Pneumocystis Pneumonia: Prevention

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Pneumocystis pneumonia (PCP) Prevention: Outline

- Background and Rationale
- Prevention of Pneumocystis pneumonia
- Criteria for starting and stopping prophylaxis
- Prophylaxis options
- Medication side effects
- Summary
Background and Rationale
Background - *Pneumocystis* Pneumonia

- Major cause of pneumonia in PWH when CD4 count <200 cells/mm$^3$
- Caused by the ubiquitous fungus, *Pneumocystis jiroveci*
- Airborne transmission
- Disease occurs by new acquisition vs reactivation of latent infection
- Symptoms include fever, hypoxia, dyspnea, non-productive cough
Prevention of *Pneumocystis* Pneumonia
Indications for Initiating Primary Prophylaxis for PCP*

- CD4 cell count <200 cells/mm$^3$, or
- CD4 percentage <14%, or
- CD4 count >200 but <250 cells/mm$^3$ IF ART is delayed and frequent CD4 monitoring is not feasible

*Individuals receiving treatment for toxoplasmosis with sulfa-containing drugs do not require additional PCP prophylaxis

Pneumocystis Prevention: Options for Prophylaxis

- **Trimethoprim-sulfamethoxazole**
  - (preferred) DS tab daily
  - (preferred) SS tab daily effective & may be better tolerated
  - DS tab 3 times per week also effective

- **Dapsone**
  - Check G6PD level prior to use
  - Can be taken by itself or
  - Can be taken with pyrimethamine and leucovorin, but is more expensive regimen

- **Atovaquone**
  - Liquid, bad taste
  - Can be taken by itself or
  - Can be taken with pyrimethamine and leucovorin, but this regimen is more expensive

- **Inhaled pentamididine**
  - Dosed once monthly
  - Unable to use in patients with underlying pulmonary problems
  - Needs to be administered in a clinic or hospital setting

When to Discontinue Primary Prophylaxis for PCP

- CD4 cell count $\geq 200$ cells/mm$^3$ for at least 3 months after ART initiation
- Can consider if CD4 is between 100-200 cells/mm$^3$ and viral suppression on ART for at least 3-6 months

When to Restart Primary Prophylaxis for PCP

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

Side Effects of Medications Used for PCP Prophylaxis
Potential side effects of medications used for PCP prophylaxis

<table>
<thead>
<tr>
<th>Medication</th>
<th>Potential Side Effects</th>
</tr>
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<tbody>
<tr>
<td>TMP-SMX</td>
<td>Renal dysfunction</td>
</tr>
<tr>
<td></td>
<td>Hyperkalemia</td>
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<tr>
<td></td>
<td>Leukopenia</td>
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<td></td>
<td>Rash</td>
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<tr>
<td></td>
<td>Hepatitis</td>
</tr>
<tr>
<td>Dapsone</td>
<td>Hemolytic anemia (if used in patients with G6PD deficiency)</td>
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<tr>
<td></td>
<td>Contains sulfonamide*</td>
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<tr>
<td>Inhaled Pentamidine</td>
<td>Cough</td>
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<tr>
<td></td>
<td>Bronchospasm</td>
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<tr>
<td>Atovaquone</td>
<td>Bad taste</td>
</tr>
<tr>
<td>Pyrimethamine</td>
<td>Nausea &amp; vomiting</td>
</tr>
<tr>
<td></td>
<td>Bone marrow suppression (if not co-administered with leucovorin)</td>
</tr>
</tbody>
</table>

*Potential for cross-reactivity with other sulfa-containing drugs; dapsone not contraindicated in patients with sulfonamide allergy
Summary
PCP Primary Prophylaxis: Editor’s Summary

- PCP prophylaxis is indicated in all PWH with a CD4 <200 cells/mm^3
- The preferred drug for PCP prophylaxis is TMP-SMX
- Alternative therapies include:
  - Dapsone +/- pyrimethamine and leucovorin
  - Atovaquone +/- pyrimethamine and leucovorin
  - Aerosolized pentamidine
- Always check the G6PD level prior to dapsone use
- Using dapsone in someone with TMP-SMX intolerance depends on severity of reaction to TMP-SMX
- Prophylaxis can usually be discontinued once immune reconstitution has occurred on ART

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