Module 0:
Basics of HIV

Learning Objectives

By the end of this unit, participants will be able to:

- Define HIV and AIDS
- Describe how the immune system works
- Describe how HIV is and is NOT transmitted
- Explain how HIV is diagnosed in both adults and children
- Describe treatment for HIV/AIDS
- Identify 3 key groups who are eligible for ART

What is HIV? What is AIDS?

- **HIV: Human Immuno Deficiency Virus**
  - Virus that affects the immune system
  - Over time, causes damage to the immune system
- **AIDS: Acquired Immune Deficiency Syndrome**
  - Advanced stage of HIV disease
  - A person is diagnosed with AIDS when he/she has a combination of certain illnesses that result from a weakened immune system

The Relationship between HIV & AIDS

- HIV is the virus that causes AIDS
- A person who has HIV may not appear sick
- Over time, this person will become more ill
- Those conditions may lead to an AIDS diagnosis

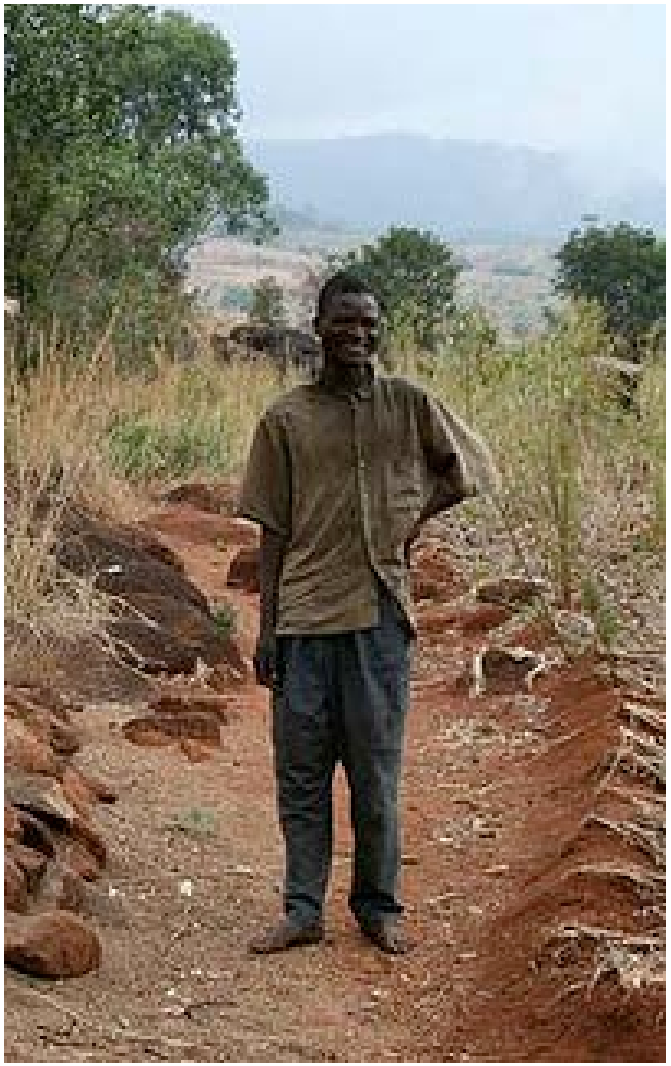


Photo courtesy of Amy Gottlieb

What is the Immune System?

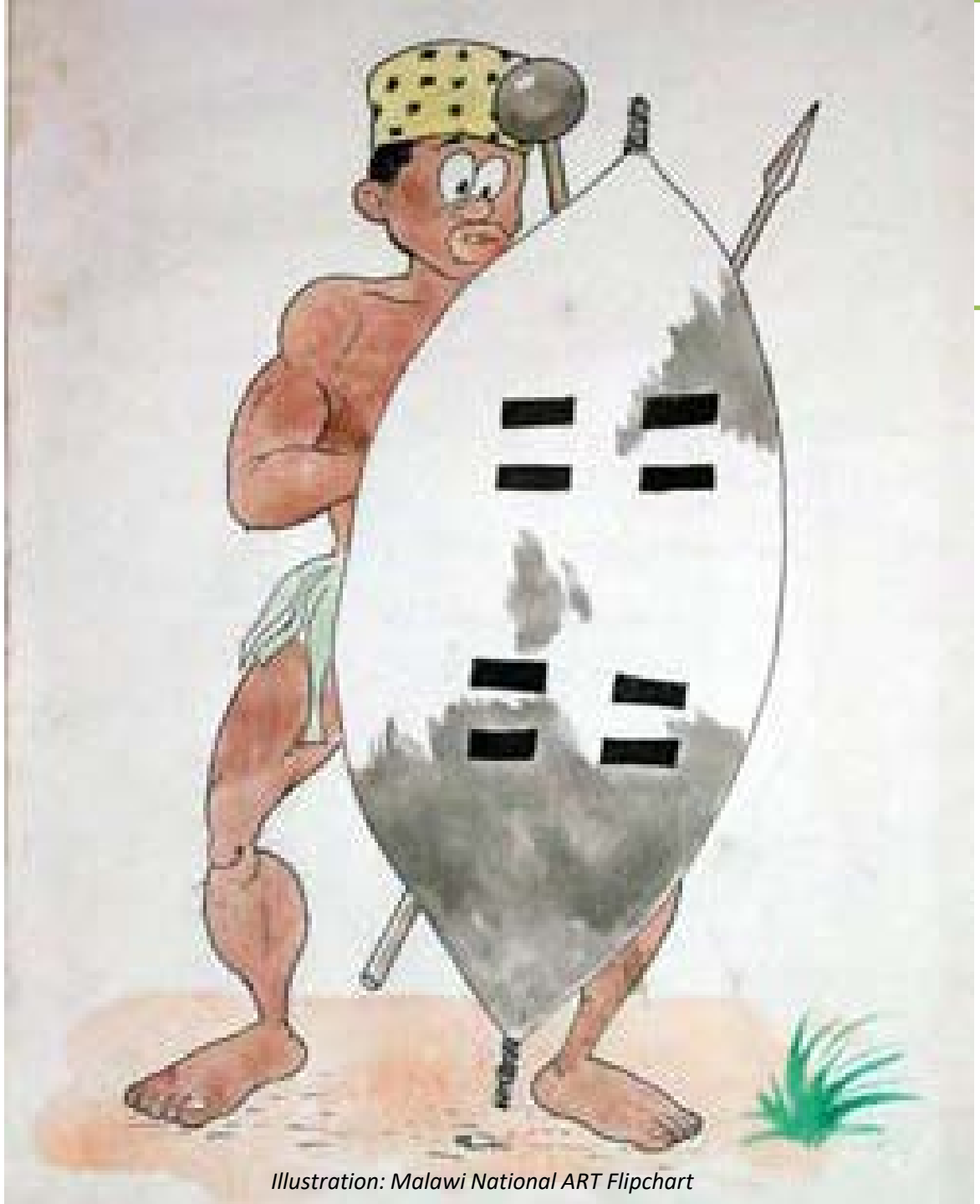
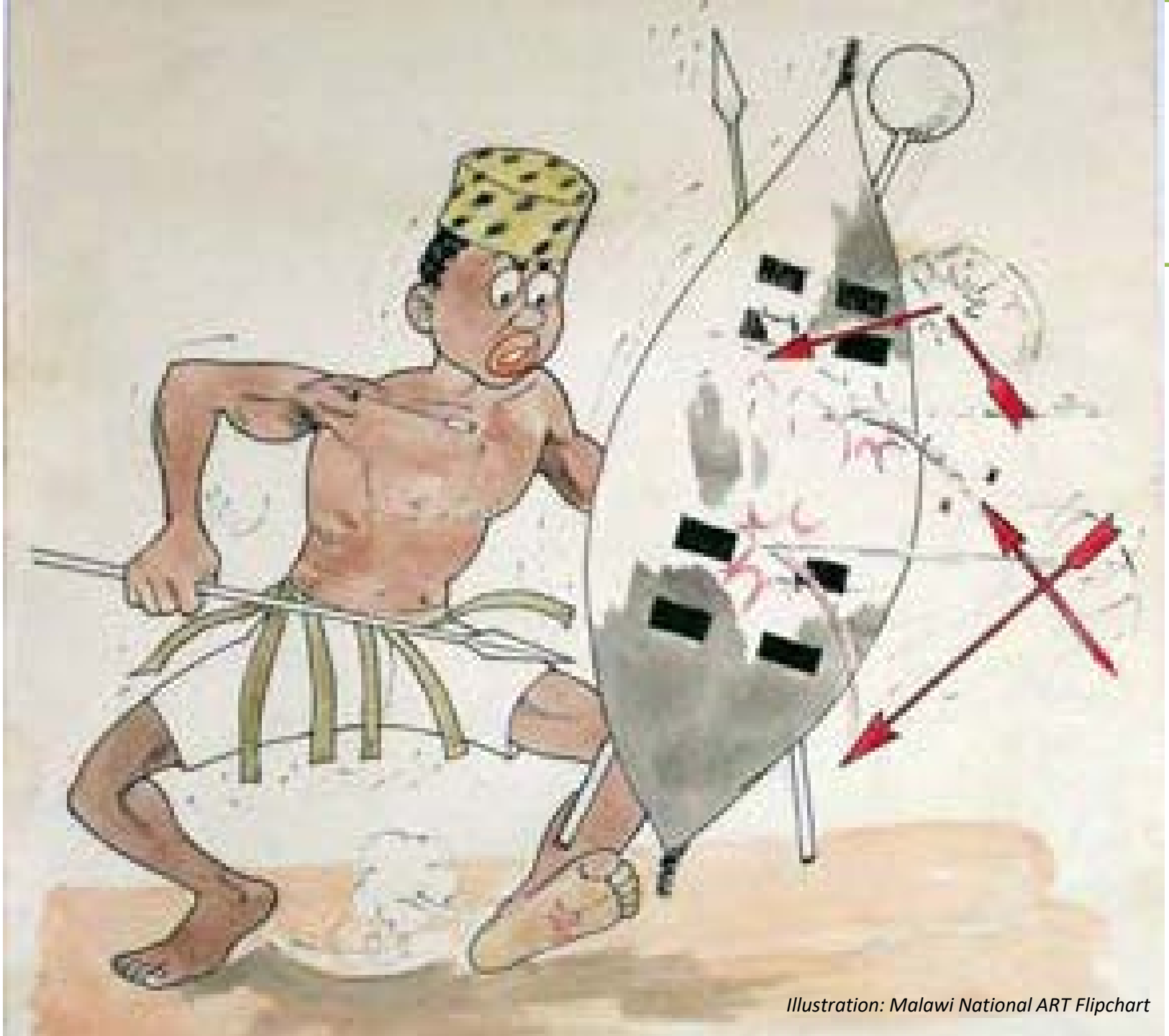


Illustration: Malawi National ART Flipchart



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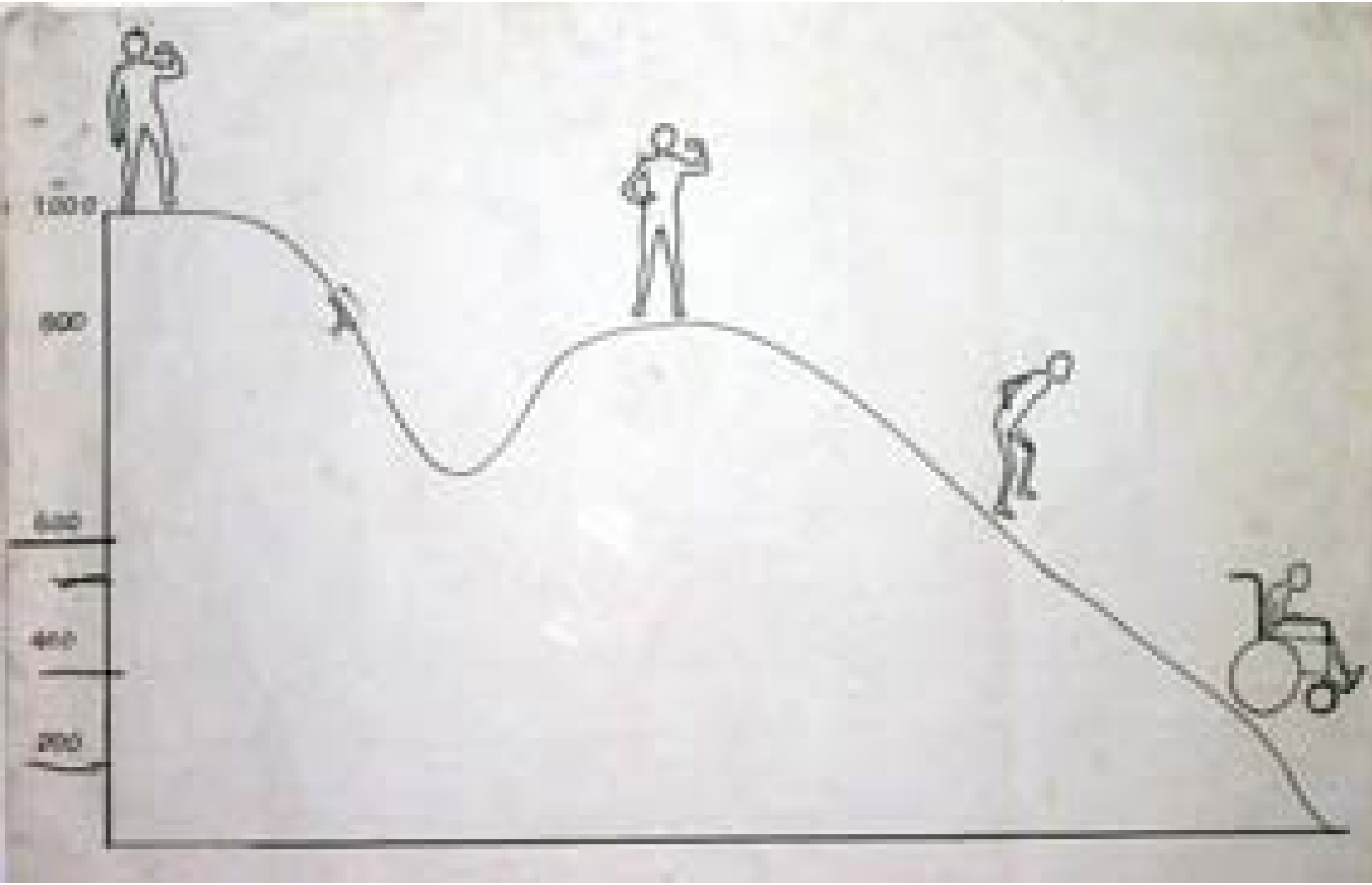
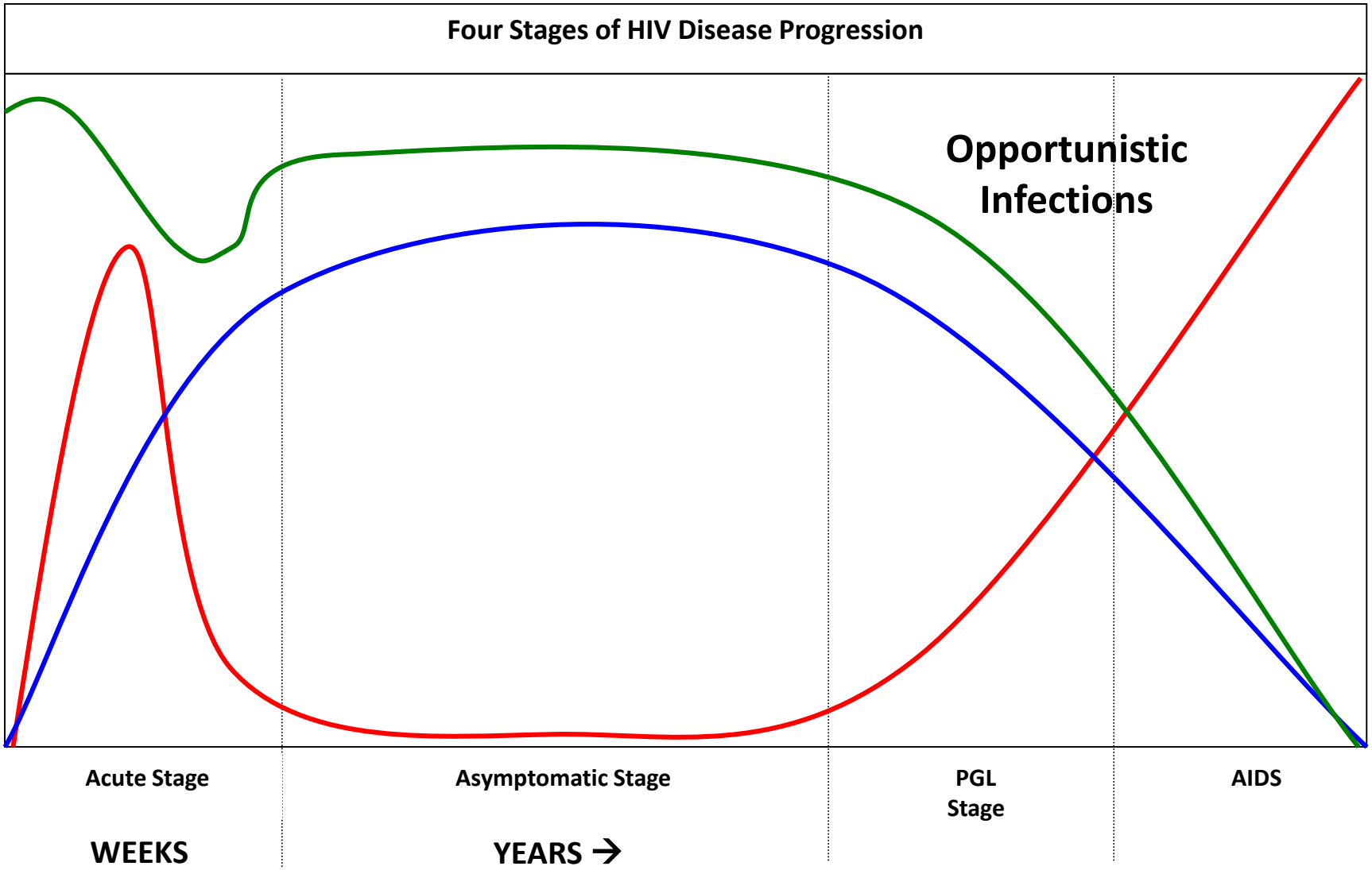


Illustration: Malawi National ART Flipchart

Immune Response

- CD4 cells
  - Direct other cells in the immune system
- Antibodies
  - Proteins (immunoglobulins) produced in the body in response to the presence of a foreign substance
- Antigens
  - Foreign substances that elicit the body to produce antibodies

Stages of HIV Infection

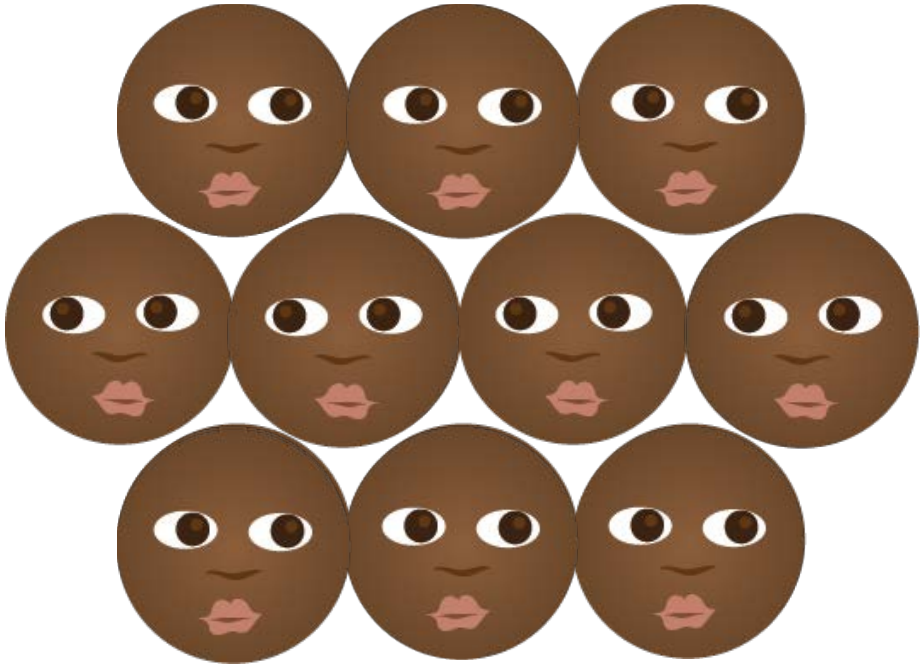


- A pregnant woman with HIV can pass it to her baby
- For infants and children with HIV, the disease progresses more rapidly to AIDS
- *EARLY DIAGNOSIS AND TREATMENT ARE CRITICAL*

Photo courtesy of Amy Gottlieb

Children are Vulnerable—Mortality

If 10 HIV+ infants are born today, and none get care…



After 1 year, 34% will have died

After 2 years, 50% will have died

After 3 years, 75% will have died

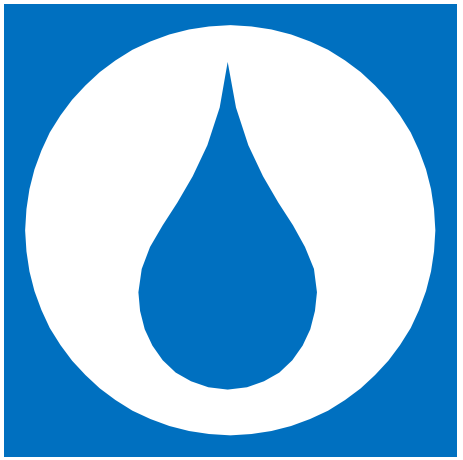
Important Points

- Many people with HIV look and feel healthy
- There is no cure for HIV
- Over time, HIV causes damage to the immune system, leading to frequent illness
- Even if they feel and appear healthy, infected people can transmit HIV to others
- After some time, a person may develop AIDS

HIV Transmission

HIV Transmission

- Which bodily fluids transmit HIV?
- What are the modes of transmission?



Exposure vs. Infection

- What is the difference between exposure and infection?
- Not every exposure leads to transmission
  - ***Not <u>every</u> act of sex*** with an infected person results in transmission
  - ***Not <u>every</u> baby born*** from an HIV+ mother will become infected with HIV
  - ***Not <u>every</u> HCW who gets a needle stick*** from an HIV+ patient will become infected with HIV

Factors That Affect Transmission: Sexual Exposure

A

- **Viral load of person with HIV**
- **Other STIs**

B

- **Frequency of sex**
- **Exposure to infectious fluids**

C

- **Overall health and immune strength**
- **Any STIs**

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Consider factors that affect transmission at points A, B and C

Factors that Affect Transmission: MTCT

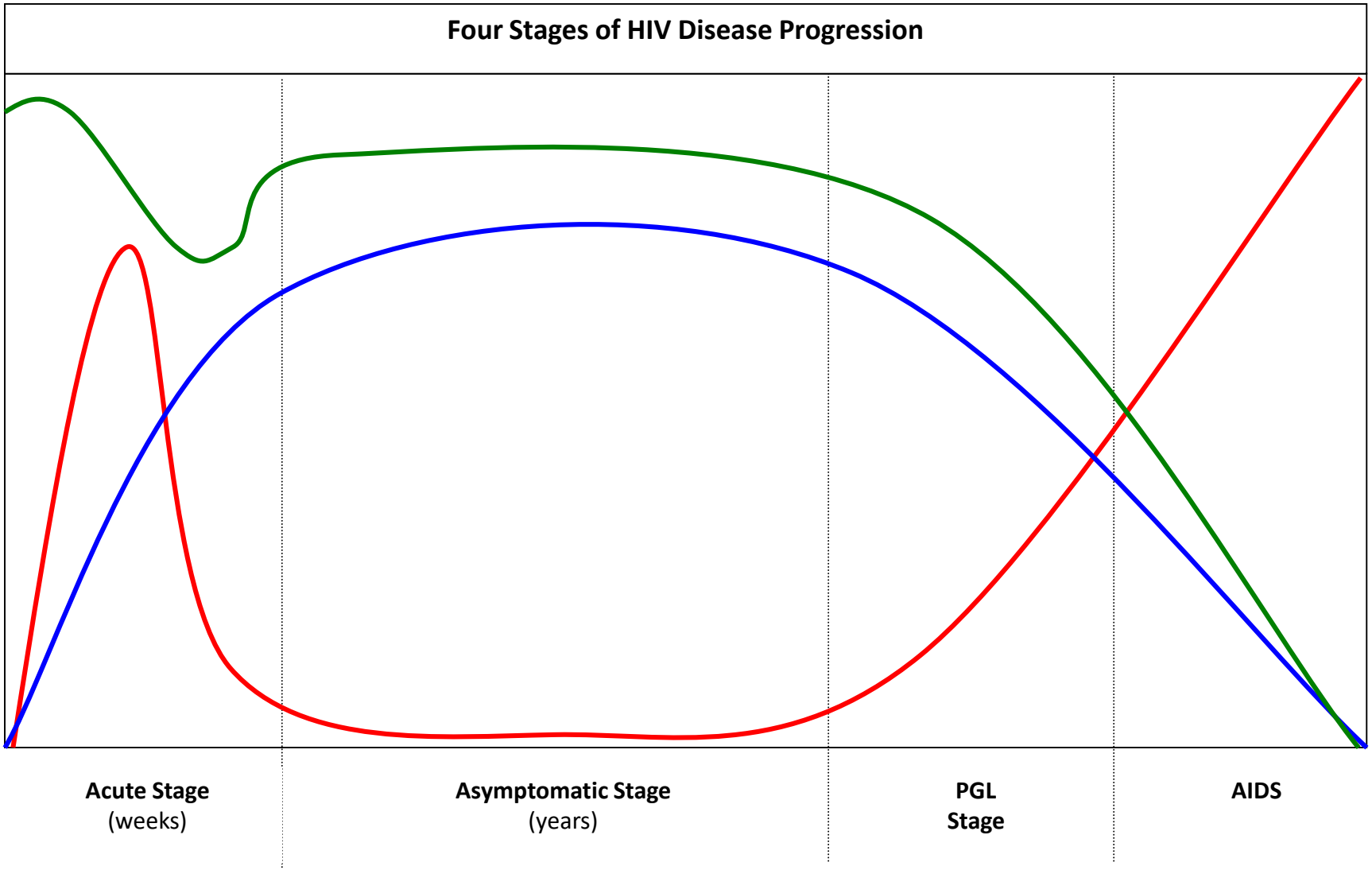
- Health of the mother during pregnancy
  - Infections (eg. STIs, malaria) can weaken the immune system and allow the viral load to increase.
  - When the mother's viral load is high, risk of transmission is greatest
- When the mother becomes infected
  - HIV transmission is more likely if the mother becomes infected ***while*** pregnant

Testing for HIV

Antibody Tests

- HIV tests used for adults detect HIV antibodies in the blood
- There are times after becoming infected when antibody levels are too low to be detected by the test

Antibody Tests and Disease Progression



Antibody Tests and the Window Period

- A person who is infected with HIV during this time will test negative
- The window period is usually 4-6 weeks (>95%)
  - For a minority (< 5%) it may extend between 6-12 weeks
  - Rare for it to be more than 12 weeks
- The virus can be passed to others during this time

Virological Tests for Infants

- HIV *antibody* tests cannot be used to diagnose infants under 12 months
  - Infants are born with their mother's antibodies
  - At 9 months, the infant begins to shed the mother's antibodies

- For infants under 12 months, a test that detects parts of the virus must be used (DNA PCR)

Overview of HIV Treatment

Can Disease Progression Be Delayed?

Disease progression can be delayed by:

- Preventing Opportunistic Infections (OIs)
- Treating OIs early
- Starting Anti-retroviral Therapy (ART)

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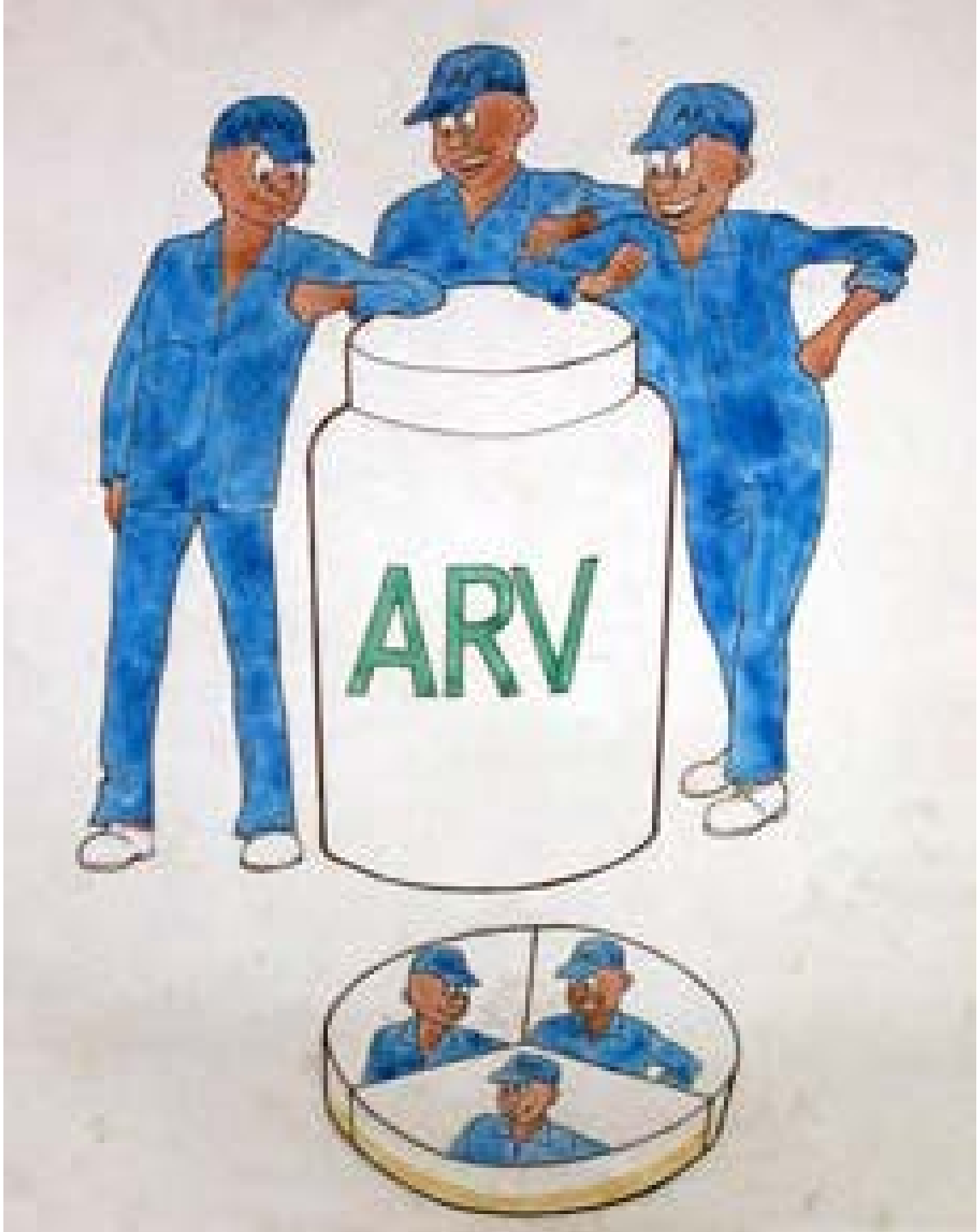

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Eligibility to Start ART (1)

- Any person with signs that the body's defense system has been damaged
  - Specific diseases classified as WHO Stage III or IV (adults and children)
  - CD4 count below 500 (adults)
  - Infants with presumed severe HIV disease

Eligibility to Start ART (2)

- Some groups are universally eligible
  - Pregnant women
  - Breastfeeding women
  - Children under 5 years

Photo courtesy of Amy Gottlieb

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What is Option B+?

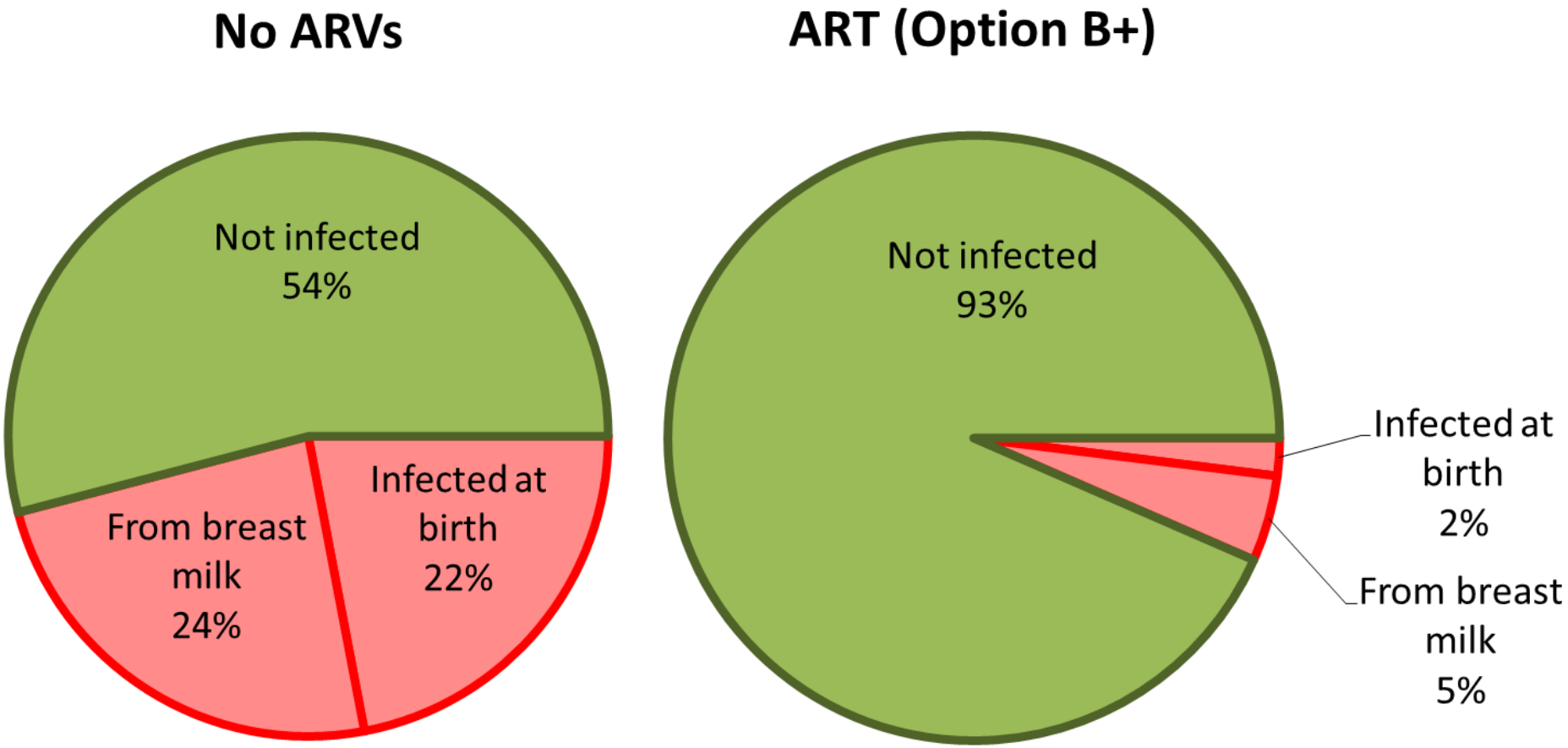
- For HIV+ pregnant/breastfeeding women
  - Lifelong ART
  - Infants take 6 weeks NVP after birth
- Option B+ facilitates:
  - Increased access to ART
  - Prevention of maternal deaths after delivery
  - Reduction of HIV transmission to both the infant and to sexual partner(s)

Option B+ Leads to Safer Breastfeeding

- Makes breast feeding (BF) safe for HIV infected women
- BF recommendations are now identical for HIV infected and non-infected women
  - Breastfeeding is recommended until age 2
  - Add suitable food from age 6 months

Impact of Option B+

Comparing HIV transmission rates among exposed infants with and without ARVs for the mother



Quick Review

- **Who is eligible to start ART?**
  - Adults, children w/signs of weak immune system
  - All HIV+ infants and children under 5 years
  - All HIV+ pregnant and breastfeeding women
- **After testing positive, who should be referred to the ART clinic for assessment?**

EVERYONE!

Every HIV+ person: child, adult, healthy or unhealthy

After Testing Positive, Every Client is Assessed for ART

- If eligible to start ART, clinician will usually initiate treatment at the same visit
  - Assessment
  - Patient education session
  - Prescribe ARVs
- If not yet eligible, patient will be enrolled in HIV Care Clinic. Follow up continues for:
  - Exposed children until age 24 months
  - Pre-ART children and adults – until they start ART

CD4 Count

- Measures the strength of the immune system
- Low CD4 count suggests that the disease has progressed
- Helps determine the right time to start treatment

All HIV+ Patients are Monitored

- Patients on ART and those enrolled in HCC need regular monitoring
- Disease progression is monitored using 1 test: Viral load

Photo courtesy of Amy Gottlieb

Viral Load

- Measures level of virus in the body
- Helps determine if treatment is working
- Viral load tests are not common in Malawi, but availability is increasing

Post-Exposure Prophylaxis

- Under certain circumstances, ARVs can also be used to prevent HIV transmission
- After a high risk contact with body fluids from an HIV infected person, ARVs started within 72 hours of exposure
  - Reduces the risk of infection by 80%
  - Starting more than 72 hours after exposure is not effective and should be avoided

PEP—Who is Eligible?

- Any exposure classified as risk in the past 72 hours

Eligible clients should NEVER be refused access to PEP

Cotrimoxazole Prophylaxis

- An antibiotic used to prevent opportunistic infections in HIV infected individuals
- All patients eligible for ART are also eligible for CPT
- Also offered to DNA-PCR negative children born from HIV infected mothers who continue to breast feed.

46% reduction in mortality when CPT is given to HIV infected patients

Key Points (1)

- HIV is the virus that causes AIDS
- HIV affects immune system and body's ability to fight off infections
- HIV is transmitted through 4 bodily fluids:
  - semen
  - vaginal secretions
  - breast milk
  - blood
- Adults are tested for HIV using an HIV antibody test
- HIV antibody tests cannot be used to diagnose infants under 12 months, use DNA PCR test instead

Key Points (2)

- Antiretroviral treatment (ART) is used to treat HIV by delaying disease progression and strengthening the immune system
- 3 groups are eligible for ART:
  - Adults, children w/signs of a weak immune system
  - All HIV+ infants and children under 5 years
  - All HIV+ pregnant and breastfeeding women