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TO

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We Provide PDF Notes for Pharmacy Students

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PATHOPHYSIOLOGY

UNIT 2

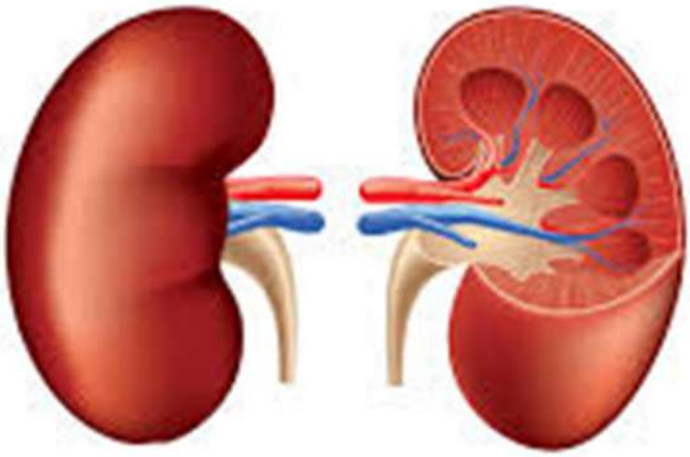
TOPIC :

- **Renal system :** Acute and chronic renal failure

Renal system

Acute Renal Failure (ARF) / Acute Kidney Injury (AKI)

→ ARF is a sudden decline in kidney function over hours to days.
→ It is usually reversible if diagnosed and treated early.



Etiology:

- **Pre-renal**: Hypovolemia, dehydration, heart failure, shock
- **Renal (intrinsic)**: Glomerulonephritis, nephrotoxic drugs, acute tubular necrosis
- **Post-renal**: Obstruction (stones, tumor, enlarged prostate)

Pathogenesis:

1. Sudden damage or obstruction →
2. Decreased blood filtration →
3. Accumulation of waste (urea, creatinine) →
4. Electrolyte imbalance →
5. Clinical symptoms of kidney failure

Clinical Manifestations:

- Sudden **oliguria** (↓ urine output) or **anuria**
- **Swelling** of legs and face
- **Nausea**, **vomiting**
- **Shortness of breath**
- **Confusion**
- **Elevated creatinine and urea**

Non-Pharmacological Management:

- Monitor fluid and electrolyte balance
- Control diet (low salt, potassium)
- Treat underlying cause (e.g., dehydration)

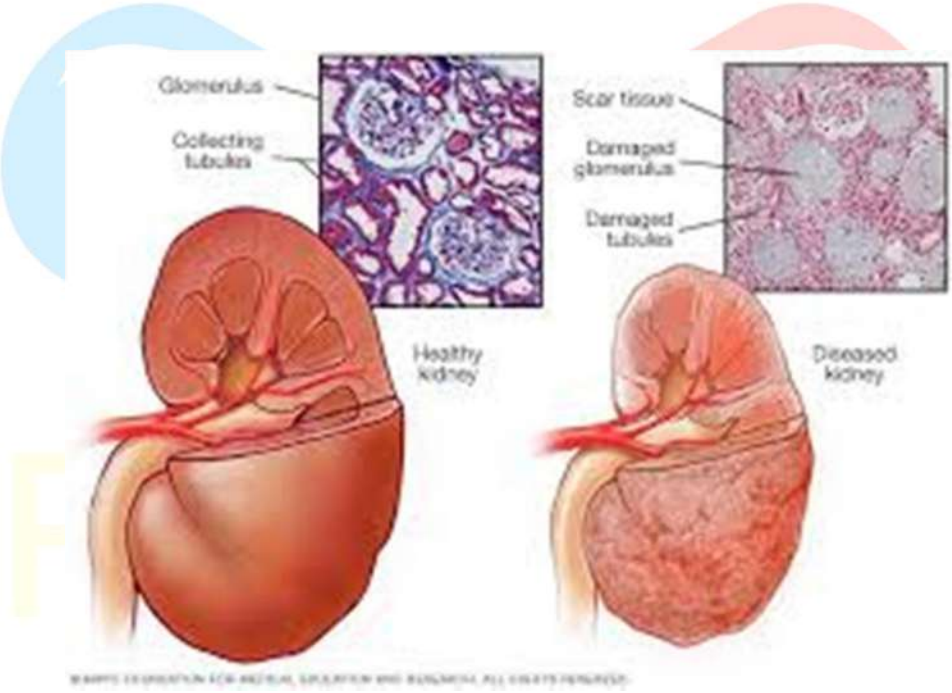
Pharmacological Management:

- **Diuretics** (furosemide)
- **Electrolyte correction**
- **Antibiotics** (if infection)
- **Dialysis** (temporary)

Chronic Renal Failure (CRF) / Chronic Kidney Disease (CKD)

→ CRF is a slow, progressive, and irreversible loss of kidney function over months or years.

→ It eventually leads to End Stage Renal Disease (ESRD) requiring dialysis or kidney transplant.



Etiology:

- **Diabetes mellitus** (most common)
- **Hypertension**
- **Chronic glomerulonephritis**
- **Polycystic kidney disease**
- **Prolonged obstruction**
- **Autoimmune disorders (SLE)**

Pathogenesis:

1. Long-term kidney damage →
2. Progressive nephron loss →
3. Decreased GFR →
4. Accumulation of toxins, anemia, bone disorders, acidosis

Clinical Manifestations:

- **Fatigue, weakness**
- **Persistent edema**
- **Anemia**
- **Loss of appetite**
- **Uremic symptoms** (itching, confusion)
- **Hypertension**
- **Altered urine output**

Non-Pharmacological Management:

- **Low-protein**, low-potassium, low-phosphate diet
- **Fluid restriction**
- **Avoid nephrotoxic drugs**
- **Lifestyle changes** to control diabetes and BP

Pharmacological Management:

- ACE inhibitors/ARBs (ramipril, losartan)
- Erythropoietin for anemia
- Calcium and vitamin D supplements
- Phosphate binders (sevelamer)
- Sodium bicarbonate (acidosis)
- Diuretics (loop diuretics for edema)
- Dialysis (long-term)
- Kidney transplant (permanent solution)