

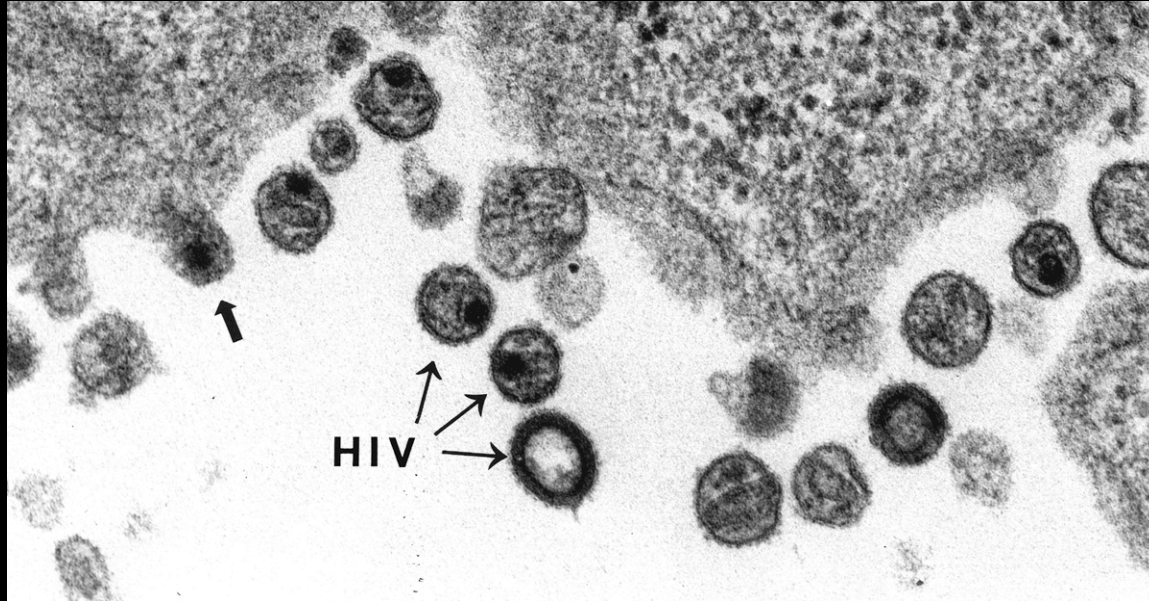
DIAGNOSIS of HIV and AIDS

JESSICA KREMIDAS

HIV

- **H** – Human
- **I** – Immunodeficiency
- **V** – Virus

- HIV causes AIDS.



- This infection attacks the immune system which inhibits the body's ability to fight other infections.

HIV has been located in fluids such as:

- Blood
- Breast milk
- Saliva
- Semen
- Tears
- Vaginal fluids

It can only be transmitted through:

- Blood or blood products
- Mother to infant
- Sexual activity
- Sharing of contaminated needles or syringes

HIV Infection – Stage 1

- Flu like illnesses
 - Swollen glands
 - Fatigue
 - Fever
 - Night sweats
- At this stage, blood tests will show positive for HIV infection.
- This stage lasts approx. 12 weeks

HIV Infection - Stage 2

- Latent infection
- HIV is detected in large quantities in:
 - Lymph nodes
 - Spleen
 - Adenoid glands
 - Tonsils
- Patient may feel completely healthy during this stage

HIV Infection – Stage 3

- Immune System breaks down
- Virus can mutate and become more aggressive
- Glands in neck and armpits swell and can remain that way for 3 months or more
- This is known as PGL
 - Persistent Generalized Lymphadenopathy

HIV Infection – Stage 4

- Early disease progression
 - Boils or warts can form all over the body
 - Mouth may have dental erosions or thrush
 - May develop severe shingles or herpes
 - Overwhelming persistent tiredness
 - May lose more than 10% of their body weight
 - Diarrhea persisting more than 1 month
- This stage is known as ARC
 - Aids Related Complex.

HIV Infection – Stage 5

- Late HIV illness → AIDS
- Infections become almost impossible to fight without intensive antibiotic therapy
- Half of all infected people will develop brain impairments or nerve damage
 - difficulty in cognitive thinking
 - poor co-ordination in walking and balance
 - changes in behavior

Diagnosing HIV

- **Serology:** The diagnosis of HIV infection is based solely on blood tests.



Blood Tests

- **Antigen Tests** Can be used early in HIV detection. Is undetectable during Latent stage because of antibody production.
- **Serial CD₄ Counts** Gives an indication of the stage the HIV is at.
- **Neopterin** Found in both blood and urine. Levels increase as the HIV infection progresses
- **B₂-microglobulin** Increases in levels show progression of the HIV infection.
- **HIV Viral Load** Indicates disease progression and virulence.

HIV Antibody Testing

- **ELISA** - Enzyme-Linked Immunosorbent Assay



- **Western Blot – Cultured HIV virus is separated into distinct protein bands by gel electrophoresis and then through antibody reactions, the HIV viral proteins are able to be accurately detected.**

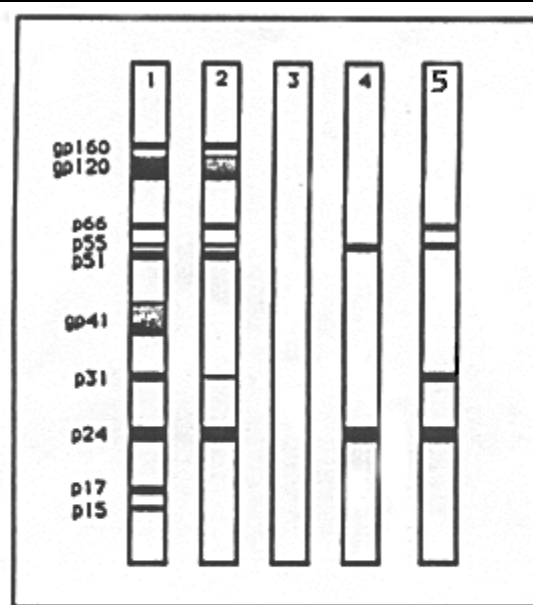


Figure:

Examples of reactions by an HIV-1 Western blot:

1. Positive control (strong)
2. Positive control (weak)
3. Negative control
4. Indeterminate profile
5. Indeterminate profile (highly suggestive)

AIDS

- **A** – Acquired
- **I** – Immuno
- **D** – Deficiency
- **S** – Syndrome

Secondary Infections and AIDS

- In this final stage, most infections are incredibly hard for the body's depleted immune system to fight off.
- These include fungal, bacterial, viral infections as well as many types of lymphomas and other cancerous tumors.
- Diagnosis is based upon which secondary infection or disease a person has.

References

- HIV/AIDS Health Center Your Guide to HIV – Get the Basics. www.webmd.com
- Laboratory Diagnosis of Human Immunodeficiency Viruses Infection
<http://virology-online.com/viruses/HIV4.htm>
- **What is AIDS? - HIV symptoms - AIDS symptoms**
<http://www.globalchange.com/ttaa/ttaa%203.htm#First%20signs%20of%20illness>

References cont.

- Nature Close Up
<http://www.genomenewsnetwork.org/articles/2004/04/02/supervision.php.html>
- The Biology Project. An introduction to ELISA
<http://www.biology.arizona.edu/IMMUNOLOGY/activities/elisa/main.html>
- DiSpezio, M. 2000. The Science of HIV (2nd edition). National Science Teachers Association.