Component 3-Terminology in Healthcare and Public Health Settings

Unit 4-Blood, Lymphatic and Immune Systems

This material was developed by The University of Alabama at Birmingham, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number U55/000023.

Blood, Lymphatic and Immune Systems

• Objectives
  – Define, understand and correctly pronounce medical terms related to the blood, lymphatic and immune systems
  – Describe the following related to the blood, lymphatic and immune systems
    • common diseases and conditions
    • laboratory and diagnostic procedures
    • medical and surgical procedures
    • medications

Blood Overview

• Average adult has about five liters of blood
• Blood circulates through body within blood vessels
• Blood cells are produced in red bone marrow
Blood: Functions

- Transports substances throughout body
  - Substances are attached to red blood cells or dissolved in plasma
- White blood cells
  - Fight infection and disease
- Platelets
  - Initiate blood clotting process

Blood Cells

- Erythrocytes (red blood cells)
  - Carry oxygen
  - Carry carbon dioxide
- Thrombocytes (Platelets)
  - Critical in blood clotting
- Leukocytes (white blood cells)
  - Provide protection against bacteria, viruses, foreign material
- Plasma (fluid part of the blood)

Blood Types

- Group A
  - A antigen on red cells
  - B antibody in the plasma
- Group B
  - B antigen on red cells
  - A antibody in the plasma
- Group AB
  - both A and B antigens on red cells
  - neither A nor B antibodies in the plasma
- Group O
  - neither A nor B antigens on red cells
  - both A and B antibodies in the plasma
Rh Factor

- Rh - blood given to Rh- patients
- Rh- or Rh + blood given to Rh+ patients
- Universal red cell donor is O negative
- Universal plasma donor is AB positive

Iron deficiency Anemia

- Iron makes hemoglobin which gives the blood its red color.
- Low iron levels might be due to:
  - Heavy periods
  - Pregnancy
  - Ulcers
  - Colon polyps
  - Colon cancer
  - Inherited disorders
  - A diet that does not have enough iron
- Anemia can make you feel weak, cold, dizzy and irritable. It is confirmed with a blood test.

Treating Iron Deficiency Anemia

- Increase iron-rich foods
- Iron supplementation
- Takes months to correct
Sickle Cell Anemia

• Abnormally shaped red blood cells
  – Shaped like a crescent or sickle
  – More fragile and more easily ruptured
  • Leads to anemia
  – Get stuck in blood vessels, blocking blood flow
    • Painful
    • Organ damage

• Genetic
• Two sickle cell genes, one from each parent = sickle cell anemia
• One sickle cell gene = sickle cell trait
• 1 in 12 African Americans has sickle cell trait
• Diagnosed with a blood test

Sickle Cell Treatment

• No widely available cure
• Treatment relieves symptoms
• Goals of treatment
  – Relieve pain
  – Prevent infections, organ damage, or strokes
  – Control complications
• Researchers looking for new treatments
Blood Combining Forms

- chrom/o color hemochromatosis
- coagul/o clotting coagulation
- erythr/o red erythrocyte
- granul/o granules granulocyte
- hemat/o blood hematologist
- leuk/o white leukopenia
- thromb/o clot thrombosis

The Lymphatic and Immune Systems

- Organs of the Lymphatic System
  - Lymph nodes
  - Lymphatic vessels
  - Thymus gland
  - Spleen
  - Tonsils

- Functions of the Lymphatic System
  - Network of vessels
  - Picks up excess tissue fluid, cleanses it, and returns it to circulatory system
  - Picks up fats absorbed by digestive system

- Functions of Immune System
  - Fights disease and infections
Immunity

- Body’s ability to defend itself
- Target pathogens
  - Bacteria, viruses, fungi, protozoans, toxins, cancerous tumors
- Two forms
  - Natural immunity
  - Acquired immunity

Natural Immunity

- Also called innate immunity
- Not specific to a particular disease
- Doesn’t require prior exposure to pathogen
- Example:
  - WBCs that ingest any pathogen encountered

Acquired Immunity

- Body’s response to a specific pathogen
- May be either:
  - Passive acquired immunity
  - Active acquired immunity
Acquired Immunity

• Passive acquired immunity
  – Results when a person receives protective substances produced by
    • Another human (e.g., maternal antibodies)
    • An animal (e.g., antitoxin)
• Active acquired immunity
  – Develops following direct exposure to pathogen
  – Stimulates immune response – series of mechanisms designed to neutralize pathogen
  – Immunizations provide active acquired immunity

Lymphedema

• Edema (swelling) develops from
  – An increase in the amount of fluid in the body
  – A blockage in the lymphatic system
• Causes include
  – Infection
  – Cancer
  – Scar tissue from radiation therapy or removal of lymph nodes
  – Inherited conditions
• Treatments
  – Physical methods (compression stockings)
  – Medicines

Tonsillitis

• Definition
  – Inflammation of the tonsils (two oval-shaped pads of tissue at the back of the throat, one tonsil on each side)
• Signs and symptoms
  – Swollen tonsils
  – Sore throat
  – Difficulty swallowing
• Causes
  – Common virus
  – Bacterial infection
• Treatment
  • Tonsillectomy
AIDS

• Acquired immunodeficiency syndrome
• Most advanced stage of infection with the human immunodeficiency virus (HIV)
• HIV is a virus that kills or damages cells of the body's immune system
• HIV is spread by
  – Having unprotected sex with an infected person
  – Sharing drug needles
  – Having contact with the blood of an infected person
• Women can give it to their babies during pregnancy or childbirth

AIDS

• Symptoms
  – Swollen glands or flu-like symptoms often first signs
  – Severe symptoms may not appear for months or years
  – Opportunistic infections
• Diagnosis
  – A blood test can confirm HIV infection
• Treatment
  – No cure, but can live with disease for many years
  – Many medications are available which fight both the HIV infection and the infections and cancers that come with it

Lymphatic & Immune Combining Forms

• adenoid/o adenoids adenoiditis
• immun/o protection immunization
• lymph/o lymph lymphoma
• lymphaden/o lymph lymphadenitis node
• lymphangi/o lymph lymphangioma vessel
Tell me, Detective . . .

- James complains of soaking night sweats, fatigue, shaking chills, swollen lymph nodes, weight loss, persistent white spots on his tongue and headaches. This is indicative of:
  - Tonsillitis
  - Iron deficiency anemia
  - AIDS

- For additional information on content covered in this unit, please visit: