



International
Transplant Nurses
Society



Transplant Options When You
Don't Have a **'Good Match'**

Transplant Options

When You Don't Have a 'Good Match'

Being told you need a transplant may bring about many feelings, including anxiety and uncertainty. It is common to have many questions about the transplant. Will it work? How long will I have to wait for an organ? Because waiting times for deceased donor organs can be long, transplant teams are working to find new methods to increase the number of organs available from live donors. Additional medications and therapies, along with creative thinking when matching organ donors and potential recipients, are helping create successful matches that wouldn't have been possible just a few years ago.

Transplant Compatibility

What does it mean for you to be compatible with your donor? Compatibility with a donor is determined by blood type, antigens, and antibody crossmatch. Highly compatible, well matched donors would share the same blood type (A, B, AB, and O), some antigens, and have a negative crossmatch.

This brochure explains transplant compatibility and looks at three treatment plans (paired donation, blood type incompatible transplant, and positive crossmatch transplant) to help you understand the live donation options that exist when your chosen donor is not a good match.

A glossary with definitions of some of the terms you'll need to understand is provided on page 5.

Antigens

Human leukocyte antigens (HLAs) are markers on cells in your body that help your body distinguish between what is you and what is not you. Typically, you inherit three antigens from your mother and three antigens from your father for a total of six antigens. Siblings who have the same parents may inherit the same or a different combination of antigens.

You don't need to have a 100% HLA match to be considered a "good match," and it is also possible to be matched to someone without being related to them.

Antibodies

Antibodies are the part of your immune system that recognize foreign cells in the body (like a cold, flu, or other infection) and then stop them from hurting you. However, antibodies may also consider a new transplant foreign and try to prevent it from "hurting" you by rejecting it. Therefore, it is important to check whether your antibodies are compatible with the potential donor's antigens.

Your specific antibodies are determined by a blood test which measures the degree of response, or the strength of preformed antibody, by testing your blood against a panel of reactive antibody (PRA) titers. The percent PRA is a measure of a potential recipient's sensitivity against all possible donor antigens. If you have a high PRA level, this means you have already formed antibodies to many different antigens and are therefore more likely to reject a donor organ than a recipient who has zero percent PRA or no antibodies.

If you have antibodies or a PRA level, a crossmatch test is done to evaluate whether you have antibodies specific to your potential donor.

Blood Type

You have a certain amount of natural antibodies to another person's blood type. Your transplant team does a blood test to measure these antibodies.

Blood type AB is the universal recipient and a person with it can receive a donor kidney that has any blood type. Blood type O (sometimes called O) is the universal donor, but those with blood type O can only receive a donor kidney that has O blood type. If you have A blood type, you may receive a donor kidney that is A or O. If you have B blood type, you may receive a donor kidney that is B or O. The amount of these natural antibodies varies from person to person. You may have a strong reaction to one person and another person may have a weak reaction to the same person.

Recipient Blood Type	Donor Blood Type(s)
A	A or O
AB	A, AB, B, or O
B	B or O
O	O

Usually, a high titer number means a strong reaction against the potential donor's blood type is likely. If the titer is 0, you have no antibodies against your potential donor's blood type. If the titer is low, you have a small number of antibodies against your potential donor's blood type and you may not need plasmapheresis. If your titer is moderate, a living donor transplant is still possible, however, you will need extra medical therapies for this type of transplant to be successful. If the titer is high you have a large number of antibodies against your potential donor's blood type and you may not be able to receive

that donor's kidney, even with additional treatment called plasmapheresis.

Crossmatch Test

During a crossmatch, your serum (the part of blood that carries antibodies) is mixed with the potential donor's white blood cells (the cells that carry antigens). Crossmatch results show if you have antibodies against the potential donor's antigens and, if so, how many antibodies you have. This is important because it determines whether or not you will reject the transplanted kidney.

The crossmatch is either positive or negative. A negative crossmatch means you did not react to your donor's blood, and transplantation should be safe. A positive crossmatch means that your blood reacted to your donor's blood and is incompatible with it. If you received a transplant from that person, you would definitely reject it. A positive crossmatch transplant is possible in some cases, but only with extra medical therapies, called pretransplant conditioning or plasmapheresis.

A positive crossmatch result is reported as T cell and B cell numbers, which indicate the amount of antibodies you have against the donor. The number range can vary. You may have a weak, moderate, or high-flow positive crossmatch.

Specialized Transplant Options: Blood Type Incompatible Transplants and Positive Crossmatch Transplants

With advances in transplantation, some transplant centers are able to fulfill living donor wishes even when facing blood incompatibility or a positive crossmatch. Historically, these donors were turned down by transplant centers, but today some transplant centers attempt to help those donors fulfill their wish to donate by offering specialized transplants.

Getting Ready for Your Transplant

To lower incompatible blood type titers or positive crossmatch levels, antibodies have to be removed from your body through a treatment process called plasmapheresis. Plasmapheresis is also called pretransplant conditioning. It is the physical removal of the natural antibodies from your body so you can receive a kidney transplant and not reject the new kidney. Your blood is removed from you and your plasma cells are separated and exchanged with albumin or fresh frozen plasma, and then the blood is returned to your body. The number of needed plasmapheresis treatments is determined by your titer level to the donor's blood type or your flow crossmatch results.



You will have daily treatments for a period of time before the transplant, up to and including the day of your transplant. Your transplant team is responsible for monitoring your titer and crossmatch. When your titer or flow crossmatch is low enough, the transplant can be performed. It is possible that the day of your scheduled transplant could arrive and your titer number or flow crossmatch is still not low enough to proceed. Your transplant surgery would then be postponed. You would need to continue with plasmapheresis or the transplant may even be canceled and you would not be able to receive a transplant from that donor. Plasmapheresis treatments are usually outpatient procedures so you will not need to stay overnight in the hospital for them.

Plasmapheresis treatments can be effective in removing antibodies against your kidney donor, but unfortunately the treatments also remove antibodies that protect you against infection. To help protect you against infections, you will receive immunoglobulin (IVIG) through a vein intermittently during plasmapheresis treatment. IVIG contains infection-fighting antibodies from donated blood that are purified and help to keep your immune system strong and protect you against infections. IVIG does have some side effects. You may experience symptoms such as headache, fever, flushing, chills, and low blood pressure.

Not all transplant centers are able to offer specialized transplants. Some centers do not perform these types of transplants due to their complexity.

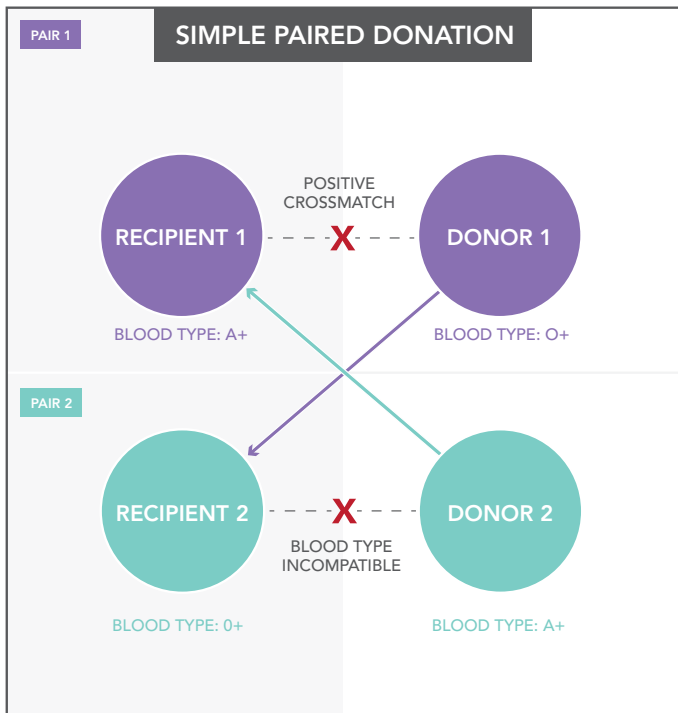
Special Follow-Up After the Transplant

If you have had a positive crossmatch transplant or blood type incompatible kidney transplant, the level of antibody in your blood will be monitored closely because you will start to make more antibodies after your transplant. If your antibody level rises too much, plasmapheresis may be needed again to remove enough antibodies to prevent rejection and injury to your new organ. The need for plasmapheresis usually occurs in the first 1 to 2 weeks after your transplant. Plasmapheresis gives your body a chance to adapt to the new kidney.

Paired Donation

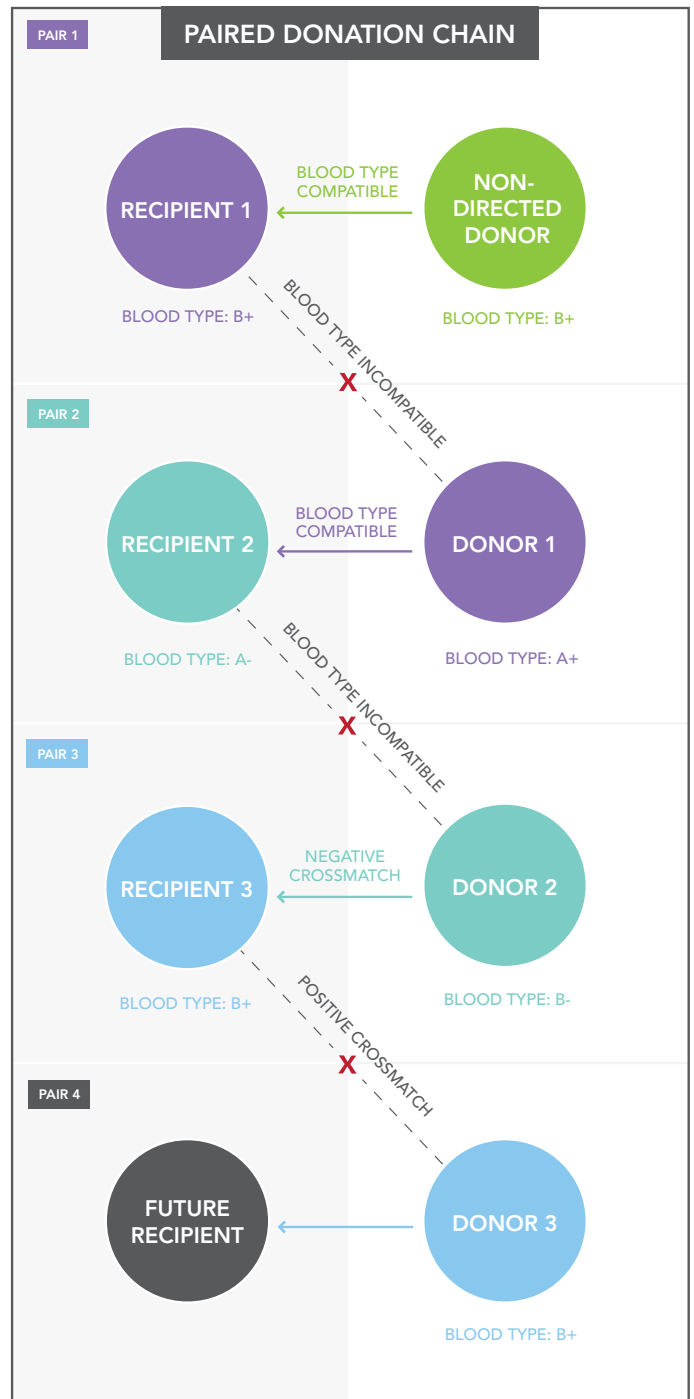
Although new treatment options offer the possibility of donations from incompatible matches, the best transplant outcomes come from compatible donors. Paired donation is now increasingly considered an accepted means to increase living donations, and may be the best option for you.

Paired donation allows a person who is willing to donate a kidney to you but is not compatible with you, to donate to you indirectly. Your donor would give a kidney to a recipient whose blood type is compatible and has no antibodies to them, and you would receive a kidney from that person's donor. Paired donation can include two pair exchanges, three pair exchanges, and paired donor chains. There are a number of paired donation registries in the United States, including Alliance for Paired Donation, National Kidney Registry, New England Paired Kidney Exchange, and UNOS Kidney Paired Donation (KPD) Program. Paired donation is also offered at some individual transplant centers.



An example of a paired donation is illustrated above.

Recipient 1 and donor 1 are incompatible. The recipient has antibodies against the donor resulting in a positive crossmatch. The crossmatch result is too high to proceed with this potential donor. In pair 2, the recipient is blood type incompatible with the donor. The recipient has a titer to the A blood type that is too high to proceed with this donor. Donor 1 is blood compatible with recipient 2, and recipient 1 has no antibodies against donor 2. This makes both donors good matches for the recipients. This is an example of a simple donor exchange between two pairs.



An example of a three pair exchange and a nondirected donor transplant chain can be seen in the illustration above. Paired donation allows all of these patients to receive kidney transplants from donors who are a good match.

After a successful kidney transplant, your new kidney will filter your blood, so you will no longer need dialysis. Your immune system will try to reject your new kidney, so you'll require medications to suppress your immune system to prevent rejection. You'll need to take these anti-rejection medications for the rest of your life.

If you don't have a good match living kidney donor, the next best option is a paired donation, which allows you to receive a kidney transplant that is a good match for you and still allows your donor to fulfill their wish to donate. Negative crossmatch and blood type compatible living donor kidney transplants are known to have the best outcomes, but incompatible blood type transplants and positive crossmatch transplants have proven to be successful with good short-term outcomes. These specialized transplants allow you greater access to a living-donor kidney transplant. As difficult as pretransplant appointments and plasmapheresis treatments may be, you will receive a precious gift from your beloved donor.

Common Questions

What does it mean to have a good match with a donor?

You may have been told that in order to receive a kidney transplant your potential kidney donor had to be a "good match." A kidney donor that is a good match has a compatible blood type and has a negative crossmatch. With medical advances, you may still be able to receive a kidney transplant from a donor who is blood incompatible with you or with whom you have a positive crossmatch.

What are my options for transplant if I've been told I have an incompatible (positive crossmatch or blood type incompatible) donor?

Your transplant team may give you some nontraditional options for kidney transplant if you have antibodies against your donor (also called positive crossmatch) or if you have a donor whose blood is incompatible with you. These options consist of paired donation, blood incompatible transplant, or positive crossmatch transplant.

After I get a positive crossmatch transplant or blood type incompatible living donor kidney transplant, will I still need extra medical therapies?

If you have had a positive crossmatch transplant or blood type incompatible kidney transplant, the level of antibody in your blood will be monitored closely because you will start to make more antibodies again after your transplant. If your antibody level rises, plasmapheresis may be needed to remove enough antibodies to prevent rejection and injury to your new organ. The need for plasmapheresis usually occurs in the first 1 to 2 weeks after your transplant.

What is my best option if my donor is not compatible with me?

If you don't have a good match living kidney donor, the next best option for you is paired donation. You will still receive a kidney transplant that is negative crossmatch and blood type compatible, and you will not be as likely to reject it.



Glossary

Antigens are markers on the cells in your body that help your body tell the difference between what is you and what is not you.

Antibodies are the part of your immune system that recognize foreign cells in the body, such as a cold, flu, or other infection, and then stops them from hurting you.

A crossmatch test mixes your serum (the blood part that carries antibodies) with a potential donor's white blood cells (the cells that carry antigens). Test results show if you have antibodies against the potential donor's antigens and, if so, how many. The crossmatch result is either positive or negative.

Tissue typing is a test that identifies certain proteins in your blood called antigens.

Titer is a measurement of how strong your reaction is to a potential donor's blood type. Titer levels help determine the risk of you rejecting your kidney transplant. Usually a higher number means your reaction against the potential donor's blood type is a strong reaction.

Plasmapheresis is sometimes called pretransplant conditioning. It is the physical removal of natural antibodies from your body. Blood is removed from you and the plasma cells are separated from cells and exchanged with albumin or fresh frozen plasma, and the blood is returned to your body.



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