

Thought Lab 8.2: Keeping the Blood Supply Safe Answer Key

Answers to Analysis Questions

1. Giving blood saves lives. Whole blood donations are processed into a variety of blood components. Each donation can save the life of as many as four people—people with leukemia, cancer, anemia, and those undergoing surgery for illness or injury.

No, some individuals, for cultural or religious reasons, do not share this view.

2. According to the Canadian Blood Services, the following people are eligible to donate blood:
 - **Age:** Between 17th and 71st birthday (regular donor), or between 17th and 61st birthday (first-time donor).
 - **Weight:** At least 50 kg (110 lb).
 - **Frequency of Donation:** Minimum interval between blood donations is 56 days.
 - **Health:** In general good health and feeling well. You should have had something to eat and adequate sleep. You must also meet hemoglobin (iron) requirements (the test is done at the clinic).

The following are some of the reasons why people may not be able to donate blood: (from the Canadian Blood Services web site)

- **Minor Illness:** Some may not feel like donating blood when they are not feeling good.
- **Drugs/Medications:** Some medications, or the underlying cause for taking the medication, may require a temporary deferral.
- **Dental Work:** For a cleaning or a filling, donors must wait until the day after treatment before donating blood. For an extraction, root canal or dental surgery, donors must wait 72 hours before donating blood—provided that the donor has recovered fully.
- **Low Hemoglobin Counts:** CBS temporarily defers blood donors whose hemoglobin copper sulfate test falls below the standard of 12.5 g/dL.
- **Tattoos/Body Piercing:** Donors must wait one year after having a tattoo or body piercing before donating blood or bone marrow. The reason for this temporary deferral is the increased risk of Hepatitis C and other infections associated with tattoos and piercing. Other similar procedures that may fall under this category include acupuncture and electrolysis.
- **Diabetes:** If you have diabetes that is treated by diet or oral hypoglycemics, you *may* be eligible to donate blood. It is important to note that each donor is different, and the use of certain medications or other underlying conditions may be cause for deferral.
- **Pregnancy:** If you have had a pregnancy in the last six months you will be temporarily deferred from giving blood and/or bone marrow.
- **HIV High Risk Activities:** Being the sexual partner of someone who has participated in high-risk sexual activities will result in a temporary deferral.
- **Exposure to Disease/Geographical Deferrals:** Exposure to diseases, such as malaria or hepatitis, may result in a temporary deferral.
- **Recent Major Surgery:** If you have had surgery recently, please speak to your local blood centre regarding your eligibility.
- **Recent Vaccinations:** Recent vaccinations may result in a temporary deferral. For example, there is a two-day deferral period after receiving a shot for influenza (the flu).

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3. Up to 4 blood components may be made from 1 unit of donated whole blood:
 - Red blood cells: The red blood cells carry oxygen. A concentrate contains twice the amount of red blood cells in the same volume of liquid. Most recipients of donated blood are given red cell concentrates to boost the oxygen-carrying abilities of their own blood.
 - Platelets: Platelets are needed for blood clotting. People who need extra platelets include those with certain diseases, such as leukemia, or those recovering from severe blood hemorrhage.
 - Plasma: Plasma is the liquid component of blood. A donation of plasma helps to boost blood volume.
 - Cryoprecipitate: This substance is found in plasma and contains clotting factors. Cryoprecipitate can be isolated from plasma and is commonly used to treat severe hemorrhage.

4. Here is an example of five misconceptions that people have about donating blood:

Misconception 1: I become weak and anemic after donating blood.

 - Donating blood is unlikely to make a person weak or anemic. If the person is already anemic, then the person will not be allowed to donate blood.

Misconception 2: I won't get the blood I lost back.

 - Blood usually is replenished within 48 hours after blood donation. Usually not more than 350 mL of blood is collected in one donation. This is roughly <7% of the total blood volume in an average healthy person, who has approximately 5 litres of blood.

Misconception 3: I will get a disease when I donate.

 - Reputable donation centres and blood banks use sterile single use bags and needles and have trained staff to handle the process. There is no risk of catching any disease in the process of donating blood.

Misconception 4: My BP will go down after donating blood.

 - Some people are anxious during blood donation and their anxiety shows up as a slightly elevated pulse rate. Usually this settles down after in a few minutes. Blood donation does not usually affect blood pressure.

Misconception 5: I will feel giddy after donation.

 - Unlikely! The feeling of giddiness is more psychological than physiological. There is no need to be anxious about blood donation. It is safe, easy, and painless.

5. One possible answer is through the development of artificial blood.

Answers to Extension Questions

6. The Canadian Blood Services web site identifies blood screening as the first line of defense in ensuring the safety of the Canadian blood supply. Donated blood is tested for pathogens causing syphilis, Hepatitis B and C, and West Nile Virus. The blood is also tested for HIV and Human T-Cell Lymphotropic Virus, which is associated with T-cell leukemia.

The second line of defense is screening of donors through a series of tests and questions.

Potential donors from certain parts of Africa are deferred because of possible exposure to a new strain of HIV. Persons who spent time in the United Kingdom between 1980 and 1996 are also

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deferred due to possible exposure to vCJD—the pathogen causing “mad-cow” disease. Persons who have history of intravenous drug use or of high-risk sexual activity are not permitted to donate blood. Other reasons for deferral are also given.

Your opinion about whether you think that these and other procedures described on the web site are adequate must be supported by evidence.

7. Your position on government vs. privatized management of the blood supply should be supported by evidence related to the relative costs, blood safety, blood availability, and other factors affecting the quality and timeliness of care given to those in need of blood.