

# What are the Risks of a BLOOD TRANSFUSION

Blood from voluntary donors in Canada is screened and tested for a number of known risks, including HIV and Hepatitis C virus. But there is a small possibility that a virus or bacteria may still be transmitted. Some may cause serious reactions. Others may not. Reactions will vary depending on your personal health. This table lists the possibility of a known risk in a single unit of donated red blood cells. If you get more than one unit of blood, the risk will be higher.

## WHAT IS THE POSSIBILITY OF GETTING A PATHOGEN IN BLOOD TRANSFUSION?

Risk: Pathogen (Virus or Bacteria), Incompatibility	Recipient reactions; common and rare	Estimated Risk per unit of transfused red blood cells <sup>1</sup>	Possible number of cases per year based on transfusion of 1,000,000 units RBCs
<b>Bacterial Contamination</b>	Minor fever or chills to serious reactions, including death.	Less than 1 : 100,000	Fewer than 10
<b>CMV (Cytomegalovirus) Herpes virus</b>	If healthy, no symptoms or long-term effects. If compromised immune systems (HIV/AIDS, cancer, organ transplant), may have very serious effects, including death. Request CMV-negative blood for at-risk patients.	Less than 1 : 5,000 <sup>2</sup>	Fewer than 200
<b>Hepatitis B</b>	Often mild (nausea and vomiting, fatigue and jaundice). For few, chronic liver disease. Preventable with Hep B vaccine.	Less than 1 : 25,000	Fewer than 40
<b>Hepatitis C</b>	From mild to serious. For some, may result in chronic liver disease or liver cirrhosis.	About 1 : 3,000,000	About 1 every 3 years
<b>Hepatitis A</b>	From no symptoms to infection of the liver.	Less than 1 : 5,000,000	Almost none
<b>Human Immunodeficiency Virus (HIV)—leading to AIDS</b>	Usually serious. Attacks immune system, resulting in chronic, progressive illness and leaving infected people vulnerable to infections and cancers.	About 1 : 5,000,000	Almost none
<b>Human T-Cell Lymphotropic Viruses (HTLV-I and II)</b>	Usually, no symptoms. Rarely, linked to cancer of the blood.	Less than 1 : 5,000,000	Almost none
<b>Malaria (Parasite)</b>	Usually, flu-like symptoms. Fever, rigors (severe shakes or muscle spasms) and chills. Rarely, seizures, coma, kidney failure and respiratory failure, which can lead to death.	About 1 : 4,000,000	About 1 every 4 years
<b>Babesiosis, Chagas Disease, Parovirus B19</b>	None to serious depending on recipient health.	Less than 1 : 5,000,000	Almost none
<b>West Nile Virus</b>	Most have no symptoms; few have flu-like symptoms, very few have serious illness and death.	Less than 1 : 50,000 (estimate)	Fewer than 20
<b>Incompatibility: Receiving wrong blood type</b>	If ABO or rh(D) incompatibility, could be serious. If other blood factors mismatched, none to mild symptoms (fever, rash) to very serious (destruction of red blood cells).	Less than 1 : 25,000	Fewer than 40

This table lists the reactions you may experience from a transfusion of donated blood and the possibility of their occurrence. Some people may be more likely to get a reaction to a blood transfusion than others. People with lower immune resistance are at greater risk for transfusion reactions.

Patient reactions to transfusion	Possible symptoms	Estimated risk per unit of transfused red blood cells <sup>1</sup>	Possible number of cases per year based on transfusion of 1,000,000 units
<b>Fever (febrile reactions)</b>	Often starts during transfusion, within first half hour. Symptoms include chills, followed by rapid rise in temperature. Rarely, rise in blood pressure. Usually, no long-term effects.	1 : 500	About 2,000
<b>Allergic (minor)</b>	Includes: Hives, rash, flushing, nausea. No long-term effects.	1 : 250	About 4,000
<b>Allergic (major)</b>	Includes: decrease in blood pressure, chest pain, wheezing, or loss of consciousness. At the extreme, cardiac arrest, possibly death.	Less than 1 : 20,000	Fewer than 50
<b>Volume Overload</b> (more blood volume than heart can pump)	Could result in congestive heart failure and acute pulmonary edema.	Less than 1 : 5,000	Fewer than 200
<b>Acute Hemolytic Reaction (hemolysis)</b> Acute (immediate) reaction in which antibodies attack and destroy red blood cells.	Could include: fever, chills, headache, chest pain, shortness of breath, drop in blood pressure. Usually occurs towards the end of the transfusion.	Less than 1 : 10,000	Fewer than 100
<b>Delayed Hemolytic Reaction</b> A delayed reaction where antibodies attack red blood cells.	Could include: fever, chills, headache, chest pain, shortness of breath, drop in blood pressure.	1 : 9,000	About 110
<b>TRALI (Transfusion-Related Acute Lung Injury)</b> Due to donor antibodies primarily in transfused plasma but also in red blood cells and platelets.	Symptoms are shortness of breath, low blood pressure, and fever; very serious reaction that can result in death if not treated.	1 : 70,000	About 15
<b>Post-Transfusion Purpura (PTP)</b> A rare reaction to packed red blood cells, plasma, and platelet concentrates.	Symptoms include wet purpura (bruises) with mucous membrane bleeding, nosebleed, gastrointestinal bleeding, or bleeding from the urinary tract.	1 : 140,000	Fewer than 10
<b>Graft-Versus-Host Disease (TA-GVHD)</b> Lymphocytes initiate an immune attack against the recipient's cells.	Fever, liver dysfunction, skin rash, diarrhea, and severe reduction in blood cells. Rare, often fatal complication.	Less than 1 : 1,000,000	Approximately 1

Combined Risk of pathogens, bacteria, and transfusion-related injury	Estimated risk per unit of transfused blood cells <sup>1</sup>	Possible number of cases in Canada per year
<b>All reactions (all pathogens and reactions combined—includes both mild and severe reactions)</b>	1 : 80	12,500
<b>All severe reactions</b>	1 : 4,000	250
<b>All infectious reactions</b>	1 : 17,000	60

<sup>1</sup>Canadian data from Kleinman, Chan and Robillard, 2003, except where noted. <sup>2</sup>USA data from AuBuchon 2003.