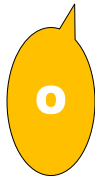


Blood Type and Transplantation
Information for Kidney Transplant Patients

Does blood type matter in transplantation?

Everyone waiting for a transplant has their blood typed. You will have one of four blood types: O, A, B or AB. Your blood type is determined by the antigens that are present on your blood cells. These antigens are A or B. These antigens will be found both in your blood and on your organs.

What antigen does each blood type have?



Blood type O have no antigens.



Blood type A have A antigens.



Blood type B have B antigens.



Blood type AB have both A and B antigens.

How does my body react to antigens?

Your body will react to antigens that are different than your own by attacking with antibodies.

Antibodies are proteins created by your immune system to attack anything that does not belong. Antibodies are the soldiers in your body's army protecting you from foreign invasions such as viruses. Unfortunately, the antibodies cannot tell the difference between harmful viruses and beneficial transplanted organs.

What blood type will my donor be?

Transplants can occur between all blood types. However, when the donor's blood type is different than yours and there are different antigens being transplanted on your new organ, your antibodies will be triggered and attack the transplanted organ. This is called rejection.

Because of this, transplants usually happen between a donor and a recipient of the same blood type. This is called an identical transplant.

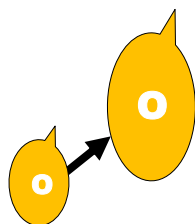
Can I get an organ from a donor that has a different blood type than mine?

Yes! If you do not have antibodies in your body against the antigens that come from the donor, your immune system should not attack the transplanted organ.

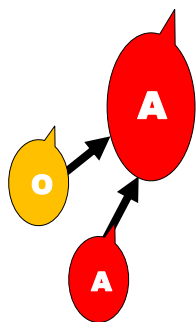
Because blood type O has no antigens, organs from a donor with blood type O will not give you any new antigens. Therefore, your immune system will ignore the transplanted organ no matter what blood type you are. Donors with blood type O are consider 'universal donors' because they can donate to recipients of all blood types. This is an example of a compatible transplant.

If you have blood type AB, you already have A and B antigens in your system and it doesn't matter what blood type your donor has because there will be no different antigens. Recipients with blood type AB are consider 'universal recipients' because they can get organs from donors with any blood type.

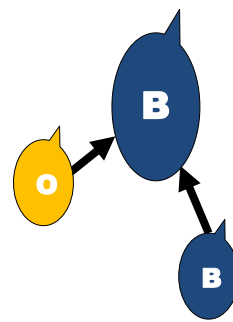
These are examples of identical (same blood type) and compatible (blood type that will not cause an antibody attack):



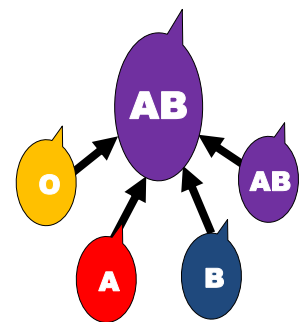
If you have blood type O, you can get organs from donors with blood type O.



If you have blood type A, you can get organs from donors with blood type O and A.



If you have blood type B, you can get organs from donors with blood type O and B.



If you have blood type AB, you can get organs from donors with any blood type.

Transplanting A into B Kidney Recipients

<p>Can I get a transplant from a donor who is incompatible?</p> <p>Yes, but this is not common. It can occur in certain cases.</p> <p>If you get a transplant from a donor that is not the same blood type or a compatible blood type, you are also getting antigens that are different than what you already have in your body. This will cause your immune system's antibodies to attack the source of those antigens – the transplanted kidney. This can lead to rejection.</p> <p>Blood type A is a special case. Kidneys from donors with blood type A can sometimes be given to recipients with blood type B or O.</p>
<p>What is different about blood type A?</p> <p>Blood type A can be further typed (subtyped) into A1 or A2.</p> <p>Blood type A1 has all the A antigens that we expect blood type A to have. A2 however has only 20% of the antigens that A1 has. This means that while there are still some different antigens present on the blood cells and the kidney, there are a lot less of them.</p>
<p>I have blood type B - why should I consider getting a transplant from a donor with blood type A2?</p> <p>A and O are the most common blood types in Canada and therefore most donors will be either A or O. Only 9% of people in Canada have blood type B. This means that someone who has blood type B might have a longer wait for transplant as few donors will have the same blood type as them. Because the waiting time for patients with blood type B was a lot longer than the other blood types, our kidney transplant team started a program where we successfully transplant kidneys from donors with blood type A2 into patients with blood type B.</p>
<p>Can everyone with blood type B get a kidney from a donor with blood type A2?</p> <p>Your ability to receive a kidney from a donor with blood type A2 depends on the amount of A antibodies you have in your system. These are the antibodies that will attack the A antigens and the transplanted kidney. We can measure your antibody level with a simple blood test – this is called an anti-A titre. Anti-A titres tell us how much antibody you have against the A antigen.</p> <p>Before being put on the kidney transplant waiting list, your anti-A titres are tested. If your antibody levels are too high, the transplant team will not consider a kidney from an A2 donor for you. If your titre is low enough, you may be eligible for an A2 donor kidney. Your titre will be repeated 3 months after listing to make sure your antibody levels are not changing. Anti-A titres are then repeated every 2 years.</p>
<p>What happens when I am offered a kidney from a donor with blood type A2?</p> <p>If you decide to accept the kidney, your blood will be retested when you arrive at the hospital for transplant. The test will include checking your anti-A titre. Three things can happen after this:</p> <ol style="list-style-type: none"> 1. If your level is low enough, the transplant process will continue. 2. If your level is slightly high, you may get plasmapheresis. This is a procedure that will wash some of the antibodies out of your blood and usually brings your titre to an acceptable level. 3. If your level is too high, the transplant will not proceed. The chance of rejection is too high.
<p>What about after the transplant?</p> <p>No matter if you needed plasmapheresis before transplant or not, the transplant team will continue to test your anti-A titre after transplant. The level can rise after transplant as your antibodies take notice of the new A antigens on the transplanted kidney. If your levels increase too much after transplant, you may need plasmapheresis to wash out some of those attacking antibodies.</p>
<p>What is plasmapheresis?</p> <p>Plasmapheresis is a procedure similar to dialysis. It is used to remove the A antibody from your blood. The plasma in your blood is separated from the blood cells. Plasmapheresis will replace your plasma which has A antibodies with 'good' antibody free plasma. If you need plasmapheresis, your transplant team will explain the details of the process to you.</p>
<p>How much plasmapheresis will I need?</p> <p>Most patients do not require any plasmapheresis. The need for plasmapheresis depends on your A antibody level. After your kidney transplant, your Transplant Team will continue to routinely test your anti-A1 titres to see if you need more plasmapheresis. It is unusual to need it after transplant but if your levels are high, it will help decrease your antibody levels and prevent rejection. It is normally not needed after one month.</p>