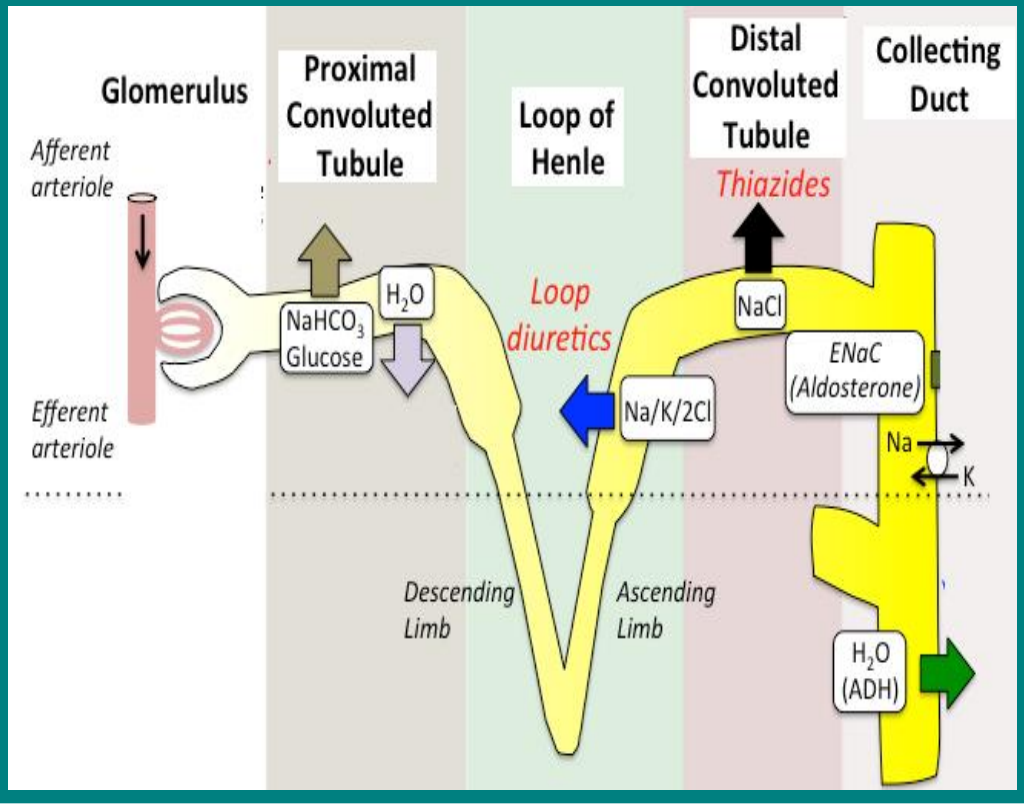
DIURETICS-II

THIAZIDES & LOOP DIURETICS



THIAZIDE DIURETICS

NA-CL SYMPORT INHIBITORS

Thiazide Diuretics
•Thiazide-Like Diuretics

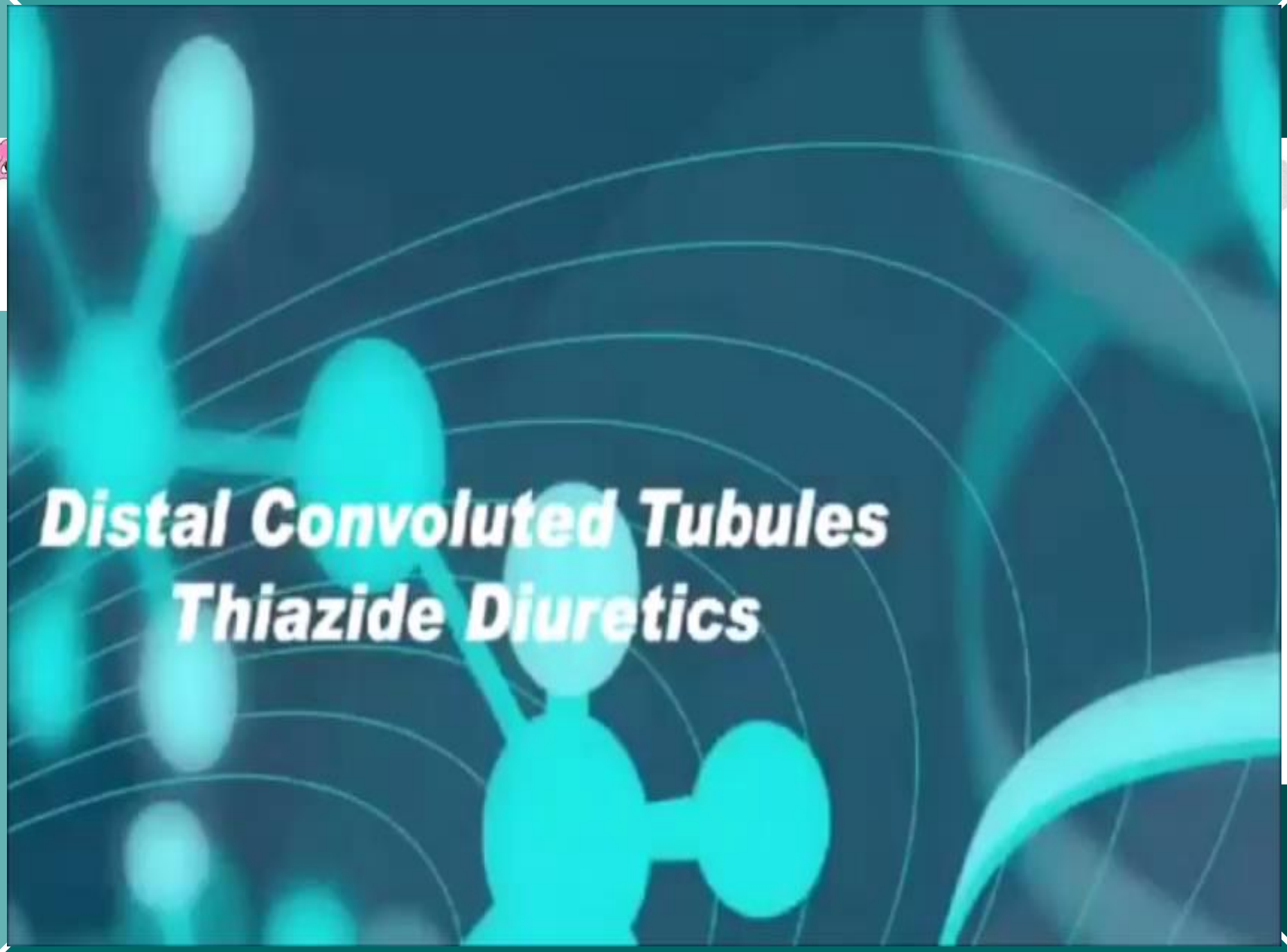
Hydrochlorothiazide
Potency 1 , t½ 3h

Chlorothiazide
Potency 0.1, t½ 2h

Chlorthalidone
Potency 10, t½ 26h

Metolazone
Potency 5, t½ 5h

Indapamide
Potency 20, t½ 16h


Distal Convoluted Tubules
Thiazide Diuretics

THIAZIDES

PHARMACOKINETICS

- Thiazides are **lipid soluble**
- **Given orally,** efficiently absorbed from the GIT
- Long duration of action
- Eliminated by glomerular filtration & tubular secretion , some is reabsorbed
- May interfere with uric acid secretion and cause *hyperuricemia*

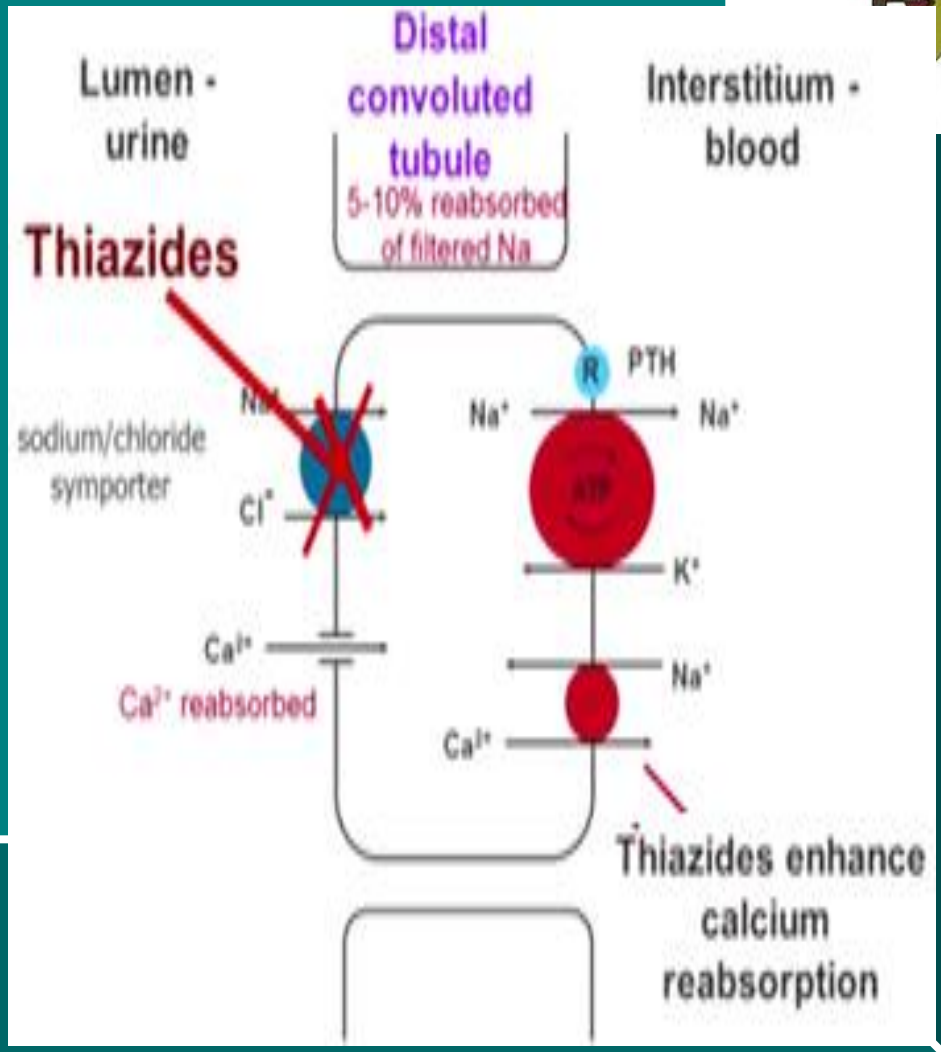
THIAZIDE DIURETICS

PHARMACODYNAMIC EFFECTS

1-Considerable K+ loss

2-May give rise to hypokalemic alkalosis

3-↓uric acid &↓Ca++ excretion & ↑Mg++ excretion

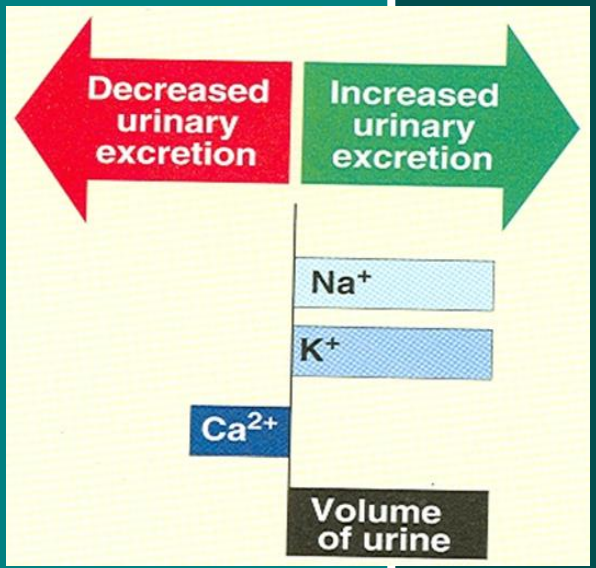


THIAZIDEDIURETICS

PHARMACODYNAMIC EFFECTS

- **4-** Causes vasodilatation , diazoxide , non diuretic thiazide is a potent vasodilator

- 5-↓of urine volume in case of diabetes insipidus



THIAZIDE DIURETICS

DRUG- DRUG INTERACTIONS

Uricosurics Sulphonylurea	⇦	Thiazides Diminish effect
Digitalis Diazoxide	⇦	Thiazides Increase effect
NSAIDs	⇨	Reduce thiazide efficacy

THIAZIDES

ADRS

- ECFV Depletion
- Metabolic Alkalosis
- Hypokalemia
- Hypercalcemia
- Hyponatremia
- Hyperuricemia
- Hypomagnesemia
- Hyperglycemia

- Impotence
- ↑ LDL

THIAZIDES

CLINICAL USES

Mnemonics

Thiazides Indications

"CHIC"

C	Congestive Heart Failure	
H	Hypertension	
I	Insipidus	
C	Calcium calculi	

Osteoporosis

LOOP DIURETICS

Na-K-2Cl SYMPORT INHIBITORS

Also Called:

- Loop Diuretics
- High Ceiling Diuretics

Furosemide
Potency 1, t½ 1.5h

Ethacrynic Acid
Potency 0.7, t½ 1h

Bumetanide
Potency40 ,t½ 0.8 h

Torsemide
Potency 3, t½ 3.5h


Loop of Henle
Loop Diuretics

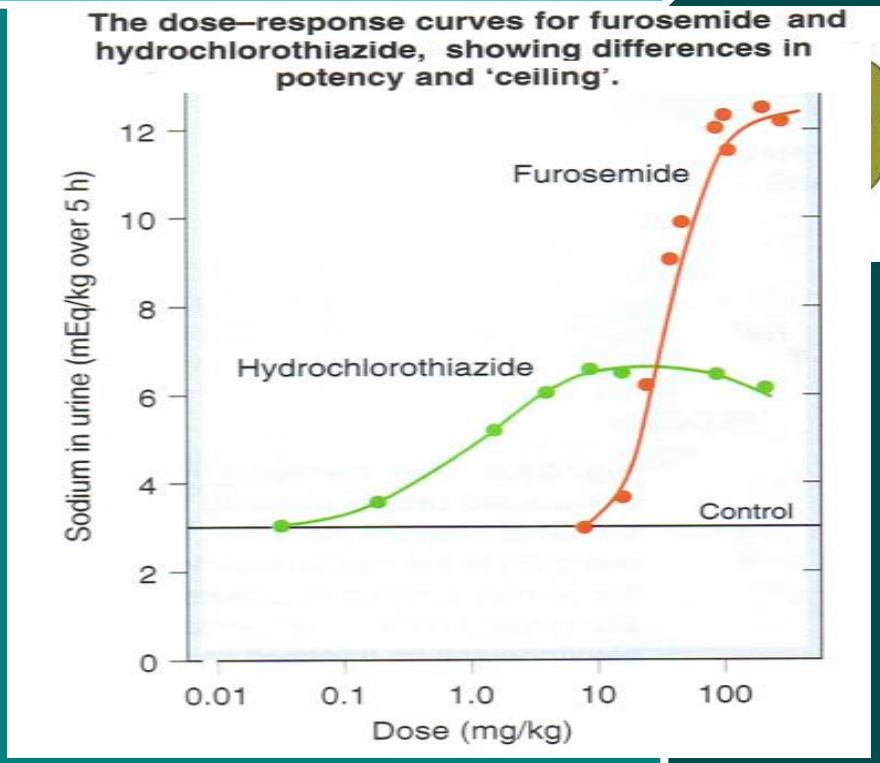
LOOP DIURETICS

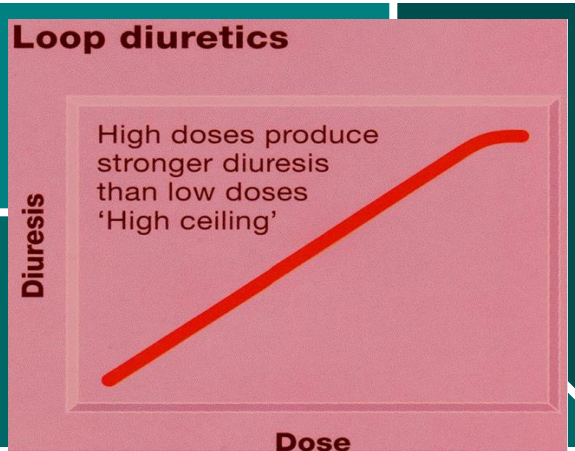
PHARMACODYAMIC EFFECTS

- The most potent diuretics, termed **"high ceiling diuretic"**

Induce expression of COX, PGE↓ salt transport in TAL

- **↓Renal vascular resistance &↑renal blood flow→ PGs**



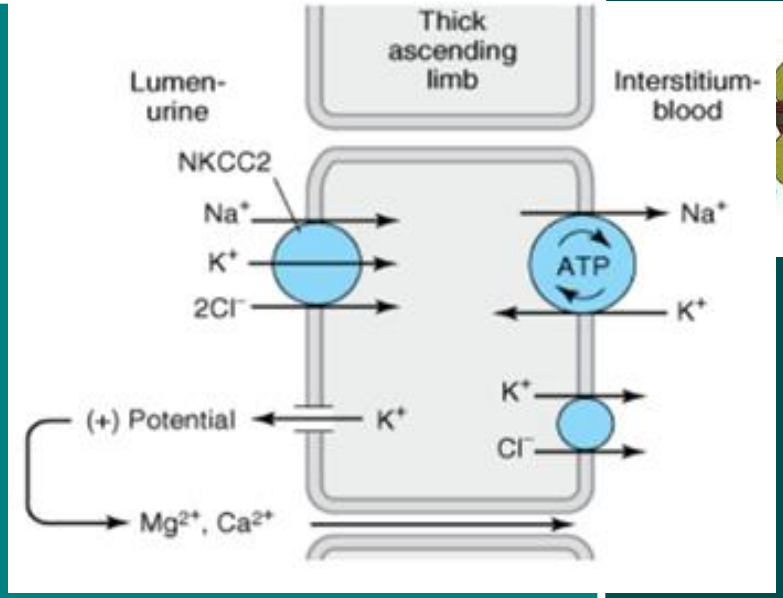


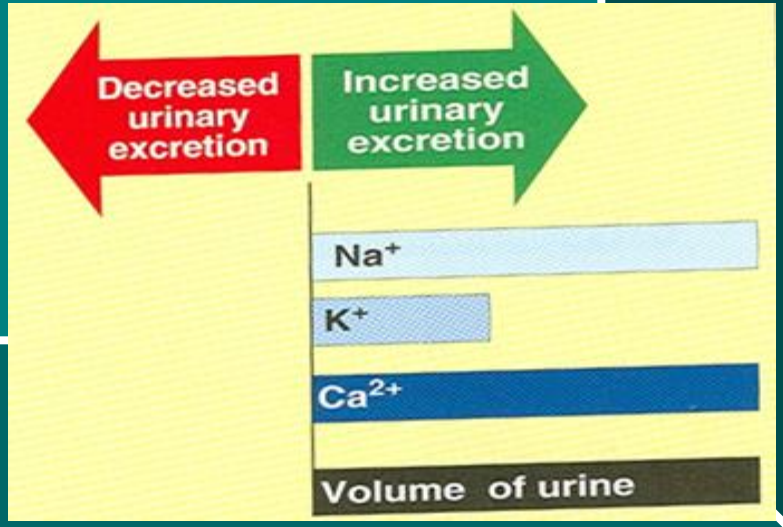
LOOP DIURETICS

PHARMACODYAMIC EFFECTS

Increase Ca & Mg excretion

Furosemide and ethacrynic acid reduce pulmonary congestion and left ventricular filling pressures in heart failure →↑ venous capacitance





LOOP DIURETICS

PHARMACOKINETICS

- Given orally or IV
- Have fast onset of action (suitable for emergency)
- Have short duration of action
- Bumetanide is the most potent
- Excreted by active tubular secretion of weak acids into urine(avidly bound to plasma proteins).
- Interfere with uric acid secretion

LOOP DIURETICS

THERAPEUTIC USES

Increase Na Excretion to 25% of Filtered Load

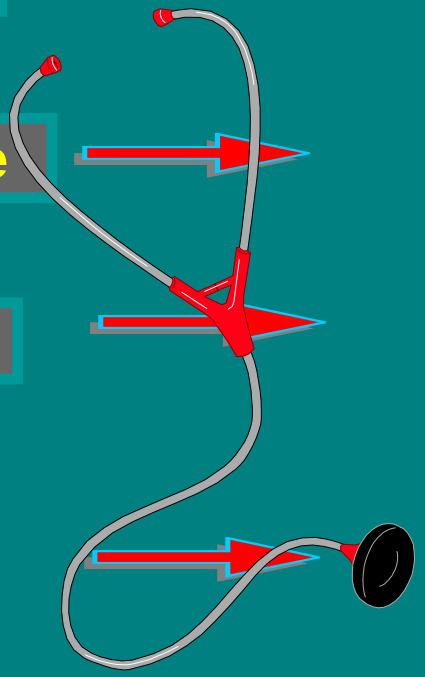
Increase Urine Volume

Increase Ca Excretion

Increase Venous Capacitance

Increase K+ Excretion

Anion overdose



Treatment for Severe Edema

Treatment for Oliguric ARF

Treatment for Hypercalcemia

Treatment for Pulmonary Edema

Acute Treatment for Hyperkalemia

Toxicity of Br, F & I

LOOP DIURETICS

ADRS

Profound ECFV Depletion

Hypokalemia

Hypocalcemia

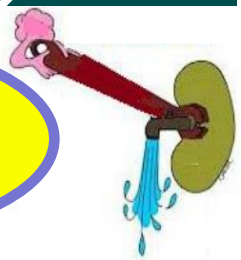
Hypomagnesemia

Metabolic Alkalosis

Ototoxicity

Hyperuricemia

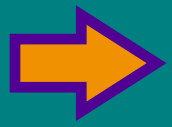
Hyperglycemia



LOOP DIURETICS

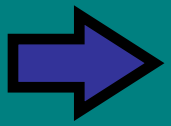
DRUG- DRUG INTERACTIONS

NSAIDS
Probenecid



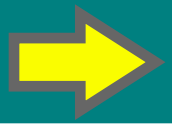
↓Diuretic Response

Digitalis



Arrhythmias

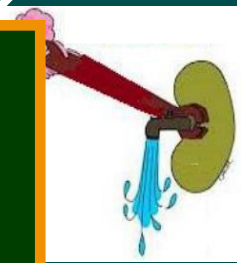
Aminoglycosides



↑ Ototoxicity of Loop Diuretic

LOOP DIURETICS

CONTRAINDICATIONS



Severe Na+ & volume depletion

Hypersensitivity To sulphonamides

Anurea unresponsive to a trial dose of loop diuretic