CLOTTING 101

Bleeding Disorders and Thrombosis Program

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LEARN ABOUT CLOTTING

Introduction

- You or your child has been diagnosed as having a blood clot. Normally a blood clot is formed when there has been an injury to the body. When the body is injured, damaged blood vessels start to bleed. The bleeding stops by a process called **coagulation** or clotting.

- Sometimes the clotting process starts in a place that has not been injured, or it gets out of control and causes a very large clot to form. This clot is called a **thrombus** which can block arteries and veins and interfere with blood travel to and from the heart. The process is called **thrombosis**.

- The remainder of this booklet will discuss:
  - Circulation of blood
  - Coagulation of blood
  - Risk factors for thrombosis
  - Diagnosis and management of thrombosis

Circulation

- Blood is carried through the body by two different types of blood vessels:

  - **Arteries**
    - Carry blood from the heart to the lungs where it receives oxygen.
    - Blood is then sent back to the heart and pumped through arteries to the rest of the body to deliver vital oxygen to organs and tissues.

  - **Veins**
    - Carry blood back to the heart to start the process again.

- The largest arteries and veins are located deep inside the body and close to the heart. Blood vessel size becomes smaller farther away from the heart and closer to the surface of the skin.

Normal Blood Coagulation

- Injury to Vessel Wall
- Vasoconstriction
- Platelet Plug- Primary Clot
- Form Fibrin Clot

Formation of a Blood Clot:

- When the body is injured, damaged blood vessels develop holes that leak blood. Bleeding stops by a process called **coagulation** or clotting.

- Blood cells called **platelets** plug the site of injury.

- When the "plug" is in place, it is sealed with **fibrin** that acts like glue. Many proteins called **factors** are involved to form a stable blood clot. This process is called the **coagulation cascade**. After the clot has done its job and the injured site is healed, the body breaks it down by dissolving the glue. This is called **fibrinolysis**.

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- A **thrombus** occurring in large veins is called **deep vein thrombosis** (**DVT**). Thrombus in a smaller vein is called **superficial thrombosis.** Thrombosis in arteries can also happen. Arterial thrombi usually occur in the brain leading to strokes or in the vessels of the heart leading to heart attacks.

- A piece of the blood clot can break off and travel through the body. It is usually trapped in the lungs. This is a **pulmonary embolism**. Pulmonary embolism can be very serious or even life threatening.