701 testing).
    - **IRIS:** Continue ART, treat OI, consider steroids if severe (e.g., TB-IRIS with respiratory compromise).

Treatment Guidelines Table

Condition	Treatment Agent/Dose	Notes
Acute HIV	Bictegravir/TAF/FTC 1 tab PO daily	Start immediately, counsel on adherence
PCP	TMP-SMX 15-20 mg/kg/day IV/PO x 21 days	Antibiotics, Prednisone 40 mg BID if PaO2 <70 mmHg
Cryptococcal Meningitis	Amphotericin B 0.7-1 mg/kg/day IV + flucytosine x 2 weeks	Antifungals Fluconazole 400 mg PO daily consolidation
Toxoplasmosis	Pyrimethamine 50-75 mg/day + sulfadiazine	Antibiotics Add leucovorin to prevent marrow toxicity
Kaposi Sarcoma	Liposomal doxorubicin 20 mg/m² IV q2-3 weeks	ART, chemotherapy ART alone for limited disease

Complications

Immune Reconstitution Inflammatory Syndrome (IRIS):

- **Definition:** An exaggerated inflammatory response to a pre-existing infection or antigen following ART initiation, driven by rapid immune recovery.
  - **Types:**
    - **Unmasking IRIS:** A previously undiagnosed infection becomes clinically apparent (e.g., new cryptococcal meningitis symptoms post-ART).
    - **Paradoxical IRIS:** Worsening of a known, treated infection (e.g., worsening TB symptoms despite therapy).
  - **Risk Factors:**
    - Low CD4 count at ART initiation (<50 cells/µL).
    - High viral load (>100,000 copies/mL).
    - Rapid immune recovery after ART.
    - Pre-existing OIs, particularly TB, cryptococcal meningitis, and MAC.
- **Clinical Presentation:**
  - **Timing:** Typically occurs within 2-12 weeks after starting ART, though can occur later.
  - **Symptoms:**
    - **TB-IRIS:** Worsening cough, fever, night sweats, new or enlarging lymph nodes, pleural effusions.
    - **Cryptococcal Meningitis IRIS:** Increased intracranial pressure, new or worsening headache, seizures, cranial nerve deficits.
    - **MAC-IRIS:** Fever, lymphadenitis, abdominal pain, hepatosplenomegaly.

        - **Kaposi Sarcoma IRIS:** Worsening or new skin lesions, lymphedema, pulmonary involvement.
    - **General Features:** Fever, localized inflammation, or systemic symptoms depending on the underlying infection.
    - **Physical Exam Findings:**
        - **TB-IRIS:** Enlarged, tender lymph nodes (e.g., cervical, mediastinal), respiratory distress, pleural effusion signs (decreased breath sounds).
        - **Cryptococcal Meningitis IRIS:** Papilledema (elevated ICP), meningeal signs (Kernig's/Brudzinski's sign), focal neurological deficits.
        - **MAC-IRIS:** Tender lymphadenopathy, hepatosplenomegaly, abdominal tenderness.
        - **Kaposi Sarcoma IRIS:** New or worsening purple skin lesions, lymphedema, respiratory distress if pulmonary involvement.
    - **General:** Fever, tachycardia, signs of systemic inflammation.
    - **Diagnostic Studies:**
        - **TB-IRIS:** CXR/CT showing new infiltrates, pleural effusions, or lymphadenopathy; sputum AFB may remain positive.
        - **Cryptococcal Meningitis IRIS:** CSF analysis (elevated opening pressure, worsening pleocytosis), brain MRI (new edema, mass effect).
        - **MAC-IRIS:** CT abdomen (lymphadenopathy, organomegaly), persistent positive blood cultures.
        - **Kaposi Sarcoma IRIS:** Skin biopsy (if new lesions), CT/PET for visceral progression, bronchoscopy if pulmonary symptoms.
    - **General:** Rising CD4 count, decreasing viral load (indicating immune recovery).

Other Complications:

- Acute:
    - **OIs:** PCP (hypoxia), cryptococcal meningitis (increased ICP), TB (miliary spread).
    - **Bleeding:** Thrombocytopenia (HIV marrow suppression, ITP).
- Chronic:
    - **Malignancies:** Kaposi sarcoma (HHV-8), lymphoma (EBV), cervical cancer (HPV).
    - **Metabolic:** Lipodystrophy (stavudine), dyslipidemia (protease inhibitors [PIs]), insulin resistance.
    - **Neurologic:** Peripheral neuropathy (stavudine, didanosine), HIV-associated neurocognitive disorder (HAND).

- Underlying Disease:
  - **HCV/HBV Co-Infection:** Cirrhosis, HCC (HCV), liver failure (HBV).
  - **Syphilis:** Neurosyphilis (meningitis, stroke), ocular syphilis.

Key Pearls

- **Suspect Acute HIV:** Mononucleosis-like syndrome with risk factors; use HIV RNA PCR.
- **AIDS Definition:** CD4 <200 cells/µL or AIDS-defining illness (repeat CD4 outpatient if low in acute illness).
- **OIs:** CD4 <200 cells/µL → PCP; <100 cells/µL → Cryptococcus, toxoplasmosis; <50 cells/µL → CMV, MAC.
- **IRIS:** Suspect if OI worsens 2-12 weeks post-ART; continue ART, treat OI, consider steroids.
- **ID Consult:** Essential for OIs, ART resistance, IRIS, or new HIV diagnosis.
- **Discharge:** Link to HIV specialist, ensure ART/OI prophylaxis, address adherence barriers.

References

- **UpToDate:** “Diagnosis and Management of Acute HIV Infection” (2025). UpToDate HIV
- **CDC:** “HIV Testing Guidelines” (2024). CDC HIV Testing
- **IDSA:** “Guidelines for the Prevention and Treatment of Opportunistic Infections in HIV” (2023). IDSA OI Guidelines
- **NEJM:** “Immune Reconstitution Inflammatory Syndrome in HIV” (2024). NEJM IRIS

Case Scenarios

Case 1: A 30-Year-Old Male with Fever and Rash

- Presentation: A 30-year-old male presents with a 5-day history of fever (38.8°C), sore throat, and a maculopapular rash on his trunk. He reports unprotected sex with a new partner 3 weeks ago. Exam shows lymphadenopathy, pharyngitis, and rash.
- Labs: Lymphopenia, rapid HIV antibody test negative, HIV RNA PCR 500,000 copies/mL.
- Diagnosis: Acute HIV Infection → Mononucleosis-like syndrome, high viral load, negative antibody test (window period).

- Management: Start ART (bictegravir/TAF/FTC 1 tab PO daily). Counsel on adherence, safe sex, and partner notification. Consult ID for follow-up care. Monitor for seroconversion (repeat antibody test in 4-6 weeks).

Case 2: A 40-Year-Old Male with Fever and Weight Loss

- Presentation: A 40-year-old male with known HIV (CD4 80 cells/μL, not on ART) is admitted with fever, weight loss, and night sweats for 3 weeks. Exam shows T 38.5°C, cachexia, and hepatosplenomegaly.
- Labs: Blood cultures grow Mycobacterium avium complex (MAC). CD4 80 cells/μL, viral load 150,000 copies/mL.
- Diagnosis: Disseminated MAC → CD4 <50 cells/μL, fever, weight loss, positive blood cultures.
- Management: Start clarithromycin 500 mg PO BID + ethambutol 15 mg/kg/day PO. Delay ART 2-4 weeks to reduce IRIS risk. Consult ID for ART initiation (e.g., dolutegravir-based regimen). Continue MAC prophylaxis (azithromycin) until CD4 >100 cells/μL for ≥6 months.

Case 3: A 35-Year-Old Female with Headache Post-ART

- Presentation: A 35-year-old female with HIV (CD4 40 cells/μL) starts ART. Two weeks later, she develops fever, headache, and confusion. Exam shows T 38°C, altered mental status, and nuchal rigidity.
- Labs: CSF cryptococcal antigen positive, India ink shows budding yeast. Brain MRI normal.
- Diagnosis: Unmasking IRIS (Cryptococcal Meningitis) → Worsening symptoms post-ART, CSF findings.
- Management: Continue ART. Start amphotericin B 0.7-1 mg/kg/day IV + flucytosine 100 mg/kg/day PO x 2 weeks, then fluconazole 400 mg PO daily. If symptoms worsen (e.g., increased ICP), consider prednisone 1 mg/kg/day (consult ID). Monitor for IRIS progression (e.g., seizures, coma).