# HIV — Inpatient Essentials

Start ART fast · CD4 drives the opportunistic infection you must not miss

**U = U**
*undetectable = untransmittable*

## START TREATMENT EARLY *rapid initiation is now standard, not aspirational*

### RAPID / SAME-DAY ART

**Same-day ART improves the rate of viral suppression, shortens time to suppression, improves retention in care and reduces transmission.** A reactive screening result should prompt counseling about ART benefits and about transmission risk, **including that undetectable equals untransmittable**.

### PREFERRED INITIAL REGIMENS

**Integrase-inhibitor based.**
**Bictegravir/TAF/emtricitabine** as a single tablet, **dolutegravir**-based combinations, and **dolutegravir/lamivudine** as a two-drug option in eligible patients.

### WHY YOU CAN START BEFORE RESULTS

Bictegravir and dolutegravir have a **high barrier to resistance**, so **INSTI genotype testing is not routinely required** unless transmitted integrase resistance is a specific concern. That is what makes same-day initiation safe.

## BASELINE WORKUP *send these, but do not let them delay the first dose*

| Test | Why |
|---|---|
| **CD4 count and viral load** | CD4 determines **opportunistic infection risk and prophylaxis**; viral load is the treatment-response marker. |
| **Resistance genotype** | Send at baseline, but **start ART without waiting** and adjust later if needed. |
| **HLA-B*5701** | Only if **abacavir** is being considered — a positive result predicts a severe, potentially fatal hypersensitivity reaction. |
| **Co-infections** | **Hepatitis B and C** — hepatitis B status changes the backbone, since tenofovir/emtricitabine treat both and stopping them can cause a hepatitis flare. Plus **latent TB**, syphilis and other STIs, and toxoplasma serology. |
| **Baseline safety labs** | Renal function, LFTs, lipids, glucose, complete blood count, and pregnancy testing where relevant. |

## LET THE CD4 TELL YOU WHAT TO LOOK FOR *the single most useful number on the ward*

| CD4 | Think about | Action |
|---|---|---|
| **< 200** | **Pneumocystis jirovecii pneumonia** — subacute breathlessness, dry cough, **exertional desaturation**, raised LDH, ground glass on CT | **TMP-SMX prophylaxis.** For treatment, **add corticosteroids if $PaO_2$ < 70 mmHg or A-a gradient ≥ 35** — steroids reduce mortality and are frequently omitted. |
| **< 100** | **Toxoplasma encephalitis** — ring-enhancing lesions. **Cryptococcal meningitis** — headache and fever, often without neck stiffness | TMP-SMX also covers toxoplasma. For cryptococcus, **send serum cryptococcal antigen** and measure and manage the **opening pressure**, which is what kills. |
| **< 50** | **Disseminated MAC**, **CMV retinitis** (painless visual loss — needs ophthalmology), CNS lymphoma | Prompt ART is the key intervention. **Routine azithromycin prophylaxis for MAC is no longer recommended** when ART is started promptly. |
| **Any CD4** | **Tuberculosis**, bacterial pneumonia, syphilis | TB occurs at any count and the chest film may be atypical. **Screen and treat latent TB.** |

## TWO THINGS THAT CATCH PEOPLE OUT *timing and interactions*

### IMMUNE RECONSTITUTION (IRIS)

Paradoxical **worsening of a treated or unrecognized infection** as immunity recovers, typically weeks after starting ART, and commonest with very low CD4. **Treat the underlying infection first** in most cases. **Cryptococcal meningitis is the key exception** — ART is deliberately **delayed several weeks**, because early initiation increases mortality. Generally **continue ART** through IRIS and add steroids for severe cases.

### DRUG INTERACTIONS

**Check every new prescription. Rifampin** is the classic problem, drastically lowering levels of many antiretrovirals — rifabutin is often substituted. **Polyvalent cations** in antacids, calcium, iron and multivitamins **chelate integrase inhibitors** and must be separated in time. Also watch statins, PPIs, steroids and anticonvulsants. **Never interrupt ART during an admission** without specialist advice.

## THE REST OF THE ADMISSION *easy wins that are routinely skipped*

| Task | Detail |
|---|---|
| **Continue their own ART** | **Do not interrupt or substitute antiretrovirals** without specialist advice, and reconcile the exact regimen on admission. Missed doses during a hospital stay are a genuine cause of resistance. |
| **Vaccination** | **Pneumococcal, hepatitis A and B, influenza, COVID-19**, and HPV where age-appropriate. Response is better once CD4 recovers, so revisit after immune reconstitution. **Avoid live vaccines when CD4 < 200.** |
| **Screen for co-infection** | **Latent TB**, syphilis and other STIs, hepatitis B and C. Repeat STI screening periodically — asymptomatic infection is common and syphilis behaves atypically in HIV. |
| **Cancer and metabolic screening** | **Cervical and anal cancer screening**, plus cardiovascular risk, lipids, bone density and renal function — people with HIV have accelerated cardiovascular and bone disease. |
| **Discharge and partners** | Confirm **reliable follow-up and drug supply** before discharge, address stigma and disclosure, and offer **PrEP to HIV-negative partners** alongside the U=U conversation. |

## PEARLS & PITFALLS

- **Prophylaxis thresholds worth memorizing: CD4 below 200** → TMP-SMX **1 DS tablet daily** for *Pneumocystis*. **CD4 below 100 with positive Toxoplasma IgG** → the same drug covers both. **CD4 below 50** → MAC prophylaxis was historically azithromycin 1200 mg weekly, but is now commonly omitted when antiretroviral therapy is started promptly. **Stop prophylaxis once the CD4 recovers on treatment.**
- **Do not delay ART waiting for the genotype.** Integrase inhibitors have a high barrier to resistance, which is what makes same-day starts safe.
- **Give steroids in moderate-to-severe PCP** — $PaO_2$ < 70 mmHg or A-a gradient ≥ 35. This reduces mortality and is a common omission.
- **Delay ART in cryptococcal meningitis.** Starting early increases mortality through IRIS.
- **Check hepatitis B status before choosing the backbone** — stopping tenofovir/emtricitabine in co-infection can trigger a hepatitis flare.
- **Antacids, calcium and iron chelate integrase inhibitors.** Separate the doses, or the regimen silently fails.
- **U=U is a clinical fact worth stating explicitly** to patients — it changes adherence, disclosure and quality of life.

**References:** HHS/DHHS Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents with HIV · DHHS guidelines for the prevention and treatment of opportunistic infections · rapid ART initiation clinical guidance.

*Educational aid; verify doses and interactions against local protocol, renal function and patient factors.*