Module 1:
Overview of HIV Infection

Learning Objectives

At the end of this module, you will be able to:

- Describe the difference between HIV infection and AIDS
- Discuss the HIV epidemics globally, regionally, and locally in terms of number of people affected
- Define the terms: antibody and antigen
- Explain how “window period” may affect HIV testing results
- Describe the progression of HIV infection

Content Overview

- What is HIV?
- What is AIDS?
- The HIV pandemic
- HIV transmission
- Window period
- Stages of HIV infection

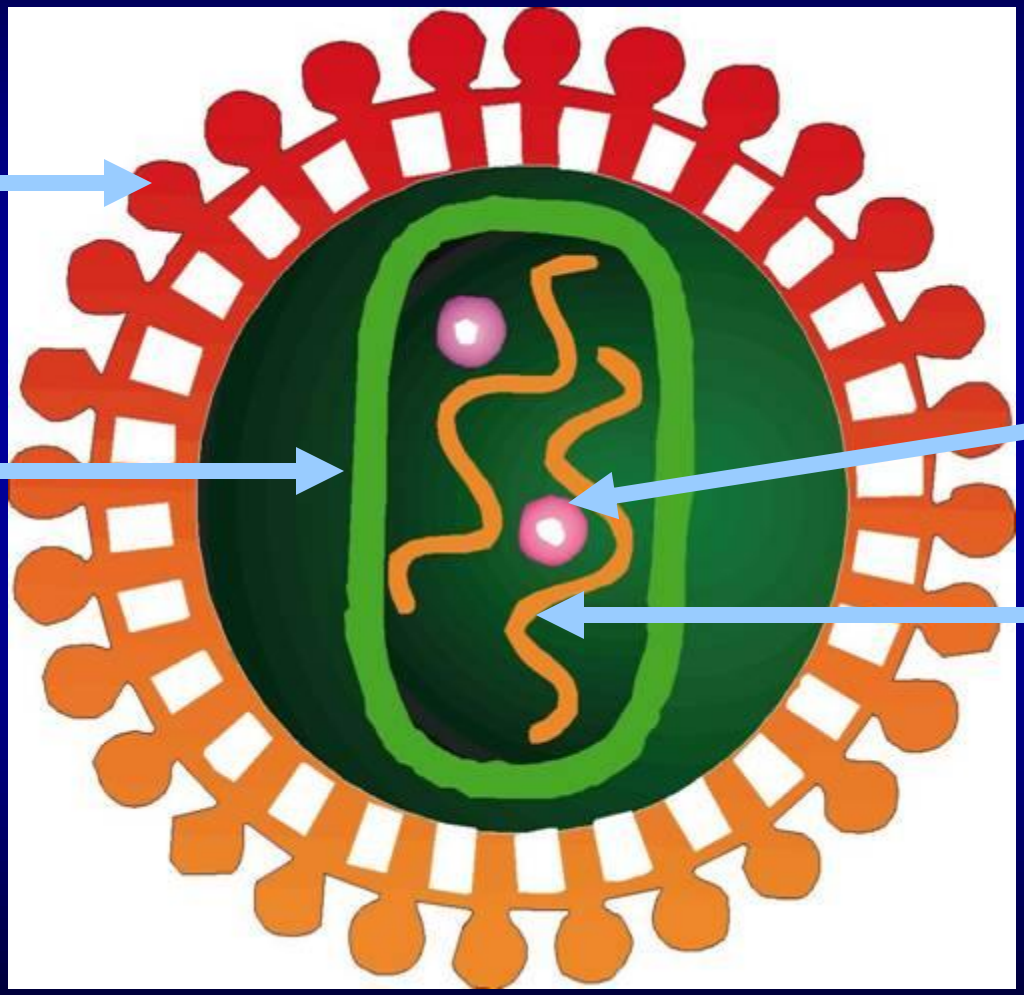
What is HIV?

- **H**uman: Infecting human beings
- **I**mmunodeficiency: Decrease or weakness in the body's ability to fight off infections and illnesses
- **V**irus: A pathogen having the ability to replicate only inside a living cell

Types of HIV Virus

- **HIV 1**
  - Most common in sub-Saharan Africa and throughout the world
  - Groups M, N, and O
  - Pandemic dominated by Group M
    - Group M comprised of subtypes A - J
- **HIV 2**
  - Most often found in West Central Africa, parts of Europe and India

Structure of HIV



What is AIDS?

- **A**cquired: To come into possession of something new
- **I**mmune **D**eficiency: Decrease or weakness in the body's ability to fight off infections and illnesses
- **S**yndrome: A group of signs and symptoms that occur together and characterize a particular abnormality

AIDS is the final stage of the disease caused by infection with a type of virus called HIV.

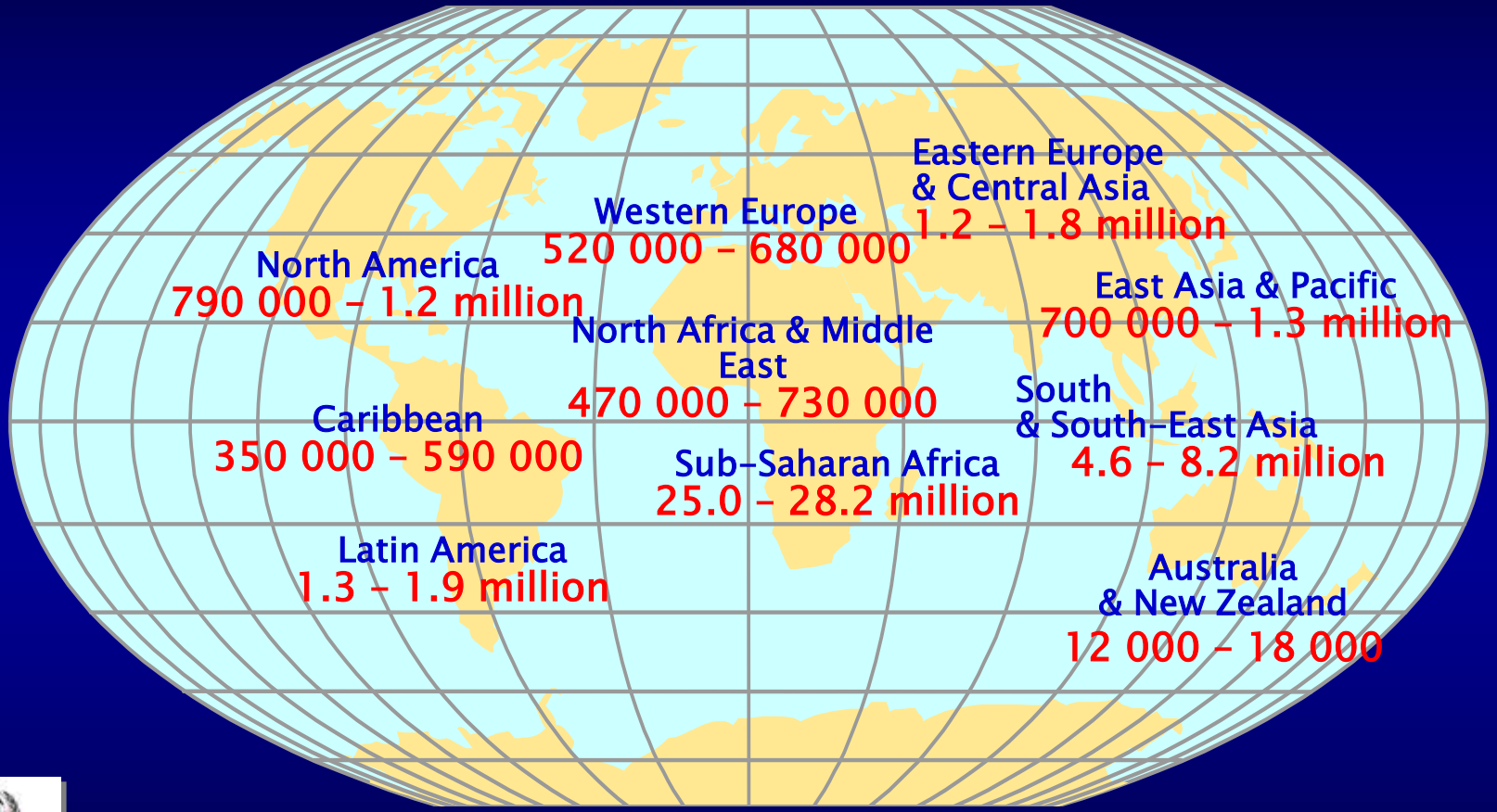
HIV vs. AIDS

- HIV is the virus that causes AIDS
- Not everyone who is infected with HIV has AIDS
- Everyone with AIDS is infected with HIV
- AIDS is result of the progression of HIV Infection
- Anyone infected with HIV, although healthy, can still transmit the virus to another person

How is HIV Transmitted?

- Unprotected sexual contact with an infected partner
- Exposure of broken skin or wound to infected blood or body fluids
- Transfusion with HIV-infected blood
- Injection with contaminated objects
- Mother to child during pregnancy, birth or breastfeeding

HIV: A Global Pandemic



UNAIDS

Adults and children estimated to be living with HIV/AIDS (2003): 34 – 46 million total

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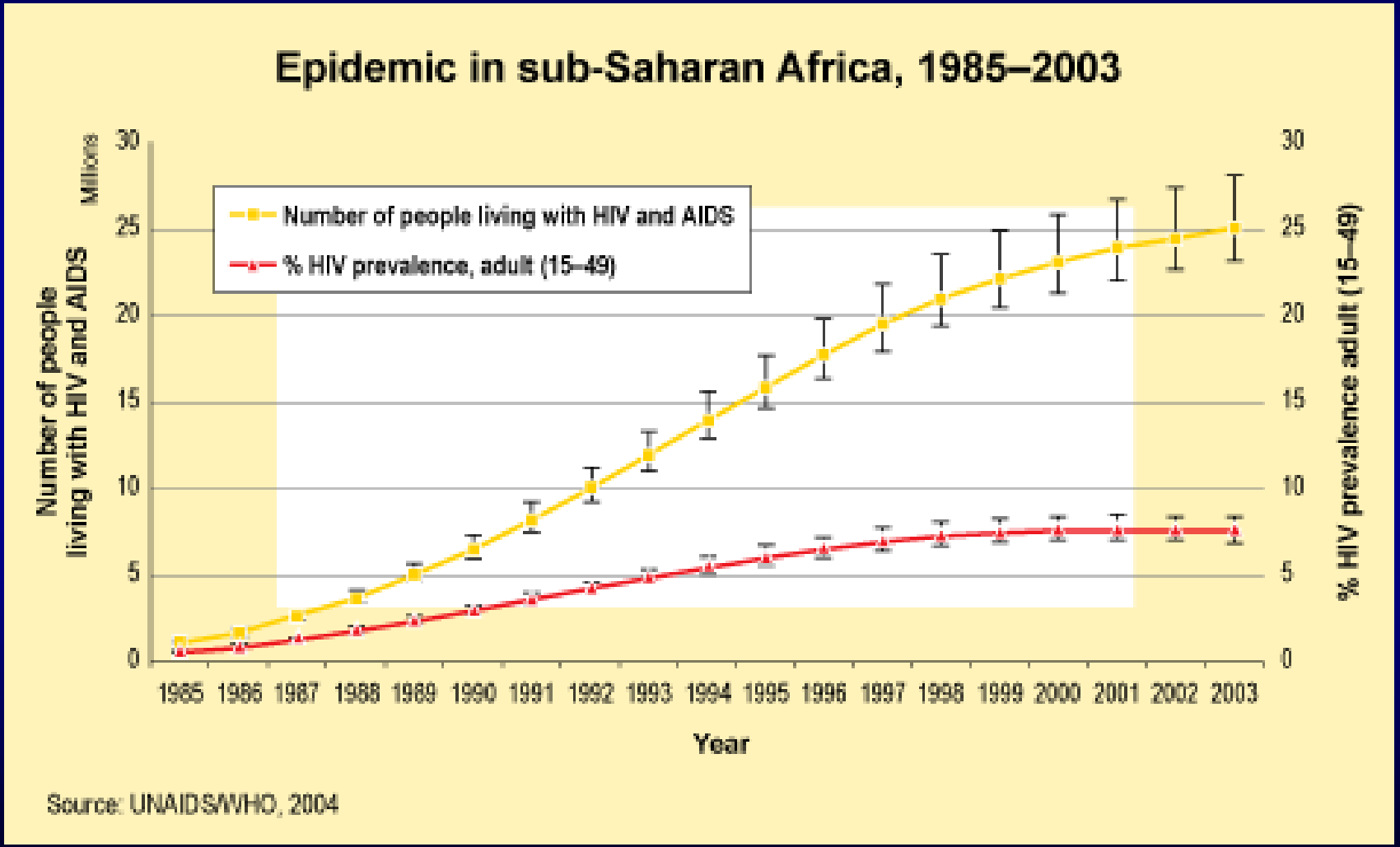
HIV Epidemic in Sub-Saharan Africa



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HIV Epidemic: Local Facts & Impact

- *Insert -*
  - *Local HIV/AIDS Facts*
  - *Local Impact*

Basic Terms

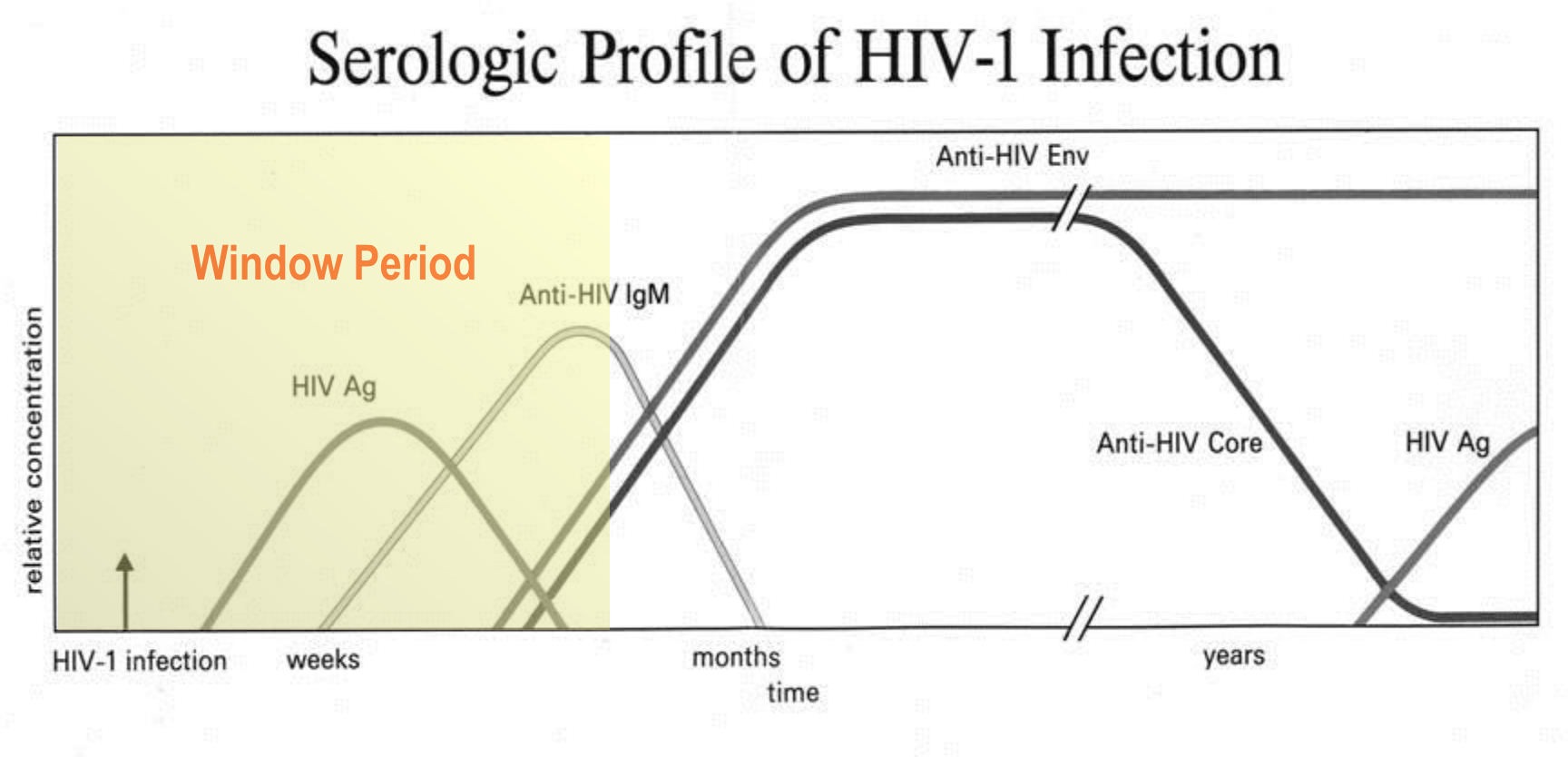
- **Antigen**: A substance which is recognized as foreign by the immune system. Antigens can be part of an organism or virus, e.g., envelope, core (p24) and triggers antibody production.

- **Antibody**: A protein (immunoglobulin) made by the body's immune system to recognize and attack foreign substances

Testing for Viral Infection and Immune Response

- Viral infection
  - Viral Load
  - p24 Antigen
- Immune response
  - Antibody (IgG, IgM)
  - Cellular response (CD4)

Evolution of Antibodies



Window Period

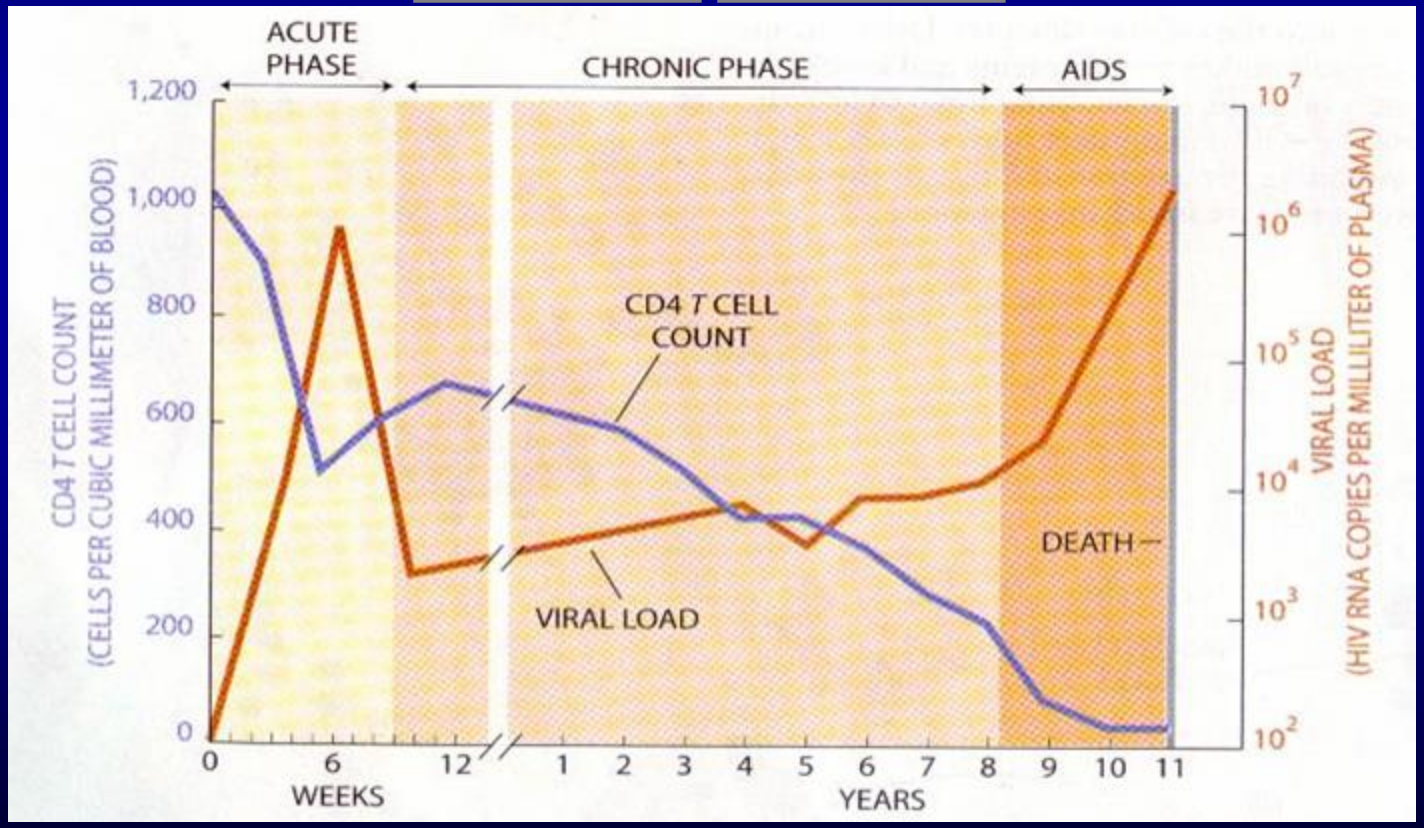
- Time from initial infection with HIV until antibodies are detected by a single test
- Usually 3-8 weeks before antibodies are detected
- May test false-negative for HIV antibodies during this time period
- Can still pass the virus to others during this period

Disease Progression

- Severity of illness is determined by amount of virus in the body (increasing viral load) and the degree of immune suppression (decreasing CD4+ counts)
- As the CD4 count declines, the immune function decreases.

WHO HIV/AIDS Classification System

Stage I	Stage II	Stage III	Stage IV
Asymptomatic	Minor Symptoms	Moderate Symptoms	AIDS



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Can Disease Progression Be Delayed?

- Prevention and early treatment of opportunistic infections (OIs)
- Antiretroviral therapy
- Positive living

Summary

- What is HIV? What is AIDS? How does HIV relate to AIDS?
- What are the means by which HIV is transmitted?
- What is “window period?” How does it affect HIV test results?
- What is an antibody? Antigen?
- How does HIV infection progress?
- How can the disease progression of HIV/AIDS be delayed?