**DRUGS USED IN BLEEDING DISORDERS**

Katzung (9th ed.) Chapter 34 pp. 556-558

**THIS MATERIAL WILL NOT BE COVERED IN LECTURE, (you are still responsible for it)**

**DRUGS YOU NEED TO KNOW:**

- **AMINOCAPROIC ACID (EACA)** (generic, Amicar)
- **APROTININ** (Trasylol)
- **DESMOPRESSIN ACETATE** (DDAVP, Desmopressin)
- **PHYTONADIONE** (Vitamin K₁) (generic, Mephyton, AquaMephyton)
- **FACTOR VIII**
- **FACTOR IX**

**OBJECTIVES:**

1. Be familiar with the drugs and plasma fractions that are used in the treatment of vitamin K deficiency, factor VIII deficiencies [classic hemophilia (hemophilia A); and von Willebrand’s disease] and factor IX deficiency (Christmas disease, hemophilia B) --- see Table 34-3 in Katzung.

2. Understand the mechanisms of action of the fibrinolytic inhibitors aminocaproic acid and aprotinin.

**1. VITAMIN K**

- the biologic activity of prothrombin (factor II), factors VII, IX and X are dependent upon vitamin K
- **PHYTONADIONE** is given to all newborns to prevent hemorrhagic disorders (which are particularly common in premature infants)
- vitamin K deficiency frequently occurs in ICU patients or in patients on multiple antibiotic therapy
2. PLASMA FRACTIONS and FACTOR VIII ACTIVATOR

**FACTOR VIII** (for treatment of hemophilia A)
- LYOPHILIZED factor VIII concentrates are prepared from plasma obtained from large donor pools (and therefore are more risky in terms of viral infection, such as hepatitis B and C or AIDS)
- CRYOPRECIPITATE is a factor VIII and von Willebrand factor preparation obtained as a plasma protein fraction from whole blood (often from a single donor) – must match blood type in children less than 1 year of age
- although they are expensive, many hospitals are switching to the use of factor VIII concentrates prepared using monoclonal antibody and recombinant DNA techniques to avoid the risk of transmission of viral diseases
- DESMOPRESSIN ACETATE (arginine vasopressin) can be used to increase factor VIII activity in patients with mild hemophilia A or von Willebrand’s disease (useful for minor surgery)

**FACTOR IX** (for treatment of hemophilia B) and others
- concentrates of factors II, VII, IX, and X are available to treat deficiencies of these factors – some preparations of factor IX contain activated clotting factors (i.e., they are useful in the treatment of patients with inhibitors or antibodies to factor VIII or IX)

3. FIBRINOLYTIC INHIBITORS

- these agents are useful as adjuncts to hemophilia therapy, and as *antagonists to fibrinolytic agents*
- **AMINOCAPROIC ACID (EACA)** inhibits plasminogen activation – side effects include intravascular thrombosis, hypotension, myopathy and GI disturbances
- **APROTININ** is a serine protease inhibitor that prevents fibrinolysis by inhibiting the plasmin-streptokinase complex