Understanding the Immune System

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Together, we can change the course of the HIV epidemic...one woman at a time.

#onewomanatatime  www.thewellproject.org  #thewellproject
Your immune system is your body's defense system

• Made up of cells and organs that protect your body from outside invaders that can cause infection and disease

• Gets rid of abnormal pre-cancerous cells and cancerous cells that are growing out of control

• When it’s working, it fights off infection and keeps you healthy

• When it isn’t, germs and other abnormal cells in the body can more easily cause disease
**Skin:**

- Single largest organ of the body
- First line of defense against germs – provides a physical barrier that keeps bacteria and viruses from entering the body

**Bone Marrow:**

- Makes white blood cells that protect the body from invaders and possibly dangerous abnormal cells
- From the bone marrow, white blood cells travel to lymph organs
Key Organs of the Immune System

**Lymph Organs:**

- **Lymph Nodes**
  - Located in the neck, armpits, abdomen, and groin
  - Contain cells ready to fight invaders

- **Spleen**
  - About the size of a fist; located in the upper left of the abdomen
  - Filters blood; identifies and gets rid of worn-out white blood cells
Key Organs of the Immune System

Other Lymph Organs:

• Peyer's patches
  – Clumps of tissue in the small intestine
• Thymus
• Appendix
• Tonsils and adenoids

Credit: AIDS.gov
Key immune system cells include:

- Dendritic cells and macrophages
- T cells
- B cells

Credit: NobelPrize.org
Your immune system recognizes and produces antibodies to HIV, but **antibodies alone are not enough to get rid of HIV**

- HIV changes (mutates) faster than the immune system can respond
- The HIV antibodies your body creates do not protect you against HIV or help you clear HIV from your body
- This is why having antibodies to HIV does not mean you are protected from HIV

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HIV turns CD4 T cells into *factories for making more copies of itself*

- As HIV reproduces, it damages or kills CD4 cells
- Without CD4 cells organizing the immune system to respond, immune cells do not know which invaders to remove from the body
  - Therefore at risk for opportunistic infections (OIs) and cancers that usually do not harm people with healthy immune systems

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HIV Reservoirs

- Collections of inactive, “resting,” or latent HIV-infected cells
- Known reservoirs include immune cells in gut, lymphoid tissue, blood, brain, genital tract, bone marrow
- Completely eliminating HIV from the body will require emptying the reservoirs/preventing latent cells from multiplying

**Early treatment with a combination of HIV drugs can minimize the size of the reservoir**
HIV and the Immune System

• Newer HIV drugs are more effective at stopping HIV from multiplying and infecting more CD4 cells
• Since CD4 cells are key to a healthy immune response, this can give your immune system a chance to replenish its supply of CD4 cells and to defend itself (you!) against opportunistic infections
• To learn more about this topic, please read the full fact sheet on this topic:
  – Fact sheet: Understanding the Immune System

• For more fact sheets and to connect to our community of women living with HIV, visit:
  – www.thewellproject.org
  – www.facebook.com/thewellproject
  – www.twitter.com/thewellproject