

# WHERE DOES MY BLOOD GO?

*The Life Saving Journey Explained*



## Blood flows into the diversion pouch

Before blood flows into the whole blood collection bag, a small portion of the blood is diverted into the sample diversion pouch (see left). This blood is transferred into pilot tubes that are used to test for the presence of infectious disease agents such as those associated with Syphilis, AIDS, Hepatitis, West Nile and Chagas disease. The diversion pouch captures the small amount of skin that is picked up when the needle is inserted. Diverting the skin from the main collection bag significantly decreases the risk of bacterial contamination.



## Blood is diverted to the collection bag

Once the diversion pouch is full, it is clamped off and blood flows into the whole blood collection bag (see above). This process usually takes 7 to 10 minutes to complete. Following collection, the unit is sent to the laboratory for processing.



## Leukocyte reduction

Once the whole blood is separated into individual components, the red cells and platelets are put through a filter that removes most of the white blood cells. This process is called leukocyte reduction. Leukocyte reduction is important in that it helps to prevent some types of recipient transfusion reactions and transmission of cytomegalovirus (CMV).

## Components are separated

Whole blood is mixed with an anticoagulant at the time of collection to prevent clotting. A centrifuge is used to quickly separate the whole blood into red blood cells and plasma. The red blood cells and plasma are further processed to create the individual components of red cells, platelets and plasma.

## Red blood cells

Red blood cells are the main cellular element in whole blood. A single unit of red cells (see right) is separated from whole blood, or two units can be collected using automation (double red cell apheresis). A red cell's main function is to transport oxygen to the body's tissues. This is possible because oxygen binds to an iron-containing molecule called hemoglobin. Red cells are produced in the marrow and survive in the body for about 120 days. Collected and stored red blood cells last for 42 days.

Transfusion of red cells is used in the treatment of anemia resulting from, for example, kidney failure, chemotherapy regimens to fight cancer, gastrointestinal bleeding or blood loss due to trauma or surgery.



## Platelets

Platelets are smaller than red blood cells and are also produced in the bone marrow. Platelets are a cellular element needed for blood to clot properly. Platelets can be processed from whole blood (see left), or collected individually by an automated process known as Apheresis. Collected platelets can be stored for 5 days before expiration.

It usually takes 4-6 units of platelets pooled together from whole blood to provide a therapeutic dose for the typical recipient. A single unit collected by Apheresis will have the same number of platelets as the pooled platelets from whole blood. The advantage Apheresis offers is found in limiting the number of individual donors to one, versus several.

Platelets are used to correct low platelet counts (thrombocytopenia) in patients undergoing chemotherapy for cancer or leukemia, or other conditions in which the patient loses platelets, such as massive trauma or uncontrolled bleeding due to abnormal platelet function.

## Plasma

Plasma is the straw-colored liquid component of whole blood in which the red cells, white cells and platelets are suspended. Its main function is to help maintain blood pressure, deliver nutrients and carry wastes. Plasma also contains dissolved proteins, glucose, clotting factors and other elements.

Plasma processed from whole blood is separated and frozen within 8 hours to preserve the clotting factors. A frozen unit of plasma can be used up to one year from its collection date. Plasma is used to help control bleeding when no coagulation factor-specific concentrate is available. Typical uses are seen with burn patients and patients suffering massive hemorrhage due to trauma or disease.

## Cryoprecipitate

Today, cryoprecipitate is a specialty product that is made and used to supplement shortages of non-human manufactured coagulation factors used in the treatment of Hemophilia A (factor VIII deficiency) and von-Willebrand's disease. It is made from frozen plasma thru a process that leaves only Factor VIII, fibrinogen and von Willebrand factor. Like frozen plasma, it can be used up to one year after it's collected.

In addition to treating patients with the deficiencies discussed above, it also is used during surgery as a hemostatic preparation (fibrin sealant that staunches blood flow).



## How will my blood be used?

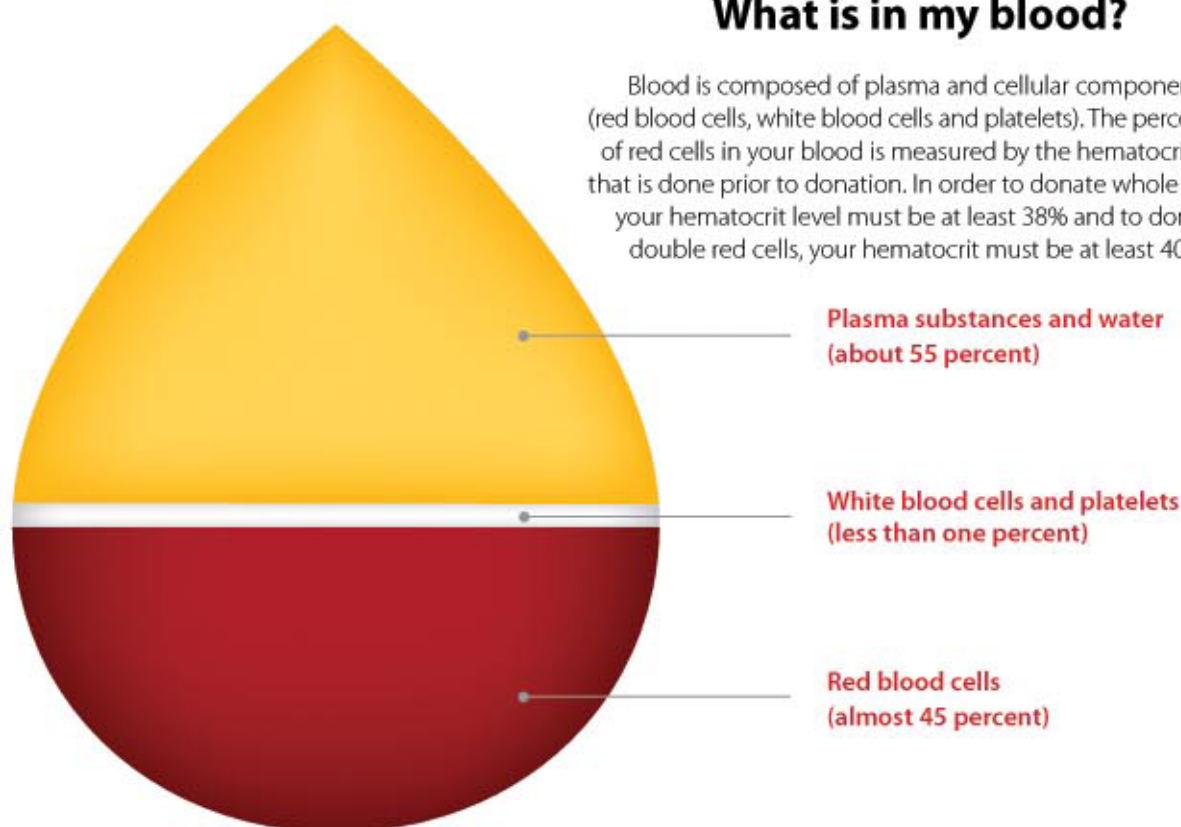
Each day, Hoxworth Blood Center needs to collect at least 350 units of blood and 40 units of apheresis platelets to meet the needs of patients in the Tri-State area. Once testing and processing is complete, the units are dispersed to the 32 hospitals served by Hoxworth where they are transfused to patients with a variety of medical needs.

These needs range from treatment of traumatic injuries to elective surgeries. The chart below indicates the average number of units that are needed for some of the many potential uses.

Examples of Blood Use	Average Number of Units Used
Severe Automobile Accident	50 units of blood
Heart Surgery	6 units of blood, 6 units of platelets
Organ Transplant	40 units of blood, 30 units of platelets, 20 units of cryoprecipitate, 25 units of frozen plasma
Bone Marrow Transplant	120 units of platelets, 20 units of blood
Average Transfusion Event	3.4 units of blood

## What is in my blood?

Blood is composed of plasma and cellular components (red blood cells, white blood cells and platelets). The percentage of red cells in your blood is measured by the hematocrit test that is done prior to donation. In order to donate whole blood, your hematocrit level must be at least 38% and to donate double red cells, your hematocrit must be at least 40%.



## What is the rarest blood type?

The rarest blood type is the one NOT on the shelf when it is needed. Therefore, we need blood donors of ALL blood types to make regular donations so that we can ensure a safe and adequate blood supply for the communities we serve.

O negative is known as the Universal Donor, making up 7% of all individuals. In emergency situations, O negative red cells can be given to people with any blood type. Individuals who are AB positive can receive any type of red cells.

The chart below identifies percentages of the four main types of blood within the general population.

Blood Group	Population Percentage	Rh Positive Percentage	Rh Negative Percentage
O	45%	38%	7%
A	40%	34%	6%
B	11%	9%	2%
AB	4%	3%	1%

## Who does Hoxworth serve?

When you donate with Hoxworth Blood Center, you are helping patients in need of blood and blood components at 32 hospitals and medical centers in the Tri-State.

### OHIO

Adams County Regional Medical Center  
Bethesda North Hospital  
Bethesda Medical Center at Arrow Springs  
Brown County Regional HealthCARE  
Butler County Medical Center  
Cincinnati Children's Hospital Medical Center  
Cincinnati Children's Hospital Medical Center - Liberty Township  
Deaconess Hospital of Cincinnati  
Drake Center, Inc.  
Evendale Medical Center  
Good Samaritan Hospital  
Highland District Hospital  
Mercy Franciscan Hospital - Mt. Airy Campus  
Mercy Franciscan Hospital - Western Hills Campus  
Mercy Hospital - Anderson  
Mercy Hospital - Clermont  
Mercy Hospital - Fairfield

Shriners Hospital for Children  
Southern Ohio Medical Center  
The Christ Hospital  
The Jewish Hospital  
The University Hospital  
University Pointe Surgical Hospital  
Veterans Affairs Medical Hospital  
West Chester Medical Center

### KENTUCKY

St. Elizabeth Medical Center - Grant County  
St. Elizabeth Medical Center - North  
St. Elizabeth Medical Center - South  
St. Luke Hospital - East  
St. Luke Hospital - West

### INDIANA

Dearborn County Hospital  
Margaret Mary Community Hospital

## Where can I donate?

Hoxworth Blood Center has nine conveniently located neighborhood donor centers. To schedule an appointment to donate at one of these centers, call **513-451-0910** or **800-830-1091**. To find a community blood drive near you or to schedule online, visit [www.hoxworth.org](http://www.hoxworth.org).

You need to be 17 years old (16 years with parental consent), weigh at least 110 pounds and generally feel healthy and well to donate.

### ANDERSON

Five Mile Center  
7715 Five Mile Road

### BLUE ASH

4310 Hunt Road

### DOWNTOWN

Tri-State Building  
432 Walnut Street, 2nd Floor

### FT. MITCHELL

Ft. Mitchell Station Shopping Center  
2220 Grandview Drive, Suite 140

### FT. THOMAS

Ft. Thomas Plaza  
90 Alexandria Pike

### HOXWORTH CENTRAL AT UNIVERSITY OF CINCINNATI

Hoxworth Center Building  
3130 Highland Avenue, 4th Floor

### MASON

Governor's Pointe Shopping Center  
9554 Mason-Montgomery Road

### TRI-COUNTY

Wimbledon Plaza  
11812 Springfield Pike/Route 4

### WESTERN HILLS

Anderson Ferry Plaza  
2041 Anderson Ferry Road