



THE IMMUNE SYSTEM: Your Protection from Disease

ACTION Project
IHV - Nigeria

OBJECTIVES

1. What is the immune system?
2. How does the immune system work?
3. How does HIV affect the immune system?
4. What are some principles of HIV treatment?

1. WHAT IS THE IMMUNE SYSTEM?

- Viruses and bacteria (germs) cause many diseases by entering the body and reproducing in the body.
- These germs are everywhere, but they are so small that we can't see them.
- We breathe germs, eat germs, and touch germs.
- Our immune system protects us from these germs so we don't get sick.



2. HOW DOES THE IMMUNE SYSTEM WORK?

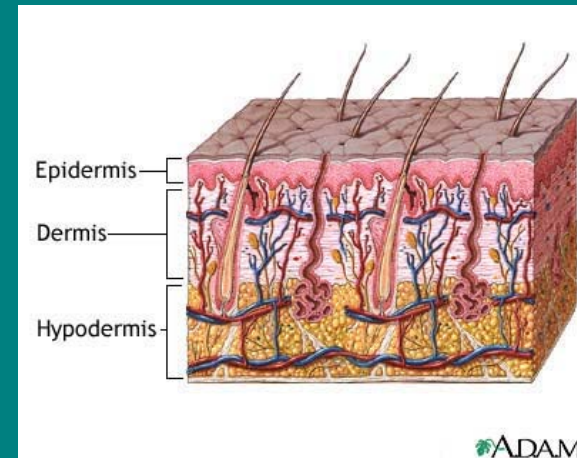
- Creates a barrier to prevent germs from entering the body
- Detects and eliminates germs before they can reproduce inside your body
- Eliminates those germs which have entered and reproduced in the body.



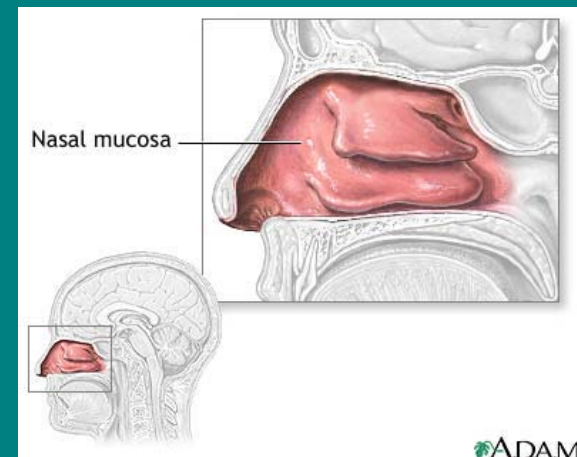
2. HOW DOES THE IMMUNE SYSTEM WORK?

What protects us when germs are outside the body?

- Skin
- Tears
- Mucus
- Saliva



A layer of the skin



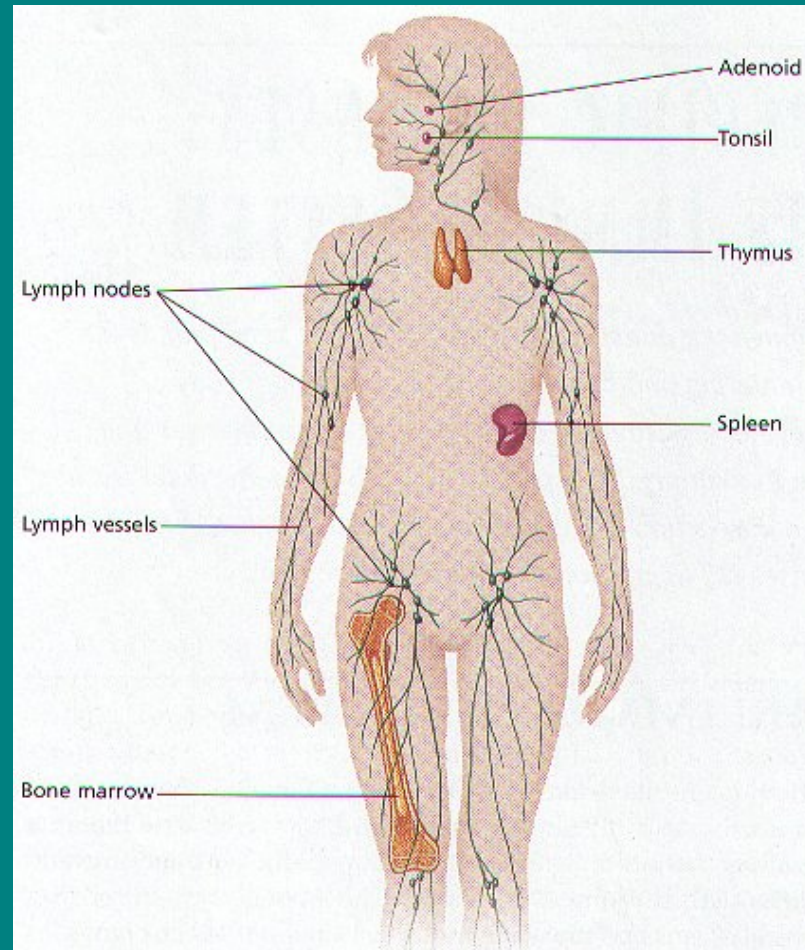
The mucus in the sinuses

Pictures from
<http://health.allrefer.com/pictures-images/skin-layers.html>
<http://www.health.allrefer.com/health/mucosa-info.html>

2. HOW DOES THE IMMUNE SYSTEM WORK?

What protects us when germs are inside the body?

- A. Lymph system
- B. White blood cells
 - i. T-cells (CD4 cells)
 - ii. B-cells
- C. Antibodies
- D. Thymus
- E. Bone marrow



Parts of the immune system

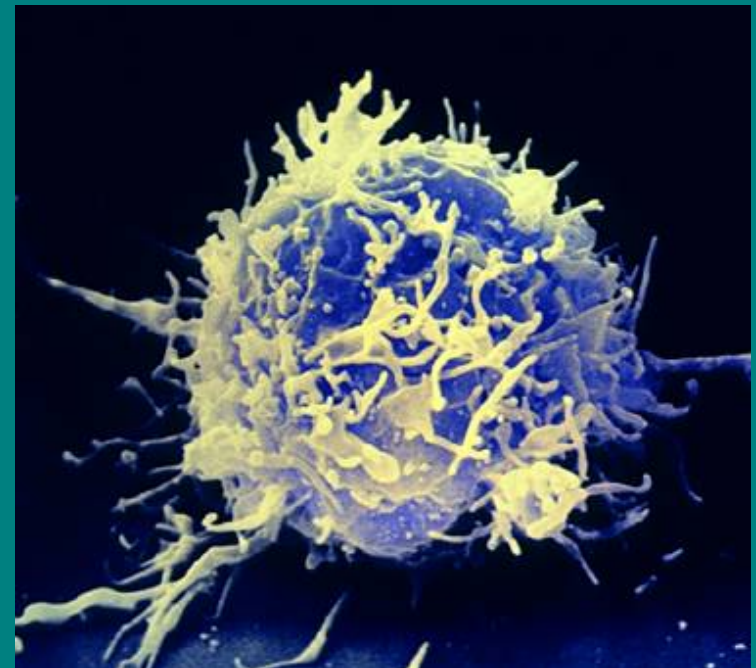
Picture from
www.sirinet.net/~jgjohnso/immunesys.jpg

A. Lymph System

- Lymph
 - is blood plasma (the clear part of the blood)
 - absorbs nutrients, waste products, and “bad” bacteria
 - filters the good from the bad, delivers the good to the cells and carries away the bad
- Lymph nodes
 - process the waste and germs
 - swell when the body fights bacteria

B. White Blood Cells

- T-cells (CD4 cells)
 - Produced in the thymus
 - Recognizes disease “intruders” in the body
 - Coordinates the antibody fight against the disease
- B-cells
 - Produced in bone marrow
 - Produce *antibodies*
 - * Recognize specific diseases
 - * Attack those diseases



A healthy t-cell

Picture from

http://ca.encarta.msn.com/media_461519550/Lymphocyte.html



3. HOW DOES HIV AFFECT THE IMMUNE SYSTEM?



1. HIV attacks the CD4 cells, so CD4 levels decrease.
2. Without the CD4 cells to coordinate immune defenses, the body cannot protect itself from disease.
3. Opportunistic infections (OIs) that continually attack the body are not defeated.



4. SOME PRINCIPLES OF HIV TREATMENT



- Treatment can suppress the virus and strengthen the immune system.
- Treatment combination must be taken exactly as prescribed (correct dose, correct time, etc).
- Treatment is taken in a combination “cocktail” to attack the virus in many ways.



With treatment, an HIV-positive person can live a long, healthy, productive life.



QUESTIONS?



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