Introduction to Safe Drinking Water for People Living with HIV/AIDS

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Estimated Number of People Globally Living with HIV

![Graph showing the estimated number of people living with HIV from 1990 to 2007. The graph indicates a steady increase in the number of people living with HIV over the years, with error bars for each year to show the range of estimates.](image-url)
Percent of Adults Living with HIV Who Are Female

![Graph showing the percent of adults living with HIV who are female from 1990 to 2007, by region.

- Sub-Saharan Africa
- Global
- Caribbean
- Asia
- E Europe & C Asia
- Latin America

Sources: UNAIDS, World Health Organization.

CAWST (Canadian Association of HIV/AIDS Service Training and Education)
HIV prevalence among migrants, Nepal, 2001

<table>
<thead>
<tr>
<th>Region</th>
<th>HIV Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migrant (N=141)</td>
<td>10.1%</td>
</tr>
<tr>
<td>Delhi (N=100)</td>
<td>3.0%</td>
</tr>
<tr>
<td>Achham (N=242)</td>
<td>3.7%</td>
</tr>
<tr>
<td>Achham (N=84)</td>
<td>7.7%</td>
</tr>
<tr>
<td>Katihai (N=308)</td>
<td>0.6%</td>
</tr>
<tr>
<td>Mumbai (N=33)</td>
<td>6.1%</td>
</tr>
</tbody>
</table>
Key Words

- **PLWHA** – People living with HIV/AIDS
- **CD4** – A measure of immune status for PLWHA
- **OI** – Opportunistic infections commonly associated with PLWHA
- **ART or ARV** – Antiretroviral therapy
- **PMTCT** – Prevention of mother to child transmission
## Study of 53 AIDS Patients at Seti Zonal Hospital, Dhangadi Nepal 2006-2008

<table>
<thead>
<tr>
<th>Clinical feature/opportunistic infections</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>38 (71.7%)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>30 (56.6%)</td>
</tr>
<tr>
<td>Weight loss</td>
<td>28 (52.8%)</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>28 (52.8%)</td>
</tr>
<tr>
<td>Oral thrush</td>
<td>18 (33.9%)</td>
</tr>
<tr>
<td>Esophageal candidacies</td>
<td>13 (24.5%)</td>
</tr>
<tr>
<td>Skin rash/itching</td>
<td>5 (9.4%)</td>
</tr>
<tr>
<td>Pulmonary tuberculosis</td>
<td>5 (9.4%)</td>
</tr>
<tr>
<td>Herpes zoster</td>
<td>4 (7.5%)</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>3 (5.6%)</td>
</tr>
</tbody>
</table>

Antiretroviral Therapy

- Antiretroviral therapy (ART) dramatically changed the outlook for those HIV infected patients who have access.

- Inhibits HIV replication, increases CD4 levels, decreases the rate of opportunistic infections.

- ART is currently available to known HIV+ patients in Nepal.
Safe Water and PLWHA

“The provision of clean water is critical in HIV care and treatment programs for 3 reasons:

(1) PLWHA are particularly susceptible to opportunistic infections and diarrhea;

(2) HIV-positive mothers who do not breastfeed need clean water to make formula; and

(3) Anti-retroviral (ARV) therapy is better absorbed if patients use clean, treated drinking water”

Safe Water and PLWHA

“Programmes serving people with HIV should advocate for adequate water supplies for their populations, particularly because people with HIV are at higher risk than those with intact immune systems of opportunistic infections transmitted through faecal-contamination.”

(WHO, 2008. Essential Prevention and Care Interventions for Adults and Adolescents Living with HIV in Resource-limited Settings)
Safe Water and PLWHA

“HIV-positive patients without access to clean water are at risk for a variety of common and opportunistic pathogens. These pathogens can be difficult to eradicate and can contribute to dehydration, malnutrition, and worsening of immune function…”

Safe Water & ART

“To implement treatment programmes for people with HIV — to provide ART, cotrimoxazole and medicines for TB, for example — access to safe water is essential, as this allows patients to take their drugs and avoid diarrhoeal diseases that reduce drug absorption.”

(WHO, 2008. Essential Prevention and Care Interventions for Adults and Adolescents Living with HIV in Resource-limited Settings)
Diarrhea and ART Absorption

(Brantley et al., 2003. British Journal of Infectious Diseases)
Percentage of PLWHA on ART

(World Health Organization, 2007)
Safe Water and HIV

- In areas that lack adequate safe water, hygiene and sanitation, people with HIV (but don’t have AIDS) still have increased rates of illness and death.
- Data from Africa show high rates of serious opportunistic infections and death occurs with CD4 levels of 200–350 (Wood and Lawn, 2009. Should the CD4 Threshold for Starting ART be Raised? *Lancet*)
Table 1 Distribution of CD$^+$ 4 and diarrhea in the HIV-infected patients

<table>
<thead>
<tr>
<th>CD4 (cells/μL)</th>
<th>Diarrhea frequency</th>
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<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>&lt; 200</td>
<td>46</td>
</tr>
<tr>
<td>200–500</td>
<td>25</td>
</tr>
<tr>
<td>&gt; 500</td>
<td>5</td>
</tr>
</tbody>
</table>

*P < 0.0005 (with CD4 groups)

(Sadraei et al., 2005. CD4+ Cell Counts and Opportunistic Protozoa in Indian HIV-Infected Patients. Parasitol Res 97: 270–273)
Immune System Restoration with ART
Key Messages

- PLWHA are particularly susceptible to opportunistic infections and diarrhea
  - Can be chronic and life threatening depending on CD4 count
- HIV+ mothers who choose not to breast feed need safe water to make formula
- Safe water and ART should be part of a comprehensive approach
Key Messages

- Some people in Nepal do not access ART due to a variety of reasons (e.g. not knowing their HIV status) which increases their susceptibility to impacts of unsafe water.

- Water and sanitation programs in Nepal usually impact PLWHA even without being aware of it.
Questions and Contact Info

- Thank you for your participation. Are there any questions?

- For future information or questions feel free to contact me at any time at tmahin@cawst.org