

AIDS in mother and child

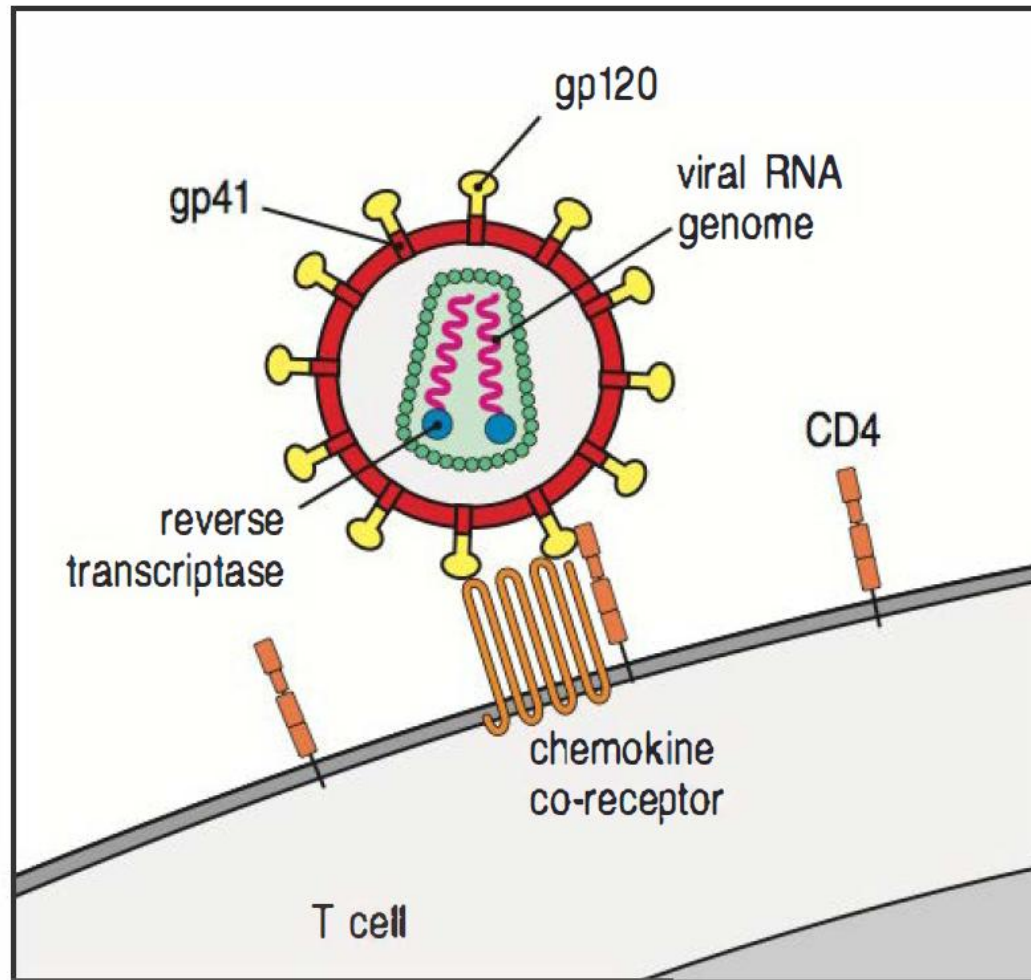
Case Study

HIV/AIDS

HIV requires CD4 and an obligatory chemokine co-receptor (CXCR4 and CCR5) to infect cells.

Drop of CD4+ count below 500 cells/ μ l constitutes the beginning of the symptomatic phase.

HIV Infecting Th Cells



Case of the Pinkerton Family

Chieko had a healthy girl then a caesarian to remove a dead fetus then a boy.

She received contaminated blood in hospital –Around 1987

She became HIV positive, infected husband and next baby boy.

Boy at 6 months: weight loss, thrush, otitis media.

A month later: Fever, thrush, lung infection (*P. carinii*).

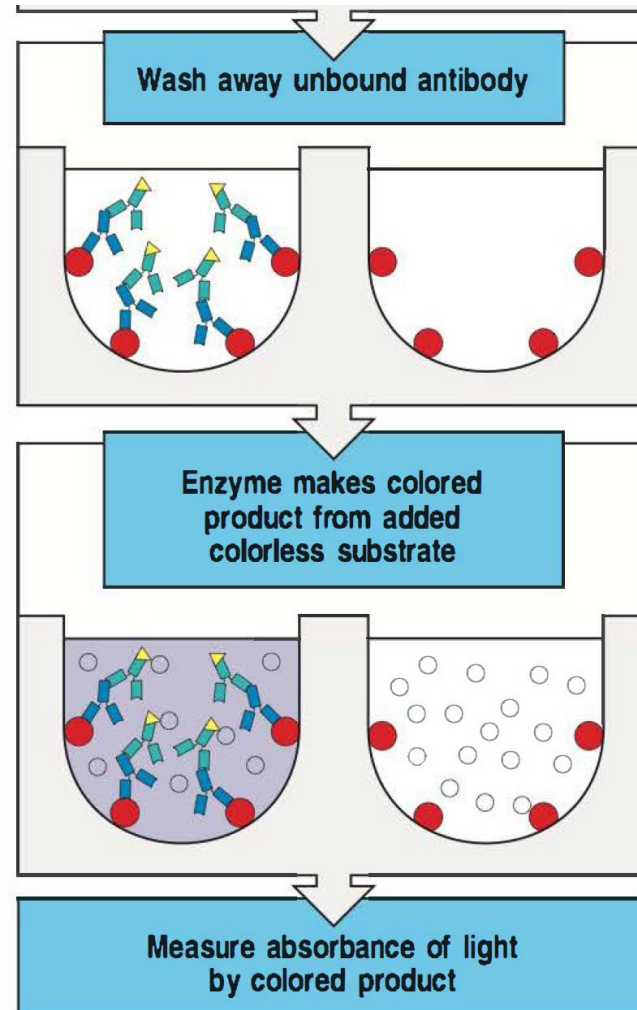
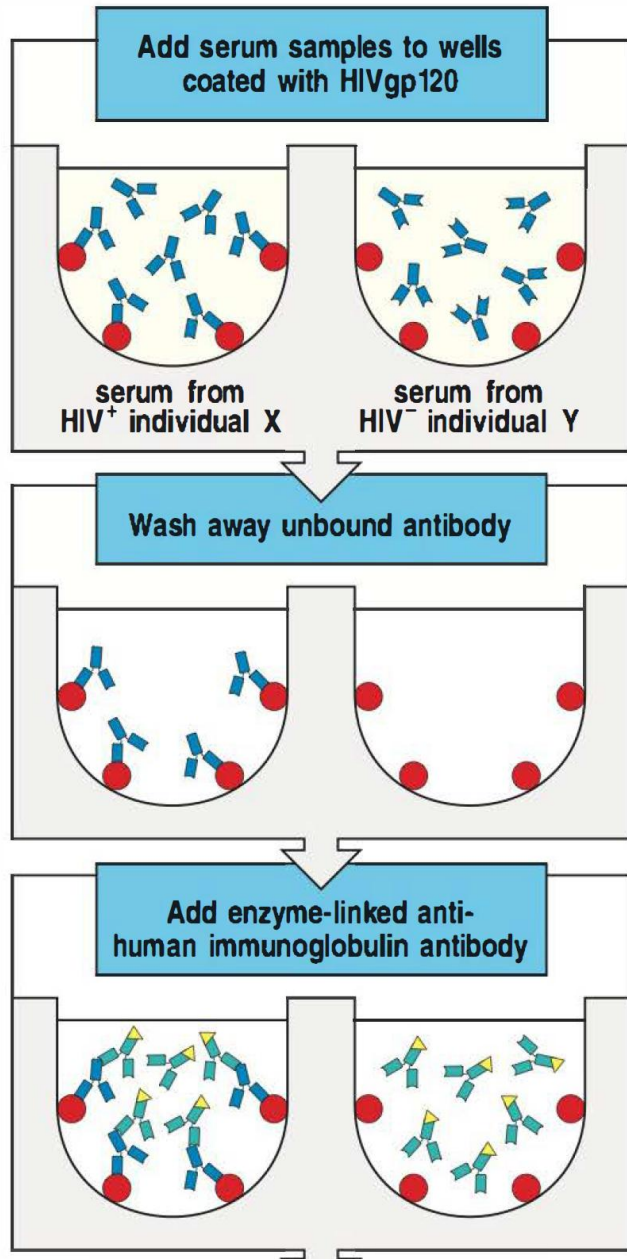
Normal WBC with normal differential, serum Igs normal, normal CD8 but low CD4 counts. HIV positive!

Culture of lung biopsy grew CMV, RSV, and *P.aeruginosa*

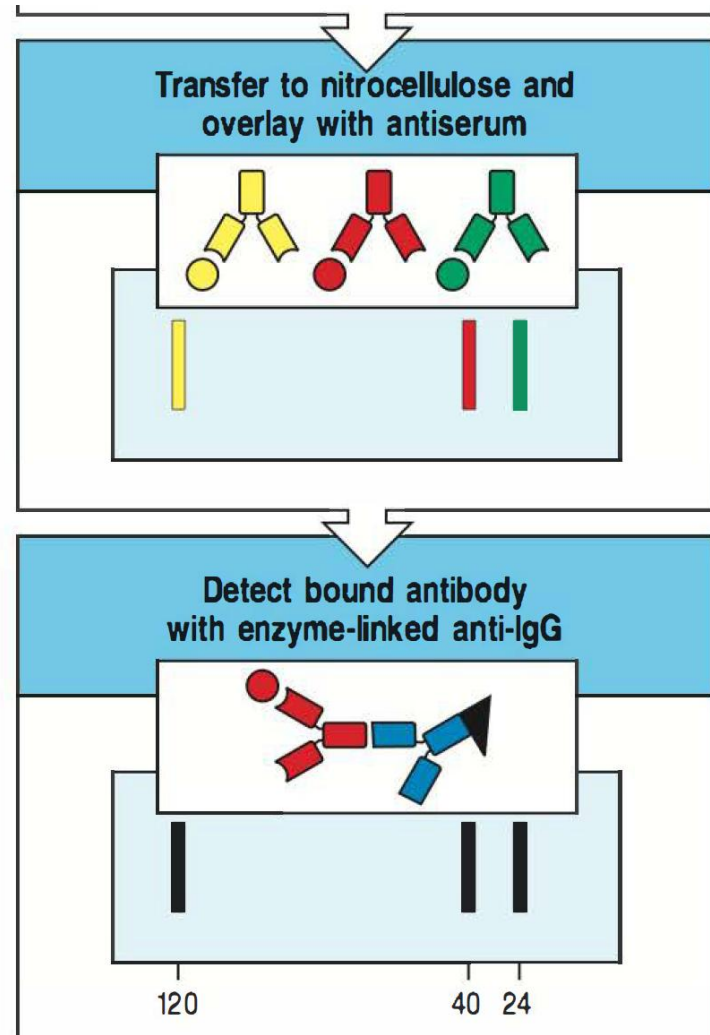
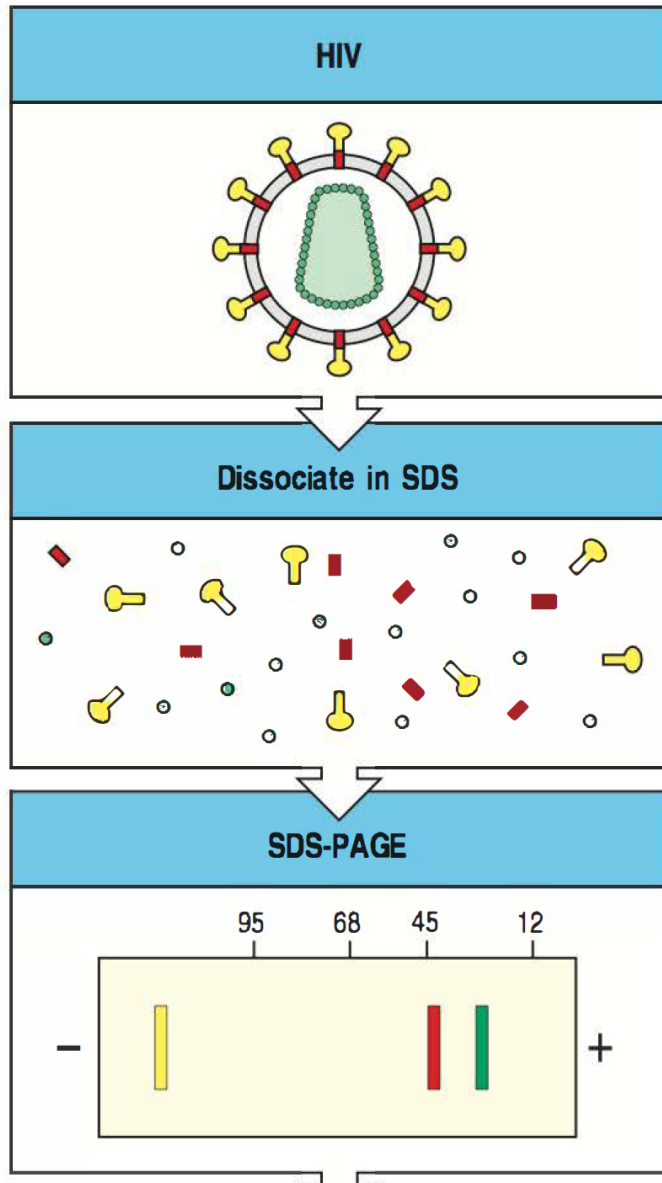
One week later, died of respiratory failure

Mom got symptomatic and placed on treatment, father remained asymptomatic

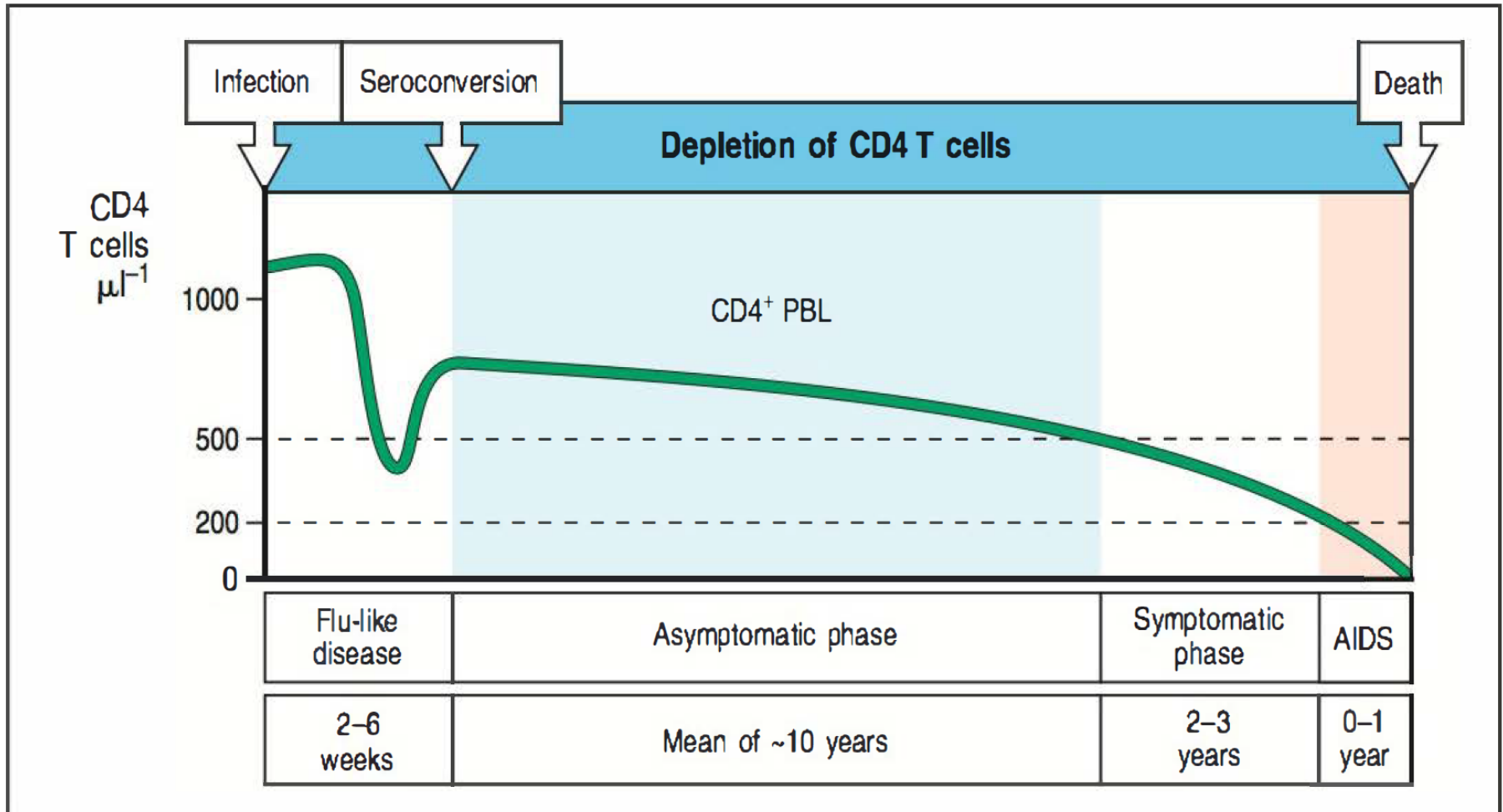
HIV Antibody ELISA Test



Confirmation by Western Blot



Typical Course of HIV Infection



Opportunistic Infections and malignancies associated with HIV

Infections	
Parasites	<i>Toxoplasma</i> spp. <i>Cryptosporidium</i> spp. <i>Leishmania</i> spp. <i>Microsporidium</i> spp.
Bacteria	<i>Mycobacterium tuberculosis</i> <i>Mycobacterium avium</i> <i>intracellulare</i> <i>Salmonella</i> spp.
Fungi	<i>Pneumocystis jirovecii</i> <i>Cryptococcus neoformans</i> <i>Candida</i> spp. <i>Histoplasma capsulatum</i> <i>Coccidioides immitis</i>
Viruses	Herpes simplex Cytomegalovirus Herpes zoster

Malignancies
Kaposi's sarcoma (invasive) Non-Hodgkin's lymphoma, including EBV-positive Burkitt's lymphoma Primary lymphoma of the brain

How did we rule out SCID diagnosis for the boy?

Normal serum Igs levels and low CD4+ count.

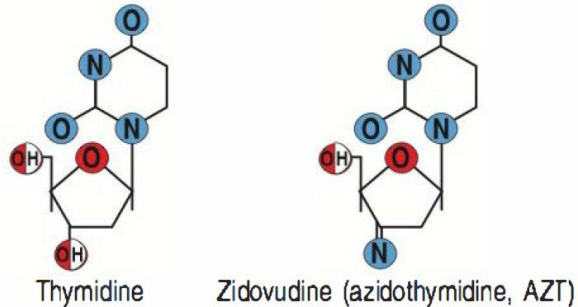
What is the difference between HIV course in pediatric vs. Adult patients?

HIV progression is much more rapid in infants. Immature immune system, very little acquired adaptive immunity against infectious microorganisms.

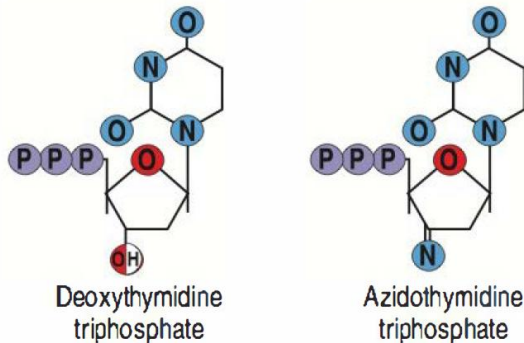
How does AZT (Zidovudine) work?

Nucleotide RT inhibitor

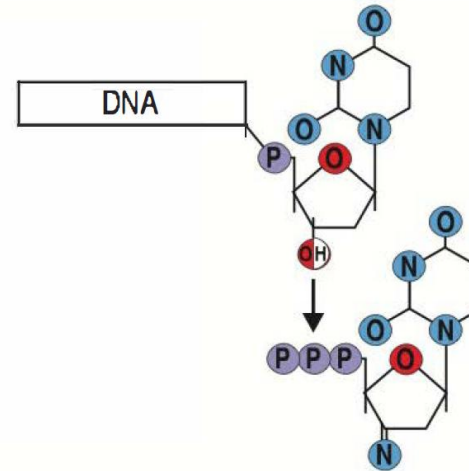
Zidovudine is an analog of the nucleoside deoxythymidine



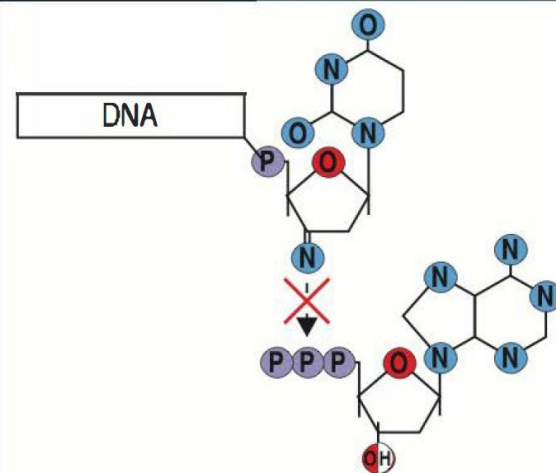
Zidovudine is phosphorylated by the host cell, becoming an analog of the nucleotide deoxythymidine triphosphate



The HIV DNA polymerase (reverse transcriptase) will incorporate zidovudine into the new strand of DNA



New nucleotides cannot be added to zidovudine as it lacks the necessary functional group—thus zidovudine inhibits viral DNA synthesis



Why are CD4+ cells depleted in HIV infection?

Virus itself can kill cell by binding to its receptor possibly inducing apoptosis and by bursting out.

Tc cells will kill T helper cells infected by the virus.

What is the most important determinant in the progression of HIV?

CD4 T cell count.

What causes weight loss in HIV patients?

TNF- α , causing anorexia and increased body heat expenditure