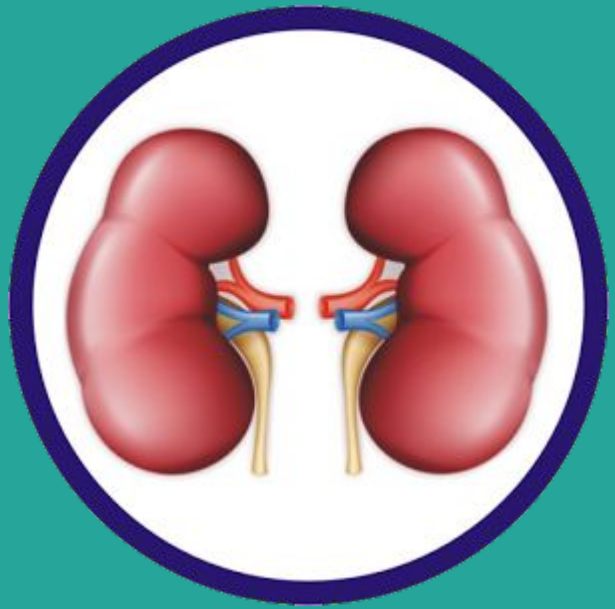
# NEPHROLOGY

By

Akila.C



# What is Nephrology ?

Nephrology is a branch of medicine that focuses on the physiology and diseases of the kidneys
It involves the study of kidney function, the diagnosis and treatment of kidney diseases, and the management of conditions that affect kidney health, such as chronic kidney disease, kidney infections, and kidney failure

**Nephrologist:**
Nephrologists are doctors who specialize in this field. They work to diagnose and treat kidney-related conditions and help manage the overall health of patients with kidney issues

## Kidney means ?

*The kidney is a vital organ in the human body responsible for filtering waste products from the blood and excreting them in the form of urine.*

*Each person typically has two kidneys, located on either side of the spine, just below the rib cage.*

*They play a crucial role in maintaining overall health by:*

1. *Regulating fluid and electrolyte balance*
2. *Removing toxins and waste products*
3. *Controlling blood pressure*
4. *Producing hormones that affect other organs*

# Nephrology diagnostic equipment:

*Nephrology diagnostic equipment is essential for diagnosing and monitoring kidney-related conditions. Here are some key types of equipment used in nephrology:*

- *Hemodialysis Machines*
- *Ultrasound Machines*
- *Microscope*
- *Colorimeters*
- *Urine Dipsticks*
- *CT Scanners and MRI machine*
- *Biopsy Needles*

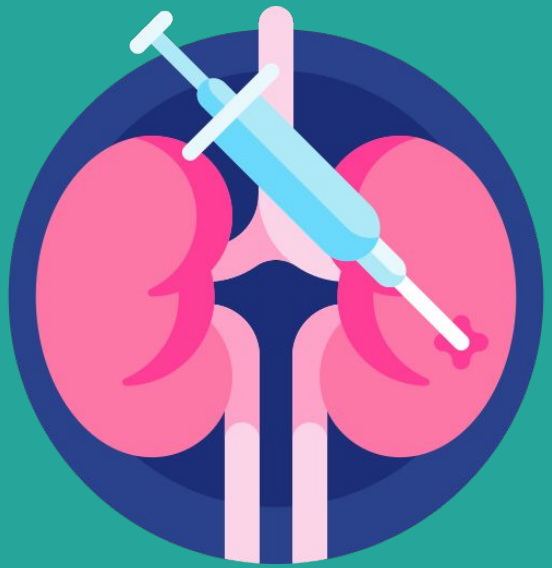
# *Nephrology therapeutic equipments*:

*Nephrology therapeutic equipment includes various devices used to treat kidney-related conditions. Here are some key pieces of equipment*:

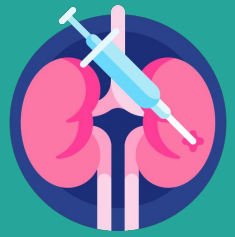
- *Hemodialysis Machines*
- *Peritoneal Dialysis Equipment*
- *Continuous Renal Replacement Therapy (CRRT) Machines*
- *Plasmapheresis Machines*

# *Nephrology diagnostic equipment*

- ***Biopsy Needle***



# *Biopsy needle*



- *A kidney biopsy, also known as a renal biopsy, is a medical procedure where a small sample of kidney tissue is removed for examination under a microscope.*
- *This procedure helps in diagnosing kidney diseases, assessing the severity of kidney damage, and guiding treatment decisions.*
- *It can be performed using a needle to extract the tissue or during surgery.*

# *Types of Renal Biopsy*

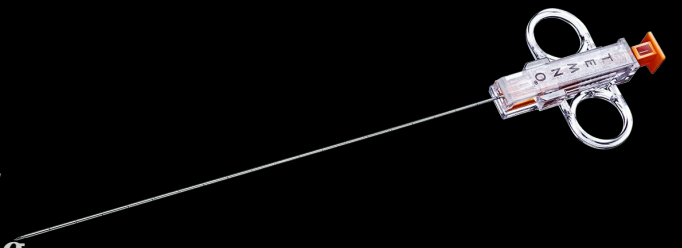
***Percutaneous (Needle) Biopsy:***
***Most common method. A thin needle is inserted through the skin to the kidney, usually guided by ultrasound or CT scan.***
***Local anesthesia is used to numb the area.***

***Open (Surgical) Biopsy: Performed during surgery.***
***A small incision is made near the kidneys to directly access and remove the tissue sample.***
***General anesthesia is typically used.***

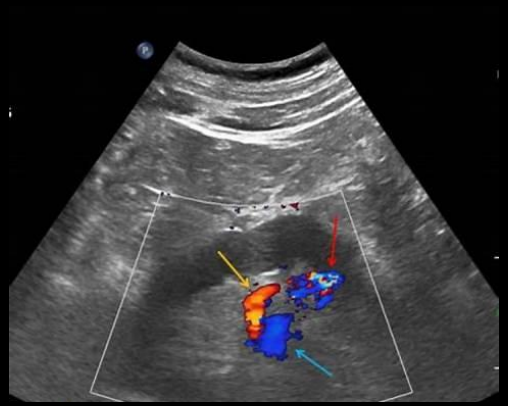
# *Procedure*

*Preparation: Before the biopsy, you'll undergo blood and urine tests.*
*You may need to stop taking certain medications that affect blood clotting.*

*During the Procedure: You'll lie on your stomach, and local anesthesia will be applied to numb the area. Using imaging guidance, the doctor inserts the biopsy needle to collect tissue samples.*



*Post-Procedure: Patients are monitored for complications such as bleeding or infection*
*Recovery instructions are provided to ensure proper healing*



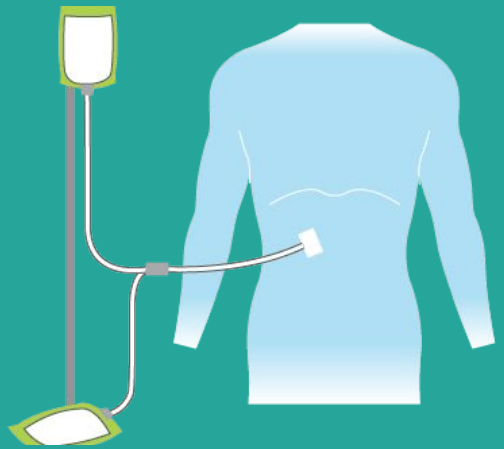
# *What are the risks of kidney biopsy ?*

*A kidney biopsy is generally a safe procedure, but like any medical intervention, it carries some risks. Here are the potential risks and complications.*

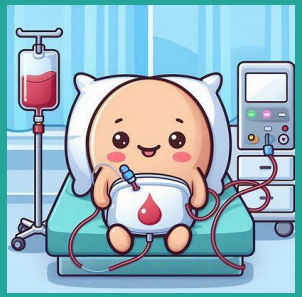
- *Bleeding*
- *Pain or Discomfort*
- *Infection*
- *Damage to Nearby Organs*
- *Other Complications*

# *Nephrology therapeutic equipment*

- ***Peritoneal Dialysis***



# *What is peritoneal dialysis ?*



- *Peritoneal dialysis (PD) is a treatment for kidney failure that uses the lining of your abdomen, known as the peritoneum, to filter waste products from your blood.*
- *This process helps maintain fluid and electrolyte balance in the body.*
- *Unlike hemodialysis, which requires a machine and access to the bloodstream.*
- *peritoneal dialysis involves introducing a dialysis solution into the abdominal cavity through a catheter.*
- *The solution absorbs waste products and excess fluids, which are then drained out of the body*

# *Types of Peritoneal dialysis*

*There are two main types of peritoneal dialysis*:

1. *Continuous Ambulatory Peritoneal Dialysis* (*CAPD*):

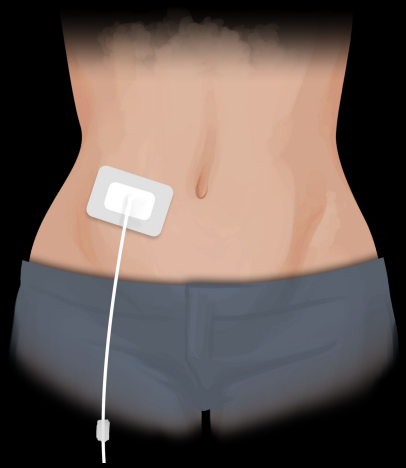
*This method doesn't require a machine and involves manual exchanges throughout the day.*

2. *Automated Peritoneal Dialysis* (*APD*):

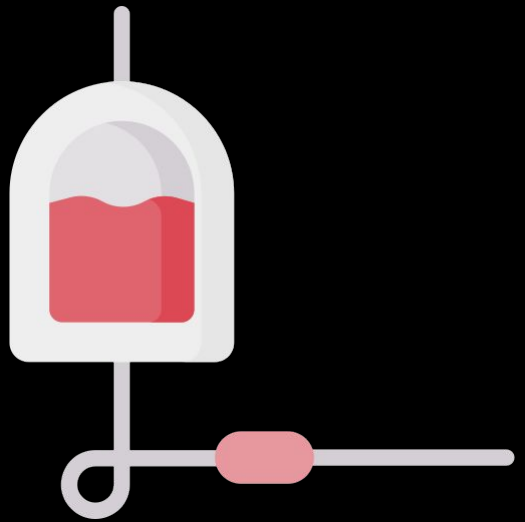
*This method uses a machine to perform exchanges, usually while you sleep.*

# *Procedure*

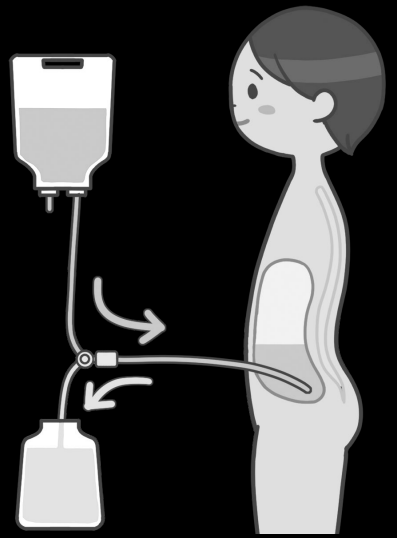
*Catheter Insertion: A soft tube (catheter) is surgically placed into your abdominal cavity. This can be done under local or general anesthesia.*



*Dialysate Solution: A special solution called dialysate is introduced into your abdomen through the catheter. This solution absorbs waste products and excess fluids from your blood*



*Exchange Process: After a few hours, the dialysate, now containing waste products, is drained out of your abdomen and replaced with fresh solution. This process is called an exchange and is typically done multiple times a day.*



# What are the risks of Peritoneal dialysis ?

Peritoneal dialysis, while effective for many patients, does come with some risks and potential complications:

- Infections: The most common risk is infection, particularly peritonitis, which is an infection of the abdominal lining. Infections can also occur at the catheter insertion site.
- Hernias: The increased pressure in the abdomen from the dialysis fluid can lead to hernias
- Weight Gain: The dialysis fluid contains dextrose, a type of sugar, which can lead to weight gain and high blood sugar levels.
- Abdominal Muscle Weakening: Over time, the presence of fluid in the abdomen can weaken the abdominal muscles.
- Other Complications: These can include nausea, vomiting, and fever.

## *Conclusion*：

***Conclusion  In summary, nephrology is a vital field dedicated to understanding and treating kidney-related diseases. Advances in diagnostic and therapeutic technologies have significantly improved patient care and outcomes. From innovative imaging techniques to cutting-edge treatments like peritoneal dialysis, the progress in nephrology continues to enhance our ability to manage and treat kidney conditions effectively. As we look to the future, ongoing research and the integration of new technologies, such as nanotechnology, promise to further revolutionize nephrology, offering hope for even better patient care and quality of life. Thank you for your attention and interest in this important field.***

***Thank you***