Toxoplasma Encephalitis: Prevention

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Toxoplasma Prevention: Outline

• Background and Rationale

• Screening

• Prevention
  – Criteria for starting and stopping prophylaxis
  – Prophylaxis options

• Medication side-effects

• Summary
Background and Rationale
Background: Toxoplasma encephalitis

- *Toxoplasma gondii* is a protozoal parasite
- Accidental ingestion risk factors include contact with cat feces or eating undercooked red meat or raw shellfish
- Disease occurs from reactivation of latent cysts when CD4 <100 cells/mm³
- Symptoms include fever, headache, seizures, encephalitis

Screening
Screening for Latent Toxoplasma Infection in People with HIV

All PWH should be tested for IgG antibodies to *T. gondii* at the time of initial diagnosis.

PWH who are seronegative for *T. gondii* Ab, should undergo repeat testing:
- IF their CD4 count decreases to $<100$ cells/mm$^3$ AND
- They are not already taking medication that provides prophylaxis for *Toxoplasma* encephalitis
Counseling Persons with Negative Toxoplasma IgG: Dos & Don’ts

- Don’t change cat litter box
  - Do wear gloves if you have to change cat litter and wash hands thoroughly after

- Don’t eat undercooked meat or raw shellfish
  - Do wash raw fruits and vegetables well before eating them

- Don’t consume unpasteurized dairy products
  - Do wear gloves and wash hands after handling soil
Prevention
Indications for Primary Prophylaxis for *Toxoplasma* Encephalitis

- Seropositive for Toxoplasma IgG
  
  *and*

- CD4 cell count < 100 cells/mm$^3$

Toxoplasma Prevention: Options for Prophylaxis

**Trimethoprim-sulfamethoxazole**
- (preferred) 1 double-strength tab daily
- 1 single strength tablet daily effective & may be better tolerated
- 1 double strength tablet 3 times per week also effective

**Dapsone**
- Check G6PD level, expensive regimen due to cost of pyrimethamine
- 50 mg po daily + (Pyrimethamine 50 mg + leucovorin 25 mg) po weekly
- 200 mg po daily + (Pyrimethamine 75 mg + leucovorin 25 mg) po weekly

**Atovaquone**
- Liquid; bad taste; expensive
- 1500 mg po daily +/- (Pyrimethamine 25 mg + leucovorin 10 mg) po daily

When to Discontinue Primary Prophylaxis for *Toxoplasma* Encephalitis

- CD4 cell count >200 cells/mm$^3$ for at least 3 months after ART initiation

- Can consider if CD4 between 100-200 cells/mm$^3$ + viral suppression on ART for at least 3-6 months
When to Restart Primary Prophylaxis for *Toxoplasma* Encephalitis

- CD4 cell count < 100 cells/mm$^3$ regardless of viral load or
- CD4 is between 100-200 cells/mm$^3$ + detectable viral load

Medication Side-Effects
Side effects of medications used for Toxoplasma prophylaxis

<table>
<thead>
<tr>
<th>Medication</th>
<th>Potential common side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMP-SMX</td>
<td>Renal dysfunction, Hyperkalemia, Leukopenia, Steven Johnson syndrome, Rash, Hepatitis</td>
</tr>
<tr>
<td>Dapsone</td>
<td>Hemolytic anemia (if used in PWH with G6PD deficiency), Methemoglobinemia, Contains sulfonamide*</td>
</tr>
<tr>
<td>Atovaquone</td>
<td>Bad taste</td>
</tr>
<tr>
<td>Pyrimethamine</td>
<td>Expensive, Nausea &amp; vomiting, Bone marrow suppression (if not co-administered with leucovorin)</td>
</tr>
</tbody>
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*Potential cross-reactivity with other sulfa-containing drugs, but dapsone not contraindicated in patients with sulfonamide allergy*
Summary
Toxoplasma Prophylaxis: Summary

- Prophylaxis indicated in all PWH with CD4 <100 cells/mm³ who are *Toxoplasma* IgG seropositive
- The preferred drug for prophylaxis is TMP-SMX
- Alternative therapies include:
  - Dapsone + pyrimethamine and leucovorin OR
  - Atovaquone +/- pyrimethamine and leucovorin
- Always check G6PD level prior to dapsone use
- Use of dapsone in someone intolerant of TMP-SMX depends on severity of TMP-SMX reaction
- Prophylaxis can be discontinued once immune reconstitution has occurred on ART

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