

MODULE 2: DISEASE COURSE

Goals:

Participants will understand the general course of HIV disease and opportunistic infections associated with various stages of disease.

Objectives:

- 1) Discuss stages of disease from infection to death.
- 2) State the difference between HIV and AIDS
- 3) Describe common opportunistic infections that occur during the various stages of HIV disease

Materials:

Power point, LCD projector, Disease progression handout, index cards, flip chart paper

Procedure:

- 1) Brainstorm definitions of HIV, AIDS, CD4, Viral load and Opportunistic Infection
- 2) Lecture describing the disease stages and opportunistic infections (30 min)
- 3) Hand out index cards with WHO performance scales and opportunistic infections written on them (use WHO classification found in curriculum)
- 4) Each participant will read her card and state which WHO clinical stage that symptom or disease falls into.
- 5) Debrief

DEFINITIONS:

HIV: Human Immunodeficiency Virus. The virus that infects a person and progresses over time to lead to the syndrome known as AIDS.

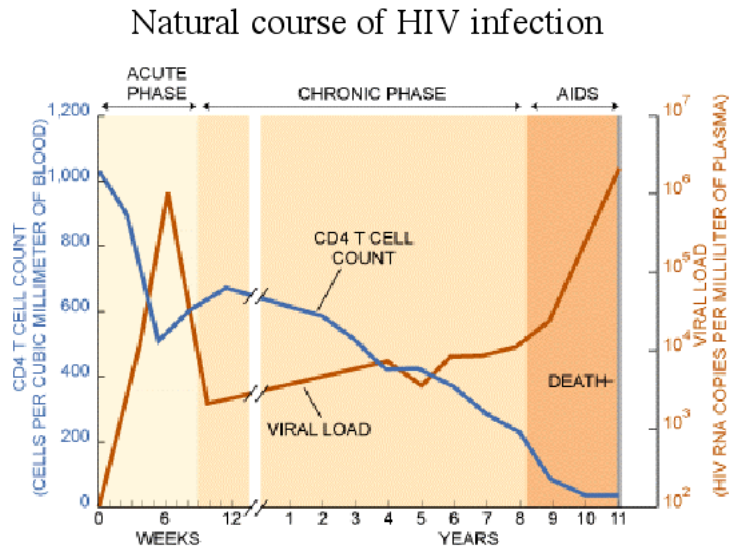
AIDS: Acquired Immune Deficiency Syndrome. When HIV has progressed over time and the immune system weakens the infected person can develop infections and eventually get sick and die. Once someone develops certain types of opportunistic infections and/or has a CD4 count less than 200, then that person is diagnosed with AIDS.

CD4 count: CD4 cells are a part of your White Blood Cell count. HIV attacks the CD4 cells and starts using them to make copies of the virus. As the HIV spreads the number of CD4 cells starts to drop. If the CD4 count becomes too low a person's body is not able to fight infections.

Viral count or viral load: The amount of virus in the blood. A large number indicates more rapid immune decline.

Opportunistic Infection: An opportunistic infection can be caused by a bacteria, fungus, parasite or virus. These are infections that a person with a weakened immune system can catch more easily than someone with a healthy immune system.

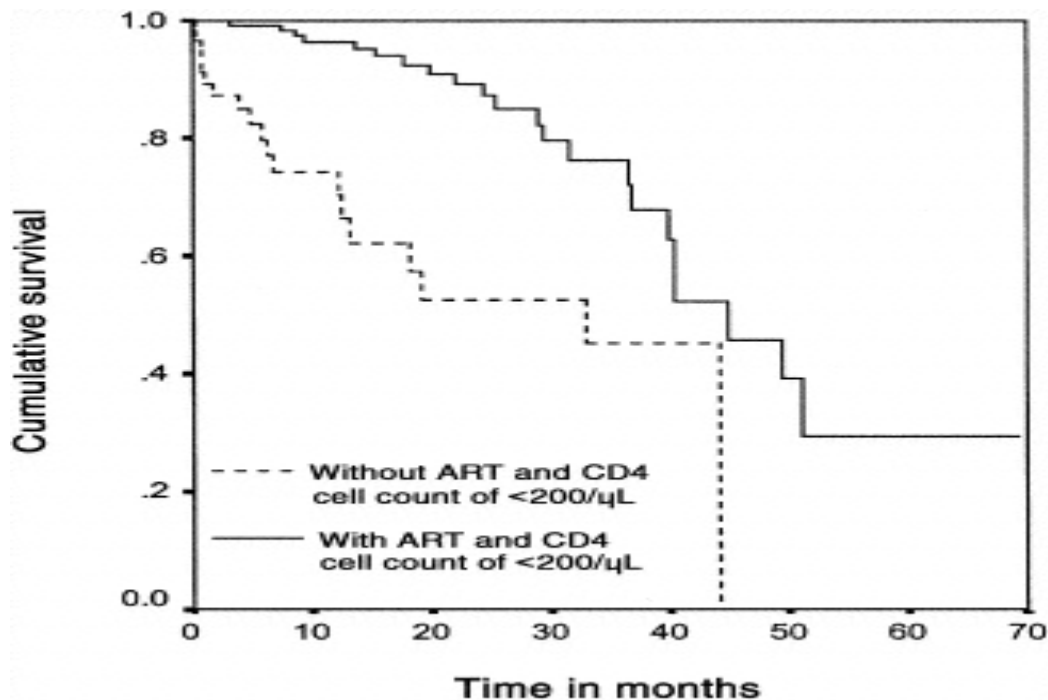
Natural course of HIV infection with corresponding viral load and CD4 count:



The chronic phase of infection is due not to quiescent, non-replicating virus, but to the extraordinary effort of the immune system to hold viral replication in check.

Note that the timeline in years does not correlate with Indian data. However, the natural history is similar.

NATURAL HISTORY OF HIV IN INDIA



N. Kumarasamy, et al., CID 2003.

Stages of the Infection

Infection and Acute Sero-conversion Illness

As soon as the virus enters the body of an individual, he/she is said to be infected and infectious (capable of infecting others). Within 3-8 weeks after infection, some but not all people develop an acute illness lasting 2-3 weeks with symptoms such as fever, rash, joint and muscle pain, swollen lymph glands, diarrhoea and sore throat. Symptoms may be mild that will eventually disappear completely. This self-limiting condition is known as Acute Sero-conversion Illness. During this period the virus continues to reproduce inside the body while the person's immune system responds by developing antibodies against the virus. At this point the person is most infectious.

Within 6-12 weeks after the infection, it is usually possible to detect HIV antibodies in the blood. Unlike antibodies to most other micro-organisms, these antibodies do not destroy the virus effectively. In some

infected people, antibodies cannot be detected for 6 months or longer, even though they are infected and infectious.

The 6-12 week phase between infection and sero-conversion is called the “Window Period”. At this time the person is infected as well as infectious, but the blood test will not indicate the presence of antibodies (see above for explanation). During these 6-12 weeks the body is forming antibodies in response to HIV.

Acute HIV infection

Symptomatic disease: 50-89%

Incubation period (HIV exposure to onset of symptoms): 2-6 weeks

Symptoms and signs:

Fever	(96%)
Adenopathy	(74%)
Pharyngitis	(70%)
Rash	(70%)
Myalgias	(54%)
Headache	(32%)
Diarrhea	(32%)
Nausea/Vomiting	(27%)
Hepatosplenomegaly	(14%)
Thrush	(12%)
Neurological Symptoms	(12%)

Asymptomatic Infection

The person may remain asymptomatic and feel and appear healthy for years, even though he/she is infected with HIV. During this asymptomatic period, the person remains infectious (i.e. able to transmit the virus to others) and as the virus continues to replicate, it causes progressive damage to both the immune and nervous system. If his/her blood is tested during this stage, it will test positive for HIV antibodies. Some individuals will have persistently enlarged lymph nodes during the asymptomatic stage of HIV infection.

Early Symptomatic Illness

Many individuals eventually develop a variety of indicators of ill health due to HIV infection without developing opportunistic infections or secondary cancers. These constitutional symptoms and signs are sometimes referred to as the “Symptomatic Period”. These symptoms include complaints such as oral thrush, diarrhea, weight loss, low-grade

intermittent fever, loss of energy, etc. Various fungal or viral diseases may be seen and individuals feel chronically ill during this stage of HIV infection. Many of these symptoms are general and associated with other illnesses or infections such as tuberculosis. These symptoms alone cannot determine a person's HIV status.

Later these symptoms may appear

• Dry cough or shortness of breath	• Fatigue
• Diarrhea	• Fever
• Furry white spots in the mouth (thrush)	• Significant weight loss
• Memory or movement difficulties	• Skin rashes
• Lack of resistance to infection	• Swollen lymph glands
• Red or purplish spots on the body	• Loss of appetite
• Night sweats	Blood tinged sputum
• Headache	Visual changes
• Difficulty swallowing	

The correlation between HIV and sexually transmitted diseases

- The predominant mode of transmission of both HIV and STD is sexual, although other routes of transmission for both include blood, blood products, donated organs or tissue, and from infected mother to her child
- Many of the measures for preventing the sexual transmission of HIV and STDs are the same
- There is a strong association between the occurrence of HIV infection and the presence of certain STDs, making early diagnosis and effective treatment of such STDs an important strategy for the prevention of HIV transmission.

STD clinical services are an important access point for people at high risk of contracting both AIDS and other STDs, not only for diagnosis and treatment but also for education and counseling.

STAGING OF HIV DISEASE

The staging of HIV disease is important for accurately diagnosing infections and estimating prognosis. A patient may be experiencing symptoms that would suggest a particular diagnosis at a high CD4 count and quite another diagnosis at a low CD4 count.

The World Health Organization has devised a clinical classification for staging patients when CD4 and viral load information are not available as is often the case in resource-limited settings. This system relies upon patient history and objective activity performance.

The Centers for Disease Control in the U.S.A. has done a similar classification using CD4 count rather than clinical information. It describes the infections that are likely to occur at different CD4 counts. It is based largely on Western data.

WHO Staging System for HIV Infection and Disease: Clinical Classification

Clinical Stage 1

- Asymptomatic
- Persistent generalized lymphadenopathy
- Performance Scale 1: asymptomatic, normal activity

Clinical Stage 2

- Weight loss less than 10% of body weight
- Minor mucocutaneous manifestations (ie. Sebhorreic dermatitis, fungal nail infections, recurrent oral ulcerations)
- Herpes zoster, within the last 5 years
- Recurrent upper respiratory infections (ie. Bacterial sinusitis)
- And/Or performance scale 2: symptomatic, normal activity

Clinical Stage 3

- Weight loss greater than 10% of body weight
- Unexplained chronic diarrhea for more than 1 month
- Oral candidiasis (thrush)
- Oral hairy leukoplakia
- Pulmonary tuberculosis
- Severe bacterial infections (ie. Pneumonia)
- And/or performance scale 3: bed-ridden less than 50% of the day during past month

Clinical Stage 4

- HIV wasting syndrome (weight loss greater than 10% and unexplained chronic diarrhea for more than 1 month or chronic weakness or unexplained prolonged fever for more than 1 month)
- Pneumocystis carinii pneumonia
- Toxoplasmosis of the brain
- Cryptosporidiosis with diarrhea for more than 1 month
- Cryptococcosis extra pulmonary
- Cytomegalovirus (CMV) disease of an organ other than liver, spleen, or lymph nodes
- Herpes simplex (HSV) infection (mucocutaneous greater than 1 month)
- Progressive multifocal leukoencephalopathy (PML)
- Any disseminated mycosis (histoplasmosis)
- Candidiasis of the esophagus, trachea, bronchi, or lungs
- Atypical mycobacteriosis (disseminated)
- Non-typhoid salmonella septicemia
- Extrapulmonary tuberculosis
- Lymphoma
- Kaposi's Sarcoma (KS)
- HIV encephalopathy
- And/or performance scale 4: bed-ridden more than 50% of the day during the past month

Correlation of Complications with CD4 Count

CD4 Cell Count	Infections	Non-infectious Complications
>500	Acute HIV syndrome, Candida vaginitis	Lymphadenopathy Polymyositis Aseptic meningitis Guillain-Barre syndrome
200-500	Pneumococcal and other bacterial pneumonia, Pulmonary TB Extrapulmonary TB Kaposi Sarcoma Herpes Zoster Thrush Cryptosporidiosis (self-limited) Oral hairy leukoplakia	Cervical intraepithelial neoplasia Cervical cancer Lymphocytic interstitial pneumonitis Monoclonal multiplex Anemia Idiopathic thrombocytopenic purpura
<200	Tuberculosis Candida esophagitis Disseminated or chronic herpes Toxoplasmosis Cryptococcosis Disseminated Histoplasmosis Coccidioidomycosis Cryptosporidiosis, chronic PML Microsporidiosis Miliary/extrapulmonary TBP. carinii pneumonia (PCP)	Wasting B-cell lymphoma Cardiomyopathy Peripheral neuropathy HIV associated dementia CNS lymphoma HIV-associated nephropathy
<50	CMV disease Disseminated M. Avium complex	

This graphic is based on largely Western data. In India, TB is the most important OI along with Candida esophagitis, toxo, cryptococcal disease. PCP plays a yet to be determined role but appears to be much less common.

MODULE 2 KEY POINTS

- Human Immunodeficiency Virus infects a person and progresses over time to lead to the syndrome known as AIDS.
- In India the average time from infection to death for an infected person is < 4 years.
- Acquired Immune Deficiency Syndrome occurs when a person is in WHO clinical stage 4 or has less than 200 CD4 cells.
- Opportunistic infections can be caused by a bacteria, fungus, parasite or virus and they occur in a person with a weakened immune system.
- Disease progression and therefore prognosis is measured by the WHO clinical staging or by CD4 count.
- The 6-12 week phase between infection and sero-conversion is called the “window period.”

Nursing Actions:

1. Assess clinical stages of HIV infection
2. Recognize the symptoms of acute seroconversion
3. Recognize signs and symptoms of WHO Clinical Stage 4