End Stage Renal Disease Care

Patient and Family Education
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Kidney Function and Risk Factors

Kidneys

The kidneys are located in the abdominal cavity on either side of the spine at the level of the lumbar spine.

Functions of the Kidneys:

1. Remove wastes
2. Remove excess fluid
3. Secrete erythropoietin
4. Regulate bone metabolism
5. Regulate blood pressure
6. Regulate acid-base balance
7. Regulate electrolyte balance

When kidneys fail you will develop what is called CKD (Chronic Kidney Disease) and if this is not controlled enough, it will lead to end stage renal disease.

Etiology & High Risk Group for ESRD

- Diabetes mellitus
- High blood pressure (hypertension)
- Glomerulonephritis (nephritis)
- Autonomic dominant polycystic kidney disease
- Urinary tract obstruction
- Reflux nephropathy
- Drug and medication induced kidney problems
- Congenital anomalies

Symptoms of Chronic Renal Failure (Uremia)

- Loss of appetite
- Weakness, insomnia
- Hypertension
- Bone disease
- Edema / Headache
- Itching
- Nausea / vomiting
- Shortness of breath
- Frequent urination, especially at night
- The patient may develop anemia or high blood pressure and fragility of the bones as a result of a lack of vitamin (d)
- Weight loss

Complications of ESRD

1. Fluid overload
2. High blood pressure
3. High potassium
4. Anemia
5. Bone disease
6. Skin changes
7. Hyperparathyroidism
8. Metabolic acidosis
9. Low calcium

Caring for ESRD Patients in Pre-Dialysis Stage

- Patients with ESRD and eGFR less than 25-20 ml/min will be referred to pre-dialysis clinic (LCC).
- In this clinic, patients will be assessed by a multidisciplinary team and a health care plan will be initiated.
- Care plan will depend on patient self-monitoring approaches and family support.
- Care plan facilitates efficient entry into a dialysis program or pre-emptive transplant.
- Care plan will help in treating the risk factors to delay or slow disease progression.

The Care plan will treat coexisting conditions including:

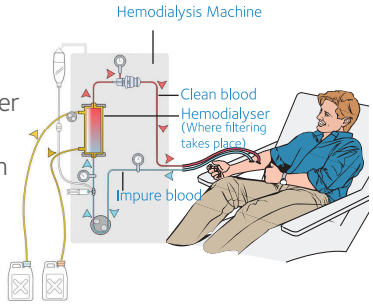
- CVD
- DM
- HTN
- Dyslipidemia.
- Complications of renal failure.
- Other comorbidities disease.
- Care plan enables patients to be assessed by a dietitian and receive instructions about an appropriate diet for chronic kidney disease pre-dialysis and when to start dialysis.
- Care plan will support patients psychosocially.
- Care plan will ensure that drug cost is not a barrier to patient adherence through the social worker and pharmacist.

Assessment and Management

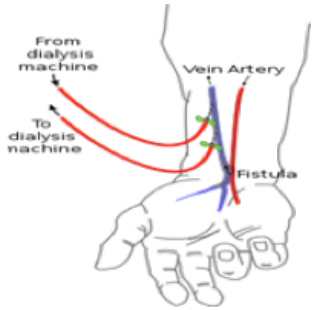
Assessment	Recommended Goals
eGFR Glomerular filtration rate is the best test to measure your level of kidney function and determine your kidney disease stage	≥ 60 ml/min/1.73m2
Proteinuria Proteinuria control will help in delaying kidney disease progression	Albuminuria less than 30 mg/day Albumin Creatinine Ratio (ACR) ≤ 3.4 mg/mmol
Blood pressure Blood pressure control reduces the risk of stroke, heart disease and kidney disease	Less than 130/80 mmHg
LDL/HDL Bad cholesterol / good cholesterol	Less than 100 / 40 mg/dl
Bone health Too much phosphorus in the blood can increase PTH and lead to bone loss	PTH: 150-300
Hemoglobin Is a test to determine if you have anemia	10 – 12 g/dl
Vaccination People with diabetes and kidney disease are more likely to be hospitalized with flu complications and are at high risk for developing pneumonia	Pneumonia: once/5 yrs. Flu: once/year
For Diabetic patients	
Fasting blood sugar/2 hrs. Post prandial	200 mg/120 mg
A1c Long term diabetic control number	Less than 7%
Eyes Diabetes related blindness can be prevented	Continue having yearly eye exams
Feet Diabetes affects the circulation in legs and the feet	Get your feet examined with every clinic visit

Your doctor may recommend different goals for you

Hemodialysis Treatment



- Renal replacement therapy depends on using a dialyzer and machines. Blood is pumped via the dialyzer to remove the extra water and waste products and then blood is pumped back into your body. About a cup of blood is outside of your body during this procedure.
- Blood flow to the machine comes from veins in your arm or leg and the surgical procedure is done to change veins into fistula or graft (blood access). Needles are inserted during the dialysis to take blood to the machine and dialyzer.



- If you have problems with your access, or if you need to start dialysis right away, a temporal tube may be put into a vein near your chest or neck for blood access.
- Hemodialysis takes place three times a week and each treatment lasts 3 1/2 to 4 hours.
- If you receive your treatment in the Dialysis Center, nurses and technicians will do your dialysis, but if you will have your treatment at home, you and an assistant will need to learn the procedure.
- You will have days off dialysis when you can do other activities.

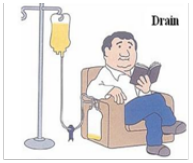
- You will be able to see and talk to the dialysis team on a regular basis, including the nurse, doctor, dietician, social worker, pharmacist, vascular coordinator and educator.
- You will need to follow a strict diet.
- Some patients experience headaches, cramps or nausea during treatment.
- You will need to check your blood access every day for signs of infection or clotting.

Peritoneal Dialysis Treatment

- A soft tube called a catheter is used to fill your abdomen with a cleansing liquid called dialysis solution
- The walls of your abdominal cavity are lined with a membrane called the peritoneum, which allows waste products and extra fluid to pass from your blood into the dialysis solution
- The solution contains a sugar called dextrose that will pull wastes and extra fluid into the abdominal cavity
- These wastes and fluid then leave your body when the dialysis solution is drained. The used solution, containing wastes and extra fluid, is then thrown away
- The process of draining and filling is called an exchange and takes about 30 to 40 minutes
- The period the dialysis solution is in your abdomen is called the dwell time

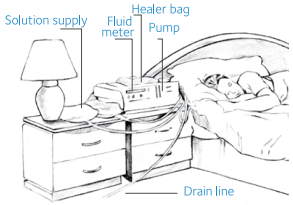
Types of Peritoneal Dialysis

- A typical schedule calls for four exchanges a day, each with a dwell time of 4 to 6 hours. Different types of PD have different schedules of daily exchanges (CAPD).



- APD: most exchanges are done at night while you sleep. A machine called a 'Cycler' drains and fills your peritoneum for you. Most patients stay on the cycler for 8 or 9 hours each night.

- PD Plus: may need to do a combination of CAPD & APD, using cycler at night and day exchange.



- You are free to do all your usual activities whilst your dialysis is taking place.

- You are in control of your treatment time but you still need to see your doctor and nurse during a clinic visit once every 4 – 6 weeks.

- Your treatments are done on daily basis.

- Your exchange area needs to be kept very clean.

- You should wash your hands and wear a mask for each exchange.

- Your catheter and skin should be cleaned daily.

- The nurses in your clinic will teach you how to do your treatment, usually 1-2 weeks is needed for each patient to learn the procedure and if needed, a family member will also learn how to do your dialysis.

Home Hemodialysis Treatment

- Your home environment will be evaluated for home treatment (peritoneal or hemodialysis) by the home dialysis team to assess the safety and suitability of your place for such treatment.

- You will need a clean place for supplies.

- You will be responsible of collecting your supply from the hospital store and transportation.

- You will receive a one month supply each month. If you go home with a peritoneal dialysis cycler or a hemodialysis machine, you may need to have electrical checks.

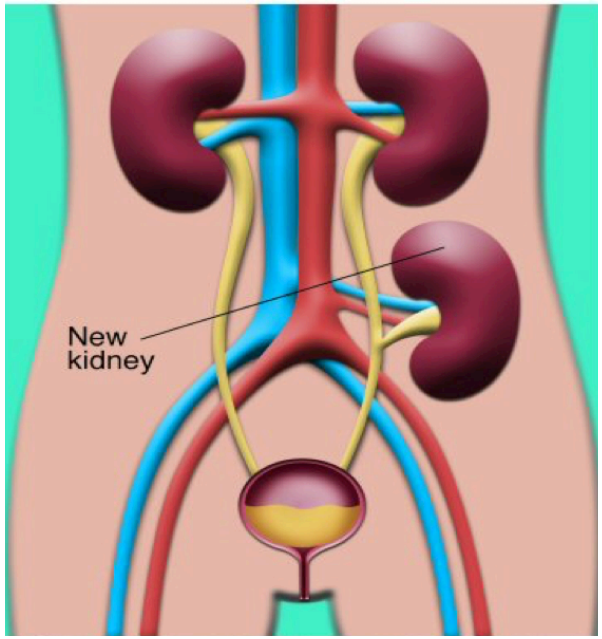
- Peritoneal dialysis patients will have a regular daily home visit by a dialysis nurse to assist in dialysis (once – twice a day) but all patients are required to visit the PD clinic once a month or more frequently as required to evaluate the condition clinically and for a blood laboratory test.

- Home hemodialysis patients will be visited by a nephrologist once a month then as required. Each patient will receive at least four hemodialysis sessions per week, each for 3½ - 4 hours with direct supervision of a dialysis nurse.

Kidney Transplantation

Kidney Transplantation is a treatment not a cure and a successful transplant can return you to a good health but you will still need to take medicine and see a doctor regularly.

- Kidney transplant places a healthy kidney from another person into your body.
- It can come from living or non-living donors.
- You may need to wait for a kidney donor that should matched for your body.
- Not every patient is a candidate for transplant, your doctor will complete a medical evaluation.
- Patients need to be hospitalized for 1-2 weeks after the surgery.
- You must sign consent for a transplant.



Nutrition and Fluid Control

Dietary and fluid control is essential to help in reducing the unfavorable symptoms and hopefully slow disease progression. It also helps to maximize the ability of kidneys to filter and excrete toxins in the blood. You need to have adequate nutrition and maintain good overall health.

The following table shows the requirement from nutrients for renal patients:

Treatment	ESRD/ Predialysis	Hemodialysis	Peritoneal Dialysis
Protein	0.6-1 (gm/kg)IBW	1.2	1.2-1.3
Energy	30-35(Kcal/kg)IBW	35(Kcal/kg)IBW	30-35(Kcal/kg)IBW
Phosphorus	800-1200(mg/kg)	800-1200(mg/kg)	800-1200 (mg/kg)
Sodom	2000-3000(mg/ day)IBW	2000-3000 (mg/ day)IBW	2000-4000 (mg/ day)IBW
Potassium	Variable Depend on patient condition	2000-3000 mg/ day Or 40 mg/kg from IDW/day	3000-4000 mg/ day
Calcium	1200-1600 (mg/ day)IBW	Depend on serum level	Depend on serum level
Fluid	Typically unrestricted	750 ml-1000 ml/ day + urine out put	2000 ml/day + urine out put
Vitamin & Mineral supplements vitamin C, folate, vitamin B6, Ca++, vitamin D, iron, zinc & selenium	Supplements	Supplements	Supplements

Depending on the lab result, phosphoresce and potassium are elevated to avoid high phosphoresce and high potassium food – *THIS NEEDS CLARIFICATION from client*

Diet Type	Food
High phosphorus food	Cheddar cheese (not cheddar milk?) and milk products, liver, chocolates, nuts, ice cream, legumes, cola, canned sardines
High potassium food	Tomato, tomato ketchup, soy sauce, potato, chilli peppers, dark green leafed vegetables, oranges, bananas, dates, apricots, melon

Also, a low protein diet should be followed and arranged by a dietitian (for patients with chronic kidney disease, pre- dialysis).

If a patient needs a high protein diet, a dietitian will advise them to increase the intake of meat, chicken, fish, and egg white.

How to Take Care of Yourself

1. Follow your diet to control waste and water levels
2. Take your medicines on time
3. Make sure you are getting enough treatment
4. Learn how to recognize problems and who to call for help
5. Stay as active as possible via exercising
6. Spend time with you family and friends
7. No matter which form of therapy you choose, you will have a team of healthcare professionals to meet your needs
8. Be sure to ask your doctor and nurses any questions

Always remember that dialysis should be part of your life, not your whole life

Get your family support