Every two seconds, someone in America needs blood.

The American Red Cross hopes to avoid both shortages of blood and excesses in the blood supply by carefully planning blood drives. The blood supply needs to be constantly replenished. Only 38% of Americans are eligible to donate, and of those only 8% do. This amounts to only about 3 of every 100 people.

Blood cannot be manufactured. It comes only from dedicated individuals who recognize the need for blood and understand that their generosity can save lives.

American Red Cross
The need is constant. The gratification is instant. Give blood.
Contents

- Blood Components__________4
- Blood Groups__________8
- Blood and Blood Safety__________12
- The Importance of Giving Blood__________24
- Blood and History__________30

Arm to Arm: Answers to Commonly Asked Questions About Blood and Blood Banking
Fourth Edition, January 2010
Blood Components

What is blood?
Each element of blood performs a special function in the body. Red blood cells carry oxygen from the lungs to all other body tissues. In the tissues, these cells pick up carbon dioxide that is carried back and released into the lungs.

White blood cells are one of the body’s defenses against disease. Some of these cells travel throughout the body and destroy bacteria, some produce antibodies against bacteria and viruses, and others help fight malignant diseases.

Platelets are blood elements that plug damaged blood vessel walls and join other elements in the blood to produce clots to stop bleeding.

Plasma is a yellowish fluid composed of about 92 percent water and 7 percent vital proteins, such as albumin, gamma globulin, anti-hemophilic factor, and other clotting factors. The remainder consists of mineral salts, sugars, fats, hormones, and vitamins.

Red blood cells, white blood cells, and platelets account for about 45 percent of the volume of blood in the body. The remaining 55 percent is plasma.

What is whole blood?
Whole blood is living tissue circulating through the heart, arteries, veins, and capillaries carrying nourishment, electrolytes, hormones, vitamins, antibodies, heat, and oxygen to the body’s tissues. Whole blood contains red blood cells, white blood cells, and platelets suspended in a watery fluid called plasma.

What are red blood cells?
Red blood cells (RBCs) are perhaps the most recognizable component of whole blood. RBCs contain hemoglobin, a complex iron-containing protein that carries oxygen through the body and gives blood its red color. The percentage of blood volume composed of red blood cells is called the “hematocrit.”

There are about one billion red blood cells in two to three drops of blood, and for every 600 red blood cells, there are about 40 platelets and one white cell. Manufactured in the bone marrow, RBCs are continuously produced and broken down. They live for about 120 days in the circulatory system. Red blood cells are prepared from whole blood by removing plasma, or the liquid portion of the blood, and they are used to treat anemia while minimizing an increase in blood volume. Improvements in cell preservation solutions over decades have increased the shelf-life of red blood cells from 21 to 42 days. RBCs may be treated and frozen for extended storage, for 10 years or more.

Patients who benefit most from transfusion of red blood cells include those with chronic anemia resulting from kidney failure, malignancies, or gastrointestinal bleeding and those with acute blood loss resulting from trauma. Since red blood cells have reduced amounts of plasma, they are well-suited for treating anemic patients who have congestive heart failure or who are elderly or debilitated; such patients may not tolerate the increased volume provided by whole blood.

What are prestorage leukocyte-reduced red blood cells?
This form of RBCs requires special preparation by removing leukocytes (white blood cells) by filtration shortly after donation. This is done prestorage because high numbers of leukocytes remaining in a unit of RBCs during the storage process can fragment, deteriorate, and release cytokines (chemicals that affect the inflammatory response). Leukocytes have been implicated as a cause of blood recipients, developing reactions to current and subsequent blood transfusions.
Comparison of a human red blood cell, a white blood cell, and a platelet.
**What is plasma?**

Plasma is the liquid portion of blood – a protein-salt solution in which red and white blood cells and platelets are suspended. Plasma, which is 92 percent water, constitutes 55 percent of blood volume. Plasma contains albumin (the chief protein constituent), fibrinogen (responsible, in part, for the clotting of blood), and globulins (including antibodies). Plasma serves a variety of functions, from maintaining a satisfactory blood pressure and volume to supplying critical proteins for blood clotting and immunity. It also serves as the medium for the exchange of vital minerals, such as sodium and potassium and helps to maintain a proper pH (acid-base) balance in the body, which is critical to cell function. Plasma is obtained by separating the liquid portion of blood from the cells.

Plasma is frozen quickly after donation (up to 24 hours) to preserve clotting factors, stored up to one year, and thawed just before use. It is commonly transfused for severe liver disease or multiple clotting factor deficiencies.

**How can I tell what type of transfusable plasma I may receive?**

<table>
<thead>
<tr>
<th>You may receive</th>
<th>O</th>
<th>B</th>
<th>A</th>
<th>AB</th>
</tr>
</thead>
<tbody>
<tr>
<td>If your type is</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>AB</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**What are plasma derivatives?**

Plasma derivatives are concentrates of specific plasma proteins prepared from pools (many donor units) of plasma. Plasma derivatives are obtained through a process known as fractionation. The derivatives are heat treated and/or solvent detergent treated to kill certain viruses like those that cause HIV, Hepatitis B, and Hepatitis C. Plasma derivatives include:

- Factor VIII Concentrate
- Factor IX Concentrate
- Anti-Inhibitor Coagulation Complex (AICC)
- Albumin
- Immune Globulins, including Rh Immune Globulin
- Anti-Thrombin III Concentrate
- Alpha 1-Proteinase Inhibitor Concentrate

**What is Cryoprecipitated Antihemophilic Factor?**

Cryoprecipitated Antihemophilic Factor (“Cryoprecipitate” or “Cryo”) is a portion of plasma rich in clotting factors, including Factor VIII and fibrinogen. “Cryo” is prepared by freezing plasma and then slowly thawing the frozen plasma. It can be used to prevent or control bleeding in those with hemophilia and von Willebrands disease, the most common inherited major coagulation abnormalities. It is also used as a rich source of fibrinogen for patients who have decreased levels of this important clotting protein.

**What are platelets?**

Platelets are small blood components that help the clotting process by sticking to the lining of blood vessels. Platelets are made in the bone marrow and survive in the circulatory system for about nine days before being removed from the body by the spleen. Platelets help prevent blood loss and blood vessel leakage by initiating the first phases of the clotting process.

Platelets are prepared by using a centrifuge to separate the platelet-rich plasma from the donated unit of whole blood.

Platelets may also be obtained from a donor by a process known as apheresis, or platelethpheresis. In this process, blood is drawn from the donor into an apheresis instrument which separates the blood into its components, retains some of the platelets, and returns the remainder of the blood to the donor. This single donor platelet product contains about six times as many platelets as a unit of platelets obtained from whole blood. Platelets are used to treat a condition called thrombocytopenia, in which there is a shortage of platelets, and they are also used to treat platelet function abnormalities. Platelets are stored at room temperature with constant agitation for 5 days.
What is apheresis?
Apheresis is the process by which platelets and other blood components are collected from a donor. The word “Apheresis” is derived from the Greek word “Aphaerisis” meaning “to take away.” This process is accomplished by using a machine called a cell separator. Most commonly, blood is drawn from the donor and platelets suspended in plasma are collected by the cell separator. The remaining components of the blood are returned to the donor by the automated instrument. Each apheresis donation procedure takes about one and one-half to two hours. Donors can watch movies or relax during the donation.

It is also possible to collect red blood cells and plasma by apheresis methods. Similar to the collection of platelets, the desired blood component is collected, and the remaining components of the blood are returned to the donor.

What are platelets used for?
Platelets are tiny, colorless, disc-shaped particles circulating in the blood, and they are essential for normal blood clotting. Platelets are critically important to the survival of many patients with clotting problems, aplastic anemia, leukemia, cancer, and patients who will undergo organ transplants or major surgeries like heart “bypass” grafts.

Platelets can only be stored for 5 days after being collected. Maintaining an adequate supply of this lifesaving, perishable product is an ongoing challenge.

How often can I give platelets?
Up to 24 apheresis donations can be made a year. Apheresis platelet donors have 24 opportunities each year to save a life and some apheresis donations can generate 2 or 3 adult-size platelet transfusion doses from one donation!

What are white blood cells?
White blood cells are responsible for protecting the body from invasion by foreign substances, such as bacteria and viruses. The majority of white blood cells are produced in the bone marrow, where they outnumber red blood cells by 2 to 1. However, in the bloodstream, there are about 600 red blood cells for every white blood cell. There are several types of white blood cells.

Granulocytes and monocytes protect against infection by surrounding and destroying invading bacteria and viruses, and lymphocytes aid in the immune defense system.

Granulocytes are prepared by apheresis. They must be transfused within 24 hours after collection and are used for infections that are unresponsive to antibiotic therapy.
Blood Groups

What is a blood group?
Nearly all people belong to one of the four major groups in the ABO system: A, B, AB, and O. Blood groups are determined by antigens found on an individual’s red blood cells. An antigen is a protein or carbohydrate on the cell that triggers an immune response, such as the formation of antibodies.

What are the four major groups in the ABO system?

Group A
Blood has A antigen on red cells and B antibody in the plasma.

Group B
Blood has B antigen on red cells and A antibody in the plasma.

Group AB
Blood has both A and B antigens on red cells, but neither A antibody nor B antibody in the plasma. Since they lack anti-A and anti-B, persons with AB blood are called universal donors for plasma products.

Group O
Blood has neither A nor B antigens on red cells, but both A antibody and B antibody are in the plasma. Since their red blood cells lack A and B antigens, persons with Group O are called universal donors for red blood cell units.

What is Rh?
Most people also have an inherited antigen on their red blood cells known as Rh, or D antigen. When the D antigen is present, a person’s blood is designated Rh positive. When D antigen is missing, the blood group is designated Rh negative. In general, Rh negative blood is given to Rh-negative patients, and Rh positive blood or Rh negative blood may be given to Rh positive patients.

You inherit your blood group from your biological parents.

This chart shows the potential blood groups you may inherit from your parents.

Blood Group Inheritance

<table>
<thead>
<tr>
<th>Parent 1</th>
<th>AB</th>
<th>AB</th>
<th>AB</th>
<th>AB</th>
<th>O</th>
<th>B</th>
<th>A</th>
<th>A</th>
<th>O</th>
<th>O</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent 2</td>
<td>AB</td>
<td>B</td>
<td>A</td>
<td>O</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
</tbody>
</table>

Possible children’s blood groups

<table>
<thead>
<tr>
<th>O</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AB</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

How can I tell what blood group I can receive?

This chart shows what blood group you can receive if you need a red blood cell transfusion.

You can receive

<table>
<thead>
<tr>
<th></th>
<th>O-</th>
<th>O+</th>
<th>B-</th>
<th>B+</th>
<th>A-</th>
<th>A+</th>
<th>AB-</th>
<th>AB+</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB+</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AB-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A+</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O+</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
You inherit your blood group from your biological parents. This chart shows the potential blood groups you may inherit from your parents.

Parent 1  
AB  
AB  
AB  
AB  
B  
A  
A  
O  
O  
O  

Parent 2  
AB  
B  
A  
O  
B  
B  
A  
B  
A  
O  

O  X  X  X  X  X  X  X  
A  X  X  X  X  X  X  X  
B  X  X  X  X  X  X  X  
AB  X  X  X  X  

This chart shows what blood group you can receive if you need a red blood cell transfusion.

How can I tell what blood group I can receive?

O-  O+  B-  B+  A-  A+  AB-  AB+  
AB+  X  X  X  X  X  X  X  X  
AB-  X  X  X  X  
A+  X  X  X  X  
A-  X  X  
B+  X  X  X  
B-  X  X  
O+  X  X  
O-  X  

Macrophage engulfing bacteria as part of the immune system's response to infection. SEM X9000
The Genius of Karl Landsteiner

Karl Landsteiner will always be honored for his discovery of blood groups. In 1901, he showed that transfusions between individuals of like blood groups (A to A, B to B) do not result in the destruction of blood cells and that this catastrophe occurs only when a person is transfused with the blood of a person belonging to a different group. In 1901-1903, Landsteiner suggested that because the characteristics that determine the blood groups are inherited, the blood groups may be used to decide instances of doubtful paternity.

In 1939, hematologist Philip Levine first hypothesized the existence of another antigen (a substance that induces antibody production), in addition to A and B antigens, on the surface of human red blood cells. Landsteiner and hematologist Alexander Wiener dubbed the antigen “Rh (rhesus).”

Landsteiner won the Nobel Prize in 1930 for his contributions to medicine. He worked in Vienna, The Hague and New York, making fundamental contributions in the field of immunohematology (blood groups and rhesus factor), syphilis (visualizing spirochetes in the dark field) and poliomyelitis (viral genesis). Landsteiner died on June 26, 1943. His obituary in the Journal of Immunology reads, “Karl Landsteiner’s mind was as young, as fertile, as flexible, on that fatal day in 1943, as when he first began his career. The world of science lost an extraordinarily versatile genius of profound capacity, and Landsteiner’s friends lost a charming and genial personality, whose wit and modesty, whose inspiring qualities and distinguished demeanor will always be fresh in their memories.”

The following list shows the percentages of people in the United States with a particular blood group.

### Incidence of Major Blood Groups in the United States

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>White</th>
<th>Black</th>
<th>Latino</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>O Rh Positive</td>
<td>40%</td>
<td>37</td>
<td>47</td>
<td>53</td>
<td>39</td>
</tr>
<tr>
<td>A Rh Positive</td>
<td>32%</td>
<td>33</td>
<td>24</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>B Rh Positive</td>
<td>11%</td>
<td>9</td>
<td>18</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>O Rh Negative</td>
<td>7%</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>A Rh Negative</td>
<td>5%</td>
<td>7</td>
<td>2</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td>AB Rh Positive</td>
<td>3%</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>B Rh Negative</td>
<td>1.5%</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>AB Rh Negative</td>
<td>0.5%</td>
<td>1</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
</tr>
</tbody>
</table>

### Why are there so many appeals for group O blood?

O Rh negative donors are called “universal donors” because their red blood cells can be transfused to people of all blood groups. This is why the Red Cross is constantly recruiting donors who are O Rh negative.
Do blood groups differ between ethnic groups?
Yes. For example, about 60 percent of the Latino population is group O, the blood group in greatest demand. Only about 45 percent of the population of other ethnic groups is group O. As our Latino population continues to increase, so does the need for group O blood. Unless we have more Latino donors, it will be extremely difficult, if not impossible, to meet this need.

Many African Americans have group O or B blood. Nearly 20 percent of all African Americans have group B blood, compared to 11 percent of the Caucasian population. Additionally, Sickle Cell Disease is a blood disorder found primarily in the African American community. Patients with Sickle Cell Disease are less likely to have complications from blood donated by other African American people. An African American blood donation may be the best hope for an individual’s survival.

Seasonal shortages of group O and group B blood are common because they are in great demand.

Superstitions About Blood Groups Abound

Many cultures have long-standing superstitions about the significance of a person’s blood group. None of these are founded in science, but nonetheless, many of these myths continue to be popular.

During the 1930’s, matching personality traits with one’s blood group became popular in Japan and other areas of the world, just as matching one’s birthday with personality traits is popular in the United States. Almost all Japanese are aware of their blood group, just as most Americans know their astrological sign.

According to this folklore, here are what some believe are the personality characteristics associated with each blood group:

**Group O**
Group O’s are outgoing and social. They often initiate projects, although they don’t always finish what they start. Creative and popular, they love to be the center of attention and appear self-confident.

**Group A**
While outwardly calm, Group A’s are perfectionists and inwardly quite nervous. Group A’s are the most artistic of the blood groups.

**Group B**
Goal oriented and strong minded, Group B’s will start a task and continue it until completed, and completed well. Group B’s are the individualists of the blood group categories and find their own way in life.

**Group AB**
Group AB’s are the split personalities of the blood groups. They can be outgoing and shy, confident and timid. While responsible, too much responsibility will cause a problem. They are trustworthy, and like to help others.

Claims have also been made that Group A people have the worst hangovers, Group O people the best teeth, and Group AB people have the highest IQs.

There is no scientific basis to any of these associations. Such claims should be considered as a form of entertainment, much like reading one’s horoscope.

www.bellaonline.com/articles/art22988.asp
Why does the Red Cross check my hemoglobin and/or hematocrit level?

Before giving blood, it’s important to determine whether it is safe for that person to donate. We do this by asking a series of health questions, taking temperature and pulse, measuring blood pressure, and checking the donor for adequate red blood cell levels to donate blood.

Before donating blood, a hemoglobin screen is performed. Hemoglobin, the iron-containing pigment that gives red blood cells their red color, is a protein that enables red cells to transport oxygen and carbon dioxide.

The hemoglobin is checked before each donation to ensure that the donor has adequate red blood cell levels to donate blood. Blood donors must have a minimum of 12.5 g/dL hemoglobin or a hematocrit of 38% to be accepted for donation. The hematocrit is a measure of the volume that red blood cells take up in the blood. Most men have a hemoglobin of 12.5 g/dL or greater and a hematocrit above 38 percent, but many women naturally have a lower hemoglobin/hematocrit level. An abnormally low hemoglobin/hematocrit, which indicates anemia, can develop when a person either does not make enough red blood cells, loses blood from the body, or is iron deficient. The most common cause of mild anemia is a low level of iron, which is needed to make red blood cells. Frequent blood donations and monthly blood loss in premenopausal women can contribute to a low iron level.

Most hemoglobin/hematocrit readings that are lower than the required level do not indicate the donor has serious health issues. Some donors naturally have lower levels, which causes them no harm. However, it does prevent them from being eligible blood donors. Other donors may be slightly anemic due to iron deficiency, and increasing their iron intake may boost their hemoglobin/hematocrit level.

Donors who are temporarily deferred are given information to help them determine if they are eligible to give blood again in the coming months. The Red Cross encourages all donors who are temporarily deferred to try to give blood again if it is safe for them to do so.

What can I do to increase my hemoglobin/hematocrit level?

If a donor’s low hemoglobin/hematocrit is due to low iron, he or she can replenish iron levels by eating more high-iron foods or taking supplements. Foods rich in iron include red meat, fish, poultry, and liver. Other good sources are iron-fortified cereals, beans, raisins, and prunes. Eating food rich in vitamin C such as citrus fruits, broccoli, and tomatoes, helps with the absorption of the iron that you eat. Iron is often included in multivitamin tablets. If a donor has not been feeling well, has a family history of anemia, or has remaining questions or concerns after speaking with the health historian, the donor should see his or her personal physician. Also, if the hemoglobin/hematocrit of a donor has been low on several occasions, the Red Cross recommends the donor should discuss the result with his or her personal physician. In these people, anemia may be caused by something other than simple iron deficiency. Donors deferred for low hemoglobin/hematocrit will be told what their level was at the time of the deferral.

Why does the Red Cross ask so many personal questions when I give blood?

We all need a safe blood supply. We need to make sure it is safe for a donor to donate blood and for a recipient to receive the donated blood. Most people choose to donate because they want to share their healthy blood with someone who needs it. Some potential donors, however, may have been exposed to diseases that can be spread through blood. Specifically, some people can be at high risk for exposure to the human immunodeficiency virus (HIV) (the virus which causes AIDS) or hepatitis without realizing it. The Red Cross asks risk behavior questions prior to donation to help prevent the spread of communicable diseases.

Don’t most people lie about their past behavior?

The risk behavior questions make donors think carefully about their behaviors prior to donating blood. We expect donors to answer the risk behavior questions truthfully. The safety of any donation begins with the donor providing accurate information.
An alveolar macrophage in a lung alveolus with red blood cells in capillaries in the interalveolar septum. SEM X3840
What Happens to My Donated Blood?

When you donate blood, you’ll give enough blood to fill a blood bag plus several small tubes. Your tubes, your blood bag, and your donor record all receive an identical bar code label in order to keep track of your donation. The tubes are sent to an American Red Cross National Testing Laboratory where they are spun in a centrifuge to separate the liquid portion (serum) from the cells (white cells and red cells). The cell portion is used to determine your blood type, and the serum is tested for viral diseases. Test results usually are transferred electronically via computer within 24 hours. Blood donations that are found to have a positive test for infectious diseases are destroyed. If the donor’s health is in question, he or she is notified and may be counseled. Blood donations that pass testing are manufactured into various blood products in an American Red Cross laboratory. Red blood cells, platelets, and plasma are labeled and stored until they are shipped to hospitals for transfusion to patients.

Could someone steal my identity with all the personal information I give the Red Cross?
The Red Cross takes the confidentiality of blood donors very seriously. Blood collection is a highly regulated and very detailed process designed to ensure the safety and security of the blood donor, the blood supply, and those who are trained to collect, manufacture, and distribute blood products.

Some of the measures utilized to protect blood donors against identity theft include:
1) Donor records are handled exclusively by authorized personnel trained to deal with confidential information. Before interacting with the public, American Red Cross Blood Services employees go through in-depth training that also requires signing a confidentiality agreement and a Code of Conduct agreement.
2) Information entered on the blood donation record completed by donors at the blood drive is protected from view by others during the donation process.
3) Access to information is limited to authorized staff who need it in order to process the blood donation.
4) Every person who handles this information is known/identified to us.
5) Access to our computers and computer database is strictly limited.
6) Information on the laptop computer is encrypted so no one else can read it.

The American Red Cross is committed to ensuring the safety and privacy of blood donors and is appreciative of the thousands of donors who continue to support us. Without their generous donation of the gift of life, lives would be lost.

What tests are administered to ensure my blood is safe to distribute to patients?
• Each unit of blood is tested for the following: ABO and Rh blood groups.
• Unexpected red blood cell antibodies that are a result of prior transfusion, pregnancy or other factors.
• Hepatitis B surface antigen, indicating a current infection (hepatitis) or carrier state for hepatitis B virus.
• Antibody to hepatitis B core antigen, indicator of a present or past infection with the hepatitis B virus.
• Antibody to hepatitis C virus, indicating a current or past infection with hepatitis C virus (most common cause of non-A/non-B hepatitis).
• Antibody to HTLV-1/II, indicator of infection with a virus that may cause adult T-cell leukemia or neurological disease.
• Antibody to HIV-1/2, indicator of infection with human immunodeficiency virus (HIV).
• Nucleic Acid Test (NAT) for hepatitis C (HCV) and HIV.
• Screening test for antibodies to syphilis.
• NAT for West Nile Virus (WNV).
• Enzyme-linked immunoassay (ELISA) test for Trypanosoma cruzi (Chagas’ Disease).

What is NAT?
The nucleic acid test (NAT) system can detect the presence of HIV and HCV in blood using a semi-automated system and further ensures the safety of whole blood and blood components, including fresh frozen plasma, red cells, and platelets, by permitting earlier detection of HIV and HCV infections in donors. The NAT system is capable of detecting a few more infectious donations than other current tests because it detects viral genetic material rather than
viral antigens (proteins from the virus) or viral antibodies (immune response to the virus). Detection of viral genes permits detection earlier in the infection since the appearance of antibodies requires time for the donor to develop an immune response, and detection of antigens requires time for a higher level of virus to appear in the bloodstream. This new technology detects very small amounts of genetic material by copying it numerous times, resulting in amplification of the targeted material. The test system can detect ribonucleic acid (RNA) from HIV-1 and HCV when tested in pools of 16 samples obtained from multiple donors. In a less automated format, it can also be used to test individual samples from whole blood collections. If a test pool is positive for either virus, the individual donations suspected of containing a virus can be identified and not transfused. The donor can be deferred from donating blood and notified.

Donors of blood and plasma are tested for antibodies to HCV and antibodies to HIV. However, there is still a “window period” during which a donor can be infected but have negative results on these screening tests. With the use of NAT for HCV, the window period is reduced approximately 50 days (from an average of 57 days to 7 days). For HIV-1, the average window period with antibody testing is 22 days. This window period is reduced approximately 12 days with NAT (from an average of 22 days to 10 days).

Could I get HIV from donating blood?
No. We use a needle only once and then dispose of it. Sterile procedures and disposable equipment are used in all Red Cross donor centers. You can’t get any bacterial or viral disease--including HIV from donating blood.

Could I get HIV from receiving blood?
According to the latest medical research, the chance of receiving an HIV-infected transfusion is estimated to be about 1 in 2,000,000 or less. The blood supply is well protected from the AIDS virus. The risk of being infected with HIV from a blood transfusion is very low. The risk of infection exists during what is called the “window period.” This is the time between the actual infection with HIV and when the test can detect the presence of the virus or antibodies to the virus in a person’s blood. An estimate of the length of this period is now 10-12 days. Since the Red Cross began testing blood for the HIV-antibody in early 1985, the risk of HIV-contaminated blood entering the blood supply has dropped dramatically.

Is it true that I can get a free AIDS test when I donate blood?
The Red Cross performs laboratory tests on blood products to qualify the products for transfusion and to protect the safety of the transfusion recipients. We do not provide diagnostic testing services for individuals. Additionally, a person must not donate blood in order to be tested since there is a danger of transmitting infections during the window period of the tests. Our community needs healthy donors. You can contact your local health department for AIDS testing.

If my blood tests HIV-Positive, will I be informed about it?
Yes. Donors that are confirmed positive for any infectious disease are notified and have the opportunity for counseling with a specially trained, professional Red Cross donor counselor.

How will the Red Cross contact me if they detect a disease?
The Red Cross regards blood test results as private and confidential information. The Red Cross may contact you by letter or call to arrange a counseling appointment, but the Red Cross does not disclose information regarding positive blood test results to anyone but the donor.

What happens if I donate blood and realize afterward that I shouldn’t have because I may have been exposed to HIV or another disease?
If you give blood but decide later that your blood may not be safe to transfuse, as soon as possible call the post-donation call-back telephone number you were given at the time of your donation.

Is it safe to get a blood transfusion?
Many patients and their families are concerned about the risk of contracting a disease (e.g., hepatitis, HIV, bacterial infections) through a transfusion. While blood transfusions are not risk free, the blood supply is safer than ever. Red Cross volunteer blood donors are carefully screened for risk factors that would disqualify them from donating blood. In addition, every donation goes through extensive testing for various infectious disease markers, including HIV and hepatitis. Donations that test positive are not used for transfusion to patients.

The risk of contracting HIV, hepatitis, or bacterial infection from a blood transfusion is extremely low. When a transfusion is needed, the benefits of receiving blood outweigh the risk of contracting an infectious disease. If your doctor recommends a transfusion, ask about the benefits and risks.

Can I donate blood for myself?
An autologous donation is when you donate blood for yourself before having surgery or a planned medical procedure. Contact your doctor first to find out if you should donate blood for yourself.

How does the American Red Cross protect the blood supply from HIV?
1) The Red Cross educates donors about who should give blood by having every potential donor read the publication What You Must Know Before Giving Blood.
2) Trained staff interview potential donors and review their medical histories.
3) Donors have the opportunity to stop the donation process. After donating they can call to confidentially instruct the Red Cross not to use their blood for transfusion to patients.
4) The Red Cross tests each donor’s blood donation every time he or she donates. Highly sensitive tests performed on samples from each blood donation are effective in detecting HIV exposure.
5) All blood that tests positive for any infectious disease is destroyed.

What are the risks associated with blood transfusion in addition to the risk of infectious disease?
Occasionally, reactions to blood transfusion occur. However in most cases, the reactions are mild, usually fever or chills. Many transfusion reactions are caused by the donor’s white blood cells (leukocytes) transfused along with the red cells or platelets. These leukocytes may cause fever, or may carry certain viruses. Clinical trials suggest that filtering red blood cells and platelets to reduce the number of white blood cells prior to storage (pre-storage leukocyte reduction) reduces complications.
HIV adsorption. The HIV virus fusing with the host T Cell and preparing to release its viral capsid.
Who can donate blood?
In most states, donors must be age 17 or older. Some states allow donation by 16 year olds. Donors must weigh at least 110 pounds, be in good health, and not at risk for HIV/AIDS or hepatitis.

Where can I donate blood?
To find the most convenient location for you to give blood, call 1-800-RED-CROSS.

Why does it seem like there's always a blood shortage?
Medical advances have improved the treatment of serious illness and injuries. These advances have increased the need for blood and blood products. Also, “baby boomers,” who make up the majority of blood donors, are aging. As they grow older, fewer are eligible to give blood, yet more of them need blood as their health declines.

How often can I donate blood?
You must wait at least eight weeks (56 days) between donations of whole blood. Regulations are different for those giving blood for themselves (autologous donors) and for those donating blood by automated collection methods (apheresis).

Where does the blood for my transfusion come from?
The American Red Cross collects more than 6 million volunteer blood donations each year, making it the nation’s largest single blood supplier. Donors are eligible to give whole blood every 56 days and can donate some blood components, such as platelets, more frequently. People of all backgrounds give blood to help others. Donors must be healthy, 17 years or older (16 years in some states), 110 pounds or more, and must meet strict requirements set forth by the Food and Drug Administration and the Red Cross.

Why would my doctor recommend a blood transfusion?
You may require a transfusion to replace blood that is lost during surgery or an accident. If you are receiving chemotherapy, your bone marrow may be temporarily unable to make new blood cells. You may require a transfusion to correct severe anemia that may not be responsive to other treatments.

Your blood transfusion options:
• Use blood from other donors.
• Donate blood for your own use.
• Use blood donated by family or friends that is your blood type.
• Ask your doctor about alternatives to transfusion.

Are blood substitutes available?
Fluids that carry oxygen are being developed and may become available in the future in the United States. These “artificial blood” fluids may be able to replace red blood cell transfusions in some but not all cases. They cannot replace platelet or plasma transfusions. Transfusions of human blood will continue to be needed.

New medical techniques and drugs can sometimes significantly reduce or eliminate the need for blood transfusion. Most surgeries today require far less blood than just a few years ago. For example, patients on kidney dialysis who previously needed monthly blood transfusions can now take a drug that is intended to increase red blood cell production.

The Red Cross actively follows blood substitute research and works closely with other organizations that develop new transfusion alternatives.

Why can't men who have sex with men donate blood?
The United States blood donor exclusion policy for men who have had sex with men (MSM) was drafted in the early 1980’s when there was no testing available to detect HIV. On March 9, 2006, the AABB (formerly known as the American Association of Blood Banks), the American Red Cross, and America’s Blood Centers (a network of U.S. blood centers) recommended modifying the MSM exclusion to 12 months to make the deferral consistent with high-risk heterosexual practices. The American Red Cross is obeying the law by adhering to the FDA-required permanent blood deferral for men who have had sex with men (MSM) since 1977.

The deferral of MSM is part of a multi-layered system designed to prevent transfusion-transmitted infection. Other methods include measures aimed at reducing unnecessary transfusions, minimizing exposures to multiple blood donors, donor selection and screening procedures (including the recruitment of volunteer rather than paid donors and deferring those individuals believed to be at increased risk of blood-borne infections from donating blood), laboratory testing, and the modification of blood units after collection.

Can lesbians donate blood if they do not have other risk factors?
Yes.

How is the Red Cross protecting the blood supply from the possible threat of Mad Cow Disease?
To further safeguard the blood supply from the possible risk of the human form of mad cow disease, variant Cruetzfeldt Jakob disease (vCJD), the American Red Cross defers at-risk individuals from donating blood: anyone who spent a cumulative total of three months in the United Kingdom from 1980-1996, anyone who has spent a cumulative total of five years in any European country or combination of countries (including the United Kingdom) since 1980, anyone who has received a blood transfusion in the United Kingdom since 1980.

What is Chagas' disease?
About 100,000 people in the United States are thought to be infected with Trypanosoma cruzi, the parasite that causes Chagas’ disease. The American Red Cross has previously estimated that in the Los Angeles area, the chance of getting a unit of potentially infected blood was as high as one in 2,000, compared to one in 7,700 estimated a decade ago. Not all units of blood that test positive for antibodies to the Chagas parasite will transmit the disease, but all that are infected must be discarded.

During 2006, the first blood donor test for Chagas’ disease was approved by the FDA.

In addition to further safeguarding the blood supply, this test will also give a more accurate idea of the extent of Chagas’ disease in the United States. The numbers of infections are assumed to be increasing as a result of immigration from the region that stretches from southern Mexico to northern Argentina. Up to 20 million people are believed to be infected in Mexico, Central and South America. Only about one percent of those infected show immediate symptoms, which can include fever, malaise, and swelling. Most appear to recover, although a few infants and people with suppressed immune systems suffer fatal brain swelling. About 30 percent of all those infected develop a dormant form that festers in the nerve cells of the heart and gut for 10 to 30 years before progressing to severe disease and death by heart failure or a ruptured intestine.
What is TRALI?
Transfusion-related acute lung injury (TRALI) is a serious blood transfusion complication thought to be most commonly caused by a reaction to white blood cell antibodies present primarily in the plasma component of blood products. When transfused, these antibodies sometimes activate a type of white blood cell called a granulocyte, which causes plasma to leak into the lungs, resulting in fluid accumulation — a condition referred to as acute pulmonary edema. Plasma containing blood components obtained from certain donors are thought to carry a higher risk of causing TRALI. Donors who are more likely to have these antibodies include women who have been pregnant and developed these antibodies as a result of exposure to fetal blood and donors who have previously received a transfusion or transplant.

There are currently no screening tests to prevent TRALI, nor is there any single intervention that can eliminate the risk of TRALI. However, some steps to reduce the risk of TRALI are being taken for products that contain high volumes of plasma which may contain antibodies to white blood cells.

Should I wait to donate blood if I have received a vaccination?
You may donate blood if you were vaccinated for influenza, tetanus or meningitis, providing you are symptom-free and fever-free. This includes the Tdap vaccine. You may donate blood if you received an HPV Vaccine (example, Gardasil). Wait 4 weeks after immunizations for German Measles (Rubella), MMR (Measles, Mumps and Rubella), Chicken Pox and Shingles. Wait 2 weeks after immunizations for Red Measles (Rubeola), Mumps, Polio (by mouth), and Yellow Fever vaccine. Wait 21 days after immunization for hepatitis B as long as you are not given the immunization for exposure to hepatitis B.

- Wait 8 weeks (56 days) from the date of having a smallpox vaccination as long as you have had no complications. Complications may include skin reactions beyond the vaccination site or general illness related to the vaccination.
- Wait 14 days after all vaccine complications have resolved or 8 weeks (56 days) from the date of having had the smallpox vaccination whichever is the longer period of time. Complications may include skin reactions beyond the vaccination site or general illness related to the vaccination.
- If you had close contact with someone who has had the smallpox vaccine in the last eight weeks and you did not develop any skin lesions or other symptoms, you are eligible to donate.
- If you had close contact with someone who has had the smallpox vaccine in the last eight weeks and you have since developed skin lesions or symptoms, you must wait 8 weeks (56 days) from the date of the first skin lesion or sore.

You should discuss your particular situation with the health historian at the time of donation. Complications may include skin reactions or general illness related to the exposure.
Can I donate blood if I had acupuncture?
Yes. Those who have undergone acupuncture treatments, if otherwise eligible to donate blood, may donate blood.

May I donate blood if I am taking birth control?
Women on oral contraceptives or using other forms of birth control are eligible to donate.

May I donate blood if I have undergone dental procedures or oral surgery recently?
Yes. It is acceptable to donate blood after dental procedures as long as there is no infection present. Wait until finishing antibiotics for a dental infection. Wait for 3 days after having oral surgery.

May I donate blood if I am on Hormone Replacement Therapy (HRT)?
Women on hormone replacement therapy for menopausal symptoms and prevention of osteoporosis are eligible to donate blood.

May I donate blood if I have used intravenous drugs?
Those who have ever used IV drugs that were not prescribed by a physician are not eligible to donate. This requirement is related to concerns about hepatitis and HIV.

How long do I have to wait to donate blood after an organ/tissue transplant?
Wait 12 months after receiving any type of organ transplant from another person. If you ever received a dura mater (brain covering) transplant, you are not eligible to donate. This requirement is related to concerns about the brain disease, Creutzfeld-Jakob Disease (CJD).

Do I have to wait after having ear or body piercings or electrolysis?
You may donate blood as long as the instruments used were sterile or single-use equipment. Wait 12 months if there is any question whether or not the instruments used were sterile and free of blood contamination. This requirement is related to concerns about hepatitis.

May I donate blood if I am pregnant or I am nursing?
Persons who are pregnant are not eligible to donate. Wait 6 weeks after giving birth.

Do I have to wait to donate blood if I had just had surgery?
It is not necessarily surgery but the underlying condition that precipitated the surgery that requires evaluation before donation. Evaluation is on a case by case basis. You should discuss your particular situation with the health historian at the time of donation.

What medications prevent people from donating blood?

In almost all cases, medications will not disqualify you as a blood donor. Your eligibility will be based on the reason that the medication was prescribed. As long as the condition is under control and you are healthy, blood donation is usually permitted. Over-the-counter oral homeopathic medications, herbal remedies, and nutritional supplements are usually acceptable.

There are a handful of drugs that are of special significance in blood donation. Persons on these drugs have waiting periods following their last dose before they can donate blood:

- Accutane, Amnesteem, Claravis or Sotret (isoretinoin), Proscar (finasteride), and Propecia (finasteride) - wait 1 month from the last dose.
- Avodart ( dutasteride) - wait 6 months from the last dose.
- Aspirin, no waiting period for donating whole blood. However, you must wait 48 hours after taking aspirin or any medication containing aspirin before donating platelets by apheresis.
- Feldene (piroxicam), no waiting period for donating whole blood. However, you must wait 48 hours after taking Feldene (piroxicam) before donating platelets by apheresis.
- Clopidogrel - wait 14 days after taking this medication before donating platelets by apheresis.
- Coumadin (warfarin), heparin or other prescription blood thinners - you should not donate since your blood will not clot normally. If your doctor discontinues your treatment with blood thinners, wait 7 days before returning to donate.
- Hepatitis B Immune Globulin - given for exposure to hepatitis, wait 12 months after exposure to hepatitis.
- Human pituitary-derived growth hormone at any time - you are not eligible to donate blood.
- Plavix - wait 14 days after taking this medication before donating platelets by apheresis.
- Soriatane (acitretin) - wait 3 years.
- Tegison (etretinate) at any time - you are not eligible to donate blood.
- Ticlid - wait 14 days after taking this medication before donating platelets by apheresis.
- Ticlopidine - wait 14 days after taking this medication before donating platelets by apheresis.

This list is not complete. Specially trained technical staff are available at each American Red Cross blood collection center. Details of each donor’s health and activities are discussed in a confidential setting prior to blood donation. The majority of donor eligibility rules are specified by the Food and Drug Administration for every collection center in the country. Other rules are determined by the medical professionals at specific blood centers, or with other regulatory bodies. Therefore, these rules may differ between programs. Donor eligibility rules are intended to protect the health and safety of the donor as well as the patient who will receive the transfusion. The criteria listed here are provided as guidelines to assist you in determining whether you may be eligible to be a blood donor. The final determination of eligibility is made at the time of donation. The guidelines listed here were last revised on 08/31/09. There may have been some changes to these criteria since the last revision date. The most up-to-date eligibility information can be obtained by contacting the American Red Cross blood center nearest you.
Which medical conditions may make me ineligible to donate blood?

**Asthma**
You may donate blood as long as you are not having difficulty breathing at the time of donation and you otherwise feel well. Medications for asthma do not disqualify you from donating.

**Bleeding Condition**
If you have a history of bleeding problems, you will be asked additional questions. If your blood does not clot normally, you should not donate since you may have excessive bleeding where the needle was placed. For the same reason, if you are taking any “blood thinner” (such as coumadin or heparin) you should not donate. If you are on aspirin, it is OK to donate whole blood. However, you must be off of aspirin for at least 48 hours in order to donate platelets by apheresis. Donors with clotting disorder from Factor V who are not on anticoagulants are eligible to donate; however, all others must be evaluated by the health historian at the collection center.

**Blood Pressure, High**
You may donate blood as long as your blood pressure is below 180 systolic (first number) and below 100 diastolic (second number) at the time of donation. Medications for high blood pressure do not disqualify you from donating.

**Blood Pressure, Low**
You may donate blood as long as you feel well when you come to donate. If your blood pressure normally runs low, it may be more difficult for your body to adjust to the volume loss following donation, especially if you are dehydrated. Drinking extra water before and after donation is important.

**Blood Transfusion**
Wait for 12 months after receiving a blood transfusion from another person in the United States. You may not donate if you received a blood transfusion since 1980 in the United Kingdom (England, Wales, Scotland, Northern Ireland, Channel Islands, Isle of Man, Gibraltar or Falkland Islands). This requirement is related to concerns about variant CJD, or ‘mad cow’ disease. You may not donate if you received a blood transfusion in certain countries in Africa since 1977. This requirement is related to concerns about rare strains of HIV that are not consistently detected by all current test methods.

**Cancer**
Eligibility depends on the type of cancer and treatment history. If you had leukemia or lymphoma, including Hodgkin’s Disease and other cancers of the blood, you are not eligible to donate. Other types of cancer are acceptable if the cancer has been treated successfully and it has been more than 12 months since treatment was completed and there has been no cancer recurrence in this time. Lower risk situations including in situ cancers and squamous or basal cell cancers of the skin that have been completely removed do not require a 12 month waiting period. Precancerous conditions of the uterine cervix do not disqualify you from donation if the abnormality has been treated successfully. You should discuss your particular situation with the health historian at the time of donation.

**Chronic Illnesses**
Most chronic illnesses are acceptable as long as you feel well, the condition is under good control, you have an adequate hemoglobin level and your temperature is normal when you come to donate, and you meet all other eligibility requirements.

**Cold, Flu**
Wait if you have a fever or a productive cough (bringing up phlegm). Wait if you do not feel well on the day of donation. Wait until you have completed antibiotic treatment for sinus, throat or lung infection.

**Creutzfeldt-Jakob Disease (CJD)**
If you ever received a dura mater (brain covering) transplant or human cadaveric pituitary growth hormone, you are not eligible to donate. Those who have a first-degree blood relative who had Creutzfeld-Jakob disease are also not eligible to donate.

**Diabetes**
Diabetics who are well controlled on insulin or oral medications are eligible to donate blood. However, people with diabetes who since 1980 have ever used bovine (beef) insulin made from cattle from the United Kingdom are not eligible to donate. This requirement is related to concerns about variant CJD, or “mad cow disease.”
Heart Disease
In general, this is acceptable as long as you have been medically evaluated and treated, have no current (within the last 6 months) heart related symptoms such as chest pain and have no limitations or restrictions on your normal daily activities.
• Wait at least 6 months following an episode of angina.
• Wait at least 6 months following a heart attack.
• Wait at least 6 months after bypass surgery or angioplasty.
If you have a pacemaker, you may donate as long as your pulse is between 50 and 100 beats per minute with no more than a small number of irregular beats, and you meet the other heart disease criteria. You should discuss your particular situation with your personal healthcare provider and the health historian at the time of donation.

Heart Murmur, Heart Valve Disorder
You may donate blood if you have a heart murmur as long as you have been medically evaluated and treated and have not had symptoms in the last 6 months, and have no restrictions on your normal daily activities.

Hemochromatosis (Hereditary)
American Red Cross does not accept individuals with hemochromatosis as blood donors for other persons at this time. However, a pilot program for hemochromatosis donors has been completed and is being evaluated for possible system-wide implementation.

Hepatitis, Jaundice
If you had hepatitis (inflammation of the liver) caused by a virus, or unexplained jaundice (yellow discoloration of the skin), since age 11, you are not eligible to donate blood. This includes those who had hepatitis with Cytomegalovirus (CMV), or Epstein-Barr Virus (EBV), the virus that causes Mononucleosis. It is acceptable to donate blood if you had jaundice or hepatitis caused by something other than a viral infection, for example: medications, Gilbert’s disease, bile duct obstruction, alcohol, gallstones or trauma to the liver. If you ever tested positive for hepatitis B or hepatitis C, at any age, you are not eligible to donate, even if you were never sick or jaundiced from the infection.

Hepatitis Exposure
If you live with or have had sexual contact with a person who has hepatitis, you must wait 12 months after the last contact. Persons who have been detained or incarcerated in a facility (juvenile detention, lockup, jail, or prison) for more than 72 consecutive hours (3 days) are deferred for 12 months from the date of last occurrence. This includes work release programs and weekend incarceration. These persons are at higher risk for exposure to infectious diseases. Wait 12 months after receiving a blood transfusion (unless it was your own “autologous” blood), non-sterile needle stick/body piercing or exposure to someone else’s blood. Wait 12 months following a human bite, in which the skin was broken.

HIV, AIDS
You should not give blood if you have AIDS or have ever had a positive HIV test, or if you have done something that puts you at risk for becoming infected with HIV.

You are at risk for getting infected if you:
• have ever used needles to take drugs, steroids, or anything not prescribed by your doctor
• are a male who has had sexual contact with another male, even once, since 1977
• have ever taken money, drugs or other payment for sex since 1977
• have had sexual contact in the past 12 months with anyone described above
• received clotting factor concentrates for a bleeding disorder such as hemophilia
• were born in, or lived in, Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, Gabon, Niger, or Nigeria, since 1977.
• since 1977, received a blood transfusion or medical treatment with a blood product in any of these countries, or
• had sex with anyone who, since 1977, was born in or lived in any of these countries.

You should not give blood if you have any of the following conditions that can be signs or symptoms of HIV/AIDS:
• unexplained weight loss (10 pounds or more in less than 2 months)
• night sweats
• blue or purple spots in your mouth or skin
• white spots or unusual sores in your mouth
• lumps in your neck, armpits, or groin, lasting longer than one month
• diarrhea that won’t go away
• cough that won’t go away and shortness of breath, or
• fever higher than 100.5 F lasting more than 10 days.
Infections
If you have a fever or an active infection, wait until the infection has resolved completely before donating blood. Wait until finished taking antibiotics for an infection. Wait 10 days after the last antibiotic injection for an infection.

Those who have had infections with Chagas Disease or Babesiosis are not eligible to donate.

Malaria
Wait 3 years after completing treatment for malaria. Wait 12 months after returning from a trip to an area where malaria is found. Wait 3 years after living in a country or countries where malaria is found.

Sexually Transmitted Disease
Wait 12 months after treatment for syphilis or gonorrhea. You may donate blood if it has been more than 12 months since you completed treatment for syphilis or gonorrhea. Chlamydia, venereal warts (human papilloma virus), or genital herpes are not a cause for deferral if you are feeling healthy and well and meet all other eligibility requirements.

Sickle Cell
Acceptable if you have sickle cell trait. Those with sickle cell disease are not eligible to donate.

Skin Disease, Rash, Acne
You may donate blood as long as the skin over the vein to be used to collect blood is not affected. If the skin disease has become infected, wait until the infection has cleared before donating. Taking antibiotics to control acne does not disqualify you from donating.

Syphilis/Gonorrhea
Wait 12 months after being treated for syphilis or gonorrhea.

Tuberculosis
If you have active tuberculosis or are being treated for active tuberculosis you should not donate. You are acceptable if you have a positive skin test, but no active tuberculosis, or if you are receiving antibiotics for a positive TB skin test only. If you are being treated for a tuberculosis infection, wait until treatment is successfully completed before donating.

Venerreal Diseases
Wait 12 months after treatment for syphilis or gonorrhea. Chlamydia, venereal warts (human papilloma virus), or genital herpes are not a cause for deferral if you are feeling healthy and well and meet all other eligibility requirements.

This list is not complete. Specially trained technical staff are available at each American Red Cross blood collection center. Details of each donor’s health and activities are discussed in a confidential setting prior to blood donation. The majority of donor eligibility rules are specified by the Food and Drug Administration for every collection center in the country. Other rules are determined by the medical professionals at specific blood centers, or with other regulatory bodies. Therefore, these rules may differ between programs. Donor eligibility rules are intended to protect the health and safety of the donor as well as the patient who will receive the transfusion. The criteria listed here are provided as guidelines to assist you in determining whether you may be eligible to be a blood donor. The final determination of eligibility is made at the time of donation.

The guidelines listed here were last revised on 08/31/09. There may have been some changes to these criteria since the last revision date. The most up-to-date eligibility information can be obtained by contacting the American Red Cross blood center nearest you.

Blood doping refers to any illicit method of boosting an athlete’s red blood cell (RBC) supply in advance of competition.

The typical adult male’s hematocrit—the percentage of his blood that is composed of red blood cells—is approximately 45%. Since red blood cells carry oxygen through the bloodstream, increasing the number of RBCs allows an athlete’s blood to deliver oxygen to muscles more efficiently, increasing stamina, reducing fatigue, and giving the athlete an advantage. Endurance athletes often train at high altitude for precisely this reason. The lower air pressure and diminished atmospheric oxygen at high altitude spur the body to generate extra red blood cells and can bump the hematocrit up two or three (non-illicit) percentage points.

Athletes can get a bigger—and illegal—boost by injecting themselves with erythropoietin (EPO), a hormone that stimulates RBC production. A urine test for artificial EPO was introduced in 1997, but it’s not foolproof; while testable traces of artificial EPO disappear from an athlete’s body within four days, the hormone’s effects are strongest three weeks after injection.

Another method of blood doping involves transfusing concentrated red blood cells directly into the bloodstream a week or less before competition.

In the past, the only way to test for transfused RBCs was by testing an athlete’s blood for an unnaturally high hematocrit. More recently, a laboratory test has been developed which detects transfused RBCs from other blood donors (allogeneic donation), but it will not detect the presence of an autologous transfusion (transfusion of their own RBCs).
Foods Rich In Iron

Food has two forms of iron: heme and non-heme. You absorb up to 30 percent of heme iron, found only in animal tissues (meat, poultry, and fish). You absorb 2-10 percent of non-heme iron, found in plant foods as well as meat. Eating meat generally boosts body iron far more than eating non-heme iron. What boosts iron absorption most: meat, iron supplements, and foods high in vitamin C, according to new research at Tufts University.1 Vegetarian iron and vitamin C supplements did not boost iron. Coffee and tea taken with meals blocks iron absorption. Other iron busters include caffeinated beverages, chocolate, an excess of high fiber foods, some medications like antacids or phosphate salts, and high-calcium foods. If you were temporarily deferred from donating blood because of your iron level, you are not alone. The majority of people who are deferred from donating blood are deferred for this reason. Iron levels can fluctuate daily, so we encourage you to follow the tips above to boost your hemoglobin and schedule another appointment soon.

Iron or stainless steel cookware transfers iron into food, especially acidic food such as tomatoes. One classic study found that spaghetti sauce had almost 30 times as much iron when cooked in an iron pot than in a glass pot.2


The Importance of Giving Blood

Why should I give blood?
You're saving lives. If enough people give blood regularly, there will always be an adequate supply for the sick or injured. If not enough blood is given, there will be shortages, and people who need blood may have to go without it, which could result in needless illness and death.

Each time you donate, your temperature, pulse, and blood pressure are taken and more than ten blood tests are done. Irregularities in any test are reported to you. To meet our nation's need, the American Red Cross must collect over six million blood donations each year.

To find out where you can give blood at a location close to you, call 1-800-RED-CROSS.

What should you do before donating?
Please remember the following:
1) Maintain a healthy diet and appropriate fluid intake.
2) Be aware of the name of any medications you are taking. Usually, medication does not keep you from donating, but the reason for taking the medication might.

How does the blood donation process work?
Donating blood is safe and simple. The entire process takes about 45 to 60 minutes. Medical equipment is sterile, used only once, and then discarded. The actual donation process works like this:

1) You will complete donor registration, which includes your name, address, phone number, donor identification number, etc.
2) You will be asked to show your donor card or other identification.
3) You will be asked some questions about your health, travel history, and risk behaviors. All information is confidential.
4) You will receive a mini “health exam”, including checks for blood pressure, temperature, and pulse. In addition, a drop of blood will be obtained from your finger to make sure that you have enough red blood cells to safely donate.
5) You will proceed to a donor bed where your arm will be cleaned with antiseptic. If you are allergic to iodine, be sure to tell the phlebotomist so an alternate antiseptic may be used.
6) You will have a blood unit and blood specimens drawn.
7) You will receive snacks and beverages while you wait for about 15 minutes after donation. Waiting periods are different in different states.

Donating blood is a simple process. Your gift of blood may help three people or more. Donated red blood cells do not last forever. They have a shelf-life of up to 42 days. A healthy donor may donate every 56 days.

Will it hurt when you insert the needle?
Only for a moment. Pinch the fleshy, soft underside of your arm. That pinch is similar to what you will feel when we put the needle in your arm.

Is it safe to give blood?
Yes. Sterile procedures and disposable equipment are used. Each donor’s blood is collected through a new, sterile needle which is then discarded. Although most people feel fine after donating blood, a small number of people may feel lightheaded or dizzy, have an upset stomach, or experience a bruise or pain where the needle was. Very rarely, loss of consciousness, nerve damage, or artery damage could occur.

How long will it take?
The time varies with each person. The entire process takes about one hour; the actual donation of a whole blood unit takes six to eight minutes. Approximately one pint of blood will be collected.

What should I do after donating blood?
It is recommended you:
1) Increase your fluid intake for the next 24 to 48 hours.
2) Avoid strenuous physical exertion, heavy lifting or pulling with the donation arm for about five hours.
3) Eat well-balanced meals for the next 24 hours.
4) People seldom experience discomfort after donating. However, if you feel lightheaded, lie down until the feeling passes. If some bleeding occurs after removal of the bandage, apply pressure to the site and raise your arm for three to five minutes. If bruising or bleeding appears under the skin, apply a cold pack periodically to the bruised area during the first 24 hours; then apply warm, moist heat intermittently over the next few days or so.
“My family and I are grateful for the more than 100 donors whose blood helped save my life following a tragic motorcycle accident in which I lost my leg. My family and I have become regular blood donors and Red cross spokespersons to help ensure that blood is there for others.”

-Justin Meadows
“There is a bond that links all men and women in the world so closely and intimately that every major difference of color, religious belief and cultural heritage is insignificant beside it. Never varying in temperature more than five or six degrees, composed of 55 percent water, the life stream of blood that runs in the veins of every member of the human race proves that the family of man is a reality.”

How long will it take to replenish the unit of blood I donate?
Blood volume, or plasma, is replaced within about 24 hours. Red cells need about four to six weeks for complete replacement. That’s why at least eight weeks are required between whole blood donations.

What does the Red Cross do with my blood?
The blood will be delivered to a blood component laboratory at the Red Cross, where it is processed into several components (e.g., red blood cells, plasma, etc.). A single blood donation may help three different people or more.

Does the Red Cross pay blood donors?
No. All Red Cross blood donors are volunteers.

Why am I charged for blood at the hospital when I have donated blood to the Red Cross previously?
Since 1960, the Red Cross has been reimbursed by hospitals for the costs associated with providing blood to hospital patients. The Red Cross is not charging for the blood itself that you have so generously donated. The Red Cross only recovers the cost associated with providing blood. These costs involve the recruitment and screening of potential donors, the collection of blood by trained staff, the processing and testing of each unit of blood in state-of-the-art laboratories and the labeling, storage, and distribution of blood components.

Blood is fully covered under most health insurance policies just as pharmacy charges are, so it is rare for a patient to have any out-of-pocket expenses related to blood transfusion. Please be aware, however, that the hospital will have its own additional charges related to the administration of blood.

Many years ago, some hospitals imposed an additional “non-replacement fee” on patients if their family, friends, or co-workers did not provide blood donations to “replace” the blood that would be used in advance of their need for blood. Blood centers, including the American Red Cross, were asked to keep track of such donations as “credits” for these donors. Apart from the cumbersome nature of administering this system, the Red Cross and other blood centers discontinued participating in this record-keeping for two reasons:

1) Such a system discriminated financially against patients without family, friends, or co-workers to donate blood on their behalf. The Red Cross provides equal access to blood for all.
2) Concern that such a system would unduly influence some individuals to donate blood without being fully honest in answering all the donor suitability questions, since their donation would provide a financial benefit to the patient who is their family member or friend.

The Red Cross, as a non-profit organization, is recovering costs associated with maintaining a safe and stable blood supply. While the Red Cross’ provision of disaster and other essential services relies heavily upon volunteers and almost entirely upon charitable contributions from the American public, the Red Cross blood program is staffed almost entirely by paid employees and is not dependent upon charitable contributions. Contrary to what many people may think, the Red Cross is not government funded.

How will my blood be used?
Blood is almost never used in its whole form. Most patients requiring transfusions only need one or two of the many components that make up blood. It would be wasteful and sometimes harmful to give patients components they do not need. Most blood is separated into blood components that can be used to treat two or more patients. Below are some of the products derived from whole blood. Red blood cells carry oxygen and are needed by surgical patients or to treat those with anemia. Red blood cells can also be washed and filtered to prevent adverse reactions in some sensitive patients. Sometimes rare red cell types are frozen to extend their storage period and help ensure that an adequate supply is always available. Platelets are blood elements that are an important part of the body’s clotting system. They are used to control bleeding in the course of treating leukemia and other forms of cancer. Plasma is the yellowish liquid portion of blood, which provides a source of clotting proteins that stop bleeding. Cryoprecipitate is a part of plasma that contains specific clotting factors. It is used to treat specific clotting deficiencies.

Fractionation is the process of breaking down plasma. Some of the more common products are:

- Albumin: used in the treatment of certain kidney and liver diseases. Because this product is easy to store and administer, it is used in the treatment of emergency cases like accident or shock victims.
- Gamma Globulin: used to bolster the immune system and modify or prevent certain infectious diseases.
- How much blood may be needed for various medical procedures?
- Coronary Artery Bypass: 0 to 5 units
- Fractured Hip/Joint Replacement: 0 to 3 units
- Cardiovascular Surgery: 0 to 25 units
- Bleeding Ulcer: 0 to 30 units
- Brain Surgery: 0 to 10 units
- Auto Accidents/Gunshot Wounds: up to 50 units
- Organ Transplant: up to 100 units
- Bone Marrow Transplant: up to 2 units per day
- Sickle Cell/Aplastic Anemia: up to 4 units per week
- Cancer: up to 8 units per week

How much blood is collected and transfused in the United States?
According to the National Blood Collection and Utilization Survey, the total whole blood derived and apheresis red blood cells (RBCs) in the United States were 16.2 million units in 2006. The total number of whole blood RBCs transfused was 14.7 million units. The total number of all blood components transfused in 2006 was 30 million units.
How is the American Red Cross different than other blood providers?

The American Red Cross, a humanitarian organization led by volunteers and guided by its Congressional Charter and the Fundamental Principles of the International Red Cross Movement, provides relief to victims of disaster and helps people prevent, prepare for, and respond to emergencies. Last year, almost a million volunteers and 35,000 employees helped victims of over 70,000 disasters, taught lifesaving skills to millions, and helped U.S. service members separated from their families stay connected.

Since establishing the first civilian blood service in the United States after World War II, the American Red Cross has been a leader in blood collection, safety and development. The American Red Cross is the single largest blood supplier in the United States.

Here are some key statistics about the American Red Cross:

- American Red Cross Chapters: 692
- American Red Cross Blood Services Regions: 36
- Recognized Red Cross, Red Crescent societies in the world: 186
- American Red Cross paid employees: 33,946
- American Red Cross volunteers: 661,871
- American Red Cross blood donors: 3,765,646
- Annual budget (FY09): $3.4 billion
- Spending ratio, consolidated: 92 cents of every dollar spent
- Approximate number of units of blood collected last year: 6.4 million
- Total number of disasters to which all Red Cross units responded last year: 67,247
- Total number of people attending disaster education presentations: 5,579,385
- Total number of people attending health and safety classes last year: 9,999,296
- Services provided to military members, veterans, and civilians: 472,943
- Red Cross messages and related international tracing services delivered by Red Cross Chapters: 7,923

All numbers are for American National Red Cross Fiscal Year 2009.
Blood Safety and Voluntary Donations: A Global Overview

The majority of the world's population has an urgent need for safe blood. As of 2005, of the estimated 80 million units of blood donated annually worldwide, only 38 percent are collected in the developing world where 82 percent of the world's population lives.

The lack of safe blood has a severe impact on mortality. Unsafe transfusions and a lack of access to safe blood have a particularly severe impact on women with complications of pregnancy; trauma victims; and children with severe life-threatening anemia as a result of malaria or poor nutrition. For example, up to 150,000 pregnancy-related deaths could be avoided each year through access to safe blood.

Too many countries still rely on family replacement or paid donors: 42 percent of blood collected from new donors in medium and low Human Development Index (HDI) countries comes from family replacement or paid donors. This blood often contains a higher seroprevalence of transfusion-transmissible infections than blood from voluntary, non-remunerated donors.

Most countries still lack a nationally coordinated Blood Transfusion Service. Despite some recent improvements in this important area, less than 30 percent of countries have a well-organized service in place. Not enough blood is tested for transfusion-transmissible infections. Despite significant improvements, annually some six million tests that should be done for infections are not done.

However, much progress has been made in the past years in increasing the global supply of safe blood. By 2001, 123 countries were monitoring the prevalence of transfusion-transmissible infections among blood donors, compared with 98 countries in 1998-1999. This enables them to focus their blood donor education and recruitment activities on people who are likely to be the safest blood donors.

Blood is collected exclusively from voluntary unpaid donors in only 39 of 178 countries.

Voluntary blood donor organizations have been set up in over 50 countries. These organizations, which are managed by blood donors themselves, play an important role in blood donor recruitment and retention through peer education and promotion.

Well-organized blood donor programs based on voluntary blood donation can prevent a high incidence of HIV infection in the general population. South Africa has an HIV prevalence of 23.3 percent in the adult population, but only 0.02 percent among its regular blood donors.
Blood and History

1600s

It was a time when disease raged over the planet. The plague, malaria, and yellow fever ravaged cities and killed tens of thousands.

Despite life being dismal and short for most, there was great promise for humanity. This was the age of Rembrandt, Milton, Newton, and Galileo. In 1628, British physician, William Harvey, discovered the circulation of blood. The first known blood transfusion was attempted soon thereafter.

1628 - British physician William Harvey discovers the circulation of blood. The first known blood transfusion is attempted soon afterward.

1632 - Taj Mahal built.

1658 - Microscopist Jan Swammerdam observes and describes red blood cells.

1665 - Distance to sun calculated; Newton discovers nature of light.

1667 - Jean-Baptiste Denis in France and Richard Lower and Edmund King in England separately report successful transfusions from sheep to humans.

1668 - British Royal Society bans blood transfusions.

1669 - The piano is invented in Florence.

1672 - French Parliament bans blood transfusions.

1678 - French Parliament bans blood transfusions.

1687 - Newton explains gravity.

1692 - Rumors about witches in Salem abound.

1698 - The British Royal Society (1668), the Vatican (1669), and the French Parliament (1678) banned transfusions. The prohibitions led to a 150 year lag in transfusion medicine. It was not until 1818 that British obstetrician James Blundell performed the first known successful blood transfusion of human blood.

1700s

The 1700’s are often referred to as the “Age of Enlightenment”. Berkeley, Voltaire, Rousseau and others created the intellectual impetus for the American and French Revolutions. The scientific and industrial revolutions transformed society, while Mozart, Bach, Handel, and Beethoven changed music forever.

But disastrous outcomes, fear and superstition led to a ban on blood transfusions.

The British Royal Society (1668), the Vatican (1669), and the French Parliament (1678) banned transfusions. The prohibitions led to a 150 year lag in transfusion medicine. It was not until 1818 that British obstetrician James Blundell performed the first known successful blood transfusion of human blood.

1752 - Franklin attracts lightning.

1764 - British taxation causes widespread American resentment.

1773 - The Boston Tea Party occurs.

1775 - First shot in American Revolution is fired at Lexington.

1776 - The Declaration of Independence is signed.

1783 - The Treaty of Paris ends American Revolution.
1788 - The US Constitution is ratified.

1791 - Bill of Rights to US Constitution is ratified.

1796 - Jenner pioneers vaccination.

**1800s**

The 1800’s are often referred to as “the age of the machine.” The invention of usable electrical, steel, and petroleum products led to the growth of railways and steam ships, as well as more efficient means of communication. The internal combustion engine, light bulb, telephone, typewriter, sewing machine, and stethoscope all came of age during the 19th century.

The term “scientist” was first used in 1833, and several great scientific advances were made in transfusion medicine. French physiologists placed blood in a rotating cylinder that caused fibrin from the blood to collect on the walls of the cylinder. The result was defibrinated blood. In 1803, John Otto published a study tracing the history of several family “bleeders” thus identifying hemophilia. In 1818, James Blundell successfully transfused ten patients for post-partum hemorrhaging. It was the first successful human blood transfusion. In 1842, British physician William Addison observed the action of platelets.

Nonetheless, transfusions in the 1800’s were plagued by superstition and complications. Animal to human transfusions were performed as late as 1890. Saline and milk transfusions were also a common practice during the 19th century. All that changed in 1900 with Karl Landsteiner’s discovery of blood groups.

1803 - The Louisiana Purchase occurs.

1804 - Lewis and Clark head west.

1818 - British obstetrician James Blundell performs the first successful transfusion of human blood to a patient for the treatment of postpartum hemorrhage.

1819 - Spain sells Florida to USA for $5 million.

1837 - Victoria becomes Queen of Great Britain.

1846 - Communist Manifesto is published.

1859 - Henri Dunant conceives the idea of the Red Cross.

1860 - Lincoln is elected US President.

1861 - The American Civil War begins.

1863 - Lincoln issues the Emancipation Proclamation.

1864 - Geneva Convention establishes standards for the treatment of the wounded in war.

1865 - Lincoln is assassinated.

1867 - English surgeon Joseph Lister uses antiseptics to control infection during surgeries.

1873-1880 - US physicians attempt transfusing milk from cows, goats, and humans.

1880 - The American Red Cross is founded.

1884 - Saline infusion replaces milk as a “blood substitute” due to the increased frequency of adverse reactions to milk.

1886 - The Statue of Liberty is erected.

1890 - Hundreds of Sioux Indians are killed by US troops at Wounded Knee Creek.

1898 - Spanish American War, Spain cedes Philippines and Puerto Rico to the United States.

**1900s**

Great empires dissolved in the first half of the century. Two world wars were fought. Discoveries, such as the theory of relativity and quantum physics, drastically changed the world of science.

Air travel, freeways, radio, television, frozen food, computers, the Internet, and mobile telephones affected the quality of life for millions of people.

Placebo-controlled, randomized, blinded clinical trials became a powerful tool for testing new medicines. Antibiotics drastically reduced mortality from bacterial diseases and their prevalence. Vaccines were developed for polio, diphtheria, pertussis (whooping cough), tetanus, measles, mumps, rubella (German measles), chickenpox, hepatitis A, and hepatitis B. X-rays became a powerful diagnostic tool for a wide spectrum of diseases, from bone fractures to cancer. In the 1960s, computerized tomography was invented. Other important diagnostic tools developed were sonography and magnetic resonance imaging.

During the century, transfusion medicine grew rapidly. Compatibility testing, the use of anti-coagulant and preservative solutions, refrigeration, the establishment of blood banks, infectious disease testing, and donor screening were all initiated in the 1900’s.
1901 - Karl Landsteiner, an Austrian physician, discovers the first three human blood groups.

1903 - Wright Brothers first flight.

1906 - First radio broadcast.

1907 - Ludvig Hektoen suggests that the safety of transfusion might be improved by cross matching blood between donors and patients to exclude incompatible mixtures.
- Reuben Ottenberg performs the first blood transfusion using blood typing and cross matching.
- NAACP is founded.

1912 - The Titanic sinks.
- Roger Lee and Paul Dudley White develop the Lee-White clotting time.

1914 - World War I begins.
- The Panama Canal opens.
- Transcontinental telephone service inaugurated.
- Long-term anticoagulants, among them sodium citrate, are developed, allowing longer preservation of blood.

1917 - Russian Tsar Nicholas II abdicates.
- United States enters World War I.

1918 - Lenin establishes a one-party Soviet state.
- World War I ends.
- Flu kills 12 million.

1919 - Weimar Republic established in Germany.

1920s

1920 - The Nazi Party emerges in Germany.
- Women granted right to vote in the US.

1923 - Talking films debut.

1925 - Hitler publishes Mein Kampf.
- The Scopes-Monkey trial begins.

1927 - Lindbergh flies across the Atlantic.

1927-1947 - The MNSs and P systems are discovered. MNSs and P are two more blood group antigen systems - just as ABO is one system and Rh another.

1928 - Penicillin is discovered.
- Bubble gum is invented.
- Mickey Mouse debuts.

1929 - The Stock Market crashes.
- The Car radio is invented.

1930s

1930 - Sliced bread becomes available.

1931 - The Great Depression peaks.
- The Empire State Building is completed.

1932 - First concentration camp in Germany emerges.
- Prohibition ends in the US.

1935 - Social Security enacted in US.

1937 - Golden Gate Bridge opens.
- Bernard Fantus establishes the first hospital blood bank in the United States.

1939 - World War II begins.
- First commercial flight over the Atlantic Ocean.
- The Helicopter is invented.

1939-1940 - The Rh blood group system is discovered by Karl Landsteiner, Alexander Wiener, Philip Levine, and R.E. Stetson.

1940s

1940 - The US government establishes a national blood collection program.
- Edwin Cohn develops cold ethanol fractionation, the process of breaking down plasma into components and products. Albumin, gamma globulin, and fibrinogen are isolated and become available for clinical use.
- John Elliott develops the first blood container, a vacuum bottle extensively used by the Red Cross.

1941 - Soldiers injured during the Pearl Harbor attack are treated with albumin for shock.
- Penicillin revolutionizes treatment of infectious disease.
1943- Acid citrate dextrose (ACD) solution is introduced.
1944- Dried plasma becomes a vital element in the treatment of wounded soldiers during World War II.
- FDR reelected.
1945- Anne Frank dies in a Nazi concentration camp.
- Atomic bomb hits Japan.
- Coombs, Mourant, and Race describe the use of anti-human globulin to identify incomplete antibodies. The process became known as the Coombs test also known as the antiglobin test.
- United Nations is formed.
1947- Shockley invents transistor.
- Jackie Robinson is signed to the Major Leagues.
- ABO blood-typing and syphilis testing is performed on each unit of blood.
- Mohandas K. Gandhi assassinated.
1949- The United States blood system is comprised of 1,500 hospital blood banks, 46 community blood centers, and 31 American Red Cross regional blood centers.
1950- Audrey Smith reports the use of glycerol cryoprotectant for red blood cells.
- United States enters Korean War. Nearly 22% of soldiers who receive blood transfusions during the conflict contract hepatitis, almost triple the rate of World War II.
- Senator Joseph McCarthy leads the Red Scare.
- Credit cards are introduced.
1951- “I Love Lucy” goes on the air.
- Cleveland disc jockey coins term “rock ’n roll.”
- Rosenbergs convicted of treason.
- Fluoridated water is shown to reduce tooth decay by two-thirds.
1953- The development of the refrigerated centrifuge expedites blood component therapy.
- Watson and Crick identify structure of DNA.
1954- T.V. dinners introduced.
- Plastic contact lenses developed.
1955- First McDonalds franchise opens.
- Rosa Parks refuses to relinquish her seat on the bus.
- Disneyland opens.
1956- Establishment of national blood clearinghouse.
- DeBakey introduces plastic tubing as a replacement for diseased blood vessels.
1957- The first commercial nuclear power plant opens in Pittsburgh.
- The AABB forms its committee on Inspection and Accreditation to monitor the implementation of standards for blood banking.
1958- Microchip developed.
- NASA established.
1959- Max Perutz and Cambridge University researchers decipher the molecular structure of hemoglobin.
- Castro institutes communism in Cuba.
- Alaska becomes 49th state and Hawaii the 50th.
- U.S. begins sending military advisors to Vietnam.
1960- JFK elected.
1961- Berlin wall constructed.
- Platelet concentrates are recognized for reducing the mortality from hemorrhage in cancer patients.
- Peace Corps established.
1962- The first antihemophilic Factor (AHF) concentrates to treat coagulation disorders in hemophiliacs are developed through fractionation.
- Sam Walton opens Wal-Mart.
- Cesar Chavez organizes National Farm Workers Association.
- The 24th Amendment prohibits the poll tax.
- Cuban missile crisis.
1963- Martin Luther King, Jr. marches on Washington.
- DeBakey develops mechanical heart.
1964- Plasmapheresis is introduced as a means of collecting plasma for fractionation.
- Beatle mania sweeps the United States.
- U.S. Surgeon General links smoking with cancer.

1965- Large scale anti-Vietnam protests erupt.
- Miniskirt becomes popular.

1966- National Football League (NFL) and the American Football League (AFL) merge.
- National Organization for Women (NOW) forms.
- Miranda decision requires individuals to be advised of rights.

1967- Rh immune globulin is commercially introduced to prevent Rh disease in newborns of Rh-negative women.
- Christian Bernard performs first successful heart transplant.
- First pocket calculator introduced.
- Thurgood Marshall becomes first African American to sit on Supreme Court.
- Mickey Mantle hits 500th career home run.

1968- Astronauts walk on the moon.
- Martin Luther King, Jr. and Robert F. Kennedy assassinated.
- Tet Offensive in Vietnam.

1969- S. Murphy and F. Gardner demonstrate the feasibility of storing platelets at room temperature, revolutionizing platelet transfusion therapy.
- Woodstock.
- Steady withdrawal of troops from Vietnam begins.

1970s

1970- Blood banks move toward an all-volunteer blood donor system.
- Congress establishes the Environmental Protection Agency (EPA).

1971- Hepatitis B surface antigen (HbsAg) testing of donated blood begins.
- The 26th Amendment lowers voting age from 21 to 18.

1972- Apheresis is used to extract one cellular component, returning the rest of the blood to the donor.
- Food & Drug Administration (FDA) begins to regulate all 7,000 U.S. blood and plasma centers.
- Nixon visits China.
- Watergate scandal begins.

1973- Mideast Oil embargo
- Watergate hearings intensify.

1974- President Richard Nixon resigns.
- Hank Aaron breaks Babe Ruth’s lifetime record of 714 home runs.
- Ford pardons Nixon.

1976- Carter elected.

1978- FDA requires blood bags to be labeled “paid” or “volunteer.”
- First test tube baby born.

1979- Khomeini overthrows Shah of Iran.
- A new anticoagulant preservative, CPDA-1, extends the shelf life of whole blood and red cells to 35 days.
- Cellular phone introduced.
- Mother Teresa wins Nobel Peace Prize.

1980s

1980- Physicians specifically trained in transfusion medicine actively participate in patient care.
- Ronald Reagan elected.

1981- Doctors identify Acquired Immune Deficiency Syndrome (AIDS).

1983- Additive solutions extend shelf life of red blood cells to 42 days.
- The United States Public Health Service issues first AIDS-related recommendations.
- Microsoft Windows hits the market.

1984- Human Immunodeficiency Virus (HIV) identified as cause of AIDS.

1985- The first test to screen blood for HIV is licensed and implemented by blood banks.

1986- Red Cross implements testing for alanine aminotransferase (ALT) which is a surrogate test for non-A & non-B hepatitis.
1987 - Two tests for screening for the indirect evidence of Hepatitis C are implemented. Hepatitis B core antibody (Anti-HBc) and alanine amino transferase (ALT).
- Gorbachev launches Perestroika.

1989 - Berlin Wall falls.
- Human T Lymphotropic Virus I antibody (anti HTLV-I) testing of donated blood begins.

1990s

1990 - Introduction of first specific test for Hepatitis C, the major cause of “non A, non-B” Hepatitis, though the Hepatitis C virus has not been isolated.

1991 - Soviet Union dissolved.
- Gulf War.


1994 - Nelson Mandela elected President of South Africa.

1995 - Oklahoma City bombing.

1996 - HIV p24 antigen testing of donated blood begins.

1997 - Sojourner transmits images from Mars.
- The Red Cross begins testing all donated blood for HTLV-1/II (HTLV I and HTLV II).
- U.S. Government issues two reports suggesting ways to improve blood safety, including regulatory reform.

1998 - HCV look back campaign, a public health effort to alert anyone who may have been exposed to the hepatitis C virus (HCV) through blood transfusions implemented.

1999 - The Euro becomes the new European currency.
- FDA BPAC recommends universal leukoreduction of blood supply.
- Community blood centers begin implementation of Nucleic Acid Amplification Testing (NAT) under the FDA’s Investigational New Drug (IND) application process. NAT employs a testing technology that directly detects the genetic material of viruses like HCV and HIV.

21st Century

Transfusion medicine has evolved into a highly specialized, clinically oriented discipline emphasizing patient care. While great strides have been made to make the blood supply safer than it has ever been, scientists are working to make the blood supply even safer and develop therapies to cure disease. Pathogen reduction and ABO antigen removal, stealth red blood cells, “artificial blood” or oxygen carriers, antigen masking, Hb-based therapies, cellular therapies, tissue regeneration, and xenotransplantation are just some of the many fields currently being explored.

2000 - New York Yankees become first team to win three World Series consecutively.

2001 - September 11th attacks.
- US begins retaliatory strikes in Afghanistan.
- Milosevic tried for war crimes.

2002 - Iraq War begins.
- Nucleic acid amplification test (NAT) for HIV and hepatitis C virus (HCV) licensed by the Food and Drug Administration.
- West Nile Virus discovered to be transmissible by transfusion.
- Mars Odyssey probe.

2003 - Space shuttle and crew lost.
- Severe Acute Respiratory Syndrome (SARS) strikes Asia.
- U.S. Supreme Court strikes down Texas anti-sodomy law, a key victory for gay rights.

2004 - European Union welcomes 10 new members.

2005 - Over 40 million people worldwide and one million people in the United States are infected with HIV.
- Hurricane Katrina devastates New Orleans and Southern U.S.

2006 - New Red Diamond and Magen David symbol approved by the International Federation of Red Cross and Red Crescent.

2007 - FDA approves testing of donated blood for Chagas’ disease and West Nile Virus.

2008 - Barack Obama elected President.

2009 - H1N1 flu causes epidemic concern.
- Debate rages over national health care reform.
If the Earth’s population was shrunk to precisely 100 people, with all the existing human ratios remaining the same, it would look something like this:

There would be
57 Asians
21 Europeans
14 from the Western Hemisphere, both north and south
8 Africans

52 would be female
48 would be male

70 would be non-white
30 would be white

70 would be non-Christian
30 would be Christian

Six people would possess 59 percent of the world’s wealth and all six would be from the United States.

80 would live in substandard housing
70 would be unable to read
50 would suffer from malnutrition

One would be near death, One would be near birth
Only one would have a college education
One would have a computer.

82 would not know if they will receive blood today should they or a loved one need a transfusion nor would they have much assurance that the blood would be safe.

When one considers our world from such a perspective, the need for acceptance, understanding and education becomes increasingly apparent.

If you woke up this morning with more health than illness, you are more blessed than one million people who will not survive this week.