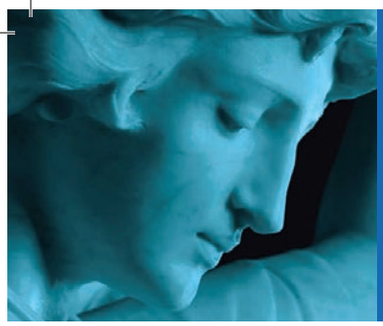


Transplant Digest

St. Michael's
Inspired Care.
Inspiring Science.

Fall 2011, Issue No. 11

St. Michael's first in North America to use blood-cleaning procedure for kidney transplant

Procedure allows man to receive kidney from brother with different blood type

By Leslie Shepherd, SMH Senior Public Relations Specialist

St. Michael's Hospital is the first in North America to have used a novel device that cleaned the blood of a kidney patient and allowed him to receive a transplant from a donor with a different blood type.

Transplants involving a donor and recipient with different blood types are rare. Most people have natural antibodies in their blood that would cause their immune system to reject an organ from someone with a different blood type.

Andre Cossette, a Grade 4 teacher at Ange-Gabriel Elementary Catholic School in Mississauga, Ont., was on dialysis for three years before undergoing a procedure called plasmapheresis at St. Michael's. He then received a kidney transplant from his brother, who has Type AB blood, even though Cossette has Type A blood and antibodies against Type B.

Plasmapheresis is similar to kidney dialysis, which removes waste products from the blood. Plasmapheresis separates plasma from patient's blood, and runs it through a column-shaped device containing synthetic carbohydrate beads that trap the blood group antibodies. The "washed" plasma is then returned to the patient's body.

St. Michael's was the first hospital in North America to perform plasmapheresis using a device known as the Glycosorb ABO, developed by Glycorex Transplantation, a Swedish company, and approved by Health Canada last year. It has been used once in Canada for a recent heart transplant in Alberta, but this was the first time for a kidney patient. The device is used in 21 countries, mainly in Europe, for kidney, liver, heart, lung and stem cell transplants.

"I get to get my brother's kidney," Cossette said, shortly after beginning the first procedure, which lasted about four hours. "I won't have to be on a waiting list, waiting for a call to come to the hospital within four hours because there may be a kidney available."

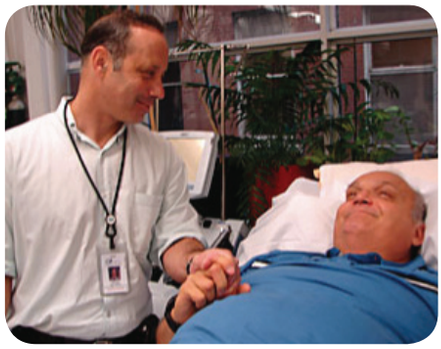
Cossette underwent the procedure a second time to get rid of all the antibodies. He will also receive medications to prevent his immune system from making more antibodies and attacking the transplanted kidney.

Dr. Jeff Zaltzman, director of the hospital's kidney transplant program, said the procedure could expand the number of living organ donors. More than one-third of potential live donors are turned down because their blood types are not compatible with the person to whom they wish to donate their kidney.

"Every time you have a living donor, you're helping someone who would otherwise be on a transplant waiting list for a long time," Dr. Zaltzman said. "That's also one more person who is not taking an organ from a deceased donor, which could then be given to someone else."

Dr. Zaltzman headed the transplant team that also included Dr. Katerina Pavenski, a hematologist, and Dr. Ramesh Prasad, a nephrologist at St. Michael's Hospital.

In Ontario, 1,075 people are on a waiting list for a kidney transplant, according to the Trillium Gift of Life Network, the province's organ and tissue donation agency.



Dr. Jeff Zaltzman of St. Michael's speaks to Andre Cossette after the plasmapheresis procedure

In this issue ...

From the Editor's Desk

Welcome to the Fall 2011 issue of Transplant Digest. We remain dedicated to providing you with detailed information that you will likely find useful in getting to know your kidney transplant better, managing your overall health, and/or preparing for your upcoming transplant, as the case may be. Please feel free to share the content with friends and relatives, your other health care providers, and anyone else you feel may be interested in your life and health or transplantation in general. We are all our own best advocates when it comes to our health. Being informed allows us to become more proactive about our own health care, to ask the right questions of our health care providers during the limited time for interaction we have with them, and to recognize potential problems with our health earlier than anyone else. If ever there was a "Prime Directive" for Transplant Digest, it is this: to make and keep you informed.

Articles in this issue include some details about laboratory and ultrasound testing, why transplants ultimately fail, metabolic syndrome, ABO incompatible transplantation (we are a Canada first!, see article), and the National Paired Exchange Program. One of our patients has provided some philosophical insights into transplantation. If there is any topic you would like to know more about, please let us know so that we may consider including something about it in a future issue. For those with the inclination, you are also welcome to write something yourself! Enjoy.

Dr. Ramesh Prasad
Editor

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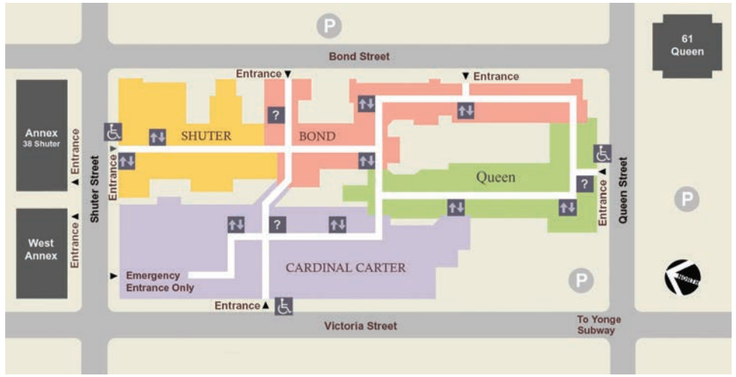

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Please send your comments or suggestions of topics for future publication to: **jayomam@smh.ca**

Welcome!

The SMH transplant clinic is pleased to announce the new members in our team.

Dr. Darren Yuen. He is a nephrologist with a background in basic research related to scarring in kidneys.

He will be in the clinic mostly on Wednesday mornings.

Sarah Mattok, RN. She will cover the Deceased Donor Program during maternity leave of Meriam Jayoma-Austria, RN.

Approaching Life After A Kidney Transplant

Phil Brideaux

Without a doubt, receiving a kidney transplant is life-changing. For some recipients, it's hard to cope with the conflicting emotions. When others, who may not have experienced this process, readily use phrases like "new lease on life" and assume that a recipient is necessarily excited and happy about everything, it may be hard to escape the overbearing and vague trope that life now "ought" to be lived "to the fullest."

In fact, adjusting to a post-dialysis life can be difficult for some recipients — especially for those who experience complications. If a transplant has drastically changed one's personal circumstances, or events haven't gone as smoothly as hoped, then what does it actually mean to live "meaningfully"? The answer is deceptively simple: being mindful of the present moment, often and always, come what may. Nothing more. This is the practice of mindfulness.

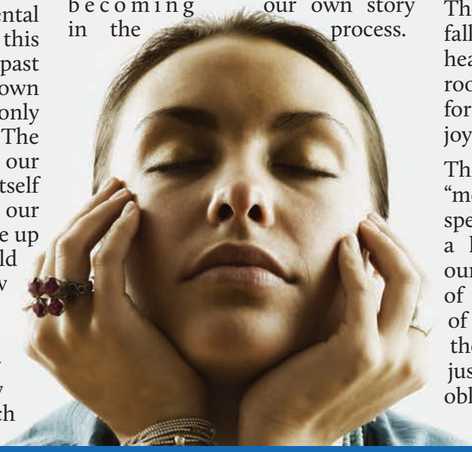
What is mindfulness? Mindfulness is bringing a particular sort of awareness to the present moment, without mentally struggling with whatever circumstances are before you. You become the observer; the non-judging witness to whatever is going on around you and inside you.

The more one can make a habit of being mindful, the more one can understand the fundamental reality of the present moment: this is literally all that exists. The past does not exist except as our own memories — which we can only experience in the present. The future does not exist except in our own imagination — which is itself formed from memories. In fact, our own sense of who we are is made up entirely of memories: who would you be if you woke up tomorrow with no memories at all?

Memory is mental activity, and mental activity is very easy to become lost in, particularly because of emotions, which are the body's physical reaction to mental activity. Thoughts trigger emotions, and emotions (like despair or elation) threaten to overwhelm us, particularly during our experiences with dialysis and transplantation. It may help to remember that anxiety is associated with the future, and sadness or anger with the past. Emotions, however strong, are a phenomenon we own and not the other way around.

We might experience fear of what the future holds, which is triggered by our imagination of what might happen, which is in turn based upon our memories of past suffering. Conversely, happy memories or thoughts can lead to happy emotions, and hope for the future. It is the same principle: we can perceive these emotions and thoughts, but we are not these emotions. We are not these thoughts. We can thus awake from our unconscious habit of making an identity for ourselves from our circumstances, good or bad.

Being mindful of the present moment allows us to return from the future, or from the past, and remain with the reality of the present — good or bad. We can step out of the machinations of our mind and be the higher witness to what is actually unfolding, without losing ourselves inside it, creating and then becoming our own story in the process.



The present moment is the only moment, and all you need do is find joy in that moment, whether you are sitting in the clinic waiting room, or sitting on top of a mountain. It's hard to think of finding joy in a single moment of anything other than positive experience, but the joy is in the understanding that when you are the sky, you are the sky that experiences and accepts both sun and storms — you are not the sun nor storms themselves.

It's even harder to think of finding joy amidst fear and suffering, but it's best explained by the teacher Pema Chödrön, who tells the story of a woman chased by tigers. The tigers chase the woman to the edge of a cliff and she hangs from a vine off the cliff's edge with the tigers above. Down below are more tigers, waiting for her. Worse, she sees a mouse gnawing on the vine to which she clings. It's then that she notices, right in front of her, a clump of ripe strawberries. She picks one, puts it in her mouth, and immerses herself in the wonderful experience of eating the strawberry.

As Pema says: "We think that the point is to pass the test or overcome the problem, but the truth is that things don't really get solved. They come together and they fall apart. Then they come together again and fall apart again. It's just like that. The healing comes from letting there be room for all of this to happen: room for grief, for relief, for misery, for joy."

The secret to living life "meaningfully" does not consist of spending our energy attempting a lifestyle that somehow justifies our worthiness of receiving the gift of a transplant. It's to stop. Let go of the past and future. Then hold the present moment and enjoy it just for what it is. There's no other obligation than this.

Save the Date !

Living Kidney Donor Celebration April 26, 2012 6pm – 8pm

Our second ever donor recognition event will be held on Thursday, April 26, 2012. The St. Michael's Hospital Transplant Program will be honouring those who donated a kidney between April 2007 and December 2011. The event will provide an opportunity to publicly acknowledge and give thanks to these donors.

This event is by invitation only for your kidney donor and guest. If your donor has yet to receive a "save the date" invitation letter, please forward their name and contact information to the Live Donor office at (416)867-7460 ext 8245.

Further details will be sent at a later date to your donor with a formal invitation.

Co- chairs Planning Committee

Maureen Connelly RN BScN **Sharon Lee MSW RSW**

MARK YOUR CALENDAR!!!

RN'S AND ALLIED HEALTH PROFESSIONALS

St. Michael Renal Transplant Program Presents.....

Forging Ahead with Excellence in Patient Care

MAY 25, 2012

at the Li Ka Shing Knowledge Institute (St. Michael's Research Building), located at Victoria and Shutter Street, Toronto

MORE DETAILS TO FOLLOW..... Contact: Galo Meliton, RN, C.Neph.C 416-867-3677

Coordinating ABO Incompatible Transplant: Easier With Great Team Work

Galo Meliton, RN, C Neph (C)

When Dr. Prasad prompted me that there will be another new initiative that the St. Michael's Hospital Renal Transplant Team was going to embark on to allow potential kidney recipients the opportunity to have a kidney transplant who otherwise could not have one due to blood group incompatibility with their potential donor, I was both excited and apprehensive at the same time.

He was referring to our first ABO incompatible living donor kidney transplant. He also said that we were going to use new technology that has not been used in desensitizing a kidney recipient who is blood group incompatible with their kidney donor, and that this would be the first in Canada. That made me a little bit more nervous.

However, I found out as I started coordinating this new project, that with great team work, the entire process was easier than it first appeared.

The first step was for Maureen Connelly, RN (Living Donor Coordinator) and I identifying the first potential pair who were already in workup for this initiative. We huddled with both Dr. Zaltzman and Dr. Prasad with our proposed pair and they both agreed to move forward with the process.

We then prompted both potential donor and potential recipient of this initiative as a possible option for them. They were willing to go ahead and do their blood work required for the purposes of this treatment: as the potential donor is of the blood group AB, and the potential recipient is of blood group A, we had to find out the antibody count the recipient had toward the B blood group, as well as do a crossmatch on their blood cells to see if the recipient had pre-formed donor specific antibodies against this specific donor. Thankfully, both results were in everybody's favour.

Next, I prompted all the staff members that would be involved in this process.

Helen Fanous, Clinical Pharmacist in the Renal Transplant Team, worked furiously at developing our protocol based on global experience with this treatment. Once we had this in place, we brought the pair in for an initial discussion with Dr. Zaltzman, who is the potential recipient's Transplant Nephrologist.

Once their work up were completed, reviewed and medically cleared, Maureen and I decided on a potential Operating Room date of August 11, 2011 which she offered to the identified donor, who gladly accepted it. I then notified the recipient and this recipient's dialysis center. I had informed them beforehand that this recipient had consented to this initiative. I double checked with them that the recipient was not on an ACE inhibitor, which is known to interfere with the treatment.

I then gave the recipient a treatment schedule. We then went ahead to the first part of the treatment: Intravenous Rituximab was given one month prior to the transplant date by Nancy Lee–Yu, RN, our procedure nurse. The recipient tolerated this procedure and medication very well.

The next step was to bring the recipient in the Autologous Room, run by Dr. Katerina Pavenski, staffed by very capable nurses: Patti Lou Cheatley, Meghan Gottfried, and Mui Chua for the actual cleansing of the recipients' Anti- B antibodies using Glycosorb ABO, manufactured by a company in Sweden. The representative from this Company came to supervise this first treatment. All went well.

The recipient was given prescriptions for triple immunosuppressive therapy, part of the protocol as well. This recipient will receive Intravenous Immunoglobulin on the day of admission, one day prior to the transplant date.

I mentioned earlier that this project would not have been possible if not for the excellent team work and camaraderie this team has; in the background of course are the ever present support from our Clinical Manager Trixie Williams and Program Director Jill Campbell.

Post Transplant Chat - Fall 2011

Fernanda Shamy, RN, Jennie Huckle RN, Thelma Carino, RN

LABORATORY TESTING

1. Where should I get my blood work done? How often should I provide this?

You must do your blood work at St. Michael's Hospital for the first month after your transplant. There are no exceptions. This is because the transplant clinic needs to check the results the same day. Most problems are likely to occur during this period, so it is important for us to get this information as soon as possible so they can be addressed. You must do blood work twice weekly for the first three months. This means that one of your two weekly blood tests can be done on a clinic day. After the first month, on non-clinic days, you can do your blood work at outside labs depending on your kidney function. There are several private labs in the GTA. The transplant team may suggest a lab convenient to you where you can go to and your reports will then be faxed to the transplant clinic. After the first three months blood work is typically done less often, and all of this can be done outside. You will be given a schedule. If possible, please do this well in advance of the clinic visit so that our interaction will have more content and be more meaningful for you.

2. Why do I need to register each time?

When you do blood work at St. Michael's Hospital, you will need to come up to the 9th floor at 61 Queen so that you can be registered and therefore activated in the computer system. There are no exceptions, even for transplant patients further out. This is important logistically so that the transplant team knows to check all the blood work done here and can verify the results as soon as possible.

3. What are you testing?

The testing is of course mainly about your kidney transplant function and drug levels but other tests are for your liver, blood (WBC, hemoglobin), glucose, inflammation, etc... We also check your urine for protein, and on occasion, will test blood or urine for different kinds of acute and chronic infection. Some tests (e.g. INR) are not routinely monitored by us but by your family doctor or other specialist. We encourage you to view the computer screen to look at your results during your clinic visit.

4. Why are you calling me back for "repeat tests"? Can I come at any time of day?

Generally the transplant nurses will call you to repeat your blood work if your results are abnormal or unusual for you. Sometimes, abnormal results are due to lab errors. You must make sure your contact information is up to date, since this is your responsibility alone. Please repeat your blood work as soon as you can, or if you are asked to do so, come back to our lab as soon as possible. Please come in the morning wherever possible since the lab will accept specimens for certain tests (e.g. CMV Ag, or cytomegalovirus antigen) only in the mornings. Transplant drug levels are meaningful only when done in the morning.

5. Can you draw my blood in clinic?

We cannot draw your blood work in clinic. There are however some exceptions, if you have a fistula and the lab is not able at that time to access your vein. The nurses in the transplant clinic will then pull blood from your fistula. If you have small veins it is usually not a concern for pulling blood since our lab technicians are very skilled. If your veins are bruised and tender and you have a fistula, the transplant nurse may temporarily draw your blood from your fistula until your veins have had a chance to heal.

6. Do I need to be fasting? Are there any other requirements for blood testing?

You must be fasting for 8-12 hours to get your blood glucose checked monthly in the first three months, and thereafter you can do this less often if you do not have diabetes. You must do a fasting lipid (cholesterol) profile once every six months. Transplant drug levels and kidney function tests do not require fasting. When doing your tests please avoid dehydration since this can happen in the mornings, particularly when you are fasting. Dehydration can make your blood more difficult to draw, and also affect some blood test results.

7. Do I need to pay for any of my blood tests?

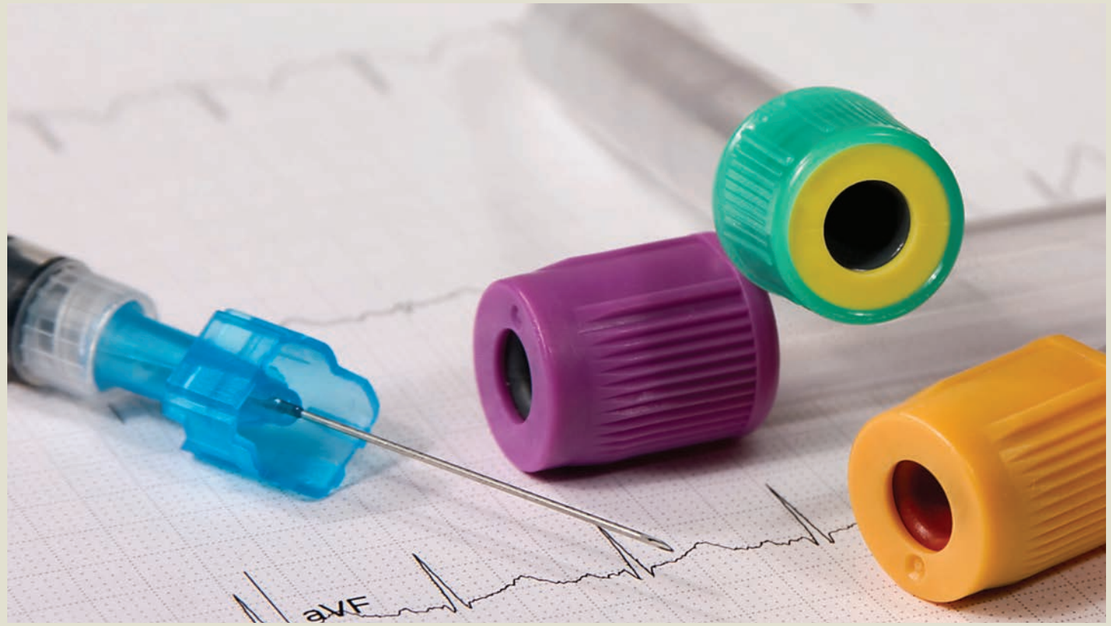
Typically you should not be required to pay for any of your blood tests. Your requisitions must be up to date. Some outside labs may wish to charge you for certain tests. If this is the case, please let us know. You may be able to do your tests elsewhere.

8. I think you take more blood than you need. Is this true?

It may seem like a lot! There are standard amounts of blood required for each test. Often the test can be run only if the tube is filled to a certain proportion. These requirements may however differ from lab to lab. The technician drawing your blood is trained in these requirements. It is however appropriate to ask if you have any concerns. The number of tubes may vary from one visit to the next. Blood testing per se will not make you anemic.

9. What color top tubes are used for which tests?

Each lab may have different color blood tubes. At St. Michael's Hospital the tubes you will generally see are lavender color top for CBC (complete blood count), drug levels, and BK virus; and gold or red/brick color top (for creatinine, electrolytes, liver tests). Green top tubes (for CMV Ag) and blue top tubes (for INR) are some of the other types you may occasionally see. You can help us by keeping track of what tubes are being drawn by your lab, to help reduce missing results.



Why don't kidney transplants last forever?

Dr. Jeff Zaltzman

Although receiving a kidney transplant is a life-enhancing experience for most patients, both transplant recipients and transplant health care providers must be realistic in the expectation that kidney transplant is not a cure for renal failure. A kidney transplant (allograft) can be expected to improve quality of life by providing freedom from dialysis, a more liberal diet, and better sense of well being compared to conventional dialysis treatment. In addition, for most, but not all transplant recipients, a kidney transplant will increase life expectancy compared to remaining on dialysis. A very healthy kidney allograft can be expected to provide approximately 50-60% of the function of two healthy native kidneys.

However, all kidney transplants have a limited survival, and experience dictates that if a kidney transplant recipient is relatively young when he/she receives their transplant, the expectation is that they will outlive their allograft and either have to return to dialysis, or get a second transplant (usually from a living donor) prior to commencing dialysis.

Kidney transplant function at the time of transplant: Living vs Deceased donor transplants

All kidneys come from human donors, meaning that these have been "used" by the initial owner. The quality of a living donor kidney is going to be better than a deceased donor kidney. Living kidney donors are always healthy, and they undergo extensive medical and kidney function screening. Even an older living donor, who passes all the tests, can provide an excellent donor kidney for a friend or family member. In addition living donor kidneys are removed under very controlled circumstances, and are transplanted very quickly. In most cases, a recipient who receives a living donor kidney is expected to have immediate allograft function. The average allograft survival for a recipient of a living donor kidney is 15- 20 years.

In comparison, deceased donors although screened prior to organ donation, have a number of potential pitfalls. Deceased donors often have a number of co-morbid conditions that can affect kidney function, and which may not be known at the time of donation. Pre-existing conditions such as diabetes, hypertension, and vascular disease are not uncommon. In contrast to the living donor situation, older deceased donors will not provide as good a kidney function as younger deceased donors. A deceased donor may be in intensive care unit for a prolonged period of time, and as such is subjected to a number of insults. Brain death, which is a perquisite for most deceased organ donation is a very unstable state, and is believed to add additional insult to the kidneys. Donation after cardiac death has its own issues with regard to a longer period of decreased blood flow to the kidneys. In both situations, there may be substantial delay following kidney procurement until transplantation. During this period of time the kidneys are kept very cool (40 C) but the delay increases the chances that the newly transplanted kidney won't function immediately. On average, deceased donor kidneys function for 9-15 years.

Insults after the transplant

a) Rejection:

All kidneys have the potential to be rejected without immunosuppressive medication. We currently have much better immunosuppressive agents, which have directly led to great improvements in transplant outcomes. In 1971, only 50% of kidney transplant recipients were alive and off dialysis at 1-year post-transplant. Rejection rates at that time were close to 80%. In 2011, despite the use of more marginal donors, and despite transplanting more sicker and older patients, the 1-year success is 95%, with a rejection rate of 15%. However in the long term, kidneys continue to fail for reasons that can be preventable, but not always. Every year we see patients who get into trouble because they haven't properly taken their anti-rejection drugs, such as by skipping doses. Patients may miss clinic appointments or blood tests, which are important in ensuring that the kidney transplant stays healthy.

Sometimes however, despite doing all the right things, the kidney may be slowly rejected and lose function. Often in these situations, transplant recipients develop antibodies against their donor kidney, which can lead to a slow but relentless destruction of the allograft. This is known as "chronic antibody-mediated rejection". Unfortunately, our current armamentarium of anti-rejection drugs is not very effective against this problem. However this is an area of intensive research.

b) Recurrent kidney disease

The native kidneys fail for many reasons, including diseases that are specific to the kidneys, or more systemic diseases such as diabetes, where the kidneys are one of many organs that can be damaged. Sometimes, in both kidney specific, or systemic diseases, the newly transplanted allograft can be subjected to the same insult that led to kidney failure in the native kidneys. The kidney diseases that can most often recur within the allograft include the category known as glomerulonephritis (GN). There are some GNs that pertain a higher risk for recurrence. Fortuitously, some of these recurrent GNs can be ameliorated by proper diagnosis and adjustment of medication including both the anti-rejection therapies and blood pressure medications.

c) Infections

All transplant recipients are at increased risk of infections because of the need for immunosuppressants. Some infections can affect the renal allograft. Recurrent pyelonephritis, which is a severe urinary tract infection that involves the kidney, can lead to kidney damage. Some viral infections such as polyoma (BK) virus can injure the kidney. Unlike pyelonephritis, polyoma is asymptomatic. In our clinic, we very aggressively treat all urinary tract infections, and screen for polyoma virus routinely during the first 2-years post transplant, when the incidence of this infection is at its highest. Once detected, polyoma infection often responds to reduction in immunosuppressive medication.

d) Immunosuppressants

Paradoxically, while drugs such as cyclosporine and tacrolimus have had the most impact on the success of transplants, these agents have a very narrow therapeutic/toxic window. This means that too little exposure can lead to rejection, whereas too much can cause serious adverse effects, including damaging the kidney allograft. It is for this reason that we follow the blood concentrations of these medications very closely, and adjust the dosage accordingly.

e) Other insults

Kidney transplant recipients are at higher risk of acute kidney injury than people with normal native kidneys. Patients need to be aware that intravenous contrast dyes, non-steroidal anti-inflammatory medications, severe diarrheal illness and some herbal medications can cause acute kidney injury. In the long term, poorly controlled blood pressure and smoking can accelerate allograft damage.

What can be done to improve the outcomes?

While it may be disconcerting that a kidney transplant may not last forever, it is worth noting that some fortunate recipients, even those with deceased donor transplants, have kept their transplanted kidney for 20, 30 or even 40 years! In general, such recipients have had few problems over the course of their kidney transplant, and sometimes one has to be lucky. However some things can be done to improve the odds. These include: (1) adherence to both transplant medications and blood/urine tests, (2) maintaining excellent blood pressure control, (3) not smoking, (4) contacting the clinic if going for x-rays that involve dye, (5) avoiding non-steroidal medications such as Advil or Motrin, (6) promptly getting a urine culture and appropriate antibiotic therapy for suspected urinary tract infections, (7) contacting the clinic for persistent, severe diarrhea.

If we find an increase in creatinine that cannot be explained by other reasons, or we detect proteinuria, a kidney biopsy may be required for diagnosis. The biopsy does not guarantee that the condition will be easily treated, but it does provide us with insight as to how to approach the problem.

Keeping your kidney healthy after transplant is a lifelong commitment and involves a strong partnership between the patient and the transplant team.

Transplant Ultrasound

Dr. Ramesh Prasad

Sometimes you will be asked by the Transplant Clinic to undergo an ultrasound of your kidney transplant, in addition to your routine or special blood tests (see Post Transplant Chat in this issue). This is a special type of investigation that we are very fortunate to have at St. Michael's. An appointment is required for this test but many times we are able to get this performed at short notice. The ultrasound can be done at other hospitals as well, when the clinical circumstances dictate (e.g. when you are admitted there for an acute illness). It is one of the most important tests in transplant medicine after blood and urine testing. An ultrasound is routinely done a few days after the transplant when you are still in the hospital, but after this, it is typically ordered for indication alone. The most common reason is for an unexplained rise in your serum creatinine (i.e. worsening kidney function), but other reasons may include severe hypertension, leakage of fluid through your incision, pain over the transplant, or in preparation for a transplant kidney biopsy. The procedure takes less than an hour to perform. There is no radiation exposure involved.

During the ultrasound the sonographer will check for the size of the kidney (normal is 9-12 cm, top to bottom), any dilation of the upper urinary tract which could indicate obstruction to urine flow, and the presence of any fluid collections around the kidney (lymph, urine, blood, pus etc...). In addition, a "resistive index" is measured. If this is "elevated" it indicates some resistance to blood flow within the kidney, as can occur with acute rejection or acute tubular necrosis (kidney damage). Finally, the blood flow in the main renal artery and vein is measured using color Doppler. If the value is elevated at certain points in the artery it may indicate blockage, or "stenosis" close by. An ultrasound may need to be supplemented with other tests, such as a CT scan or angiogram, MRI, or nuclear flow scan to obtain more information about the reasons behind why the kidney transplant is not working well enough and to decide on a course of action.

Kidney Transplantation and the Metabolic Syndrome

Dr. Ramesh Prasad

In previous issues of Digest we have talked about some of the risk factors for heart disease after a kidney transplant. We have discussed at length high blood pressure, high cholesterol (lipids), diabetes, and excess weight. Patients may have abnormalities in none, one, or more than one of these parameters. Patients and doctors may naturally focus on the one or two abnormalities that are obvious to them, not realizing that some of the other test results may actually be very close to abnormal and need attention as well. Physicians talk about the "metabolic syndrome" as a large cluster of abnormal values, which puts patients at higher cardiac risk even though the degree of abnormality in each component may be small. Transplant patients are at much higher risk for having heart attacks than the general population, Thus, a discussion of metabolic syndrome will bring together some of our previous discussions on isolated cardiac risk factors.

The term "metabolic syndrome" is actually fairly recent, having been coined in 1988. It is important to realize that it is not a disease by itself, although it is a good predictor of future disease. The most important reason why people develop the metabolic syndrome is that their bodies are unable to use insulin. This may be the result of excess weight, particularly around the abdomen, but may also be due to a sedentary lifestyle, genetics and ethnicity, and inflammation. Needless to say, many transplant patients are at risk for development of the metabolic syndrome due to some of the immunosuppressive drugs, advancing age, poor exercise habits and diet, and pre-existing diseases like high blood pressure and cholesterol.

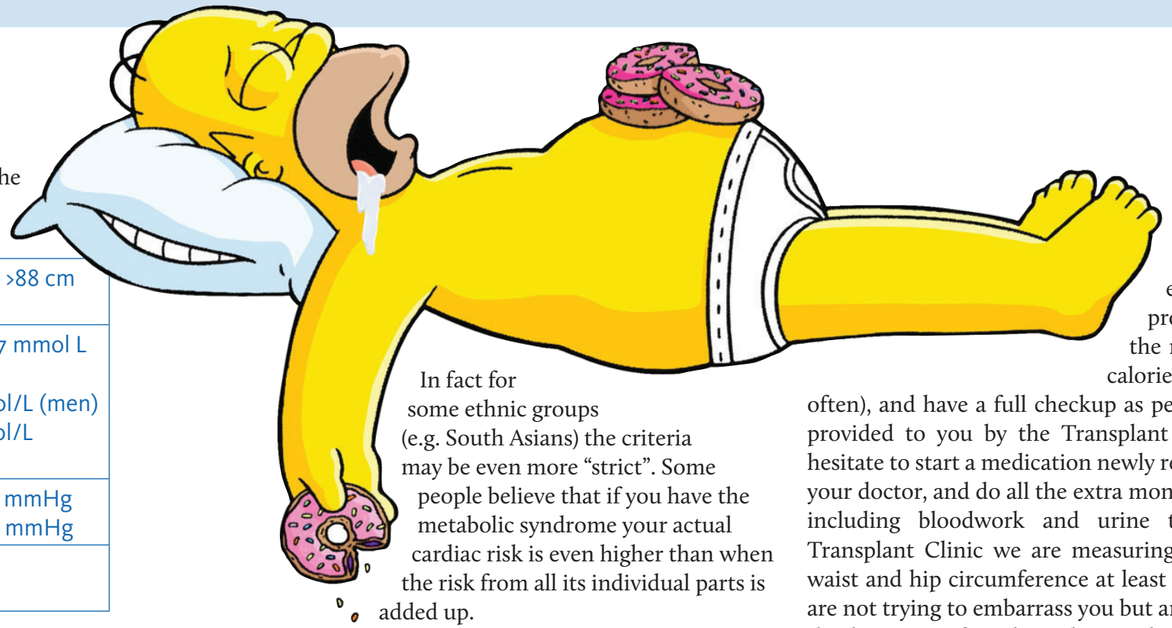
Definition of Metabolic Syndrome

You may wish to know: Do I have the metabolic syndrome? Here is a simple table to help you out (ATP III criteria).

Waist circumference	>102 cm (men) or >88 cm (women)
High lipids (or on treatment)	Triglycerides ≥ 1.7 mmol L (all) HDL-C <1.03 mmol/L (men) HDL-C <1.29 mmol/L (women)
Blood pressure (or on treatment)	Systolic BP ≥ 130 mmHg Diastolic BP ≥ 85 mmHg
Fasting blood glucose	≥ 5.6 mmol/L

If you have three or more of these abnormalities, you have the metabolic syndrome! There are some other ways to define metabolic syndrome as well, however. For example, the World Health Organization (WHO) uses a fasting glucose ≥ 6.1 or after-meal glucose ≥ 7.8 mmol/L and BMI >30 kg/m2 (both men and women) or waist-to-hip ratio >0.9 for men or >0.8 for women; systolic BP ≥ 140 or diastolic BP ≥ 90 mmHg; HDL-C <0.9 mmol/L (men) and <1.0 mmol/L (women); and urine albumin-to-creatinine ratio >30 mg/g to define the metabolic syndrome.

Thus, you may have the metabolic syndrome by ATP III, WHO, or both criteria, but if you satisfy even one of the two classifications it deserves to be taken seriously.



In fact for some ethnic groups (e.g. South Asians) the criteria may be even more "strict". Some people believe that if you have the metabolic syndrome your actual cardiac risk is even higher than when the risk from all its individual parts is added up.

What Can I Do About the Metabolic Syndrome?

So you have the metabolic syndrome. Remember that if you already have diabetes, you should really focus on the treatment of the other abnormalities also. If you don't have diabetes yet, you are at higher risk for developing it and need to focus on bringing all the abnormal values back in to the normal range, soon! In fact people with the metabolic syndrome may actually have worse kidney function too. In all cases, your cardiovascular health needs your attention, since a heart attack could in turn damage the transplant as well.

Exercise regularly (walking is not enough!), eat a proper diet with the right amount of calories (eat out less often), and have a full checkup as per the guidelines provided to you by the Transplant Clinic. Do not hesitate to start a medication newly recommended by your doctor, and do all the extra monitoring required including bloodwork and urine testing. In the Transplant Clinic we are measuring every patient's waist and hip circumference at least once a year. We are not trying to embarrass you but are just obtaining the data to see if you have the metabolic syndrome, so if you would like these measured by us more often we are happy to do so. Make sure your height is measured at least once (patients tend to exaggerate their height). Keep track of your weight, and if you are told to lose weight in the clinic because your weight is too much for your height, please take this advice seriously. Keep a log of your blood sugar, blood pressure, and different types of cholesterol, as well as urine protein, and ask questions of your doctor or nurse about these in the clinic. Please make sure that you do fasting blood work at least twice per year. The transplant is very important no doubt, but so is the rest of your body. Remember, we are here to help you achieve your goals.

Update on the National Paired Exchange Program

Maureen Connelly RN BScN
Living Kidney Donor Coordinator

New innovative approaches in living kidney donor transplantation have enabled transplants across blood group and immunological (tissue type) barriers.

This article provides an update on the living donor transplant national paired exchange registry.

Since the launch of the National Living Donor Exchange Registry in 2009, all transplant programs across Canada are now participating in the registry. Living donor paired exchange provides a way for kidney donors who are incompatible with their intended recipient to still donate and help a person with chronic kidney disease receive a transplant. In exchange, their intended recipient receives a transplant from another kidney donor.

Donors may be incompatible with their intended recipient in two ways:

1) The recipient has proteins in his/her blood called antibodies that react against donor cells. These antibodies can be a result of a previous transplant, pregnancy or blood transfusion. A transplant candidate with antibodies may be harder to match with potential donors
2) The donor's blood type is not compatible with their intended recipient. The blood type chart enclosed shows the compatible donor/recipient blood types.

BLOOD TYPE COMPATIBILITY CHART

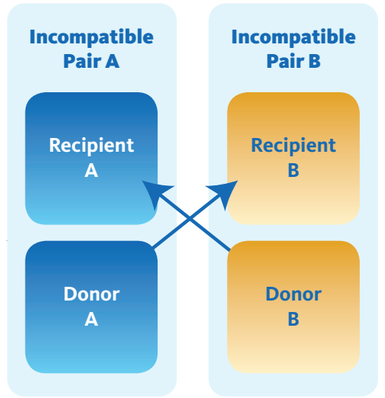
RECIPIENT'S BLOOD TYPE	DONOR'S BLOOD TYPE
O	O
A	A or O
B	B or O
AB	A, B, AB or O

The advantage of doing living donor paired exchange on a national level is that the chance of finding a matching donor increases if there is a larger pool of potential pairs to select from. Once the donor and transplant candidate have both completed their respective tests and evaluations, their health information is entered into the registry. The electronic registry is a secure computer database that is managed by Canadian Blood Services. CBS runs a cycle of the registry about every three months to allow time for as many donor/recipient pairs to be entered into the registry to improve the odds of matching.

When a computerized cycle is run you and your donor will be notified if you are in a proposed match by your transplant nurse coordinator. There are a number of steps involved once a proposed match takes place. One of the first considerations is whether you or your donor can travel to another transplant center for the surgery. Usually it is the donor who travels to the centre where their matched recipient receives his/her care. Other steps include sending blood for further testing called a cross match. Once all the results are back, the donor medical records are shipped to the transplant program where the surgery will take place. It usually takes about 3-4 months before surgery can take place after a proposed match is done.

Within the proposed matches, a number of chains can occur such as below:

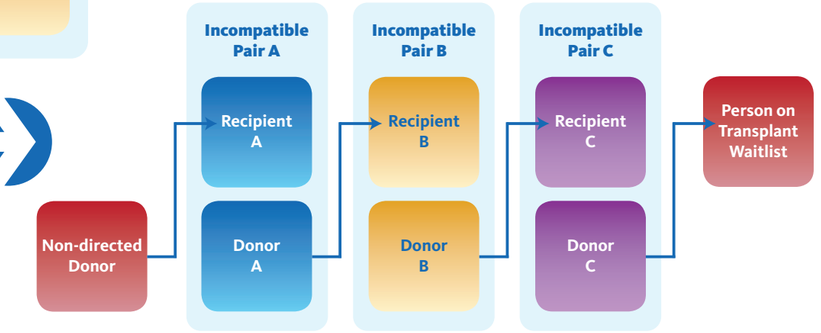
PAIRED EXCHANGE



Anonymous donors are now considered at some transplant programs, including St. Michael's. An anonymous donor can start a domino chain of proposed matches with the last donor donating to a recipient on the local transplant waiting list.

ANONYMOUS PAIRED EXCHANGE

AD or NDD can register in the LDPE Registry to kick off a domino



Since the start of the paired exchange program, St. Michael's has been a leader in promoting paired exchange. A number of patients from our program have received a transplant.

Transplants by Recipient's Transplant Program

	Recipient Transplant Program	Transplants	Provincial Totals and %		
1	Vancouver General	16	BC	39	41.4%
2	St. Pauls's Hospital (Vancouver)	23			
3	University of Alberta (Edmonton)	3	AB	6	6.3%
4	Foothills Medical Centre (Calgary)	3			
5	St. Paul's Hospital (Saskatoon)	3	SK	3	3.2%
6	Health Sciences Centre (Winnipeg)	1	MB	1	1.1%
7	London Health Sciences	1	ON	38	40.0%
8	Toronto General Hospital	16			
9	St. Michaels Hospital (Toronto)	14			
10	The Hospital for Sick Children	1			
11	The Ottawa Hospital	6			
12	C.H. Universitaire de Sherbrooke	1	QC	3	3.2%
13	Notre Dame	2			
14	Queen Elizabeth II (Halifax)	5	Atlantic	5	5.3%
	TOTAL	**95**			**100.0%**

If you would like further information on the paired exchange program, contact:
Donors: Maureen Connelly RN BScN - 416-867-3676 **Transplant Candidates:** Galo Meliton RNCNephC - 416-867-3677

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