Bob’s Journey: Kidney Disease to Kidney Health

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Goals for today

- HOW the kidney functions
- WHAT causes kidney impairment
- OPTIONS that should be explored before deciding treatment

The Urinary (Renal) System

- The Kidneys
- Urinary Tract
- Ureters
- Bladder
- Urethra

Together they function to filter waste from the blood system and remove it from the body.
The Kidneys

- Most individuals are born with two kidneys each about the size of your fist.
- They are considered a retroperitoneal organ. The left kidney is usually a little higher than the right.

Major function of the kidneys

- Remove waste products and excess fluids from the body
- The critical regulation of the body's salt, potassium, and acid

Other functions of the kidney's

- Balance of body fluids
- Release of hormones
- Production of active form of Vitamin D
- Controls the production of Red Blood Cells
Gross Anatomy of the Kidney

The Filtration System

Each kidney has over 1 million filters called nephrons. Each nephron filters a small amount of blood. Our bodies filter approximately 120 to 150 quarts of blood per day to make approximately 1-2 quarts of urine per day.

It is important to understand how the kidneys work so you can look for the subtle symptoms of kidney disease in our individuals.

The Nephron

The Nephron consists of two structures:

- The glomerulus
- The renal tubule
The filtration process

First filtered in the Renal Corpuscle

Blood is forced through the glomerular capillaries at a higher pressure than the pressure that blood travels through the body and also the kidney itself. This will result in a filtration process forcing some of the blood fluid into the Bowman's capsule.

It is always helpful to describe the function of the kidney to something that direct care is familiar with. I compared the above filtration to an every day event of using a wash cloth. As the water enters a dry wash cloth and becomes completely soaked, then you twist the wash cloth increasing the pressure within the cloth fibers, resulting in excess water being removed “filtered” out back into the sink.

The fluid that is forced into the Bowman's Capsule is called

Glomerular Filtrate

Glomerular Filtration

- Blood enters the kidney via renal artery
- The artery divides and separates many times and eventually delivers blood to each of the individual nephrons. These are called Afferent Arterioles
- The diameter of the afferent arterioles is greater than the diameter of the arterioles that leave the kidney, Efferent Arterioles

[Diagram of the filtration process in the kidney]
Glomerular Filtrate
Contains all materials present in the blood except for blood cells and most proteins. The reason for this is that the molecules of blood cells and protein are too big to pass the glomerular membranes.

As a result the following components are removed:
- Water
- Most to All salts
- Most to All glucose
- Most to All Urea

GFR – Glomerular Filtration Rate
GFR: is the flow rate between the glomerulus and the Bowman’s capsule
GFR = Urine concentration x Urine Flow
     Plasma concentration

eGFR: = *** Many different formula’s to determine the eGFR (estimated)
BUT
The final outcome in functional numbers (Normal value being 150cc/min)
When staging Kidney Disease

The next step in filtration
- The Glomerular filtration (GF) passes from the renal corpuscle to the renal tubule.
- Only about 1% of the GF actually leaves the body; the other 99% is reabsorbed into the blood while it passes through the renal tubules and ducts. This is called Tubular Reabsorption.
Tubular Reabsorption

- OSMOSIS: Movement of water across a membrane
- DIFFUSION: As a result of kinetic energy of random motion molecules intermingle
- ACTIVE TRANSPORT: Movement of ions from a lower concentration to a higher concentration.

Reabsorption varies according to the body's needs, enabling the body to retain most of its nutrients.

3 stages:
- PCT: Proximal Convoluted Tubule
- Loop of Henle
- DCT: Distal Convoluted Tubule

Proximal Convoluted Tubule

- Water and glucose (except in diabetics)
- Sodium ions, glucose, amino acids, lactic acid, and bicarbonate ions are solutes that are selectively moved from GF to Plasma by active transport
- Following the movement of solutes (including sodium) is the reabsorption of 80% of the GF by osmosis.
Loop of Henle

* The Descending Limb
  * is permeable to water but less permeable to sodium and chloride and urea. This allows water to gradually move from the descending limb to the interstitium

* The thin ascending limb
  * is impermeable to water still remaining in the tubules and stays inside, but is permeable to Sodium and Chloride and some what to urea, this allows the tubular fluid to flow back to the renal cortex while sodium and chloride diffuse from tubules into the interstitium. Some Urea also enters the tubules at this stage.

* Ascending Limb of loop of Henle
  * Reabsorption of NaCl from tubular fluid via a different transport process from that of the thin ascending.

Distal Convoluted Tubule (DCT)

* The DCT reacts to the amount of Anti-diuretic hormone (ADH) in the blood.
* The more ADH the more water is reabsorbed in the blood. Why?
* The ADH causes the cells in the last section of the DCT to become more permeable to water, allowing more water to return to the blood stream, this will result in more concentrated urine.
* The opposite is also true, the less ADH in the blood less water is reabsorbed. Why?
* Because the cells in the last section of the DCT become less permeable to water, resulting in less concentrated urine.
* What causes the variable level of ADH in the blood system?
  * Diabetes insipidus, diuretics, and some dietary habits.
Tubular Secretion

- This is the 3rd process of waste removal and is the transfer of materials from peritubular capillaries to renal tubular lumen. This is by active transport. These substances are present in great excess or are natural poisons.
- The substances that are secreted into the tubular fluid for removal from the body include:
  - Potassium
  - Hydrogen
  - Ammonium
  - Creatinine
  - Urea
  - Some hormones
  - Some drugs

The Final Stage

- Urine formed by the three processes trickles into the renal pelvis. At this stage approximately 1% of the originally filtered volume but includes high concentration of urea and creatinine and variable concentrations of ions.
- The typical volume of urine produced by an average adult is around 800 to 2000 cc per day.
Steps to Maintain kidney health

- Exercise
- Healthy eating habits
- Maintain good blood pressure control
- Maintain good blood sugar control if diabetic
- Talk with your doctor about risk factors

Nutrition Tip

- Avoid using table salt
- Use Fresh or Frozen Vegetables / avoiding canned foods
- Avoid processed foods/ deli meats
- Use leaner cuts of meats
- Grill, Bake or Broil instead of Frying foods.

Case Study: Who is Bob

- Bob is 53 years old. He has cerebral palsy, and legally blind from glaucoma. He had a family history of chronic kidney disease, his paternal uncle was on dialysis for many years. He resides in a group home residence with 3 other male roommates. The agency that runs the group home does not have any direct nursing services and relies on VNA and DDS area office nurse. Bob is presumed competent and has a health care proxy that is not invoked at this time. He goes to day program 5 days a week that does have nursing supports.
Chronic Kidney Disease – CKD
ONE IN 10 AMERICAN ADULTS (more than 20 million)
HAVE SOME LEVEL OF KIDNEY DISEASE*

* Is a gradual loss of kidney function over a period of time. It is permanent and non-reversible

* End Stage Renal Disease – ESRD- is total and permanent failure

* Acute kidney injury: Sudden temporary and sometime fatal kidney failure, in some circumstances can be reversed.

* Centers for Disease control

Common Lab values for Kidney function

* Serum Creatinine: measures waste products from muscle activity
  - Normal values are 0.6 to 1.20 for women
  - Normal values are 1.3 to 1.5 for men

* BUN: Blood urea nitrogen : waste product of protein (from diet)
  - Normal value is 7-20

Electrolyte values

Sodium: 135-145
Calcium: 2.2-2.6
Potassium: 3.5-5.0
Chloride: 95-105
Chronic Kidney Disease

- Stages of kidney Disease.
  1. Signs of mild kidney disease but normal or better GFR > 90%  
  2. Signs of mild kidney disease with reduced GFR 60 – 89 %  
  3. Signs of moderate chronic renal insufficiency with reduced GFR 40-59%  
  4. Severe chronic renal insufficiency with GFR of 15-39%  
  5. Total renal failure GFR below 15%, at this stage usually dialysis is started

Stages of Kidney Disease

Stage ONE
- Signs of mild kidney disease but normal or better GFR > 90%

Stage TWO
- Signs of mild kidney disease with reduced GFR 60 – 89 %

Stage THREE
- Signs of moderate chronic renal insufficiency with reduced GFR 40-59%

Stage FOUR
- Severe chronic renal insufficiency with GFR of 15-39%
Stages of Kidney Disease

- Stage FIVE: Total renal failure. GFR below 15%, at this stage usually dialysis is started.

Bob was diagnosed with CKD in 2005

Risk Factors
- Polycystic Kidney disease
- Family history
- Chronic Urinary retention with reflux
- Chronic UTI's

Blood Values

Nutrition Tip

- Review with staff how to read a food label
- Encourage the individual to start a food diary if possible, if not have staff work with them to write down all food and fluids per day
- Encourage to carry this across all setting, family home, residence, and day program
His diagnosis of Kidney Disease

Neurogenic Bladder
- This resulted in continued urine retention
- Chronic UTI’s
- Eventual need for straight catherizations minimum bid

Polycystic Kidney Disease
- Multiple kidney cysts bilaterally
- Pressure of cysts impairs the function of the kidney
- Includes a fear of needles, Frequent blood work

Symptoms of CKD

- Weakness
- Lethargy
- Widespread edema
- Shortness of breath
- Excessive urination
- Oliguria (to little output)
- Uremic Frost
- Heart arrhythmia
- Metabolic acidosis
- Metabolic alkalosis
- Uremia
- Anemia
- Bob did not present with any symptoms
- He continued to enjoy his day to day activity with the same amount of energy that he always had. This made it very difficult for staff, and Bob to understand that he had an illness. He couldn’t see it! This was a big obstacle in convincing him to modify his diet and want what he eats and drinks.
Risk Factors for CKD

- Uncontrolled hypertension
- Diabetes
- Excess use of painkillers such as ibuprofen, naproxen, acetaminophen to name a few
- Smoking
- Obesity
- Chronic UTIs (causing scarring from infections)
- Hx of kidney stones

- Come contrast mediums
- Family History of CKD who required dialysis or transplant
- Congenital malformation of the lower urinary tract which can cause urinary reflux

Medications and CKD

Some examples of medications that are secreted by the kidney are:
- Antibiotics (Penicillin, gentamycin, tetracycline)
- Diuretics (thiazide)
- NSAIDS (Indocin, they also decrease blood flow to the kidneys)
- Narcotics (Morphine)
- Methotrexate
- Dopamine
- Cimetidine
- Atenolol
- Chlorpromazine
Medications that can have an impact on Kidney Health

- Lithium
- OTC medications:
  - TUMS (calcium levels could be affected)
  - PPI inhibitors (Alka Seltzer can cause electrolyte imbalance)
  - Contrast Dyes (can accelerate kidney failure)

Lithium Use and effect on Kidneys

History: Has been used since the 1870's initially for depression, gout, neutropenia, and for cluster headache prophylaxis but was then banned from 1940 to 1970 due to its side effects and increased incidents of "lithium poisoning/toxicity".

Today Lithium is mainly used for bipolar disorder. It has a very narrow therapeutic index and is completely absorbed in the GI tract.

Lithium use and CKD

- The inability of the kidneys to react to ADH.
- Resulting in the inability to regulate the fluid balance
- This can result in edema
- Polyuria (too much urine output)
- Polydipsia (increase thirst)
- Signs of modest dehydration
  - Orthostatic hypotension
  - Tachycardia
  - Abnormal sodium levels
  - Change in mental status

Most common problem associated with lithium use is the development of nephrogenic diabetes insipidus.
Lithium Use and CKD

**Recommendations for individuals who continue to take Lithium**

- Check Lithium levels frequently to avoid toxic frequent toxic blood levels
- Therapeutic blood level: (0.6 to 1.2)
- Check Creatinine levels yearly

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Treatment Options

**When the diagnosis of chronic kidney disease is made:**

- Consult with a nephrologist
- Meet with a renal dietician who can make recommendations for healthy kidney diet.
  - *This is especially helpful for ID/DD individual who has to adjust to diet restriction and might need additional time before it is essential.*
- Lab work / monitoring of kidney function

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**Nutrition tip**

When the diagnosis is made, start getting staff and the individual used to substituting food items that are their favorite. One at a time while you have the time to do it. The easiest one to challenge first is Sodium.

**Remove the salt shaker and replace it with herb supplements.**

***Remember salt substitutes are high in potassium and should never be used for CKD.***
Options

Transplant consideration
Care and comfort
Preparation for dialysis

Dialysis

What is it?

Dialysis is a life-sustaining process that cleans waste products from the blood, removes extra fluids, and controls the body’s chemistry when a person’s kidneys fail.

As we have learned earlier, there are many other jobs that the kidneys do that dialysis does not provide.

Bob was initially monitored by a local nephrologist. He started going to a nephrology clinic at one of the Boston Hospitals when his GFR indicated he was between stage 3 and stage 4; this time he was referred to the Transplant clinic. He also discussed with his doctors and family treatment options and decided to do hemodialysis.
Bob’s treatment options

Dialysis
- Tessio Tunnelled Cath
- Fistula
- Desensitize to needles
- Restrictive diet

Transplant
- Vigorous testing
- Living vs. cadaver donor
- Lot of individual and staff training/impaired immune system after transplant
- Insertion of Suprapubic tube to avoid I. cath

Care and comfort
- Respect health kidney diet
- Make him comfortable as kidneys fail, bring in palliative care and then hospice.

Dialysis and Transplant is not for everyone
- Keep in mind the impact of treatment long term for your individual. Take into consideration the impact of his/her quality of life.

Points to take into account:
- Time commitment,
- Food restrictions,
- the ability to stay still for a period of time,
- increase doctor’s visits.

**REMEMBER ONCE DIALYSIS IS STARTED, IT IS A LIFE SUSTAINING TREATMENT AND CONSULTATION SHOULD BE DONE WITH LEGAL DEPARTMENT IF TERMINATION OF DIALYSIS IS EVER TO BE CONSIDERED**

Peritoneal Dialysis
Peritoneal Dialysis (PD) is a gentle, no-needle treatment done at home, either by the patient alone or with a care partner if desired. PD is a treatment in which waste products and extra fluid are removed in a different way than hemodialysis. The blood does not leave the body, so no needles are involved. Instead, a tube called a PD catheter is placed in the belly, and the dialysis process happens by sterile fluid flowing through the lining of the belly (called the peritoneum). Blood is cleaned inside the body.

* Taken from https://www.ultracare-dialysis.com/treating-kidney-failure/about-dialysis/home-dialysis/peritoneal-dialysis.aspx#sthash.PQ9q8NLQ.dpuf*
Hemodialysis

- Can be done
- Home
- OR
- Dialysis Center

A dialysis machine and a special filter called an artificial kidney, or a dialyzer, are used to clean your blood.

Getting Ready for Dialysis

- GFR between 15 to 39% indicates stage 4
- Discussion of options with nephrologist and the individual, guardian, HCP, and staff.
- If hemodialysis is being considered, consult with nephrology clinic regarding insertion of fistula for long term treatment.

Establishing an Access.

Depending on the type of dialysis you and your doctor choose, the first step is to create a safe way to routinely access your blood to perform the dialysis.

- Tunneled Catheter
- Fistula
Nutrition Tip

The Renal Diet

Dietary restriction is now a must. When on dialysis, electrolyte balance is extremely important.

- Sodium Restriction (per your Renal Dietician) would be around 1500mg. (Normal Sodium consumption is approx. 2300mg, about 1 tsp of salt)
- When training staff use visual tools such as an actual teaspoon filled with salt.
- Measuring liquids using kitchen Dixie cups for 5 oz. or bathroom Dixie cups for 3 oz.
- Deck of cards is the size of 3 oz. of meat.

Fistula's

A fistula is the best choice for hemodialysis. It is preferred because it lasts the longest and has fewer problems like clotting and infection. A fistula should be placed several months before you will need to start dialysis. This allows the fistula enough time to "mature.”

AV Graft

An arteriovenous (AV) graft is created by connecting a vein to an artery using a soft plastic tube. After the graft has healed, hemodialysis is performed by placing two needles, one in the arterial side and one in the venous side of the graft. The graft allows for increased blood flow. Grafts tend to need attention and upkeep. Taking good care of your access may limit problems.
Considerations before vein mapping is done

- Make note on the consult sheet which hand is dominant for the individual.
- Inform the individual that it is non-invasive procedure.
- Warn them that there will be a lubricant used that can be quite cold.
- Done on both arms even if there is a preference of one over the other.

The individual's responsibility

- Do not allow anyone to draw blood or give you an injection in the arm with the fistula.
- Never let anyone take your blood pressure in the fistula arm.
- Obtain a medical bracelet and wear it to inform staff/EMS etc. about your fistula and chronic kidney disease.

After fistula surgery

- Keep it dry; once it is healed you can take showers.
- Watch for bleeding.
- Call the doctor if you notice any of the following:
  - Redness, pain or swelling.
  - Shortness of breath noted.
  - Temperature higher than 99 orally.
Feel the Thrill ............

* Once a fistula has matured, you can feel the blood passing through it, we call this a thrill.

* I like to compare it to a kitten “purring” in your lap, you not only hear the kitten but you can feel the vibration as well. At any time you CANNOT feel the thrill Notify the MD for potential issue.

Nutrition Tip

What’s the best way to reduce potassium in potatoes?

* Potatoes must be cut into small pieces.
* Boiled at least 10 minutes in a large pot of water.
* Potassium is reduced by at least half the original amount.
* These potatoes will still contain 100 to 200 milligrams of potassium in a 1/2-cup serving so people on a low-potassium diet are encouraged to pay attention to portion control.

Dialysis

* Dialysis is the primary procedure used to treat patients in the later stages of chronic kidney disease. It is important to follow your health care team’s recommendations regarding treatment. Your overall health depends on treating the lack of renal and endocrine functions of your kidneys.

  Medications might be prescribed by your kidney specialist depending on Blood work, each person is unique on the specific hormones that might need to be replaced.
What to expect.......  
- Many things to consider when first going to dialysis with an individual.
- FEAR
- LOSS
- BORDOM
- COMPLIANCE
- HUNGER

Have the individual pack a bag.  
DVD PLAYER
SNACK
IPOD/IPAD WITH EAR PLUGS!
BLANKET
FAVORITE ITEM FOR COMFORT
SOMETIMES THERE ARE TV'S AVAILABLE
BRING GLASSES IF NEEDED

Starting Dialysis with a Tunneled Catheter
Starting Hemodialysis with a fistula

- Two needles will be inserted into the fistula at the beginning of each dialysis. This is called a "button hole". These needles are connected to soft plastic tubes that go to the machine. Your blood travels from your arm to the machine and back again. The machine will clean the blood and then return it to your body.

DIALYSIS MEDICATIONS

- Without going into specific medications as each person is different, some of the types of medications you might see are:
  - BLOOD PRESSURE MEDICATIONS
  - CHOLESTEROL MEDICATIONS
  - MEDS TO TREAT ANEMIA
  - MEDS FOR CALCIUM AND PHOSPHORUS TRANSPORT
  - DIABETES
  - DEPRESSION
Transplant Eligibility

• 1. You must be in relatively good health, free of symptoms of major cardiovascular disease.
• 2. Willing to undergo many procedures and tests
• 3. Potential need to visit with a therapist as all of this might be a little overwhelming.

What to do to prepare for Transplant

• Staff training
• Cleaning
• Exercise
• Start a morning routine for taking your temperature

Getting “Listed”

The criteria for getting on the “List” has changed since Bob applied. Today you can start acquiring days as soon as you start dialysis. In 2005 Bob had to have final approval before he started to build up listed days.

UNOS: United Network of Organ Sharing is a centralized computer network that links organ procurement organizations and transplant centers.

• As of late 2014, a new system for kidney matching.
Many factors now weigh in to matching:
- Age, blood type, medical urgency, geographical distance between organ and recipient are some.
The difference is that now the kidney is being scored as well for the best match resulting in a decrease in failed transplants.
Transplant Preparation

- Maintain healthy weight
- Routine dental visits, make sure you take care of any cavities etc.
- Dermatology consult : make sure you have no abnormal moles etc.,
- Protect you skin from sunlight , use sunscreen at all times, wear hat
- Maintain healthy BP
- Exercise
- For women, regular cancer screening, pap smear and mammogram q 2 years
- Make sure all your vaccinations are up to date

Bob’s Prep List

**Cardiology**
- Echocardiogram
- Frequent Blood Pressure checks

**Respiratory**
- See a specialist for a “Cloud” on CXR
- Monitored for 6 months, if + growth would not be listed

**Urological**
- Neurogenic bladder
- Prepare for Supra Puboc tube insertion at time of transplant to reduce reflux of urine from bladder into new kidney

Nutrition Tip

The focus now changes from dietary restrictions to dietary preparation.

Food borne illness can be deadly to a transplant patient.

Serve Safe guidelines are very helpful in explaining how to prepare foods and keeping a kitchen safe.

*This training should be done prior to having the transplant*
The Phone Call

- How to prepare for it.... The wait is very long so you need to prepare way ahead of time.
- Update all medical information, med lists, phone numbers and contact people every time there is a change.
- Designate who will be transporting the individual to the hospital. (Never leave the van on empty)
- Have a bag pre-packed for the hospital
  - * NOTHING BY MOUTH FROM THIS POINT ON.............*

The Phone Call

- Make a checklist:
  - List of phone numbers to notify immediately
    - Family members
  - Key staff (which should include a call to start the telephone notification tree)
  - Copy of insurance cards, bring the hospital card
  - Copy of health care proxy or guardianship papers
  - Updated Medication List

Arriving at the Hospital

- First Stop will be the Emergency Room. Here you will have labs drawn to confirm that you are still a match for the donated kidney and a general medical exam to confirm you have remained in good health and free from infection.
- Second Stop: Transplant clinic floor. Here it will be determined if you need dialysis first before surgery.
- Third Stop: Operating Room, surgery usually is about 3-4 hours if there are no complications.
- Four Stop: Recovery Room
- Intensive Care Unit for 24 hours
- Medical Unit for close monitoring for 3-5 days
Bob Got the call in September 2010

* Bob got the call around 12 noon, he was picked up by staff from his day program and met his family at the hospital. He had one session of dialysis prior to going up to the transplant floor. His blood work came back a match and the procedure was done, he was in the OR for about 5 hours. (also had the supra pubic tube inserted by his urologist.
* Post operatively, Bob did well, but……..
* **THE KIDNEY REJECTED HIS BODY……….** And it had to be removed as it stopped functioning. He was placed back on the list and restarted dialysis.

Bob got the call again one month later
October 25, 2010

* This time the procedure went well. He was in the OR for approximately 4 hours. He was discharged to an acute rehab facility for 2 weeks to help gain his strength back. We used this time to review trainings with staff.
* 6 Weeks after having the transplant he returned to his group home.

Food Safety / Post Transplant

* Food borne illness can occur when there is contamination of a food at any point during the preparation process. It is important to know that some foods choices are more "risky" than others.
  * E. coli
  * Listeria
  * Salmonella
At Risk Foods

- Raw or undercooked eggs
- Raw or undercooked meats, poultry, and fish
- Unpasteurized Milk and Cheeses
- Sliced deli meats, cheeses and deli salads

Nutrition Tip

Heating up deli meats can make them safe to eat.

Example: Grilled Ham and Cheese Sandwich
Any Panini sandwich
When Ordering meals from the Deli Ask that a new package be opened
Do NOT use pre-sliced meat/cheeses
Request that the staff at the grocery store change their gloves before serving you.

Food Handling

NO COUNTER TOP THAWING
AVID MARINATING MEATS AT ROOM TEMPERATURE
NO TASTING WITH STIRRING SPOON
LEFT OVER/DOGGIE BAGS MUST BE REFRIGERATED WITHIN 2 HOURS OF BEING COOKED
Food Safety Tips

[Image of a can opener and a handheld can opener]

[Image of a bowl of fruits]

[Image of cutting boards]

[Additional text here]
Post Transplant Risks

- Rejection
- Infection
- Surgical Infection
Rejection

* Your body now knows that there is something foreign and it will try and attack it, medication must be prescribed to prevent your body from attacking the “foreign” kidney.
* Rejection can take place at any time.

Medications

* Used to control rejection of the kidney by suppressing or reducing the immune system. Thus the name immunosuppressant

**Must be taken for the rest of their lifetime.**

If a dose is missed contact your nephrology/transplant on call for directions, do not double up

Medications

Examples:

Calcineurin Inhibitors: Bob was on Prograf
Corticosteroids: Bob was on Solu Medrol / Prednisone
Anti-Metabolites: Bob was on CellCept
mTor Inhibitors:
Other immunosuppressant.

The regime is very individualized to each of the Transplant clinics as well as to each individual
Surgical Infection

* As with any major surgery the risk of infection of the surgical site etc. is there and needs to be monitored.
* Bob was discharged to a acute rehab facility where he could be monitored by skilled personnel.

Prevention of Post Transplant Infection

* Routine Dental Check ups
  * Every 6 months
  * Ask if you need Dental Pre med
* Dermatology follow up:
  * Increase risk for skin cancer
  * Use Sun Screen
  * Cover up from the sun
* Avoid exposure to germs
* Good handwashing frequently
* Keep bottle of hand sanitizer with you
* During Flu season wear mask when around large crowds or if staff have colds
* Keep your living environment clean

The Kidney Book

Chapter One: Introduction to kidney disease
Chapter Two: Treatment options and getting ready for end stage kidney disease
Chapter Three: Transplant
Questions

• The National Kidney Foundation
  www.Kidney.org
• The National Institute Digestive and Diabetes and Kidney Diseases
  http://www.niddk.nih.gov
• DaVita
  www.davita.com
• The Centers for Disease Control and Prevention
  http://www.cdc.gov/
• Other reference websites
  www.niddk.nih.gov
  www.tuftsmedicalcenter.org/transplant
  www.fresnius.com

Resources

FOOD SAFETY
• http://www.fda.gov/downloads/Food/FoodborneIllnessContaminants/UCM312793.pdf
• WWW.FSIS.USDA.GOV
• WWW.KIDNEY.ORG/ATOZ/CONTENT/FOODSAFETY
• WWW.SERVESAFE.COM

TRANSPLANT
• WWW.UNOS.ORG
• WWW.TUFTSMEDECALCENTER.ORG/TRANSPLANT
Thank you!

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Hello Kriby