# **Kidney Decisions Aid**

A GUIDE FOR PEOPLE WHO HAVE, OR KNOW SOMEONE, WITH CHRONIC KIDNEY DISEASE, AND TO AID IN THE DECISION ABOUT WHICH TREATMENT BEST FITS INTO YOUR LIFE





#### What is CKD

- Chronic kidney disease (CKD) is a long term health issue where the kidneys develop trouble doing many tasks they are responsible for
- Some individuals develop mild issues that do not worsen, while others lose more and more kidney function with time that are irreversible



Chronic Kidney Disease (CKD)

## What Do The Kidneys Do?

- The major job of the kidneys it to filter wastes and excess water out of your blood to make urine
- When kidneys are damaged they lose their ability to act as a filter and as a result, harmful toxins and excess fluid can build up in the body
- Jobs of the kidneys:
  - Clear waste from the blood
  - Remove extra fluid and keep electrolytes (sodium/potassium) in balance
  - Produce hormones to help control blood pressure, keep bones healthy, and produce red blood cells

### The Kidney





### Causes of CKD

- Kidney damage in most cases is caused by other health issues that have damaged our kidneys progressively:
  - o Uncontrolled high blood pressure (hypertension)
  - Diabetes

#### Other less common causes:

- o Vascular disease
- o Lupus
- Immunological related disorders
- Genetics
- Long term use of painkillers (Aleve, Motrin, Ibuprofen) and illegal drugs
- Heart disease
- Obstruction of the bladder or ureters

#### Stages and eGFR

- The Estimated Glomerular Filtration Rate (eGFR) is a blood test which checks how well the kidneys work to filter out waste from your blood and to determine the stage
- Typically the kidneys filter 100 mL (a little less than ½ a cup) of blood every minute in young healthy adults
- The eGFR is an estimate how much blood your kidneys can filter and factors in age, sex, race, and creatinine level

Stage	Description	GFR Level 90 mL/min or more 90 mL/min or more	
Normal Function	Healthy kidneys		
Stage 1	Kidney damage with normal GFR		
Stage 2	Mild decrease in GFR	60 to 89 mL/min	
Stage 3	Moderate decrease in GFR	30 to 59 mL/min	
Stage 4	Severe decrease in GFR	15 to 29 mL/min	
Stage 5 Kidney failure		Less than 15 mL/min or on dialysis	

# Dialysis

- Dialysis is a treatment process of removing waste (diffusion) and unwanted water (ultrafiltration) from the blood
- This is done by either using a machine to pump blood outside the body and run it through a filter and then return the clean blood back to you (hemodialysis) or by placing a specific peritoneal dialysis solution in your abdomen to let the abdominal blood vessels filter the waste products into the dialysis solution (peritoneal dialysis)

## Dialysis



waste products cross the semipermeable membranes into the peritoneal space



Peritoneal Dialysis

#### Hemodialysis (fistula access)



### **Peritoneal Dialysis**

- This type of dialysis uses the peritoneal membrane in your abdomen to filter and remove waste products and excess fluid from your blood
- This treatment can be performed by either you or a helper at home after receiving thorough training from experienced dialysis nurses. The supplies are sent to your home and there are no needles or direct blood contact
- Peritoneal dialysis allows individuals to be flexible with their schedules and traveling and there are on call nurses available 24/7

### Automated Peritoneal Dialysis (APD)

- This type of dialysis is done overnight by a nighttime cycler machine while you are sleeping (8-10 hrs)
- You are permitted to sleep in any position as tubing is long and pliable
- Some people may need to do one more simple exchange of fluid during the daytime





## Continuous Ambulatory Dialysis (CAPD)

- This treatment is done intermittently during the day without a machine
- The process lasts about a half hour and is usually done 4-6 times a day (morning, noon, evening, and bedtime)
- No machine needed, no electricity needed, and no plumbing needed!
  - **Supplies Delivered to Your Home**:
  - Dialysis solution
  - Masks
  - Hand sanitizer
  - IV pole
  - Scale to weigh yourself
  - Blood pressure cuff
  - Additional supplies specific to your needs will be discussed with your doctor



## Peritoneal Dialysis Access

- For this type of treatment, you will need access to the peritoneal space in the abdomen
- A soft flexible tube called a peritoneal dialysis catheter will be placed in the abdomen usually below the beltline on the side of the umbilicus (belly-button)
- It allows sterile dialysis fluid to flow into and out of the abdomen which removes wastes/toxins from the blood
- It is typically a one day surgery to have the catheter placed. The area is covered by a small bandage and the catheter is worn under the clothes when not in use for dialysis
- There is a risk for infection, therefore proper training and education are provided to minimize the risk. You can swim, shower and be sexually active



### Hemodialysis

- Another treatment option that can replace some of the work done by kidneys when they are no longer working effectively
- During this process, your blood flows through a filter called a dialyzer, which removes waste products and excess fluid from your blood
- The filtered blood is then returned to your body
- **In-Center Hemodialysis**: performed in a scheduled time/day clinic 3 days a week for ~4hrs.
- Home Hemodialysis: performed at home by you and a partner with treatments that are shorter and more gentle done 5-6 days a week depending on your prescription or machine you are using. This provides flexibility in schedule and travel and on-call nurses are available each day when you would be performing treatments

### Hemodialysis



#### **In-Center Hemodialysis**

#### Home Hemodialysis



#### Hemodialysis Access

- Hemodialysis requires vascular (blood) access and there are three types: fistula, graft, and catheter
- **Fistula**: the preferred choice and done by connecting an artery to a vein, which provides greater blood flow for the dialysis treatment. This is performed by a surgeon and in most cases does not require you to stay overnight in a hospital. It takes 6-8 weeks for the fistula to be ready to use and when it is ready, 2 needles are placed near the connection in order to get the blood to the dialyzer.

#### Hemodialysis Access Cont.

- **Graft**: The 2<sup>nd</sup> best way to get access to the bloodstream and consists of a flexible tube, usually made of plastic that connects an artery to a vein. This is done by a surgeon and only when he/she thinks that the area will never mature to the point where it can be used. The artificial material of the graft is then available for the two needles to be placed.
- **Central Vein Catheter**: the 3<sup>rd</sup> option to access the bloodstream and only used when the person needs to start dialysis immediately and is only temporary. The catheter is placed by an interventional radiologist into a large vein in your neck and is ready for use immediately. Once the catheter is in there are no needles.
  - Since the catheter goes from outside the body, where there are many germs, directly into the bloodstream, there is a high risk of infection. These infections may be treated with antibiotics, but sometimes the infections can be very severe and cause heart valve infections or an abscess in your spine that may require surgery to treat. Generally, patients get a fistula or a graft while using a catheter so that the catheter doesn't have to be in for long. For people who must have the catheter it is necessary to keep the catheter area dry and clean.



# **Comparing Dialysis Treatments**

	Hemodialysis		Peritoneal Dialysis	
	IN CENTER	HOME	Continuous Ambulatory (CAPD)	AUTOMATED (APD)
PLACE OF DIALYSIS CARE	Dialysis facility	HOME	Home, work, any clean place	Home, work, any clean place
HOW DIALYSIS WORKS	Attaching to a machine by the arm via fistula/graft/catheter	Attaching to a machine by the arm	Attaching to a bag with fluid by the belly	Attaching to a machine by the belly
# OF HOURS PER SESSION	Approx 4	Approx 4	Approx 1/2 hour	10-Aug
# OF SEEIONS IN A WEEK	3 days a week	5-6 days a week	Approx 28 (4 times daily/7 days a week)	7-Jun
# OF SESSIONS IN A DAY	1	1	4	1
WHO PERFORMS DIALYSIS	Qualified staff at the facility	The patient is trained. Family/friend nearby for support	The patient is trained	The patient is trained
EQUIPMENT NEEDED	A machine set uo next to reclining chair	A machine & dialysate fluid	Dialysate bags, gloves, masks	A mchine, dialysate fluid, gloves, masks
TYPE OF ACCESS NEEDED	Fistula, graft, or catheter	Fistula, graft, or catheter	Peritoneal dialysis catheter in the belly	Peritoneal dialysis catheter in the belly

### Transplant

- A kidney transplant is a surgery to replace a diseased kidney with a healthy one from a donor
- The transplanted kidney ca be from a living person from your family, a living person you are not related to, or from a person who has died
- The surgical procedure to remove a kidney from a living donor is called a nephrectomy
- The operation is done by surgeons and the transplanted kidney is placed near your bladder and the damaged kidney is not removed
- Not all people are qualified for a transplant!
- To be considered you will need to be medically cleared by a transplant team which involves tests such as ultrasounds, EKG, blood work, physical and psychological exams, etc.

#### Transplant Cont.

- If you are a suitable candidate for a transplant, you will be registered with UNOS, the United Network for Organ Sharing, which determines the best person to receive a kidney as donor kidneys become available
- A living donor is ideal
- If no donor is available then you are placed on the list, which may take years depending on:
  - The number of kidneys available
  - Your general health
  - Your blood type
  - How long you have been on the waiting list



#### Resources

- <u>Metabolism Associates, P.C.</u>: Physicians and Physician Assistants who specialize in kidney disease. The group looks at issues that relate to kidney metabolism that can affect your health. This may include: high blood pressure, proteinuria, electrolyte abnormalities, kidney failure, anemia, and bone problems
  - o 136 Sherman Ave, Suite #405, New Haven, CT 06511
  - Phone: 203-787-0117, press 0
  - Fax: 203-777-3559
  - o <u>www.metabolismassociates.com</u>

#### National Kidney Foundation

- o 1-800-622-9010
- o <u>www.kidney.org</u>

#### <u>United Network for Organ Sharing (UNOS)</u>

- o 904-330-8500
- o <u>www.unos.org</u>

#### • <u>Avantus Renal Therapy: Dialysis</u> facilities affiliated with the Renal Research Institute and Yale New Haven Hospital, located in various cities throughout the U.S.

- o <u>www.avantusrenaltherapy.com</u>
- o North Haven Dialysis Center, 266 State Street, North Haven, CT 06473 203-230-1946
- o Shoreline Dialysis Center, 34 East Industrial Road, Branford, CT 06405 1-888-662-8268
- St Raphael Dialysis Center, 137 Water Street, New Haven, CT 06511 203-772-2421
- o New Haven Home Dialysis, 136 Sherman Ave, New Haven, CT 06511 203-773-0853