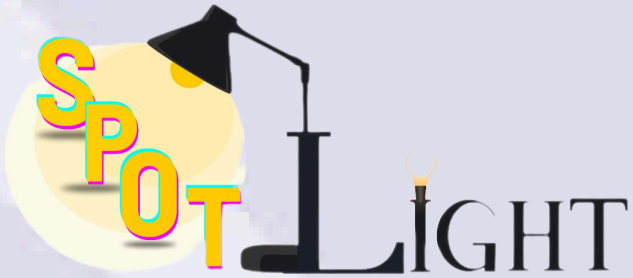
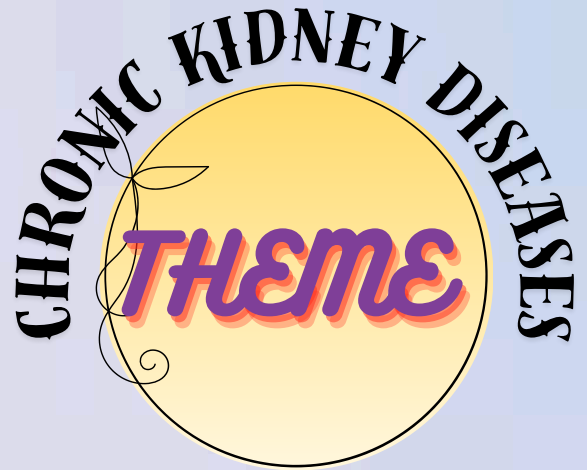




VIVEKANANDHA MEDICAL CARE HOSPITAL
ALLIED HEALTH SCIENCE



*THE STUDENTS
MAGAZINE*



*DIALYSIS
TECHNOLOGY*



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PROLOGUE



KIDNEY



TERMINOLOGY OF KIDNEY DISEASES



CHRONIC KIDNEY DISEASE



STAGES OF CKD



CAUSATION OF CKD



ETIOPATHOGENESIS OF CKD



MANIFESTATION OF CKD



DIAGNOSIS OF CKD

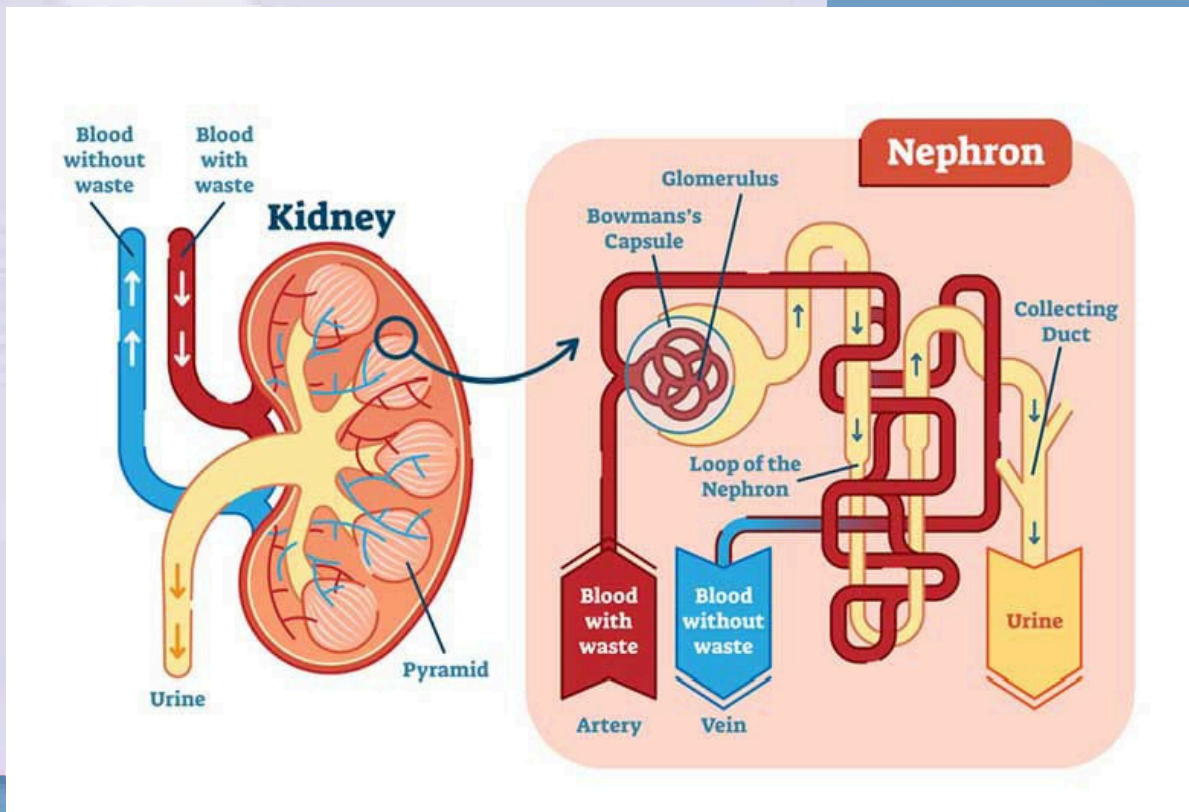


REGIMEN FOR CKD



PREVENTION OF CKD

KIDNEY



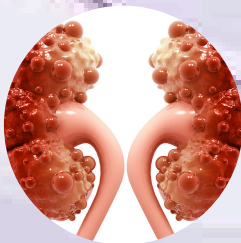
Kidneys are one of a pair of vertebrate organs situated in the body cavity near the spinal column that excrete waste products of metabolism ,In humans kidneys are beans shaped organs that filters your blood. Kidneys are the part of urinary system. Kidneys filters about 200Quarts of fluid in every day. During this process kidneys remove waste, which leaves body as urine.....

KIDNEY DISEASE

AND THE ROAD TO SAVING LIVES

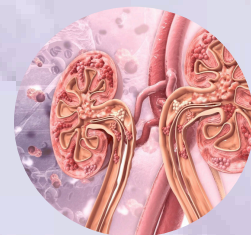
Kidney disease , also known as renal disease, occurs when the kidneys are damaged and can't filter blood properly. This can lead to a buildup of waste and fluid in the body, Which can cause health issues. kidney diseases are classified as **Acute and chronic kidney disease**. In our magazine we are briefly explaining about chronic kidney disease. Other kidney problems include.....

kidney stone



kidney cysts

kidney infection



CHRONIC KIDNEY DISEASES

DEFINITION

Chronic kidney diseases (CKD) involves progressive , irreversible loss of kidney function, where the kidneys are damaged or have structural problems , preventing them from filtering blood properly.

ABOUT CKD

Early in the course of CKD , patients are usually asymptomatic, but later symptoms may include Leg swelling, feeling tired, vomiting, loss of appetite, and confusion. Complication can relate to hormonal dysfunction of the kidneys and include high BP , bone disease, and anemia.



HOW KIDNEY DISEASES LEADS TO CKD??

1. INITIAL KIDNEY INJURY

The kidneys are damaged by various causes like Diabetes, Hypertension, Infection, Obstruction. This leads to loss of normal kidney function.

2. PROGRESSIVE NEPHRON DAMAGE

Kidneys have millions of nephron, when nephrons are damaged the remaining ones have to work hard to maintain function. This overwork causes further damage.

3. REDUCED GFR

As more nephrons are lost, the glomerular filtration rate (GFR) declines. A persistently reduced GFR ($<60\text{ml/min/1.73m}^2$ for >3 months) is a marker of CKD.

4. CHRONIC CHANGES SET IN

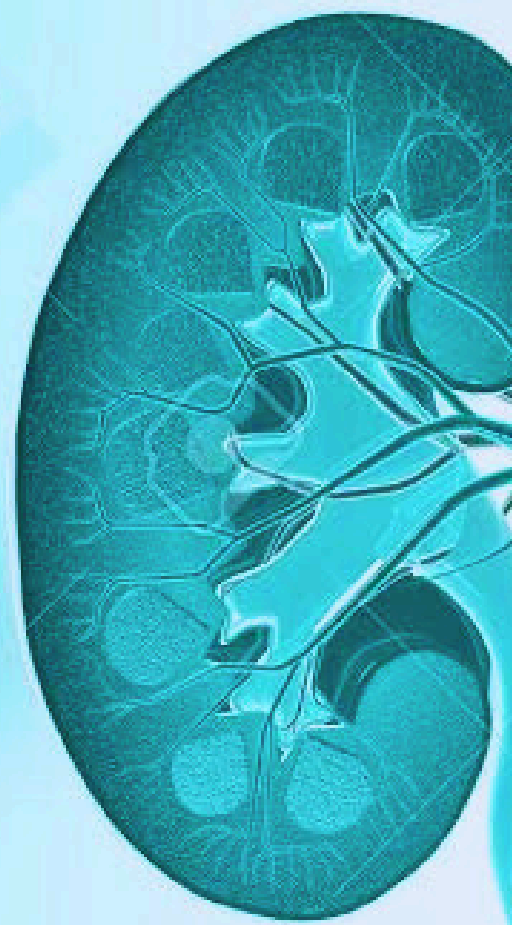
Long standing kidney damage results in permanent structural changes like:
Glomerulosclerosis
Tubular Atrophy
Interstitial Fibrosis

5. SYMPTOMS OCCURS

Gradual decline in function leads to;
Fluid Retention
Electrolyte Imbalance
Waste Accumulation
Anemia
Bone diseases

STAGES OF CKD

To determine the stage of kidney disease using the **Glomerular filtration rate(GFR)**, Which means a measure of how well the kidneys are filtering the blood, specifically the volume of fluid filtered by the glomeruli per minute. GFR is a math formula using a persons age, gender , and their creatinine level(A waste product that comes from muscle activity, is a key indicator of kidney function).The National kidney foundation divided kidney disease into five stages.

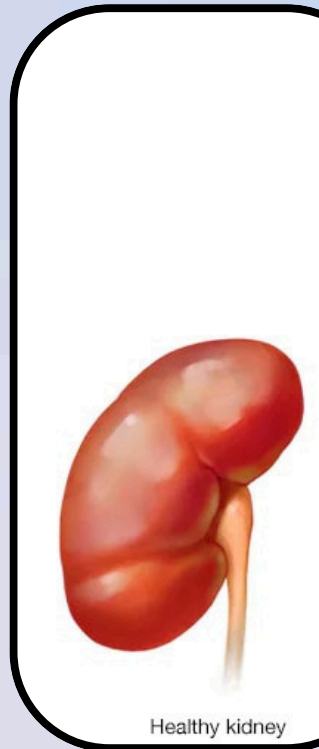
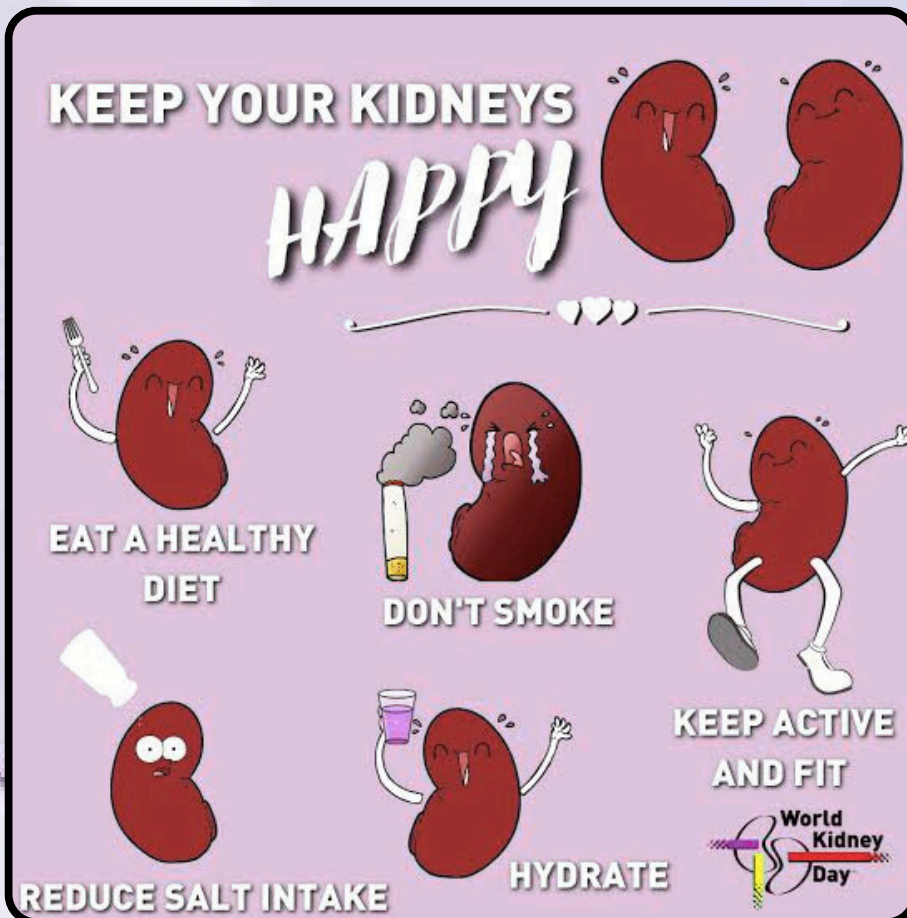


Kidney disease stage and eGFR

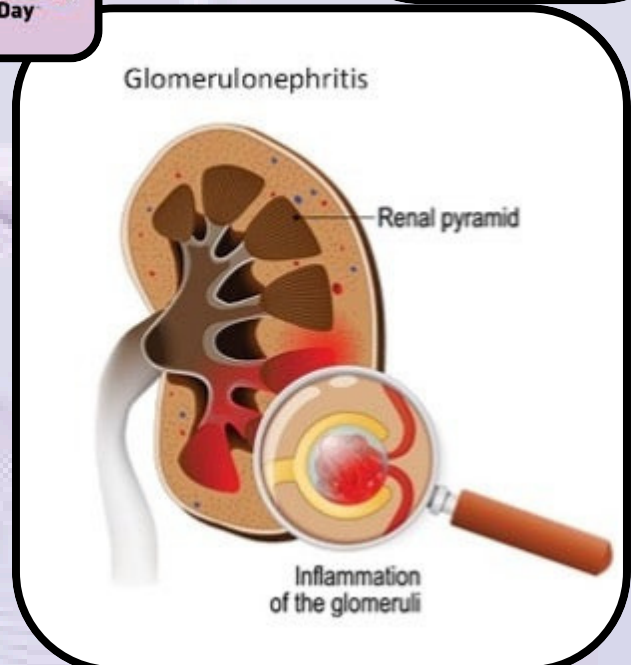
Stage	Description	eGFR	Kidney Function
1	Possible kidney damage (e.g., protein in the urine) with normal kidney function	90 or above	90-100%
2	Kidney damage with mild loss of kidney function	60 to 89	60-89%
3a	Mild to moderate loss of kidney function	45 to 59	45-59%
3b	Moderate to severe loss of kidney function	30 to 44	30-44%
4	Severe loss of kidney function	15 to 29	15-29%
5	Kidney failure	Less than 15	Less than 15%

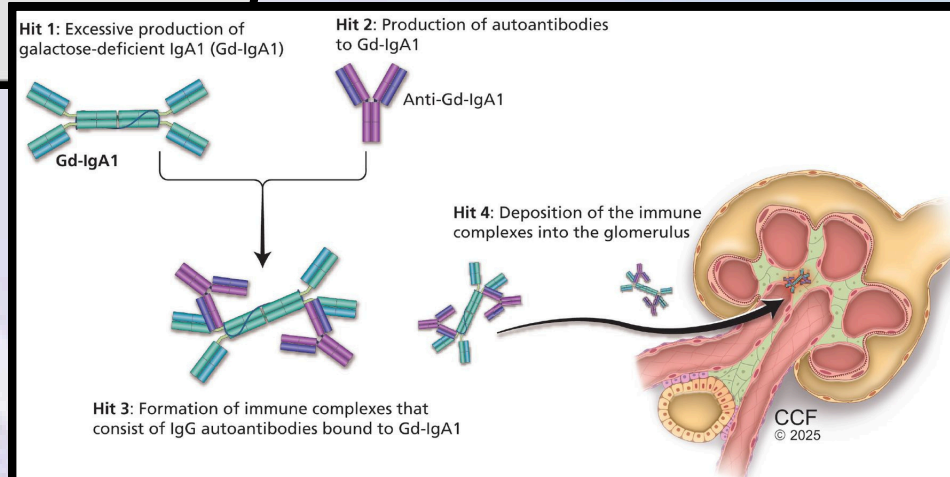
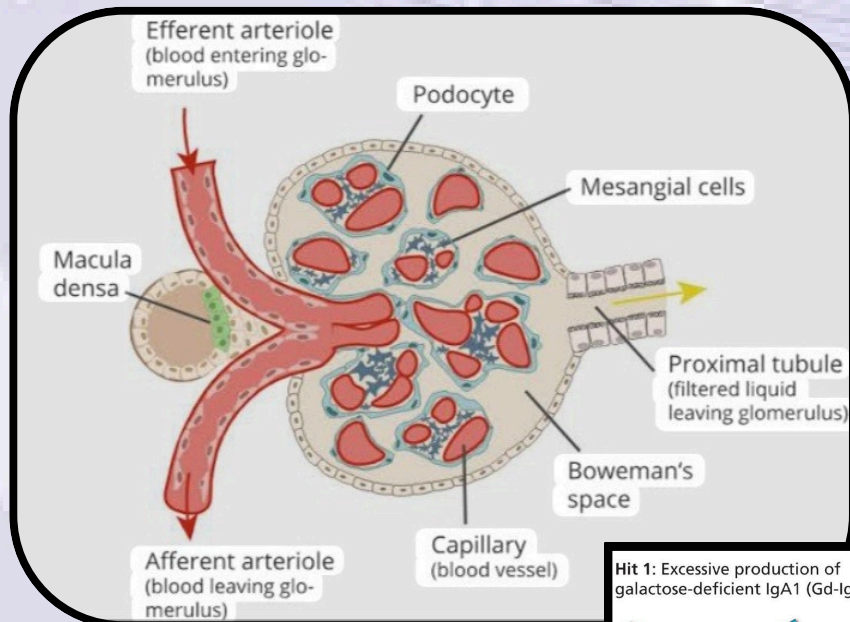
CAUSATION OF CKD

IGA NEPHROPATHY also known as Bergers disease that occurs when the body immune system produces abnormal amounts of immunoglobulin (IGA) Antibodies in the kidneys.

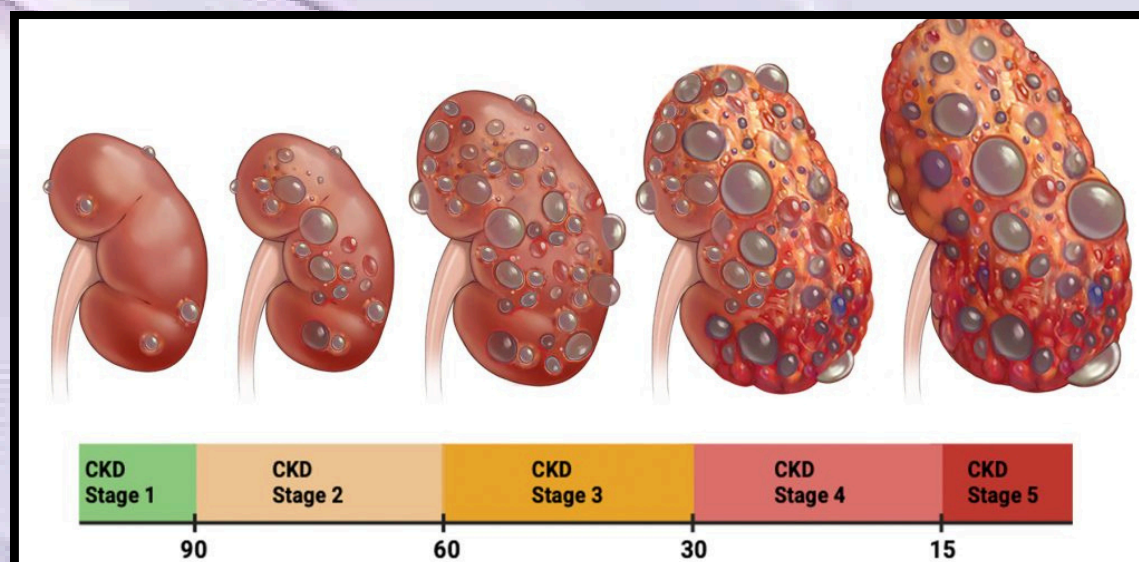


GLOMERULONEPHRITIS is a kidney disease that involves inflammation and Damage to the glomeruli. It can causes infection, Diseases like lupus or diabetes, or an inherited genetic disorder.





POLYCYSTIC KIDNEY DISEASES is an inherited disorder in which the clusters of cysts develops in the kidneys. The cysts in the PKD are non cancerous sacs containing water like fluid. They can grow very large.



ETIOPATHOGENESIS

DIABETES



High blood glucose, can damage the blood vessels in kidneys. They don't work as well.

HYPERTENSION



Hypertension can damage blood vessels throughout the body, causing them to become less effective at filtering waste.

Renal blood flow



Glomerular
Hyperfiltration

Sodium Retention



Tubular
Reabsorption

(A Crucial process in kidney function where the nephron removes water and solutes from the tubular fluid and returns them to the bloodstream.)



Oxygen
consumption



Tissue
Hypoxia

(Tissues donot receive enough oxygen to function properly.)

- Nitric oxide
- Renin angiotensin system
- Insufficient HIF Activation
- Adenosine mono phosphate kinase

- Tubulointerstitial injury
- Microvascular rarefraction
- Glomerulosclerosis



CKD

MANIFESTATION OF CKD

**FATIGUE
CHEST PAIN
HEADACHES**



CARDIOVASCULAR

**LETHARGY
CONFUSION
HAND TREMORS**



NEUROLOGICAL

**SHORTNESS OF
BREATH
PRODUCTIVE
COUGH**



RESPIRATORY

**ERECTILE
DYSFUNCTION**



REPRODUCTIVE

**VOMITING
NAUSEA
PAIN**




GENITOURINARY

**JOINT PAIN
MUSCLE CRAMPS**



MUSCULOSKELETAL

CKD **DIAGNOSIS**

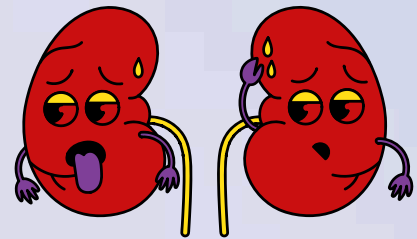
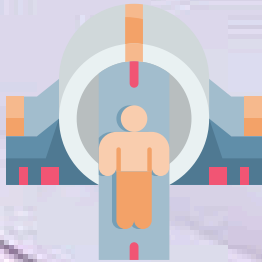


BLOOD TEST



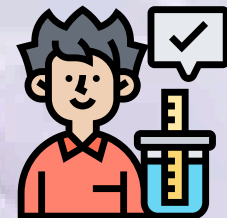
URINE TEST

RENAL BIOPSY



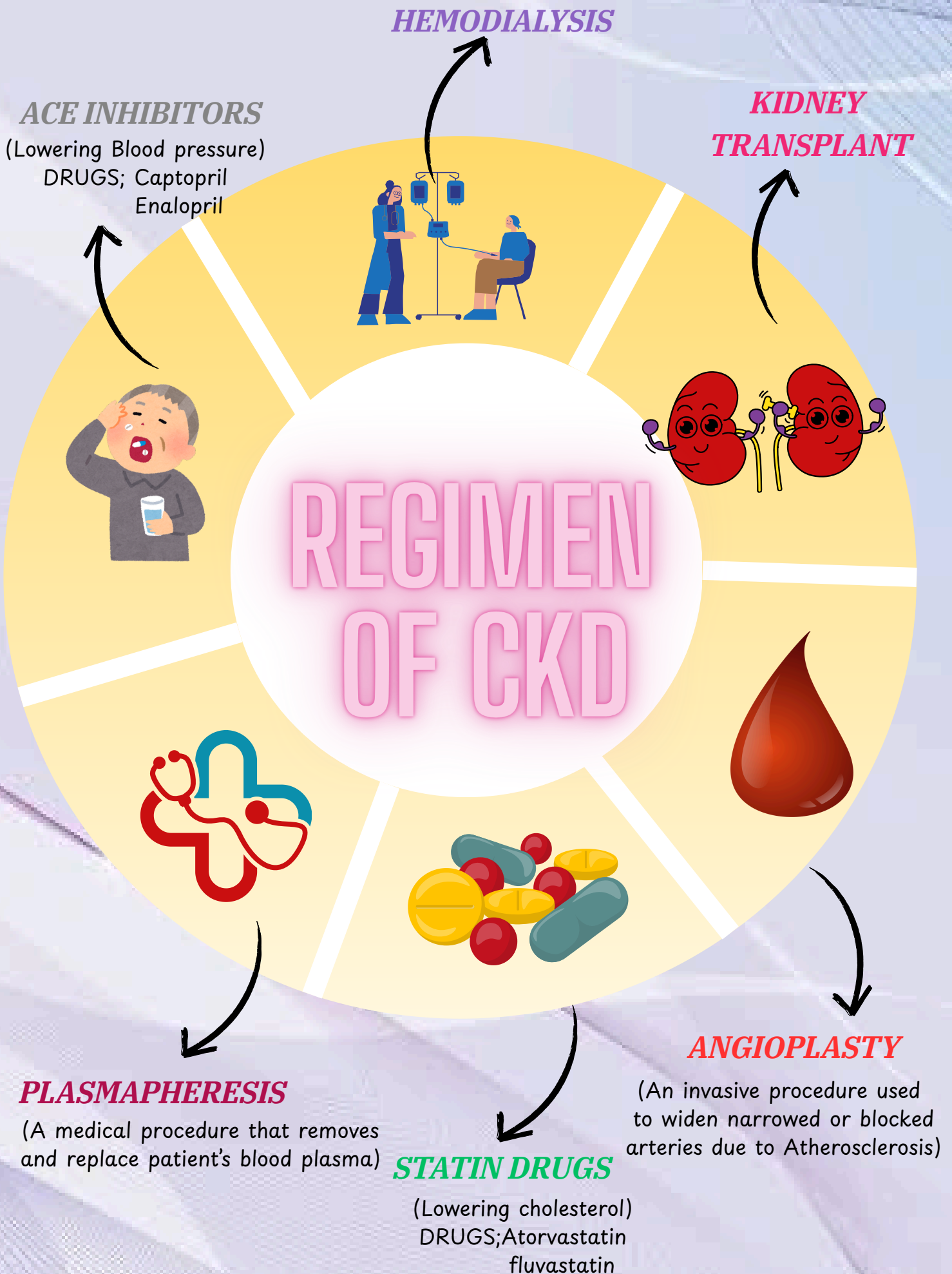
CT SCAN

URINALYSIS



CBC TEST

TREATMENT



FINAL TREATMENT

DIALYSIS

Dialysis is a treatment for people whose kidneys aren't working. When people have kidney failure, the kidneys don't filter blood the way they should. As a result, waste and toxin build up in the blood stream. common waste includes Nitrogenous waste(urea), muscle waste(creatinine) and acids. Dialysis does the work of the kidney by removing waste products and excess fluids from the blood.

HEMODIALYSIS(HD)

Hemodialysis is a medical procedure that filters a person's blood to remove waste products and excess fluid when their kidneys are not functioning properly. It acts as an artificial kidney, helping to control blood pressure and maintain the balance of essential minerals in the body.

WHY HEMODIALYSIS FOR CKD?

Before starting Hemodialysis Treatment for Chronic kidney Disease focus on managing complications and slowing Disease progress through medication such as Diuretics , Blood pressure reducers , Anti anemia drug, combined with dietary changes including Reduced salt , phosphorus and protein, as well as managing fluid intake to control swelling and Blood pressure. When the kidneys can no longer adequately filter waste, excess fluid ,and toxins from the body , Then the final treatment Hemodialysis has been used.

PERITONEAL DIALYSIS(PD)

Peritoneal dialysis is one type of dialysis for kidney failure. People can do PD at home. PD can be done for CKD as it is a form of renal replacement therapy that cleans the blood by using the patient's own body cavity , the peritoneum.

PREVENTION OF CKD

MEDICAL MANAGEMENT

PRIMARY

- 📍 ANTIOXIDANTS
- 📍 LIFE STYLE MODIFICATION
- 📍 SENOTHERAPY
(A Therapy used to reduce inflammation and fibrosis)

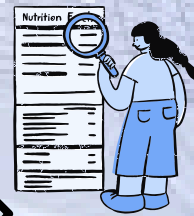
SECONDARY

- 📍 MEASURES FOR PREVENTING CKD PROGRESSION
- 📍 DIAGNOSIS CKD EARLY

TERTIARY

- 📍 REGULATE CKD PROGRESSION
- 📍 BP CONTROL
- 📍 GLUCOSE CONTROL

NUTRITIONAL MANAGEMENT



A Renal diet, also known as kidney diet, is a dietary plan designed to support kidney health, particularly for individuals with Chronic kidney diseases (CKD) or those on dialysis.

KIDNEY FOOD CHART



Kidney Food Chart

Eat

Limit

Avoid

Vegetables (low potassium)

Cabbage
Cauliflower
Cucumber
Bell peppers
Radish
Lettuce

Fruits (low potassium & phosphorus)

Apples
Blueberries
Grapes
Pineapple
Watermelon
Cranberries

Vegetables

Carrots (cooked)
Green beans
Sweet corn
Turnip
Eggplant
Zucchini

Fruits

Strawberries
Raspberries
Orange (small slice)
Banana (1/3 piece)
Kiwi
Melon (small slice)

High-Potassium Vegetables

Tomatoes (sauce, paste, raw)
Potatoes (baked, fried, mashed)
Spinach (cooked)
Avocado, Pumpkin
Beetroot

High-Potassium Fruits

Bananas (full)
Oranges (whole or juice)
Dried fruits (raisins, apricots)
Mango, Papaya
Pomegranate

Grains & Low-Phosphorus Carbs

White rice
White bread (low-sodium)
Pita bread (no salt)
Unsweetened cornflakes
Rice noodles
Pasta (no added salt)

Protein (low in phosphorus)

Egg whites
Skinless chicken (boiled or grilled)
Canned tuna (in water, low sodium)
Tofu
White fish (e.g., cod, tilapia)
Cottage cheese (low sodium)

Grains & Dairy

Oats
Whole wheat bread (1 slice max)
Low-fat milk (1/2 cup)
Rice pudding (unsweetened)
Greek yogurt (plain, small)
Brown rice (small serving)

Nuts & Additions

Almonds (few only)
Peanut butter (1 tsp)
Unsalted popcorn
Low-sodium crackers
Homemade muffins (low phosphate flour)
Olive oil (1 tsp)

High-Phosphorus & Processed Foods

Processed meats (ham, bacon, sausage)
Dark sodas
Canned soups (regular)
Chocolate
Cheese (hard, salty)
Packaged baked goods

High-Sodium Items

Pickles, Soy sauce
Salted snacks (chips, crackers)
Fast food
Canned beans (not rinsed)

CONFERENCE



DIACON 2K23
ON HEMODIALYSIS
IN PSG COLLEGE
COIMBATORE

DIACON 2K24
ON PERITONEAL
DIALYSIS IN
PSG COLLEGE
COIMBATORE



CRRTCON 2K25
IN SRM COLLEGE
TRICHY

POSTER PRESENTATION



'POSTER PRESENTATION ON ADVANCED RENAL REPLACEMENT THERAPY IN ACUTE NEUROLOGICAL INJURY PATIENTS IN CRRTCON 2K25'

**N.PARGAVI
R.ASWATHA
III - BSC.DT(2022)**

'POSTER PRESENTATION ON ADVANCED RENAL REPLACEMENT THERAPY IN RENAL TRANSPLANTATION IN CHILDREN IN CRRTCON 2K25'

**H.ABINAYA
T.DHARSHANA
III - BSC.DT(2022)**





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07	B.SC.DIALYSIS TECHNOLOGY	4 YEARS

KRISHNA INSTITUTE OF OPTOMETRY AND RESEARCH

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