Initial HIV Clinical Assessment

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Outline

- Medical History and Physical Examination
- Psychosocial Assessment
- HIV-related History
- Review of systems
- HIV-specific testing
- Screening
- Other Laboratory Testing
- Immunizations
- Prophylaxis for Opportunistic Infections
- Initial interventions

A comprehensive present and past medical history includes:

1. General history
   - Review of sources of past medical care
   - Past hospitalizations, past and current illnesses
   - Tuberculosis history
   - History of hepatitis A, B and C
   - Current prescription and non-prescription medicines
   - Vaccination history
   - Reproductive history, partner information
   - Allergies
   - Travel history/place of birth, Occupational history and hobbies, pets/animal exposure
2. Mental health history
   - Mental health diagnoses particularly depression anxiety, PTSD, suicidal/violent behavior and/or other severe and persistent mental illnesses
   - Psychotropic medications
   - Past psychiatric hospitalizations
   - Contact information for mental health providers if applicable
3. Substance use history
   - Types of drugs; past and current use (illicit or prescribed)
   - Alcohol
   - Tobacco
   - Frequency of use and route of administration
   - Risk behaviors—drug/needle sharing, *exchanging sex for drugs, sexual risk-taking while under the influence of drugs or alcohol*
   - History of treatment and barriers to treatment
4. Sexual history
   - Current sexual activity
   - History of sexually transmitted infections
   - *Sexual practices—vaginal, anal, oral*
   - Gender identity
   - Past and current partners
   - Risk behavior assessment, condom use, number of partners, etc

Psychosocial Assessment

- Housing status
- Employment and insurance status
- Educational level
- Family and partner contacts
- Stability of personal relationships
- Domestic violence screening
- Immigration status

HIV-RELATED HISTORY

- HIV exposure history
  - Date and place of the diagnosis, route of exposure, if known
- Most recent viral load and CD4 count
- Sero-conversion Illness
- Nadir CD4 and peak viral load
- Drug-resistance testing (Genotype)
- Current and previous ARV regimens and date of initiation of ARV therapy
- Previous adverse ARV drug reactions
- Opportunistic infections or prophylaxis received
- Patient's understanding of HIV disease and treatment

Review of Systems (1)

* Assessment of symptoms may require direct questioning

- **Constitutional—weight loss, malaise, fevers, night sweats**
- Eyes—change in vision
- Ears, nose, **throat**—dysphagia, odynophagia, oral herpes simplex—**oral thrush, hairy leukoplakia**
- **Pulmonary**—**cough, sputum**, dyspnea, hemoptysis
- Cardiac—chest pain, palpitations, heart murmur

• Assessment of symptoms may require direct questioning because patients may not consider their symptoms important until after the symptoms have already caused significant morbidity

•Constitutional—weight loss, malaise, fevers, night sweats, changes in appetite, changes in sleep, adenopathy

•Eyes—change in vision, including blurry vision, double vision, flashes of light, or loss of vision

•Ears, nose, throat—dysphagia, odynophagia, hearing loss, discharge, dental pain, periodontal disease, oral herpes simplex—oral thrush, oral hairy leukoplakia

Review of Systems (2)

- **Gastrointestinal** —**nausea, vomiting, diarrhea**
- **Genitourinary**: Vaginal or penile **discharge**, genital/rectal warts
- **OB/GYN**—**menstrual status**, bleeding, infections, last Pap test and result
- **Extremities**—muscle **wasting**, **weakness**, muscle pain, joint swelling
- **Neurologic**—**cognitive changes**, tingling, burning, **pain, or numbness in the extremities**

In addition:

- Gastrointestinal - constipation, blood per rectum, hemorrhoids
- Genitourinary - aginal pain, dysuria, classic and atypical herpes simplex virus
- Neurologic - weakness

HIV – RELATED	PHYSICAL EXAMINATION (1)
BP, weight, and symptoms	Assess at each visit
Ophthalmologic	**Fundoscopic exam when CD4's <50**
Head, ears, nose, **throat**	**Oral thrush**, **hairy leukoplakia, Kaposi's sarcoma**, gingival disease
Dermatologic	**Rash**, psoriasis, molluscum contagiosum, seborrheic dermatitis, **Kaposi's sarcoma**, onychomycosis, **diffuse folliculitis**, melanoma
Lymph nodes	Axillary, posterior cervical chain, supraclavicular, submental, epitrochlea, femoral
Endocrinologic	**Abnormal subcutaneous fat redistribution** Thyroid gland assessment
Pulmonary	Lung fields for wheezes, rhonchi, rales, or dullness

In addition, also assess:

1. Pain assessment

Assess at each visit

2. Head, ears, nose, throat

Sinus infection, odynophagia, dysphagia, hearing loss

HIV – RELATED	PHYSICAL EXAMINATION (2)
Cardiac	Heart rhythm, murmurs, click, or rub, peripheral edema
Abdominal	Hepatosplenomegaly, lipomata in subcutaneous fat, abdominal tumors
Genital	Vaginal or penile **discharge**, ulcerative genital disease, genital warts OB/GYN **carful pelvic examination**
Rectal	Visible anal lesions or evidence of skin abnormality around the anus **Digital rectal exam**
Musculoskeletal	Extremities – muscle **wasting** Joints – inflammatory changes Peripheral pulses and evidence of vascular disease Peripheral edema
Neuropsychological	**Reflexes, sensory, motor**, and cerebellar function Cranial nerves, **Cognitive status, mental health and substance use assessment**

In addition also assess:

1. Pulmonary

   Lung fields for wheezes, rhonchi, rales, or dullness

2. Abdominal

   Hepatosplenomegaly, multiple lipomata in the subcutaneous fat, increased visceral fat, abdominal tumors

3. Rectal

   Symptoms—itching, diarrhea, pain

4. Neuropsychological

   Reflex, sensory, motor, and cerebellar function

   Signs of multifocal motor and sensory nerve abnormalities especially peripheral neuropathy

   Cranial nerves

   Cognitive status examination

   Mental health and substance use assessment

HIV SPECIFIC TESTING

	Test	Baseline
HIV Infection Status	HIV Diagnostic test (confirmation)	√
Immunologic Assessment	CD4 absolute count and percentage	√
HIV Plasma Viral Load	Quantitative RNA testing	√
Drug Resistance Testing	HIV Genotypic drug resistance	√ (At the time of first HIV pVL)
Other	HLA-B*5701 (Not an HIV-specific test)	√
Other	Tropism testing	If considering a CCR5 antagonist

• If laboratory confirmation is not available, a repeat HIV antibody testing should be done (AIII)

• All patients entering into care (baseline) should have CD4 counts (absolute and fraction) (AI). CD4 cell counts should be monitored both to assess the efficacy of antiretrovirals and to determine the need for prophylaxis against opportunistic infections (AI)

• Once HIV pVL is <50 c/mL for one year and CD4>350, monitoring may be extended to Q 6 months in patients with dependable antiretroviral adherence (CIII).

• A quantitative HIV RNA determination (plasma viral load) should be obtained soon after confirmation of HIV diagnosis (at baseline) (AI).

• All patients should be assessed for transmitted drug resistance using genotypic drug resistance testing regardless of the estimated duration of the infection (AIII). This should be ideally done shortly after primary infection or by simultaneously testing the first available HIV plasma viral load (AIII). In British Columbia, genotypic drug resistance will be done automatically in leftover plasma from the first HIV pVL test (CIII).

• If antiretroviral therapy is deferred, repeat drug resistance at the time of initiation of therapy is recommended because of the potential for superinfection (CIII).

• Genotypic drug resistance testing should be conducted for patients experiencing treatment failure or incomplete viral suppression (HIV pVL > 250 copies) while receiving antiretroviral therapy (AII).

• HLA-B*5701 is not a specific HIV viral test. However, screening for HLA-B*5701 identifies persons at high risk for abacavir hypersensitivity reaction (HSR) (A-I). Although not all patients will be exposed to abacavir, in British Columbia HLA-B*5701 is recommended at baseline, and results be saved for future use (C-III).

• If HLA-B*5701 screening test was not conducted at baseline, it should be performed in any patient before starting on an abacavir-containing regiment. HLA-B*5701-positive patients should not receive abacavir (A-II)

• HSR, including fatalities, have been documented after re-initiation of abacavir following a gap in therapy in patients who had previously tolerated the drug. Therefore, all patients taking an abacavir-containing regimen should be screened for HLA*B5701 regardless of how well are they tolerating abacavir (CIII).

SCREENING

	Test	Baseline
Tuberculosis	TB Skin Test (TST) using purified protein derivative (PPD)	√ Unless contraindicated
Toxoplasmosis	Toxoplasma IgG antibodies	√
Hepatitis A	Total anti-HAV antibodies	√
Hepatitis B	HBsAg Anti-HBs Anti-HBc HBV-DNA	√
Hepatitis C	Anti-HCV HCV – PCR qualitative	√
Syphilis	RPR (or VDRL)	√
Gonorrhea	Urine NAAT Cervical Swab for females	√
Chlamydia	Urine NAAT Males Cervical Swab or urine for females	√
Cervical cancer	Cervical pap smear	√
Other	Chest x-Rays	√
Other	Pregnancy Testing	When appropriate

• TB Skin Test (TST) using purified protein derivative (PPD) unless there is a contraindication (AI). Contraindications for TST include: documented history of a previous positive TST, documented TB or a previous severe reaction to PPD.

• All HIV positive individuals should be screened for HAV using total anti-HAV antibodies (CIII), unless there is documented evidence of prior HAV vaccination or prior HAV diagnosis.

• All HIV positive individuals should be screening for HBV status using HBsAg, anti-HBs, Anti-HBc (AIII).

• Individuals testing negative for HBsAg and Anti-HBs but positive for anti-HBc (Isolated anti-HBc positive) should have HBV-DNA testing to rule out occult HBV infection (CIII).

• All HIV positive individuals should be screened for HCV using a test for HCV antibodies (BIII). Positive test results should be confirmed by using qualitative HCV-PCR testing (AIII).

• All HIV positive individuals should be screened for syphilis using RPR or VDRL (AIII). RPR or VDRL positive screening results should be verified by FTA-ABS or TP-PA confirmatory tests (AI)

• All HIV positive individuals should be screened for Chlamydia and gonorrhea using Nucleic Acid Amplification Test (NAAT) in first void urine specimen for males and cervical swab for females, or NAAT in a urine specimen for women without a cervix or those who wish to avoid pelvic examination (AII).

• All HIV positive women should be screened for cervical cancer using pap smear (BII).

• All HIV positive individuals should have a chest x-ray examination at baseline and repeated as needed (CIII).

• Pregnancy testing should be considered in the following circumstances: Missed menses, irregular bleeding, new onset pelvic pain, enlarged uterus during physical examination, before initiation of any medication with potential to harm the fetus (e.g. efavirenz), with new onset nausea/vomiting, or at patient request (BIII).

*Anal cytological screening (i.e. anal pap smear) in HIV infected women and MSM is not considered to be the standard of care at this time but is being performed in some health centres. Additional studies of screening and treatment protocols for anal dysplasia are in progress to clarify this issue (MMWR Rep 2009; 58 (RR-4): 1-207).

Other screening and health maintenance interventions may be indicated depending on the age and gender of the patient. The reader is encouraged to visit the Canadian Guide to Clinical Preventive Health Care at http://www.phac-aspc.gc.ca/publicat/clinic-clinique/index-eng.php

Laboratory Testing

	Test	Baseline
Hematologic Assessment	CBC with Differential with CD4 counts and HIVp-VL	√
Renal Function	Creatinine eGFR Na, K, Cl, HCO_3 BUN Urinalysis Spot urine for Abumin to Creatinine ratio (UACR)	√
Liver Function Tests	ALT, AST, T. bilirubin, INR	√
Fasting Lipid Profile	TC, HDL, LDL, TG	√
Blood Glucose	Fasting Glucose	√

• Clinical and laboratory assessment of relevant co-morbid conditions should be performed at baseline, before initiation of antiretroviral (ARV) therapy and during follow up.

• The frequency of laboratory monitoring for ARV toxicity depends on the known potential toxicities of specific drugs, concomitant medications, and underlying co-morbid conditions. Monitoring may occur 4 weeks after initiation of therapy, decreasing to up to every 6 months after stabilization of HIV disease. In most cases the timing of safety laboratory monitoring can be coordinated with monitoring of HIV RNA and CD4 cell counts.

• Hematologic abnormalities are common among HIV-infected individuals. A complete blood count with differential white blood cells is recommended at baseline and routinely there after (AIII).

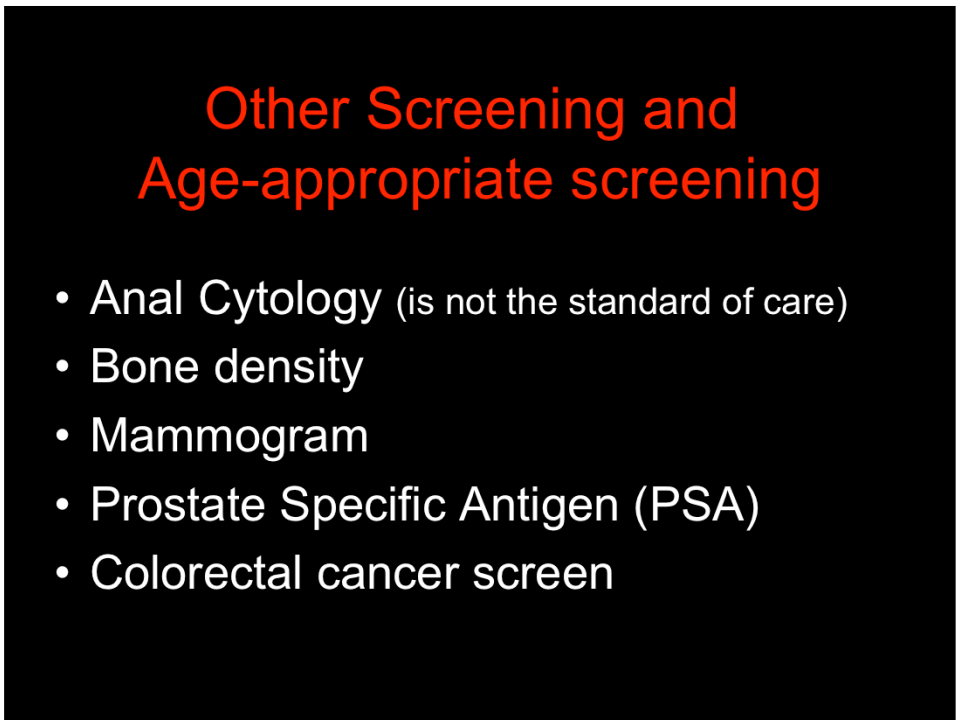
• Renal function is abnormal in about 30% of HIV-infected individuals. HIV-associated nephropathy is a common cause of end-stage renal disease in this population. Renal function and risk of renal disease should be assessed in all HIV-infected individuals (AIII).

• Risk factors for chronic liver disease among HIV-infected individuals is frequent. Among these factors are alcohol, viral hepatitis, obesity, diabetes, insulin resistance, hyperlipidemia, and hepatotoxic drugs. Liver function should be assessed in all HIV-infected individuals (AIII).

• The Canadian Cardiovascular Society recognizes HIV as a significant risk factor for premature CVD and an indication for screening for CV risk factors, including lipids. In addition, some ARVs are more likely to cause dyslipidemias. Fasting lipid testing including Total Cholesterol (TC), High Density Cholesterol (HDL), Low Density Cholesterol (LDC) and Triglycerides (TG) should be assessed at baseline (AII). Apolipoprotein B (apoB) levels, now a treatment target, should also be monitored (AIII).

•Diabetes Mellitus is more prevalent in the HIV-infected population than in the general population, particularly in those who are HIV/HCV co-infected. Fasting blood glucose should be performed at baseline and thereafter during ARV therapy (AIII).

* Elevated levels of some inflammatory biomarkers, such as high-sensitive C-reactive protein (hsCRP), are independently associated with a high risk of myocardial infarction in the HIV positive population, as in the general population. However, the interpretation of hsCRP can be complicated in the setting of chronic inflammatory state associated with chronic HIV infection. Although ARV therapy reduces the levels of these biomarkers, they can remain elevated compared with those of HIV uninfected individuals. The clinical utility of these biomarkers for initiation or monitoring of therapy in the setting of HIV is unknown.



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• Other screening and health maintenance interventions may be indicated depending on the age and gender of the patient. The reader is encouraged to visit the Canadian Guide to Clinical Preventive Health Care at http://www.phac-aspc.gc.ca/publicat/clinic-clinique/index-eng.php

• Prevention is an important aspect of HIV care in the era of highly active antiretroviral therapy.

• Vaccines provide an excellent opportunity to avert certain infectious diseases for which patients with HIV infection are at increased risk due to immunosuppression.

• However, the state of immunosuppression reduces the efficacy of vaccines and increases the risk associated with certain vaccines.

General considerations when immunizing HIV+ individuals

- Tailor immunization to the individual
- Immunize early in the course of HIV
- Do not make assumptions about susceptibility or protection
- Killed or inactivated vaccines are safe
- Live vaccines generally contraindicated
- Consult with an expert

• Immunization should be tailored to the needs of each patient based on his or her underlying host defects and epidemiological pressures.

• Immunization early in the course of disease is safer and more effective

• Killed or inactivated vaccines do not represent a danger to immunocompromised persons

• Live, attenuated virus vaccines are generally contraindicated. The use can be consulted with an expert.

• We cannot make assumptions about susceptibility or protection as history of childhood infection or previous immunization may be irrelevant

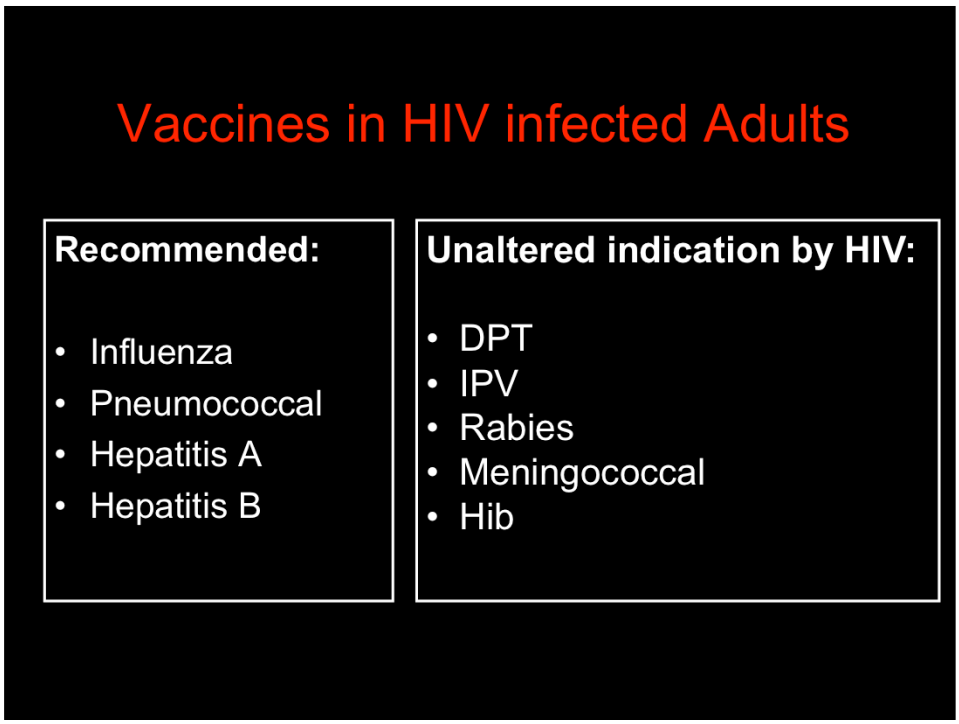
• Immunocompromised individuals frequently exhibit a reduced antibody response to immunizations

• Due to reduced antibody response, post immunization serology is sometimes indicated in HIV infected individuals when it is not recommended in non-infected persons.

Immune response to vaccine in HIV

Vaccine	Response rate (%)
Measles	25-77%
IPV	61-88%
Varicella (asymptomatic children)	60%
Hepatitis B	24-43%
Influenza	15-80%

Adapted from: Dr. R. Gustavson – Medical Health Officer, VCH



- When vaccinating pregnant women, infants and children, or assessing the need to administer a live vaccine, consulting with a specialist is strongly recommended. Similarly, when assessing vaccination needs for the international traveler consult with a Health Travel Specialist.

For further information:

Immunization Manual – BC Centre for Disease Control
http://www.bccdc.org/content.php?item=193

Canadian Immunization Guidelines
http://www.phac-aspc.gc.ca/publicat/cig-gci/pdf/cig-gci-2006_e.pdf

Recommended Vaccines
(Formulation, dose, route and schedule)

Vaccine	Recommendation
Hepatitis A Vaccine (Formalin inactivated Monovalent with an aluminium hydroxide or influenza virosome adjuvant)	**Formulations**: Vaqta®, Havrix®, Avaxim®, EpaxalBerna® **Schedule**: 0, 1, 6 months (different from standard schedule of 0, and 6 – 12 months) for susceptible individuals. **Dosage**: Standard adult dose (formulation dependant) **Route of administration:** IM
Hepatitis B Vaccine (Monovalent recombinant DNA vaccine)	**Formulations**: RecombivaxHB ® (10 mcg/1.0 ml) or Engerix B ® (20mcg/1.0ml) **Schedule**: 0, 1, 6 months for susceptible individuals. **Dosage**: 2ml (20 mcg of RecombivaxHB or 40 mcg of Engerix B (different from standard doses) **Route of administration:** IM
Pneumococcal Vaccine (23-valent pneumococcal polysaccharide vaccine)	**Formulations**: Pneumovax 23®, Pneumo23®, Pnu-immune®. **Schedule**: Initial dose plus a single booster five years after initial vaccination **Dosage**: 0.5 ml. **Route of administration:** IM
Influenza Vaccine (Inactivated split-virus vaccine)	**Formulations**: Fluviral ® and Vaxigrip® **Schedule**: Single yearly injection **Dosage**: 0.5 ml **Route of administration:** IM
Td (Tetanus, diphtheria) - adsorbed	**Formulations**: Td® **Schedule**: Routine boosters every 10 years **Dosage**: 0.5 ml **Route of administration:** IM

- **Hepatitis A Vaccination** – Schedule is different from the standard schedule. Response rates are higher in those with higher CD4s. Immunological efficacy improves with a third dose (J Acquir Immune Defic Syndr 2008; 49(3): 272-275).
- **Hepatitis B Vaccination** – Vaccination doses are higher for HIV infected individuals due to a diminished response as compared with HIV uninfected individuals. Depending on risks, patients can be immunized with <200 CD4s or >200 CD4s. Response rates are higher in those with higher CD4s.
- ***Pneumococcal* Vaccination** –There is recent evidence of the protective effectiveness of *pneumococcal* vaccination regardless of the CD4 counts (*Vaccine* 2008; 26:5830-34. *Clin Infect Dis* 2008; 46:1093-1100). Given the significant burden of *pneumococcal* disease and the cost-effectiveness of the vaccine, *pneumococcal* vaccination should be given regardless of the CD4 counts.
- (**Trivalent) Influenza Vaccination** – Influenza vaccine efficacy may be lower in the immunocompromised than in healthy adults. However, the possibility of lower efficacy should not prevent immunization in those at high risk of influenza-associated morbidity, since protection is still likely to occur. Thus, annual influenza vaccination should be offered to all HIV infected individuals regardless of CD4 counts.

For further information:

Immunization Manual – BC Centre for Disease Control: http://www.bccdc.org/content.php?item=193

Canadian Immunization Guidelines - http://www.phac-aspc.gc.ca/publicat/cig-gci/index.html

OIs - Prophylaxis

Opportunistic Infection	Indications for Prophylaxis	Medication/doses	When to Stop?
PCP	**Primary Prophylaxis** Absolute CD4 count <200 cells/mm^3 or CD4 fraction < 14%, or Oral candidiasis * Consider if CD4 <250 and follow up uncertain **Secondary Prophylaxis** Any patient with a prior diagnosis of PCP	**Primary or Secondary Prophylaxis** **TMP-SMX** - 1 DS tablet po once daily, or 1 SS tab daily or **Dapsone** 100 mg po once daily **Other alternatives:** [3] Atovaquone Pentamidine	**Primary or Secondary Prophylaxis** Consistent CD4 recovery >200cells/mm^3 for at least 3 months while on ART If CD4 > 100 but <200 cells/mm^3 associated with HIV RNA < 400 copies while on ART
TOXOPLASMOSIS	**Primary Prophylaxis** Positive Toxoplasma IgG serology and CD4 counts <100 cells/mm^3 **Secondary Prophylaxis** Any patient with a prior diagnosis of Toxoplasmosis	**Primary Prophylaxis** **TMP-SMX** - 1 DS tablet po once daily. **Other alternatives:** [3] TMT-SMX – 1 SS tablet po once daily or Dapsone+pyrimethamine+leukovorin or Atovaquone +/-pyrimethamine+leukovorin **Secondary Prophylaxis** [3] Sulfadizine+Pyrimethamine+Leukovorin **Other alternatives:** [3] Clindamycin+pyrimethamine+leukovorin or Atovaquone +/-pyrimethamine+leukovorin	**Primary Prophylaxis** Consistent CD4 recovery >200 cells/mm^3 for at least 3 months while on ART **Secondary Prophylaxis** No signs and symptoms of toxoplasma encephalitis + Consistent CD4 recovery >200 cells/mm^3 for at least 6 months + Optimal response to ART
MAC	**Primary Prophylaxis** Absolute CD4 counts < 50 cells/mm^3 **Secondary Prophylaxis** All patients with documented MAC disease	**Primary Prophylaxis** Azithromycin 1200 mg po once weekly **Other alternatives** [3] Azithromycin 600 mg po twice weekly, or Chlarithromycin 500 mg po BID or Chlarithromycin XL (slow release) 1000 mg po od, **Secondary Prophylaxis** [3] All patients should receive life-long combination therapy. Clarithromycin+Ethambutol **Alternative regimen:** [3] Azithromycin+ethambutol+/-Rifabutin	**Primary Prophylaxis** Consistent CD4 recovery >100 cells/mm^3 for at least 3 months while on ART **Secondary Prophylaxis** [3] Sustained (>6 months) CD4 increase > 100 cells, and Completed ≥ 12 months of therapy for MAC, and Asymptomatic from MAC disease

BCCFE: Therapeutic Guidelines for Opportunistic Infections. http://cfenet.ubc.ca/sites/default/files/uploads/docs/Opportunistic_Infection_Therapeutic_Guidelines.pdf

- Prior to starting Pneumocystis Jiroveci Pneumonia (PCP) prophylaxis patients should be assessed to rule out active pulmonary disease (PCP or TB)
- Alternative treatment regimens usually require consultation with an experienced HIV specialist. There may be cost considerations involved in the decision of which alternative drugs to use (e.g. Atovaquone).
- Prior to starting Mycobacterium Avium Complex (MAC) prophylaxis, the possibility of disseminated MAC infection should be excluded by clinical evaluation that may also include a mycobacterial blood culture.
- When considering Rifabutin for MAC prophylaxis, patients should be screened for active tuberculosis.
- **Therapeutic Guidelines for Opportunistic Infections:**

  http://cfenet.ubc.ca/sites/default/files/uploads/docs/Opportunistic_Infection_Therapeutic_Guidelines.pdf

Initial interventions

- Appropriate post-test counseling including partner notification and public health follow up
- Explanation of the natural history of the progression of HIV, management & treatment options.
- Staging HIV Disease.
- Referrals to address specific co-morbidities or medical concerns.
- Referrals to community, peer support, housing and income support referrals.