Hemingway Name:

Immune System: Notes # 2

The Immune System

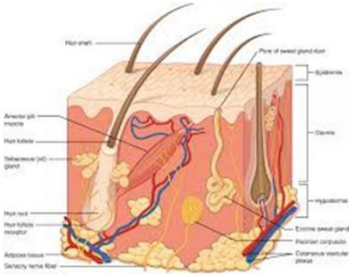
- The body's main defense against _____
- It recognizes, attacks, destroys and remembers each type of pathogen that enters the body
- The immune system functions to fight infections through the productions of cells providing _____

Two General Categories

- _____ defenses
  - Like fortress wall of the system
  - Guard by keeping most things out
  - Response is the same for any type of invader
- _____defenses
  - Security guard
  - Track down and destroy harmful pathogens that have made it past the non specific defenses.

Nonspecific Defenses

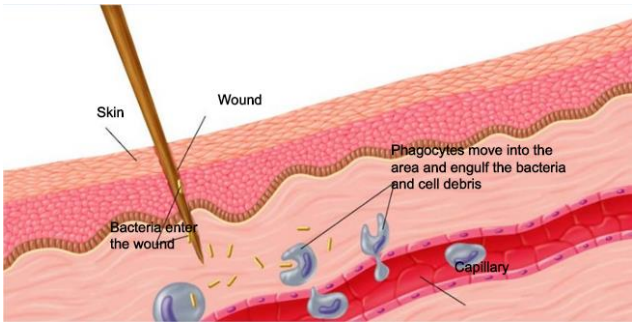
- _____ line of defense
  - _____ barriers
    - The _____ is a physical barrier that stops most pathogens from entering the body (_____)
    - Once the skin is_____ pathogens can enter the body and quickly multiply.
    - The sweat and oils on skin are slightly _____
    - _____ in your stomach can destroy some pathogens.
    - _____and cilia in your nose prevent pathogens from entering your respiratory system.



- _____ line of Defense
  - If a pathogen makes it past the first line of defense.
  - The second line of defense includes two types of immune response:
    - _____ Immune Response
      - A response you are born with.
    - _____ Immune Response
      - A highly specific attack on a pathogen.

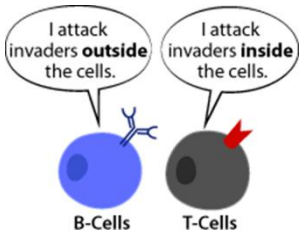
Non specific defenses -Innate

- Second line of defense
  - If pathogens _____
    - _____Response
      - _____ defense reaction to tissue damage caused by injury or infection

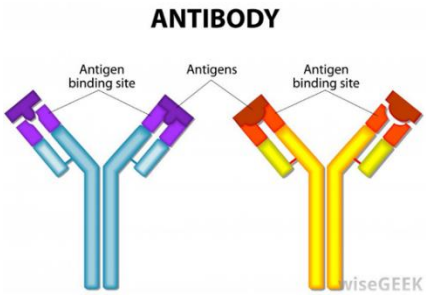


- Immune system produces millions of _____(WBC) to fight the infection
- Blood vessels near wound _____
- WCB move from the vessels into the infected tissue causing flow of _____into the area
- Many of these WBC are _____ which engulf and destroy bacteria
    - Symptoms
        - Infected tissue may become _____
- Immune also releases chemicals that increase body temperature
    - _____
        - Many pathogens can only survive in a narrow temperature
        - An elevated temperature increases the heart rate which allows the WBC to get to the site of infection _____
- Fever and elevated numbers of white blood cells indicate to doctors that your body is working hard to fight an _____

Specific Defenses-Acquired Immune Response

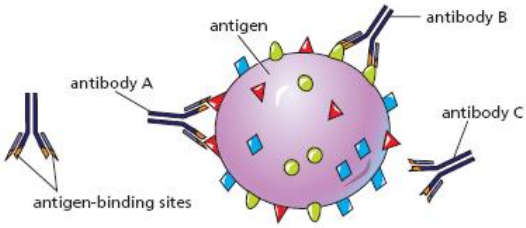


- Highly _____ attack on a specific pathogen or antigen.
    - An _____ is a non-living particle or substance that body cannot recognize.
- Virus, bacteria or other pathogen may serve as an antigen
- Also known as the Immune Response
    - Triggered by an _____
- Cells of the immune system that recognize specific antigens are two types of _____(WBC)
    - B-cells
    - T-cells



_____Immune Response

- **B cells** in action
    - First process in the acquired immune response:
        - B Cells _____ present in the body.
        - B Cells produce particles, called_____
            - Antibodies are proteins that recognize and _____ to the antigen
            - Antibodies attach to and _____ pathogens and antigens
        - _____ cells remain after infection that are capable of producing antibodies specific to that pathogen
            - _____chance of the disease occurring a second time



- **T cells** in action
  - Second process in the acquired immune response:
    - Occurs if the pathogen is able to get_____ living cells
    - Two types of T cells:
      - _____
        - Recognize antigen or pathogen and activate B cells
      - _____
        - Recognize and destroy antigen or pathogen without B cells.

    - All acquired immune responses help give you active immunity.
      - This means your body _____ how to fight a pathogen that has infected it before.
      - After an infection antibodies get stored on B cells (Memory B Cells)
      - These can reactivate if the antigen/pathogen reappears
      - This is why you get diseases such as chicken pox only once.

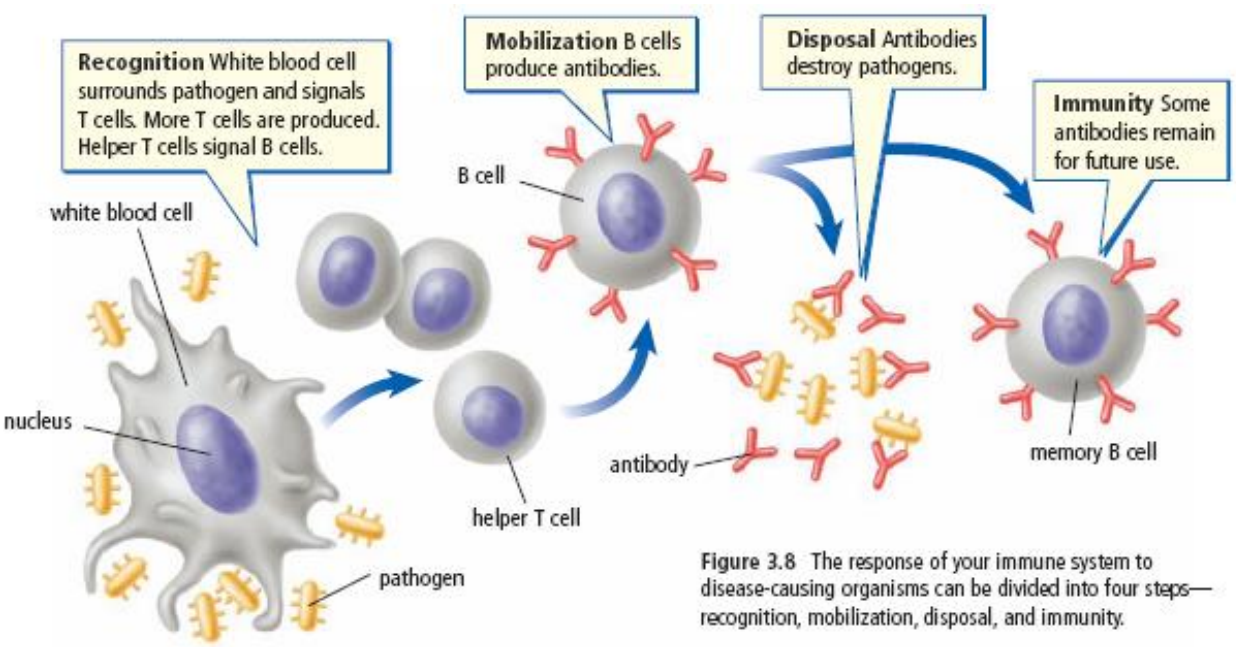


Figure 3.8 The response of your immune system to disease-causing organisms can be divided into four steps—recognition, mobilization, disposal, and immunity.

Jenners Famous Experiment
Would his experiment happen today?
Is it ethical?

Active Immunity

- The body makes its _____ in response to an antigen.
  - Results from:
    - _____ to the antigen
      - Fighting an infection
    - _____ exposure to the antigen
      - Vaccination

Hemingway Name:

Vaccines

- The injection of a _____ form of a pathogen to produce immunity
- Stimulate the immune system to create millions of cells ready to produce specific types of _____
- Boosters are needed for some vaccines to extend the immune system's memory (tetanus)

_____ Immunity

- Antibodies produced by other animals against a pathogen are _____ into the bloodstream
- Does not last very long as the body will _____the foreign antibodies
- Can develop naturally or by deliberate exposure
  - _____Exposure
    - Antibodies produced by a mother are passes to the infant via breastmilk
    - Will protect a child against most infectious diseases for the first few months or longer if breast fed
  - _____ Exposure
    - Individuals bitten by rabid animals are injected with antibodies that attack the rabies virus

What happens when your immune system works against you

- Allergies
  - life threatening diseases

Disorders of the Immune System

- Allergies
  - An allergy is an unusually high _____ to some substance.
  - Any antigen that causes an allergic reaction is called an _____
    - Common allergens are: milk, pollen, and dust.
    - Allergens act as an _____

Histamines

- Body releases chemical called histamine to _____ allergen.
- Common _____includes sneezing, runny nose and watery eyes.
- Increase the _____ and fluids to the surrounding area
- _____ are drugs that are used to counteract the effects of histamines

What happens when you are highly allergic?

- Severe allergies can cause an _____
  - Ie peanuts, bee stings
- People with severe allergies can experience
  - Swelling of airways
  - Breathing difficulty
  - Death
- Most likely will carry an "epi-pen"
- Injected into thigh
- Adrenaline auto injector
- Will decrease effects of allergic reaction

Autoimmune Disease

- When the immune system makes a mistake and attacks the body's _____
  - Type I Diabetes
  - Rheumetoid arthristis
  - Multiple Sclerosis

Disorders of the Immune System

- _____ – Acquired Immunodeficiency Syndrome
- AIDS is caused by a virus called _____
- HIV attacks the immune system by infecting _____.
- When other pathogens or antigens enter the body the immune system can't activate Killer T cells or B cells.
- This can lead to a person dying from a _____ infection.

Transmission

- AIDS is transmitted by _____
- Through unsafe sex or sharing needles
  - _____ through casual contact
- Currently no cure
- The virus keeps changing its structure making the_____ hard to identify
- New forms are identified every year
- An infected person typically live 4-10 years

Taking Care of Your Immune System

- Important steps you can take to help your immune system stay healthy.

- Eat a well-balanced diet.
- Maintain your personal hygiene—brush your teeth, shower or bathe, and wash your hands often.
- Keep your home clean.
- Avoid tobacco and other non-prescription drugs.
- Get plenty of rest and exercise.
- Keep your vaccinations up to date.
- Do not engage in activities that involve sharing body fluids with others.