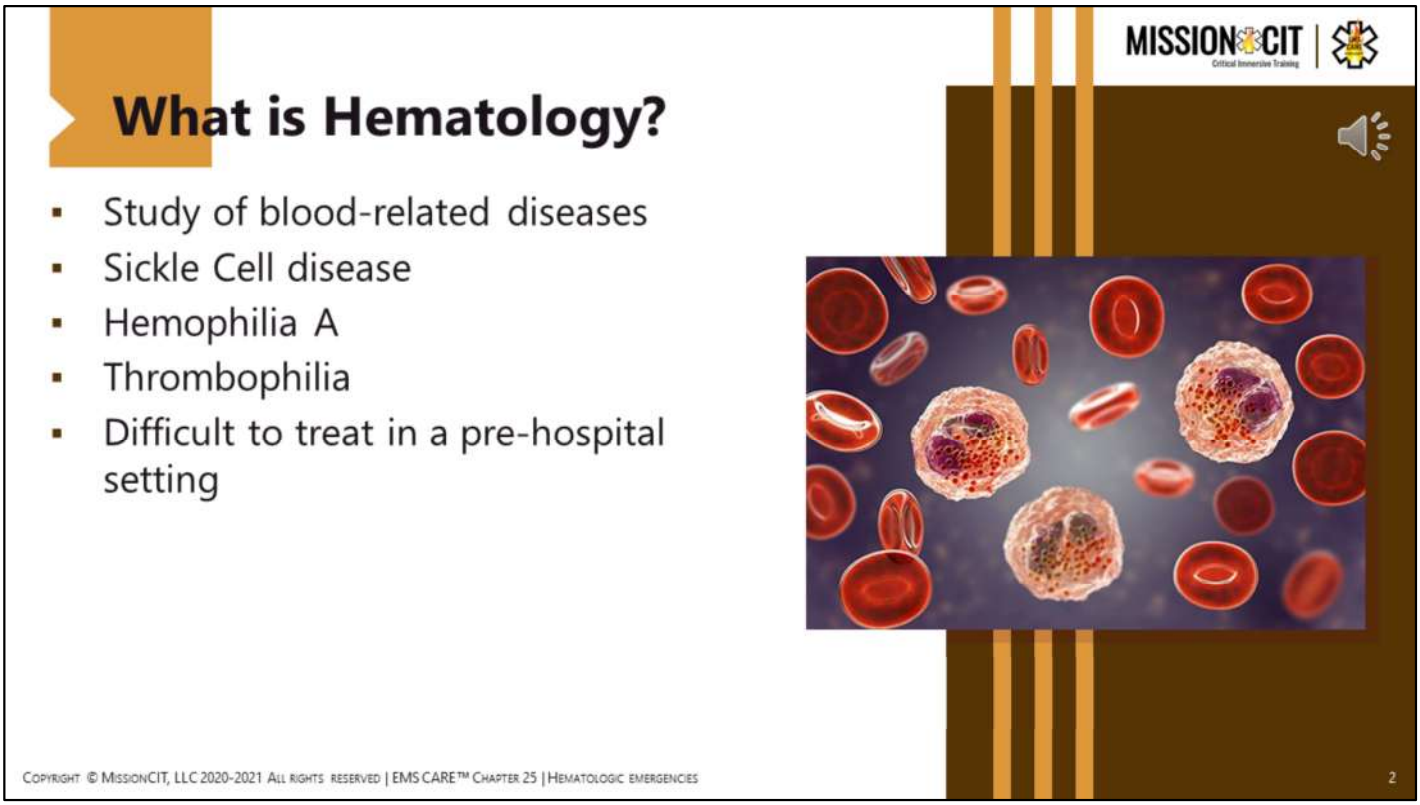


Hello everyone! Welcome to this course.

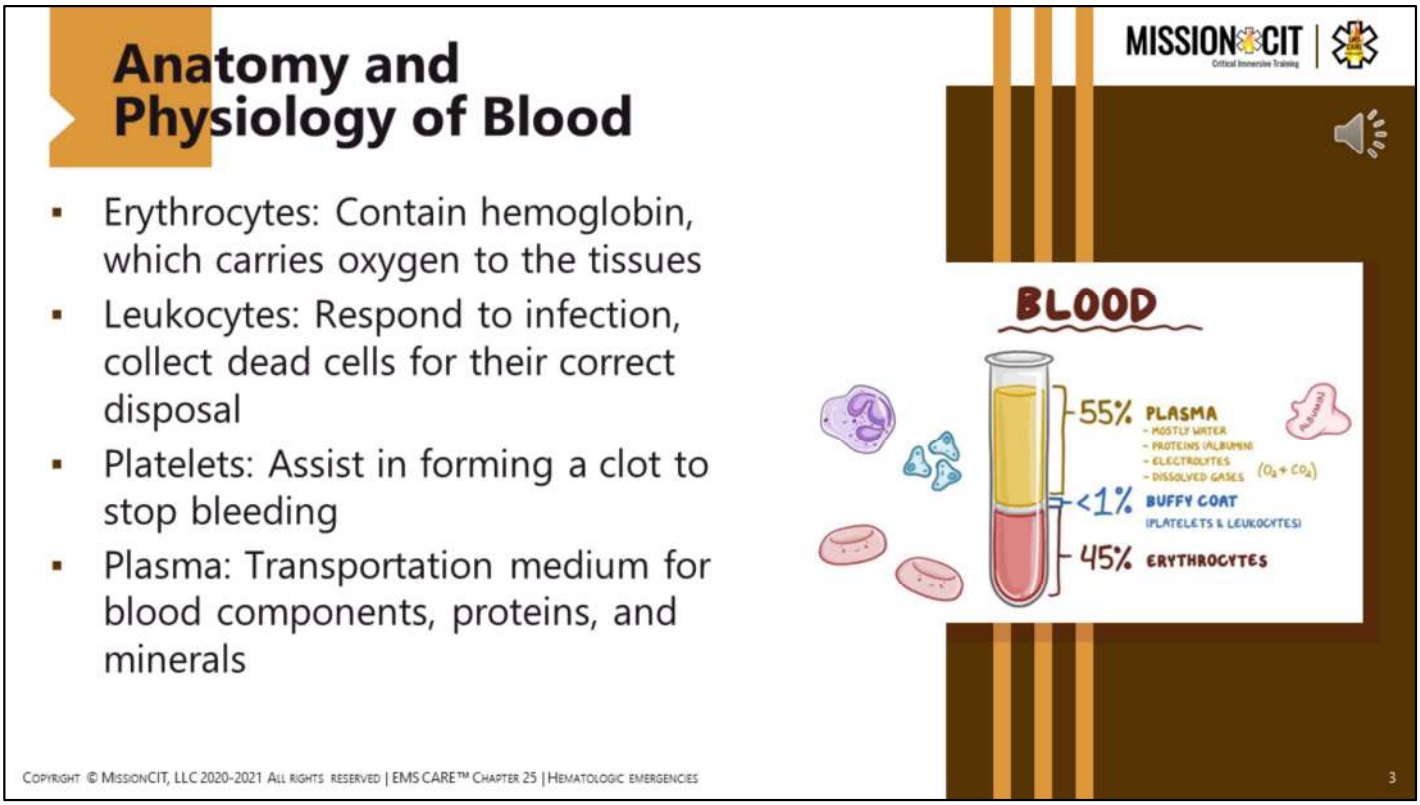
Hematologic emergencies are unique because doing the right things can save a person's life. At the same time, it's difficult to assess and treat in a pre-hospital setting. So, understanding what this emergency is and how best you can handle it is important.

Let's start with the basics here.



Hematology is the study of blood-related diseases. Three disorders that can create a prehospital emergency are:

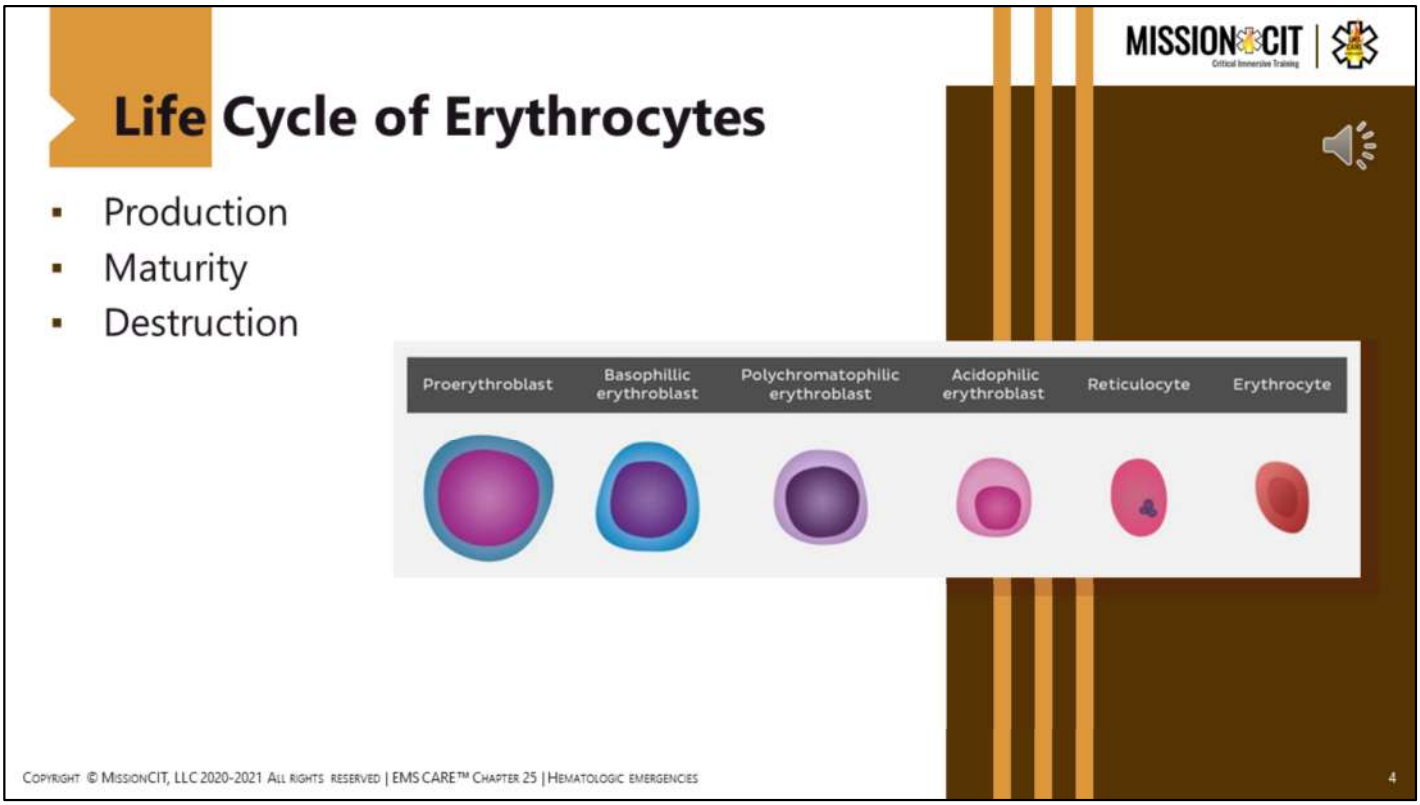
- Sickle cell disease
- Hemophilia A, and
- Thrombophilia



Blood is made up of four components, namely, erythrocytes, leukocytes, platelets, and plasma. Each of the components of the blood serves a purpose in maintaining the body's homeostatic balance.

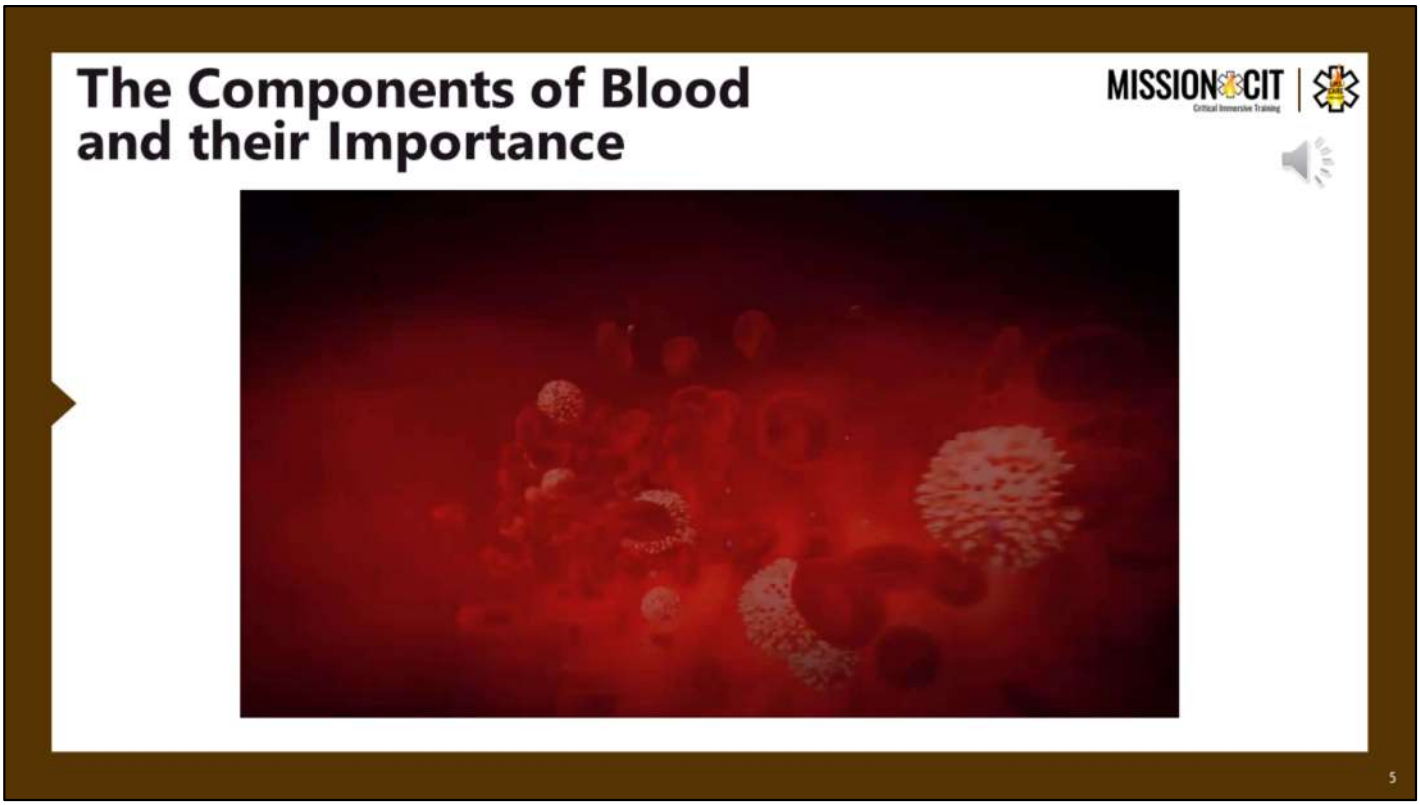
Red blood cells, called RBCs or erythrocytes, contain hemoglobin, which carries oxygen to the tissues. White blood cells, also called WBCs or leukocytes, on the other hand, respond to infection and collect dead cells for their correct disposal.

Platelets assist in forming a clot to stop bleeding and finally, plasma serves as the transportation medium for blood components, proteins, and minerals.



The life cycle of erythrocytes involves three stages; production, maturity and destruction.

- Production of erythrocytes (erythropoiesis) is one of the sub-processes of hematopoiesis, happening in the red bone marrow. The body may increase red blood cell production to compensate for any condition that results in low oxygen levels.
- As an erythrocyte matures in the red bone marrow, it extrudes its nucleus and most of its other organelles.
- Erythrocyte destruction: With the time spent in circulation, the cell membrane of erythrocytes gets damaged. Macrophages recognize this morphological blueprint of an old or unfeasible erythrocyte and phagocytose it. The primary site of erythrocyte clearance, called eryptosis, is the spleen.



Watch this video to learn more about how the components of blood work.
Now that you have an idea of the basics, after this video, Justin will walk you through the pathophysiology of specific hematologic emergencies to help you provide the appropriate pre-hospital care.