

Let's Talk Rejection

This is a discussion of rejection – not personal rejection – ORGAN rejection! It's something we fear because we just don't know enough. Everyone fears the unknown. So let's get to know a bit more about rejection – and we'll do a better job controlling our fear. Anxiety can probably cause more damage than rejection!!

What's Here ~

Definitions: *What is Rejection?*

Descriptions: *What happens and what do we do?*

Discussion: *What is it like?*

What is rejection?

A rejection episode is when your body learns that your transplanted organ is not your own (foreign to you). Your body then tries to get rid of it. Rejection episodes happen most often in the first 3 months after the transplant. However, rejection can occur at any time as long as you have your organ. A rejection episode does not mean you are going to lose your organ. It means your body is trying to get rid of the organ. Treatment is necessary to prevent losing your organ.

The risk of rejection never goes away. You will always need to stay on your anti-rejection medications. The dose of the medications will be decreased, but you should never skip or stop your medications. Your doctors will monitor your breathing tests, your chest x-rays, and some blood tests to try and prevent lung damage due to rejection.

<http://www.medicalcenter.osu.edu/pdfs/PatientEd/Materials/PDFDocs/surgery/transpla/tr-rejec-epi.pdf>

The Columbia Lung Transplant website has this to say about rejection:

Immunosuppression and Organ Rejection

The purpose of your immune system is to protect your health. It recognizes and attacks anything different from the substances normally present in your body, even those only slightly different, like your newly transplanted lung. The immune system does not discriminate between harmful substances, like bacteria, fungi and viruses, and transplanted organs — so to your immune system your new lung appears as a foreign substance that needs to be eliminated.

To protect your new lung, we prescribe a variety of medications to suppress your body's natural immune response. These medications are called "immunosuppressants," and they

trick the immune system into believing that your new organ is not foreign, and thus it is not attacked. After transplantation, you will be taking immunosuppressant medications for the rest of your life.

Understanding Organ Rejection

Even with the use of immunosuppressants, your body can at times recognize your transplanted organ as a foreign object and attempt to protect you by attacking it. Rejection is the term used when your body's immune system is attacking your transplanted organ. Nearly all patients will experience at least one episode of rejection. If and when you suffer an episode rejection, remember:

- * It does not mean that you will lose your new lung.
- * It does not mean your new lung is failing.

Rejection may occur early or late after transplantation. Early rejection occurs most often in the first six months after transplant, and late rejection typically occurs after six months.

http://www.columbiasurgery.org/pat/lungtx/guide_immunosuppression.html

Types of Rejection:

There are three general forms of rejection: hyperacute, acute, and chronic.

"Hyperacute" rejection occurs within minutes of transplantation due to antibodies in the organ recipients blood stream that react with the new organ and result in organ failure within the first hours after transplantation. Cross matches are done between a donor and a potential recipient to decrease the likelihood that hyperacute rejection will occur.

"Acute" rejection generally occurs in the first 6 to 12 months after transplantation. Lymphocytes from the thymus (t-cells) are blamed for causing acute rejection. For most organs, the only way to show unequivocally that rejection is occurring is by biopsy of that organ. For practical reason, however, biopsies are not always done when acute rejection is suspected. In some circumstances treatment for rejection is begun and a biopsy is performed at a later date to check and to determine that the organ is improving. This strategy varies from organ to organ and transplant center to transplant center. The diagnosis and treatment of acute rejection can be difficult at times. Most of the time acute rejection can be treated successfully with additional anti-rejection medications. After the first few months following transplantation, the risk of acute rejection decreases, and it may be possible to decrease the amount of anti-rejection medication that patients need to take after transplantation.

“Chronic” rejection is less well defined than either hyperacute or acute rejection. It is probably caused by multiple factors: antibodies as well as lymphocytes. The definitive diagnosis of chronic rejection is again generally made by biopsy of the lung in question.

Transplanted lungs with chronic rejection are said to have "bronchiolitis obliterans" a scarring problem in the substance of the lung.

From the University of Iowa website: The sophisticated immunosuppressive medications available today allow organ transplants to be successful, but not necessarily free from rejection. The majority of patients experience some rejection activity; the two common types of which are acute rejection and chronic rejection.

Acute rejection happens to almost all patients who receive organ transplants. The patient's immune system and white blood cells recognize the transplanted organ as being foreign and mount a defense against the organ. The new organ is then incapable of working at full efficiency, and symptoms of rejection become apparent to the transplant recipient. These symptoms of rejection are very similar to the symptoms of organ failure. Early detection is essential to successful reversal of acute rejection. For this reason, the transplant recipient carries a large responsibility for maintaining his or her health. Acute rejection is almost always reversible with special medication. Once successfully reversed, some patients never have trouble with acute rejection again, although some patients do have subsequent episodes. Most rejection episodes require admission to the hospital. Acute rejection is less common beyond the first year of transplant. In addition to the subjective symptoms of worsening organ function that the transplant recipient feels, there are indicators of organ rejection which the health care team can identify. Various blood tests are used to identify possible rejection, and biopsies (the removal of a small piece of organ tissue via a thin needle) are done to confirm rejection.

Chronic rejection is different from acute rejection in that it is usually not reversible, but it is also a response of the patient's immune system. A patient's white blood cells produce special proteins called antibodies that are created specifically to "latch onto" the transplanted organ. While attached to the organ, the antibodies alert the rest of the immune system to attack the organ slowly and continuously. Most people will have little or no chronic rejection. Some people have some chronic rejection, leaving their organ function less than perfect but still adequate. Some people will lose complete function of the organ. Because chronic rejection is usually not reversible, the best defense is to prevent it from happening in the first place by taking the anti-rejection medications exactly as prescribed.

University of Iowa - Hospitals & Clinics:

<http://www.uihealthcare.com/topics/medicaldepartments/surgery/rejection/index.html>

Acute Rejection* Grade Histopathological Findings	
A0 (None)	No mononuclear inflammation, hemorrhage or necrosis
A1 (Minimal)	Scattered infrequent perivascular mononuclear infiltrates not obvious at low magnification (40X). Blood vessels, particularly venules, are cuffed by small round, plasmacytoid, and transformed lymphocytes forming a ring of 2 to 3 cells thick in the perivascular adventitia.
A2 (Mild)	Frequent perivascular mononuclear infiltrates surrounding venules and arterioles readily recognizable at low magnification and usually consist of activated lymphocytes, small round lymphocytes, plasmacytoid lymphocytes, macrophages, and eosinophils. Frequent subendothelial infiltration by the mononuclear cells with hyperplastic or regenerative changes in the endothelium (endotheliitis); although there is expansion of the perivascular interstitium by inflammatory cells, there is no obvious infiltration by mononuclear cells into the adjacent alveolar septae or air spaces. Concurrent lymphocytic bronchiolitis is not uncommon. A solitary perivascular mononuclear infiltrate of significant intensity to be noted at low magnification still warrants a diagnosis of grade A2 (or greater) rejection.
A3 (Moderate)	Readily recognizable cuffing of venules and arterioles by dense perivascular mononuclear cell infiltrates, which are usually associated with endothelialitis; eosinophils and occasional neutrophils are common. By definition, there is extension of the inflammatory cell infiltrate into perivascular and peribronchiolar alveolar septae and air spaces. Collections of alveolar macrophages are common in the airspaces in the zones of septal infiltration.
A4 (Severe)	Diffuse perivascular, interstitial, and air space infiltrates of mononuclear cells and prominent alveolar pneumocyte damage usually associated with intra-alveolar necrotic cells, macrophages, hyaline membranes, hemorrhage, and neutrophils; there may be associated parenchymal necrosis, infarction, or necrotizing vasculitis. The obvious presence of numerous perivascular and interstitial mononuclear cells seen with grade A4 rejection permits distinction from peri-operative (reperfusion/ischemic) lung injury.

Anti-rejection drugs

Transplant patients take medications each day to prevent organ rejection. Because the patient's immune system recognizes the new organ as a foreign tissue, it's normal for the immune system to try to reject the organ. Drugs (called immunosuppressants) help suppress the immune system to prevent or reverse rejection. At the same time, these drugs may have side effects. Both the patient's risk of rejection and susceptibility to side

effects are considered when prescribing drugs and their dosage. Although researchers continue to study new drugs, these are the most common drugs used to prevent organ rejection:

- cyclosporine (Neoral®, Sandimmune®)
- prednisone (Novo Prednisone®, Apo Prednisone®)
- azathioprine (Imuran®)
- tacrolimus or FK506 (Prograf®)
- mycophenolate mofetil (CellCept®)
- sirolimus (Rapamune®)
- OKT3 (Muromonab CO3®, Orthoclone®)
- ATGAM & Thymoglobulin

<http://www.lhsc.on.ca/transplant/drugs.htm>

What happens and what do we do?

Again – info from the Columbia website:

Symptoms of Organ Rejection

The most common symptoms or signs of rejection are:

- * Flu-like symptoms
- * Cough/chest pain
- * Fatigue
- * Fever
- * Shortness of breath
- * Decreased peak flow
- * Decreased incentive spirometry
- * Decreased oxygen saturation

If you develop any of these symptoms or signs, contact your transplant team at once.

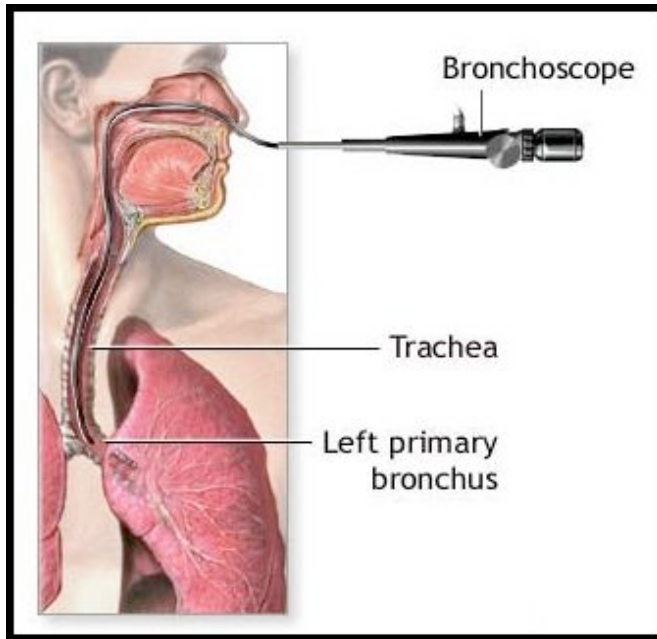
Monitoring for Rejection

Rejection can frequently be silent and without symptoms, and detected only by lung function testing. This is why we frequently measure your lung function during your hospitalization and at your follow-up clinic visits. In addition, a lung biopsy may be necessary to determine if rejection is actually occurring.

Pulmonary function tests, a measure of your lung function, will be performed weekly in the three months after your transplant, and less frequently thereafter. This test may reveal the first sign of rejection or infection. Your lung function will be followed at home with the measurement of spirometry and peak expiratory flow measurements, which you will

record daily at home. Any persistent decrease in these values should be reported to the transplant team.

If rejection is suspected, a bronchoscopy, or lung biopsy, will be performed to rule out rejection or see if it is actually occurring.



A bronchoscope is a tube with a tiny camera on the end - inserted through the nose (or mouth) into the lungs. During a bronchoscopy, a scope is inserted through a nostril until it passes through the throat into the trachea and bronchi. A bronchoscope is used to provide a view of the airways of the lung (tracheo-bronchial tree). The scope also allows the doctor to collect lung secretions and lung tissue for biopsy of tissue specimens.

[More About Bronchoscopy](#)

Flexible bronchoscopy (pronounced bron-kos-ko-pee) is a procedure that enables your physician or surgeon to examine the major air passages of the lungs. This allows your physician to evaluate your lungs and take small samples of tissue or fluid, if necessary. Usually the procedure is performed after you are mildly sedated and your nose or mouth is numbed. Your physician will then insert a bronchoscope, which is a flexible lighted tube about the width of a pencil, through your nose or mouth and into your windpipe. A small channel in the instrument allows tissue and fluid samples to be collected when appropriate.

[How Is a Bronchoscopy Performed?](#)

To prepare:

- ✚ Ask your doctor if you should take your medicines the morning of the test. If so, take pills with small sips of water.
- ✚ You will not eat or drink anything after midnight the night before.
- ✚ You will need PFT's before your bronchoscopy **[unless they start in the middle**

of the night - like 7 am – before the PFT Department even opens! - which has been my experience! YOU try getting over the GW at that hour of the morning.].

During the Bronchoscopy:

- ✚ You will wear a hospital gown.
- ✚ You will lie on a table in the procedure room in the bronchoscopy suite - Herbert Irving Pavilion.
- ✚ An IV (intravenous) is put in a vein in your arm.
- ✚ You will be given medicine to cause you to relax.
- ✚ A blood pressure cuff is put on your arm. Your blood pressure and heart rate are checked often.
- ✚ An oximeter is put on your finger to check the oxygen level in your blood. You may be given oxygen to breathe during the test.
- ✚ Your mouth and nose are sprayed with numbing medicine. [Ed. Note: Not a nice taste!]
- ✚ After the numbing medicine begins to work, the doctor puts the bronchoscope into your nose. You will be able to swallow and breathe.
- ✚ The doctor removes mucus and a tissue sample if needed. The tube is then removed. That's it.

Occasionally, the examination is done with the aid of x-ray equipment to help your physician locate the exact area from which to take a sample. A nurse or another health-care professional will be present during the exam to assist you and the physician. Bronchoscopy is a safe test that carries little risk. Complications are rare, but if they occur, they may include collapsed lung, bleeding from the sample site, an allergic reaction to medicines, hoarseness, and slight fever. Only rarely do patients experience other, more serious complications. If a problem should occur, the doctor and health-care professional can easily take care of them.

What Happens After a Bronchoscopy?

After the Bronchoscopy:

- ✚ The nurse will check you often for about 1 hour after the test.
- ✚ Medicines given during the test will make you sleepy. You will need to have an adult family member or friend take you home for your safety. You should wait 12 - 24 hours before driving, making major decisions or operating equipment. [Ed. Note: You're going to be a bit loopy for about an hour. Don't figure on making a lot of sense during that time!]
- ✚ It takes about 2 hours for the numbing medicine to wear off, and then you may eat and drink.
- ✚ You may have a sore nose or throat, a hoarse voice, or a cough. It is normal to cough up a few teaspoons of blood-tinged mucus for 24 to 36 hours after the

test. [Any more blood than that - or any amount that worries YOU - call the doctor and ask!]

- ✚ Ask your doctor what you may use to help with pain or soreness. [Ed. Note: **You probably won't need anything.**]
- ✚ You should restart your routine medicines unless you are instructed otherwise.

When the procedure is finished, you will be observed until you are awake enough to leave. Tell the nurse if you have any chest pain, difficulty breathing, or notice more than flecks of blood in your phlegm. It is normal to cough up a small amount of blood for a day or two after the procedure. Your blood pressure, pulse, and breathing rate will be checked prior to your discharge. The needle in your vein will be removed, and you will go for a chest x-ray - back down to the first floor of Herbert Irving where you usually get your x-rays. You cannot eat or drink anything for 2 hours after the procedure because your throat may still be numb. Your physician will be happy to discuss any questions you may have regarding the examination and will tell you when to expect a report of the test results. Sometimes it takes a few days to a week for the complete results to come back from the laboratory. [Preliminary results are usually ready within a day or so. Because it takes a while for cultures to grow from samples, the final results will take a while - sometimes a week or even longer.]

Managing Organ Rejection

We manage a mild rejection episode by making adjustments to your medication dosages. Moderate or severe rejection may require a few days of hospitalization, allowing your physician to administer alternative immunosuppressants and observe your progress.

http://www.columbiasurgery.org/pat/lungtx/guide_immunosuppression.html

What's in the Future to Deal with Rejection: New Contrast Agents Track Organ Rejection: September 25, 2006

Organ transplants give patients a new lease on life. However, preventing their immune systems from rejecting the organ sometimes presents a challenge. Physicians must strike a balance between suppressing the immune system so that it does not reject the organ and maintaining enough activity to ward off infections. Tracking how well the body accepts the new organ is critical to this process.

The current "gold standard" for monitoring organ rejection is tissue biopsy, an invasive procedure in which a physician removes a small sample from the transplanted organ for testing. Biopsy has two drawbacks: patient discomfort, as the physician must perform the procedure multiple times, and poor selectivity since the biopsy removes tissue from only a limited number of sites, possibly missing rejection starting elsewhere in the organ.

To overcome these limitations, researchers at Carnegie Mellon University are developing a new method to monitor organ rejection using magnetic resonance imaging (MRI). They inject polymer-coated nanometer- and micrometer-sized iron oxide particles into the blood where macrophages – immune cells that scavenge the body for foreign substances – ingest the particles and carry them to rejection sites in the transplanted organ. Because the highly magnetic iron particles can be clearly identified by MRI, researchers then use MRI to track the macrophages.

"This technique may provide a way to optimize the administration of immunosuppressant drugs," says Dr. Chien Ho, alumni professor of biological sciences at Carnegie Mellon University. "If we can detect acute rejection at an early stage, we can prevent irreversible tissue damage and the on-set of chronic rejection, which may destroy the transplanted organ."

<http://www.nibib.nih.gov/HealthEdu/PubsFeatures/eAdvances/25Sep06>

What's in the Future to Deal with Rejection: THERAPEUTIC CLONING

Therapeutic Cloning is also called biomedical cloning, and research cloning. It involves the process of somatic cell nuclear transfer in which the nucleus of a cell from a human patient's body is injected into a human ovum which has had its nucleus removed. The goal of therapeutic cloning is to develop organs for transplant that have an identical DNA structure to the organ recipient. [It does not involve the attempt to create a newborn.]

Ethical considerations: Ethics become a concern because of the source of the stem cells.

Stem cells could be obtained from many sources. Three are:

- ✚ Embryos created during infertility treatment. These are sometimes called "spare embryos." They are usually frozen at a very low temperature in the event that they are needed in the future to attempt another a pregnancy.
- ✚ Embryos created for the purpose in the laboratory by manually fertilizing an ovum with donated sperm.
- ✚ From the germ cells or organs of an aborted fetus. These "appear to be limited in the type of tissue they can be developed into."

Unfortunately, organs grown from stem cells from one of these sources would have foreign DNA that did not match the DNA of the organ recipient. The recipient would have to take anti-rejection drugs for the rest of their life and could suffer organ rejection at any time.

There are four other sources that would produce organs that are perfectly matched to the recipient's DNA. They would presumably prevent organ rejection:

- ✚ Via cell nuclear replacement. The nucleus in an ovum is removed and replaced by the nucleus from an adult cell from the patient.
- ✚ From bone marrow and some other adult tissues. These are expected to have limited usefulness.
- ✚ From "mature adult tissue cells reprogrammed to behave like stem cells." This mechanism is purely speculative at this time.
- ✚ From umbilical cord blood collected at the person's birth. This would require cord blood to be collected when a person is born and stored for possible future use.

Embryos appear to be the only source of stem cells that would have wide potential in therapeutic cloning. The remaining three sources appear to have limited flexibility and usefulness.

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Author: B. A. Robinson

What does rejection feel like?

From: jimh721@hotmail.com

Sent: Fri, 16 Mar 2007 3:19 PM

I presently have a mild form of rejection, at least that's what I think they said.

It started when I felt something was not right. I started coughing a little more than my once or twice a day. and started to bring up some stuff. but that was either clear or white, so I don't think that was an infection problem. But still I knew things were not right. I mentioned it to my Coordinator and she said we should watch it.

When I went in for clinic we found that my PFT's were down very slightly. That should not be. If anything they should go up a little. There was no question in Dr Wilt's mind, do a bronc. and let see if anything is going on. Two days later after the biopsy they found a mild form of rejection.

Gen. called me that night and told me the good news and said to be down at the hospital first thing the next morning. Into the infusion room for an IV steroid infusion. That's a three-day treatment: Friday, Saturday and Sunday. It takes about an hour and a half. The hospital is empty on the weekend in the morning.

Then starting on Monday 3 days of 60mg's prednisone and decreasing 10mg's a day every third day. By the time it gets back down to 10 mg's the rejection should be cleared.

Dr Wilt will do another bronc to make sure.

On February 26, I was four months out from TX.

Describe = The word rejection = frightening, worried

Treatment: IV infusion on the weekends was a fight not to be admitted because Medicare did not want to pay for outpatient. They wanted to pay thousands to have me admitted for the weekend. No wonder why the system is broke, that and high pensions to federal employees! Ha, Ha! [Ed. Note: Mocking reference to Stan. Writer might want to check back to my recent email reference to VENGEANCE!!] But they found the error of their ways. Bobbie was worried!

The bronc verified suspicion. I alerted them, Its my job to know what's going on with my body after tx and let them know if I think there is any problem. I believe they know how to fix most problems if caught early. But if you let a little problem go on it may only get bigger and than it's a real problem.

You can use my name and comments if you like.

Jim

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From: Kelali3@aol.com

Sent: Fri, 16 Mar 2007 3:45 PM

As you know I recently had an acute rejection episode. The week before my rejection I had really bad headaches. I hardly ever have headaches, so this was unusual for me. They started in the morning and as each day passed they lasted longer. I alerted the doctors to this condition. Since this wasn't a common symptom for rejection, we all thought it was one of the medications. The day before I entered the hospital, I started to feel as if I had the flu, fever (101.3), chills, pains, etc. My O2 level started to drop also. I had been in the high 90s since transplant... I dropped to the high 80s. The next day I knew something was wrong, and by then my O2 level was in the low 80s. Ron (my husband) just returned from a business trip and dropped his suitcase and drove me straight to NYPH. I was started on antibiotics and scheduled for a bronc the next day.

After the bronc my O2 level dropped to the 40s... I was put on a respirator and I don't remember much until I woke up a week later. The anesthesia took a long time to leave my body. At one point they even thought I might have had a stroke! Glad I was asleep for all of that. But, I came out of it and though this is a setback, I still consider myself very blessed. My advice to all, any unusual symptom should be considered with rejection ... since we have not been through this before, anything can manifest itself as a sign of rejection.

Also, it came on pretty fast, so any changes should be addressed immediately. It was stressful, especially for Ron and our daughters. I was pretty calm, but then again I slept

through most of it... lol... I am just happy to be back... My transplant date was 10/21/06.

You can use my comments, and name.

Karen

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From: Kelali3@aol.com

Sent: Fri, 16 Mar 2007 5:07 PM

A few things I forgot to mention ... the steroids... I believe I was given one gram the first day and 1/2 gram the second ... the side effects as you know are wicked ... eyes tearing and blurry at times, black and blue especially at the IV site and blood gas site, thinning hair, and 'shakes' really bad. My handwriting looks like I am being given electric shock treatments ... lol but this too shall pass. [Ed. Note: She nailed the side effects!]

KDW

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From: tashyy@aol.com

Sent: Fri, 16 Mar 2007 5:50 PM

My rejection episode was less than one month after TX. Dr. Wilt had the pleasure of calling me on Christmas Eve to tell me (after a routine one month bronc.) I didn't have any symptoms so we were shocked! My PFTS were already at 80% and rising - no shortness of breath. We were all pretty floored. I did the three-day IV treatment at home - which made me CRAZYYYYYYYYYYYYYYYYYYYY. It cleared right up and I have never had an episode since then. Because it was so soon it was scary. It made me nervous, especially because I didn't FEEL it. If I didn't feel it then, how would I know I was rejecting if it happened again? My caregiver - my mom - was stoic. I don't know if she was like that when I wasn't around, but when she was with me it was all - everything will be okay! And it was!

Feel free to use any of my info you want - name, disease so on.

Tash

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From: richard.dotts@snet.net

Sent: Sat, 17 Mar 2007 11:14 AM

Here's my story - thankfully, not much to tell. Feel free to share all.

Single lung tx - 5/12/2006

I went through a very slight rejection episode in January. I was feeling great with no complaints and went for a belated bronc (postponed until I was off the coumadin I had to

take for 6 mos after an embolism). I was actually hoping that Dr. Jessie would reduce prednisone (currently and then 10 mg) but no... It seems that I had some inflammation in my new lung which Dr. Jessie described as a 1 on a 0-4 scale for rejection. Rejection, huh? Funny that I didn't feel too panicked about it since we're all told (part of the tx education) that almost everyone goes through some form of rejection and most will happen in the first year. I think my wife was way more upset than I was.

Treatment was a prednisone taper consisting of taking 60 mg prednisone each day for three days - then reducing to 50 mg for three days and so on until I was back to 10 mg. This took a bit over two weeks and I certainly went through a prednisone high - eating everything in sight, painting and such... Blood sugar went crazy but everyone knew why. I felt fine physically the whole time and really felt confident that I was receiving the the best possible attention and treatment.

Follow-up consisted of another bronc in February. I admit, I was a bit leery that things would be cleared-up by then and that I might have to go for some kind of more intensive treatment - so I was very relieved when Genevieve called with the good news that there was "no sign of rejection"!

Needless to say, my prednisone wasn't reduced as I had initially hoped - in fact, Dr. Jessie said that even without problems it wouldn't have gone below the 10 mg dose the first year.

My "episode" wasn't really much in the scheme of things. I felt fine and continue to feel fine. So I guess the bronc is worthwhile after all.

Regards to all,
-Rick

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From: HOGSROCK@aol.com
Sent: Sat, 17 Mar 2007 12:39 PM

Not yet from me and it's almost 16 mos - I awake with a silent - "Thanks" on my mind and lips. I have more energy than I know what to do with!

Call me Donna McBoing Boing.
Donna

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From: zawro@optonline.net
Sent: Mon, 19 Mar 2007 2:15 PM

I have been more than lucky in the rejection department. I've had only two acute rejections and both were handled by changing my medicines or dosages over the phone.

Both showed up in blood work and Dr. Wilt called with the changes she wanted to make. She also made me go for additional blood work locally. When those results were viewed by her, rejection gone and back to my usual meds.

This can certainly be shared my other post-tx friends. I just wish all of you had as few problems as I did.

Donna Z.

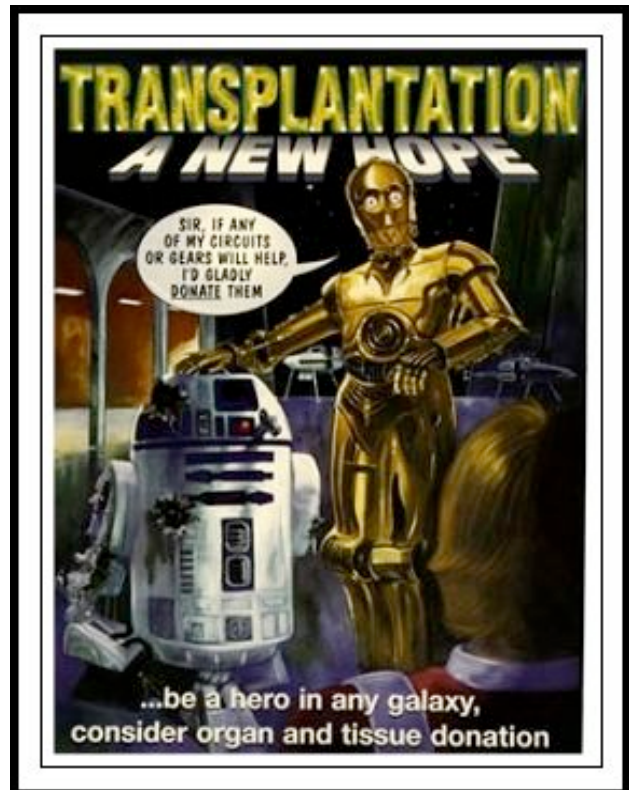
To Summarize:

The word "rejection" can be very scary for transplant recipients and their family members. However, rejection does not mean that your new organ has failed or that you will lose it. Knowing what rejection is and how it can be prevented or reversed will help reduce your fears.

Transplant rejection is a process by which the immune system of the recipient of a transplant attacks the transplanted organ or tissue. This is because a normal healthy human immune system can distinguish foreign tissues and attempts to destroy them, just as it attempts to destroy infective organisms such as bacteria and viruses.

Since the donor organ doesn't match your old organ exactly, your body tries to destroy the transplanted organ. Essentially, a transplant creates a new disease called rejection. Rejection is nature's way of protecting your body.

The rate of rejection varies by organ from about 30% to 60%, but rejection does not mean that the organ is lost. Over 90% of rejection can be successfully treated with medications. So now you can relax because you know.



Check out this link for a terrific overview of Lung Transplant from the American Society of Transplant.

<http://users.adelphia.net/~terryl2952/ASTOverviewLungTX.pdf>