

The Importance of Safe Drinking Water for People Living with HIV/AIDS

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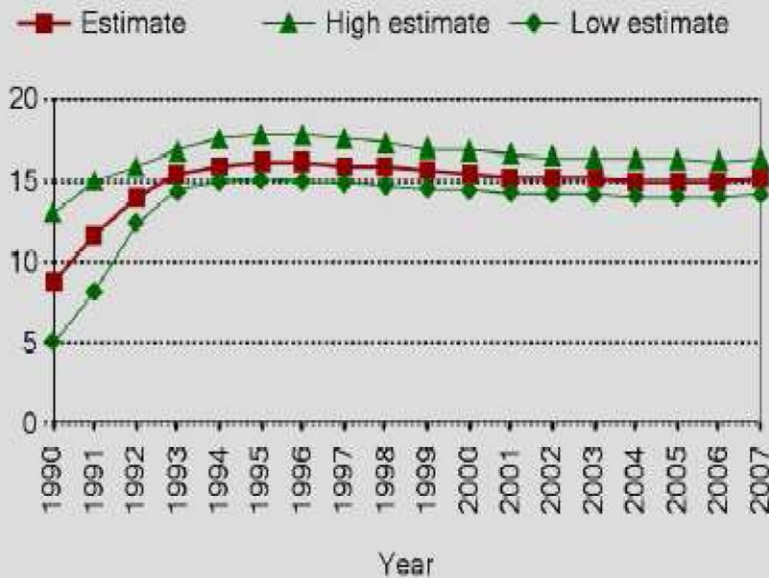
Lusaka, Zambia
September 30, 2010



Zambia

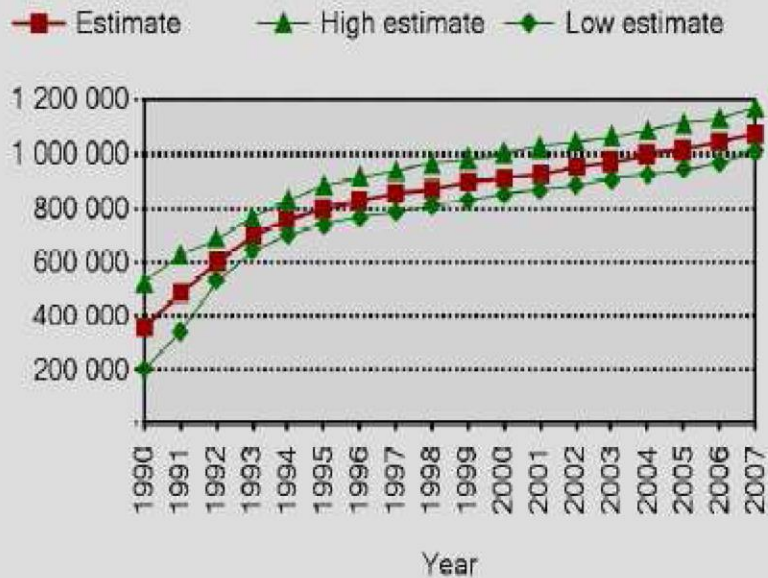
Epidemic estimates

Estimated adult HIV (15-49) prevalence %



Source: UNAIDS/WHO, 2008

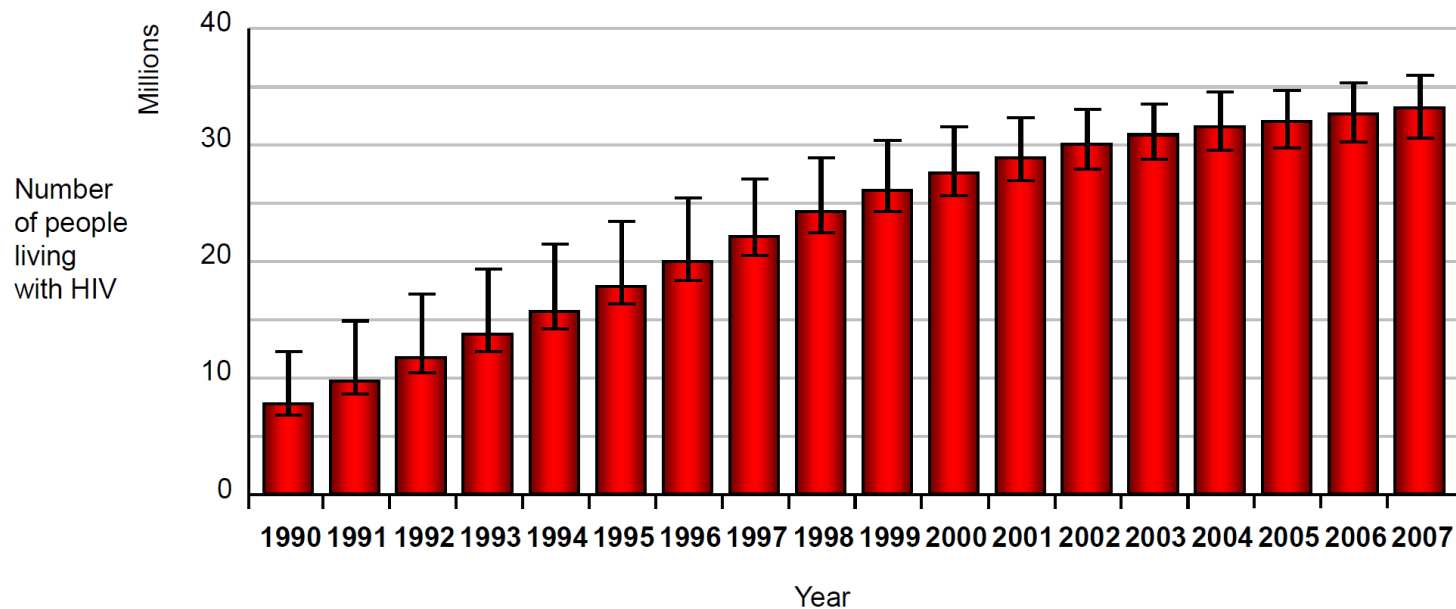
Number of people living with HIV



Source: UNAIDS/WHO, 2008



Estimated Number of People Globally Living with HIV



I This bar indicates the range



Key Words

- **PLWHA** – People living with HIV/AIDS
- **CD4** – A cell count that measures immune status for PLWHA
- **OI** – Opportunistic infections commonly associated with PLWHA
- **ART or ARV** – Antiretroviral therapy
- **PMTCT** – Prevention of mother to child transmission



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 waterborne pathogens and related diarrhea (from unsafe water);
- (2) Anti-retroviral (ARV) therapy is better absorbed if patients use uncontaminated drinking water
- (3) HIV-positive mothers who choose not to breastfeed need safe water to make formula

(USAID, 2007. Best Practices In Social Marketing Safe Water Solution for Household Water Treatment: Lessons Learned from Population Services International Field Programs)



Key Message 1

PLWHA are particularly susceptible to waterborne pathogens and related diarrhea (from unsafe water)



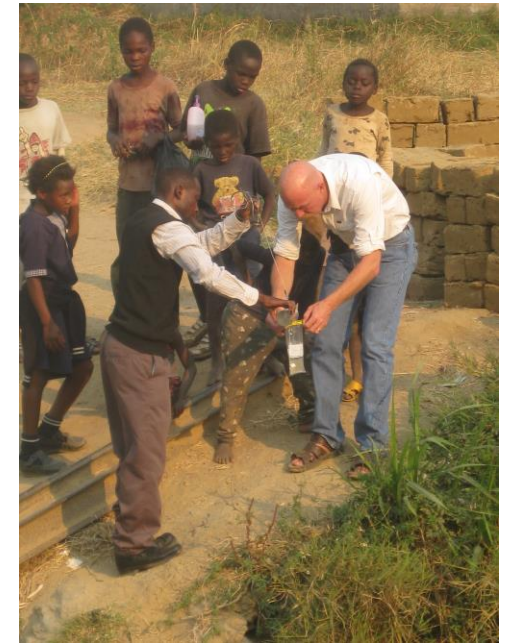
Safe Water and PLWHA

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

(Partners in Health, 2006. PIH Guide to the Community-Based Treatment of HIV in Resource-Poor Settings, Second Edition)



Bacteria Sampling of Drinking Water at Mazyopa and Chazanga (9-27-10)



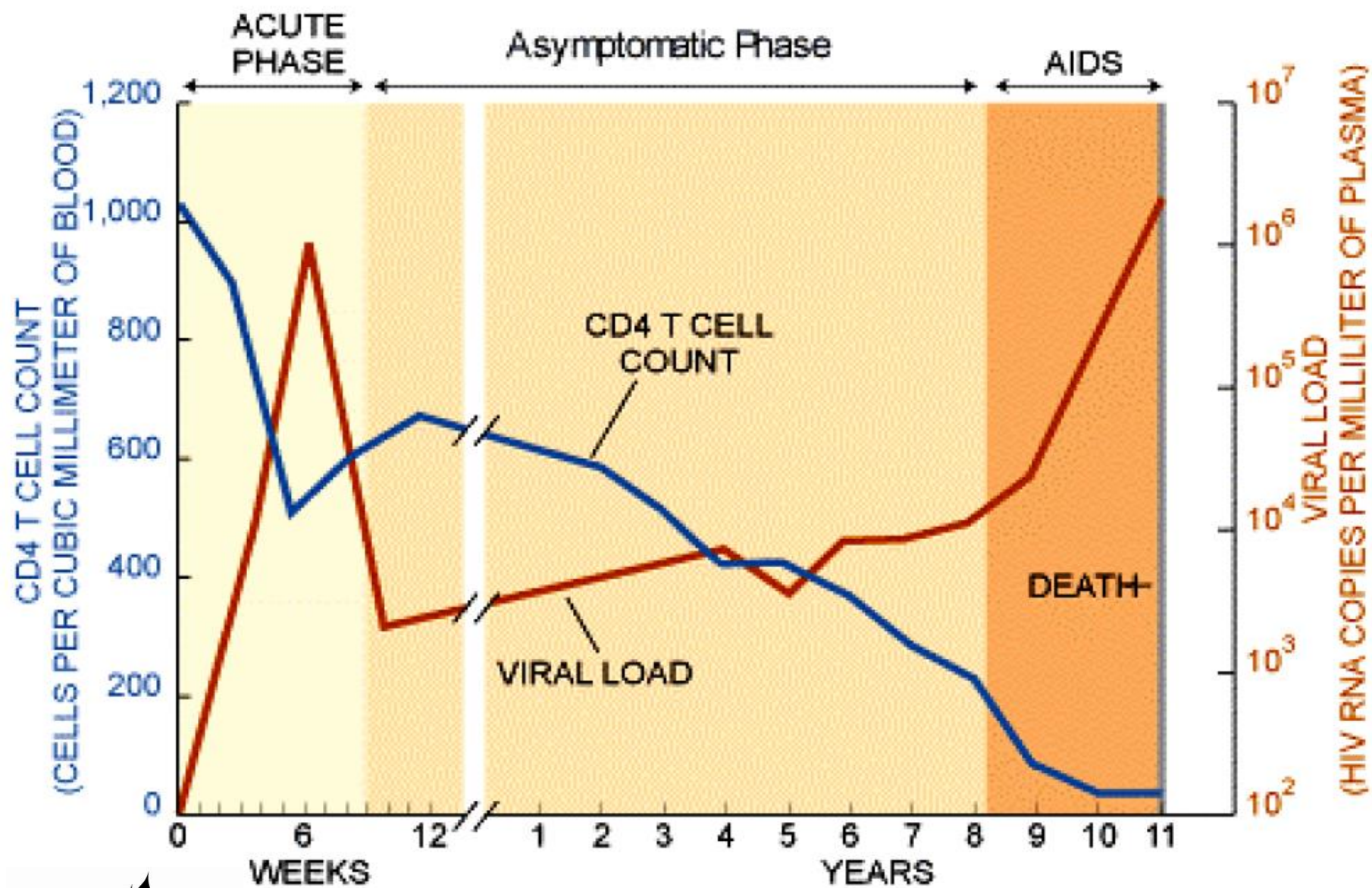


Table 1 Distribution of CD⁺ 4 and diarrhea in the HIV-infected patients

| CD4 (cells/ μ L) | Diarrhea frequency | |
|-------------------------|--------------------|-------|
| | No. | Per. |
| < 200 | 46 | 56.1* |
| 200–500 | 25 | 29.8 |
| > 500 | 5 | 14.7 |

* $P < 0.0005$ (with CD4 groups)

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



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 occur with CD4 levels of 200–350



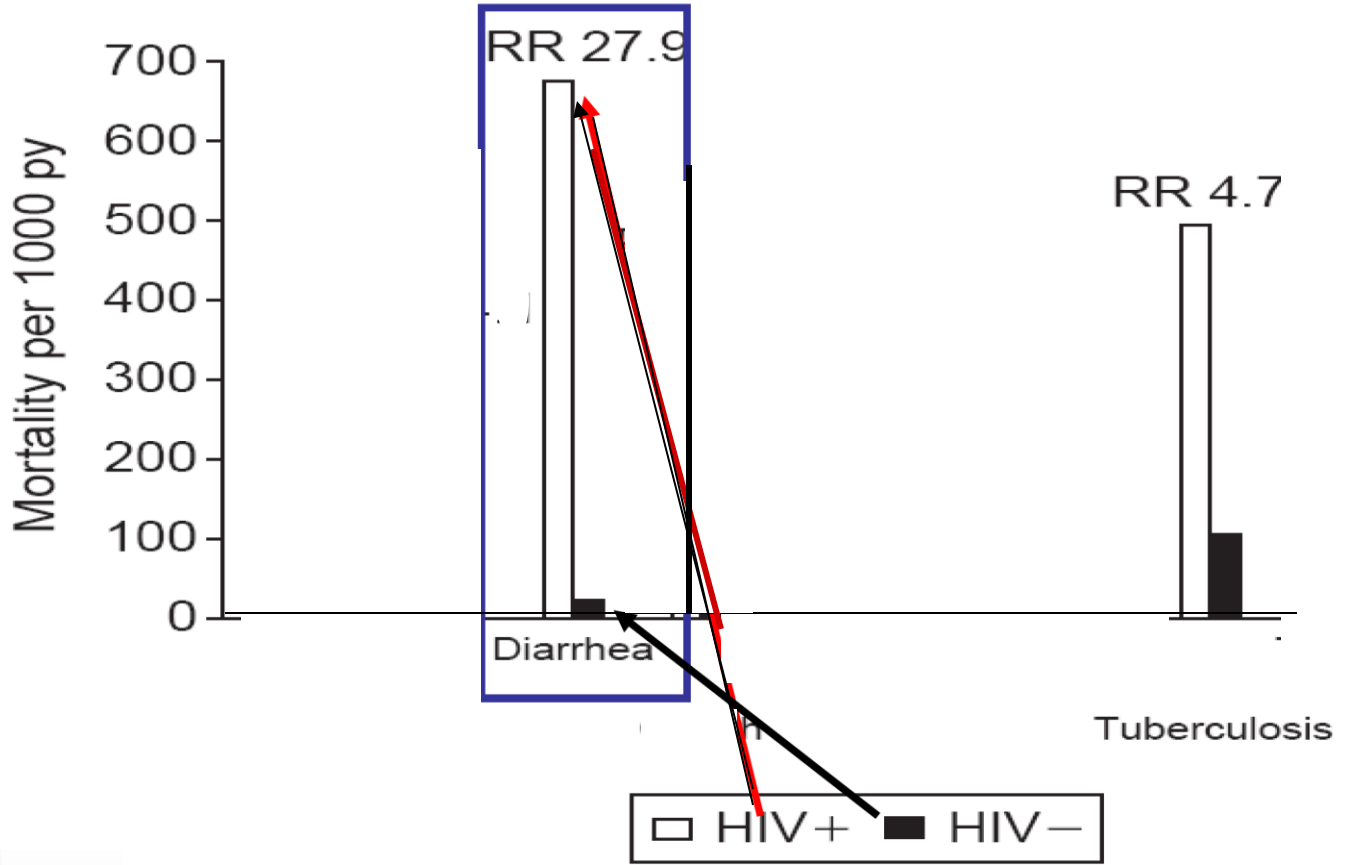
(Wood and Lawn, 2009. Should the CD4 Threshold for Starting ART be Raised? *Lancet*)

Diarrhea and HIV (WHO)

- Diarrhea is a major cause of morbidity (illness) and mortality (death) in people with HIV.....
 - Recent studies demonstrated ... reduction in diarrheaof 39% with point-of use household water treatment.”
- **WHO 2008** “Essential prevention and care interventions for adults and adolescents living with HIV in resource-limited settings”

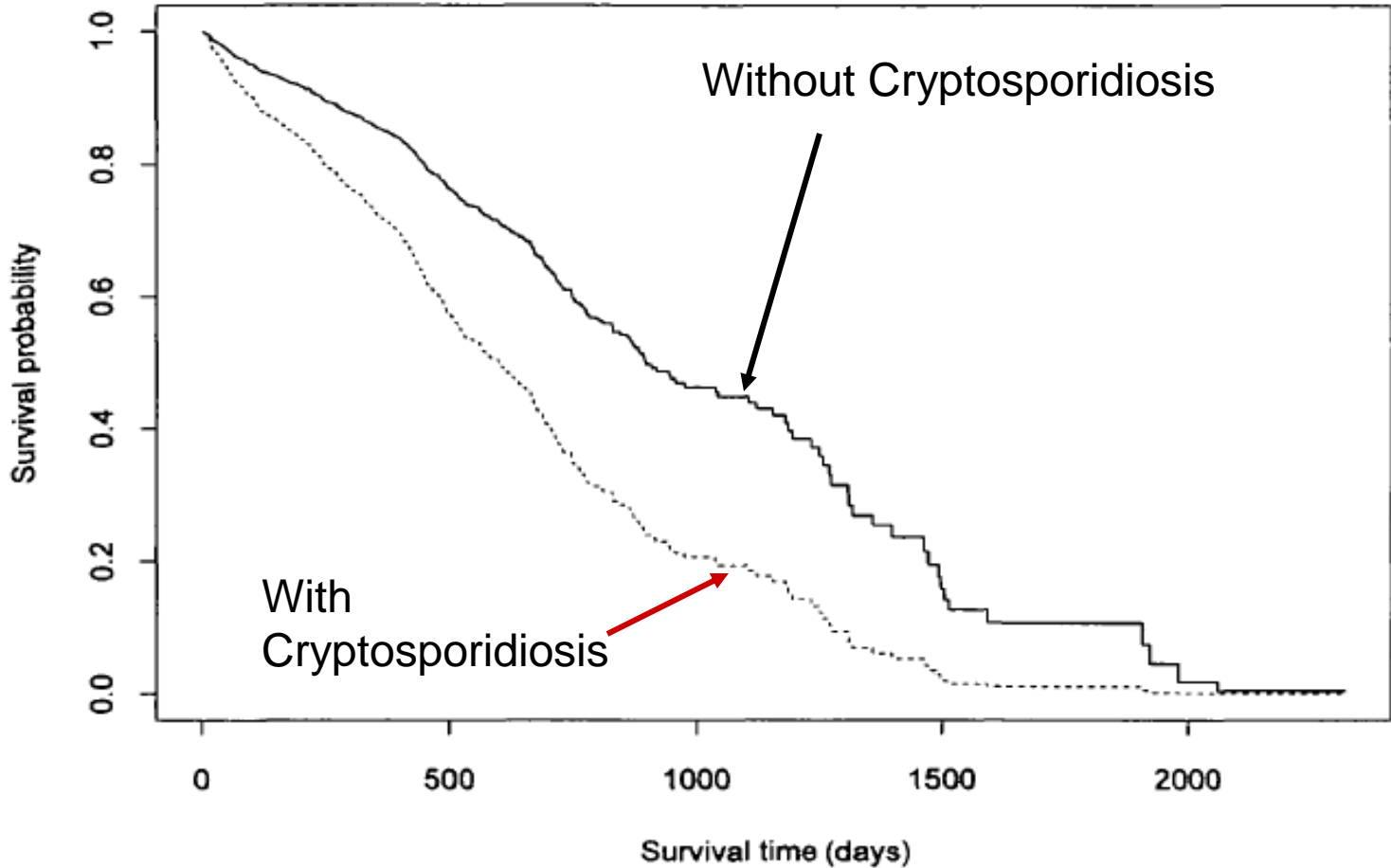


Death Rates 20,000 HIV+ Adults Uganda



Sewankambo et al. "Mortality associated with HIV infection in rural Rakai District, Uganda" Aids 2000

% Survival of AIDS Patients and *Cryptosporidium*



Rainfall & *Cryptosporidium*

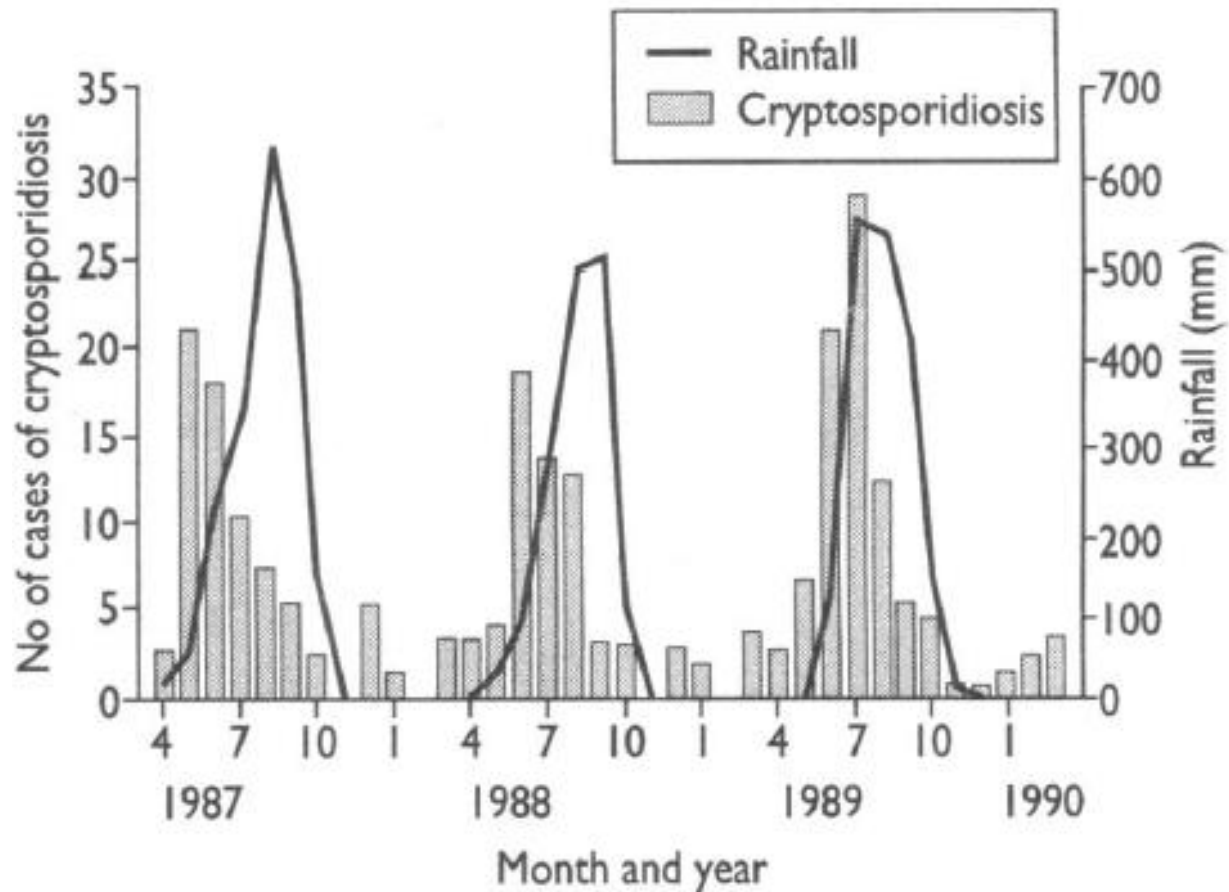


FIG 1—Monthly rainfall (Institute of Meteorology, Bissau) and number of episodes of cryptosporidium diarrhoea among 3215 episodes of diarrhoea in children in Bissau, Guinea Bissau, West Africa

Key Message 1

- PLWHA are particularly susceptible to waterborne pathogens and related diarrhea (from unsafe water)
- Any questions?



Key Message 2

Anti-retroviral (ARV) therapy is better absorbed if HIV+ individuals use uncontaminated water



Safe Water & ARVs

“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.”

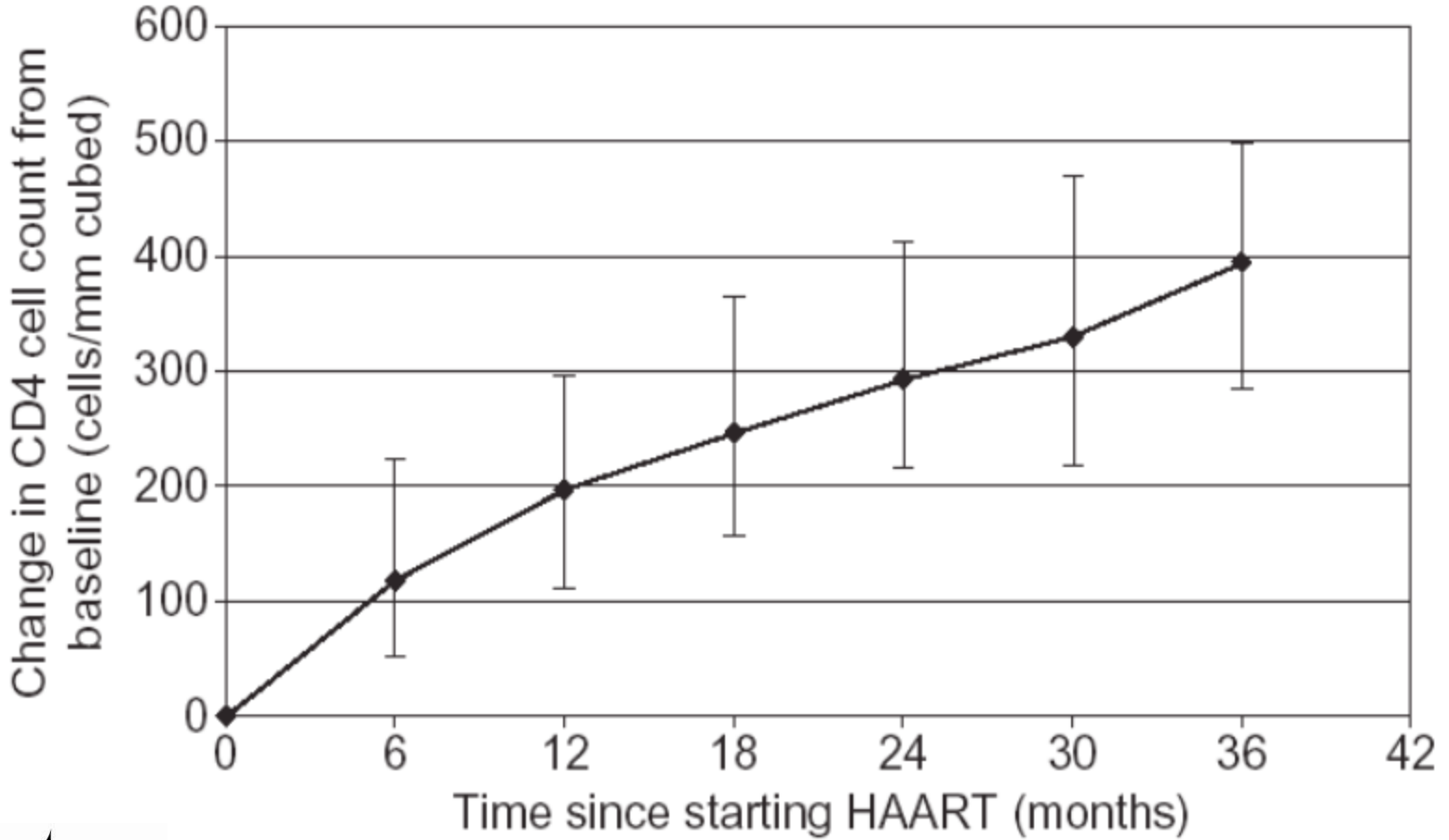
(**WHO**, 2008. Essential Prevention and Care Interventions for Adults and Adolescents Living with HIV in Resource-limited Settings)



Water Sources in Mazyopa and Chazanga



Immune System Improvement with ARVs



Key Message 2

- Anti-retroviral (ARV) therapy is better absorbed if patients use uncontaminated drinking water
- Any questions?



Key Message 3

HIV-positive mothers who choose not to breastfeed need safe water to make formula



Replacement Feeding & Importance of Water Treatment - WHO

- When mothers choose “replacement (i.e., formula) feeding of infants of mothers with HIV, or early weaning of breastfed infants of HIV infected mothers, the provision of **effective water treatment is essential** to protect the health of the infants.”
 - WHO 2008 “Essential prevention and care interventions for adults and adolescents living with HIV in resource-limited settings



Household Water Treatment - Mazyopa



Biosand Filter

Percent of Adults Living with HIV Who Are Female

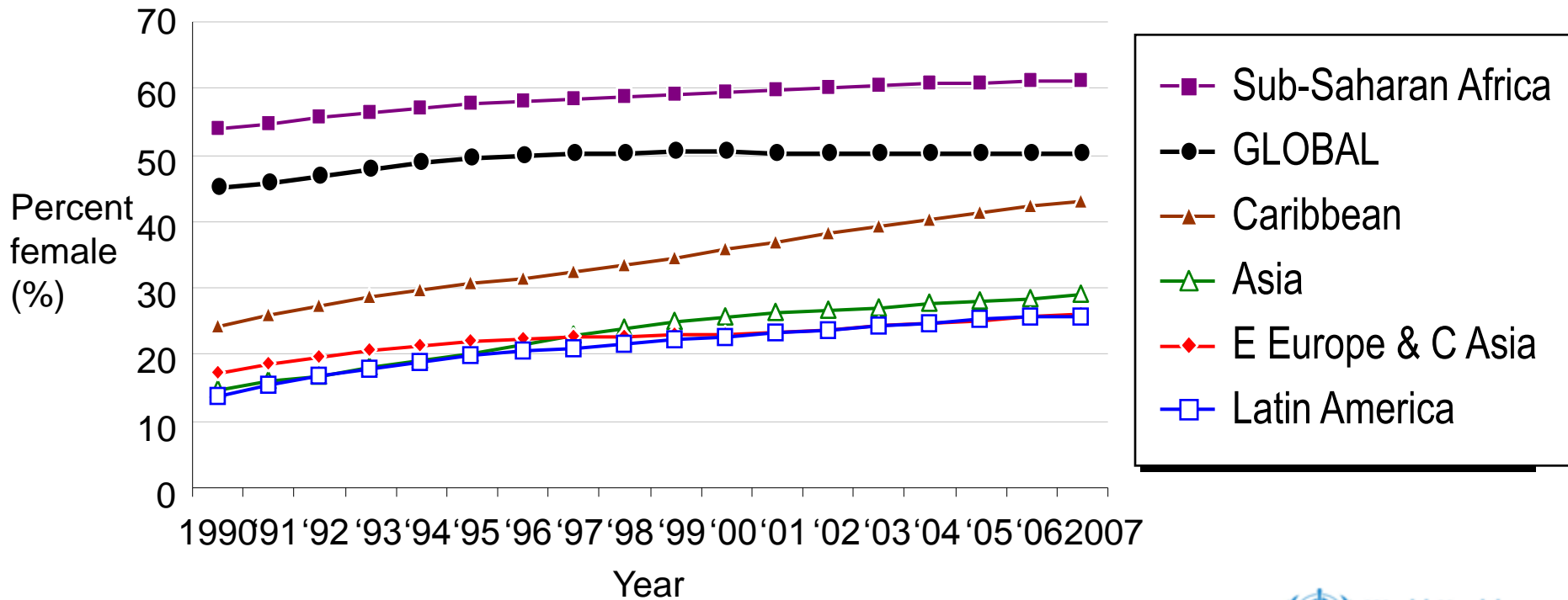
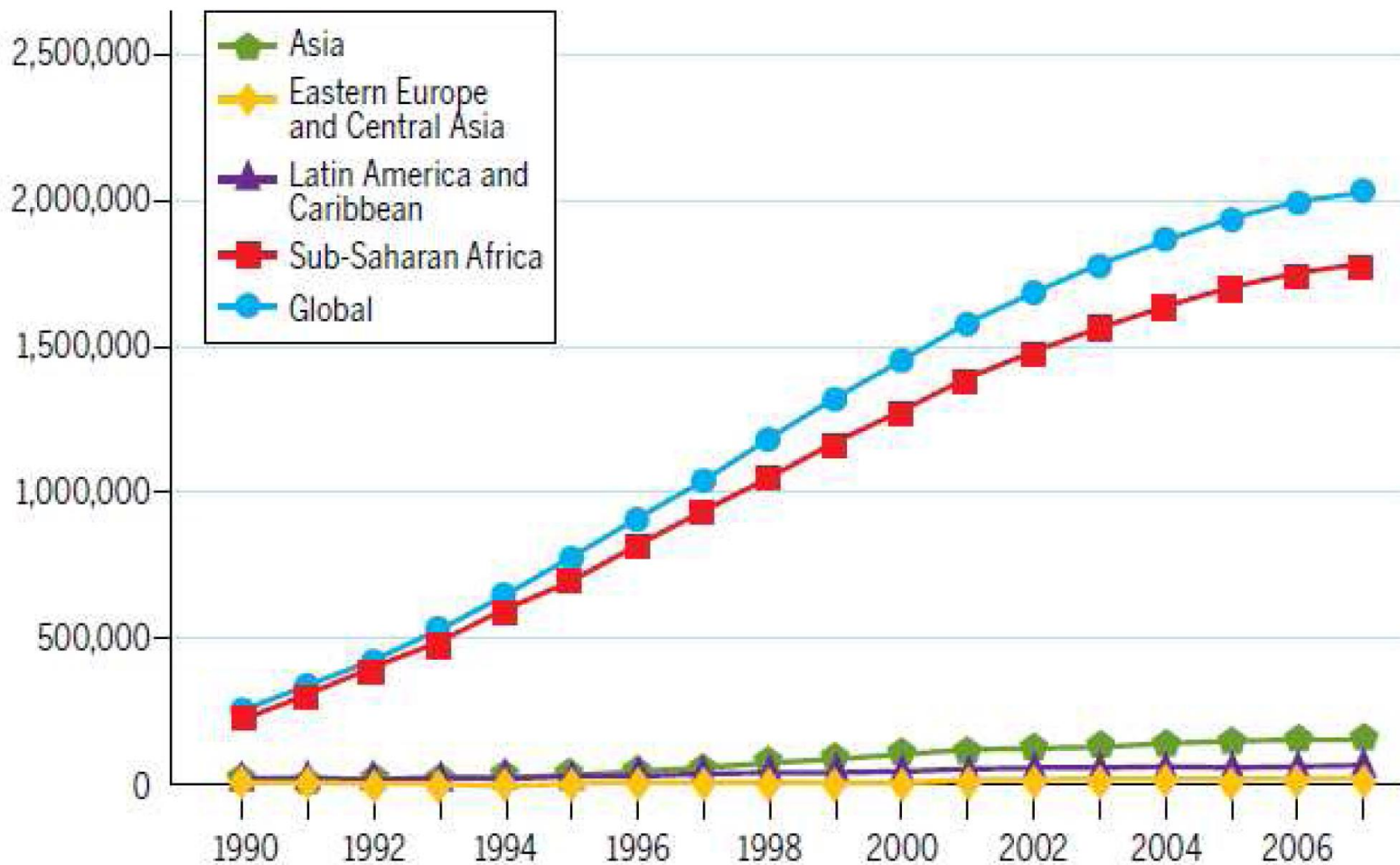


Figure 1: Children Living with HIV Globally, 1990-2007



Source: Richter, 2008. Data from UNAIDS, 2008.



Conclusions

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

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(USAID, 2007. Best Practices In Social Marketing Safe Water Solution for Household Water Treatment: Lessons Learned from Population Services International Field Programs)



Closing Thought

“Programes serving people with HIV should advocate for adequate (safe) water supplies for their populations

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



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

