Transfusion-related acute lung injury:

Transfusion-related acute lung injury (TRALI) is a rare but **very serious transfusion reaction**. It can happen **with any type** of transfusion, but is much more likely in people who are already seriously ill. **Transfusions** that contain **more plasma**, such as **fresh frozen plasma** or **platelets**, seem more likely to result in TRALI. It often **starts** within 1 to 2 hours of starting the transfusion, but can happen any time up **to 6 hours after a transfusion**. There's also a **delayed** TRALI syndrome, which can begin up to **72 hours after** the transfusion is given.

The main **symptom** of TRALI is **trouble breathing**, which can become **life-threatening**. If TRALI issuspected during a transfusion, the transfusion should **be stopped** right away.

Many of the patients **who get** TRALI have had recent **surgery, trauma, cancer treatment**, transfusions, or have an active infection. **Most of the time**, TRALI goes away **within 2 or 3** days if the person is **helped with oxygen**, **fluids**, and sometimes a **breathing machine**. Even with this kind of treatment, it's deadly in 5% to 10% of cases. TRALI is more likely to be fatal if the patient was already very ill before the transfusion.

Delayed TRALI has been observed in people who are already **critically ill** or seriously **injured**.

These patients have a higher **risk of death**. If a patient who has had TRALI in the past needs **red blood cells**, doctors may try to **prevent** it by removing most of **the plasma** from the red blood cells or by taking other measures. Researchers are working on other ways to reduce the risk of TRALI.

Acute immune hemolytic reaction:

An acute hemolytic reaction is the most serious type of **transfusion reaction**, but careful blood handling has helped make it very rare. It **happens** when donor and **patient blood types do not match**. The **patient's antibodies attack** the transfused **red blood cells**, causing them to **break** open (heamolyze) and **release harmful substances** into the bloodstream.

Patients **may have** chills, fever, chest and lower back pain, and nausea. **The kidneys** may be badly **damaged**, and **dialysis** may be needed. A hemolytic reaction can be **deadly** if the transfusion is **not stopped as soon as the reaction starts.**

Delayed hemolytic reaction:

This type of **reaction** happens when the body **slowly attacks** antigens (other than ABO antigens) on the transfused blood cells. The blood cells are **broken down** days or weeks after the transfusion.

There are usually **no symptoms**, but the transfused red blood cells are **destroyed** and the patient's red blood **cell count falls. In rare cases**, the kidneys may be affected, and treatment may be needed.

People don't usually **have this type of reaction** unless they have had **many** transfusions in the past.

Those who do have this reaction need **special blood tests** before any more blood can be transfused.

Graft-versus-host disease:

Graft-versus-host disease (GVHD) can occur when a person **with a very weak immune system** gets a **transfused blood product that contains white blood cells**. The white cells in the transfusion **attack the tissues** of the patient who got the blood.

Within a month of the transfusion, the patient may have fever, liver problems, rash, and diarrhea.

To prevent white blood cells from causing GVHD, donated blood can be treated with **radiation** before transfusion. (Radiation **stops** white blood cells from working **but** does not affect red blood cells.) These are called **irradiated blood products.** They are often used for **people with cancer**.

Infections:

Blood transfusions can **transmit** infections caused by bacteria, viruses, and parasites. The chance of getting an infection from blood in the United States is extremely low, but the exact **risk** for each infection **varies. Testing units** of blood for infection and asking questions to learn about donor risks has made the blood supply **very safe**. Still, no test or set of questions is 100% accurate.

Bacterial contamination:

Rarely, blood gets contaminated with tiny amounts of **skin bacteria** during donation. **Platelets** are the most likely blood component to have **this problem because** platelets must be **stored** at room temperature. **Other components** are refrigerated or frozen which **curbs** the growth of bacteria.

Blood banks now routinely test platelets and destroy units that are likely to cause harm. But today fewer cases of illness are caused by platelets. Also, **more hospitals** use **single donor platelets**, which have a **lower risk** of bacterial contamination **than** pooled platelets.

Hepatitis B and C:

Several **steps** are routinely taken to **reduce** the risk of viral hepatitis from blood transfusion. People who are getting ready to donate blood are **asked** questions about hepatitis risk factors and symptoms of hepatitis. Donated blood is also **tested** for infection from hepatitis B virus, hepatitis C virus, and **other** liver problems that could be signs of other types of hepatitis.

Viral hepatitis infection **transmitted** by blood transfusions is **rare**. The risk of getting hepatitis B from a blood transfusion in the US is about 1 in 800,00 to 1 in 1 million. The risk of getting hepatitis C is about 1 in 1 million.

Work continues to be done to reduce the risk of these infections even further.

Human immunodeficiency virus:

Human immunodeficiency virus (HIV) causes acquired immune deficiency syndrome **(AIDS).**

Testing each unit of donated blood for HIV began in 1985, and all donated blood is now tested for HIV with 2 screening tests.

With improved testing for HIV, the number of transfusion-related AIDS cases continues to **drop.**

The risk of HIV transmission from a transfusion is estimated to be about 1 in 1 million to 1 in 1.5 million. Along with testing, **the risk is reduced** by **asking donors questions** about HIV risk factors and **symptoms**.

Cytomegalovirus:

Cytomegalovirus, also **called CMV**, is a **very common** infection in the United States. Up to 3 in 4 people have this infection by the **age of 40**. Most people with **CMV don't know** they have it **because** it **rarely** causes serious symptoms. Still, because it doesn't cause problems for most people, donated blood is **not always** tested for CMV.

If you haven't had CMV and your immune system is **weakened**, being exposed to CMV can make you very ill. CMV **spreads** from person to person through **body fluids** like blood, saliva, urine, semen, and breast milk. If you haven't had CMV and you need a transfusion, **your cancer team** might choose to give you **CMV-negative blood products**, which come from CMV-negative donors. **Or** they might use blood products **prepared** with **fewer** white blood cells in which the **virus lives**. Either of these measures greatly **reduces** the risk of getting CMV if your immune system is weak.