Overview

- inhibit activity of enzyme carbonic anhydrase (found in kidneys, eyes, and other parts of body)
- work at the location of the carbon anhydrase enzyme system along nephron (primarily proximal tubule
- Medications: **Acetazolamide**

Indications

- treatment of glaucoma
- edema
- high-altitude sickness symptoms (headache, nausea, shortness of breath, dizziness, drowsiness, fatigue)
- adjunct drugs in long-term management of open-angle glaucoma
- short term in conjunction with miotics to lower intraocular pressure in preparation for ocular surgery
- adjunct in treatment of secondary glaucoma
- manage edema secondary to heart failure that has become resistant to other diuretics

Interactions

- digoxin: hypokalemia, toxicity
- corticosteroids: hypokalemia
- amphetamines, carbamazepine, cyclosporine, phenytoin, and quinidine: effects may be increased

Mechanism of Action and Drug Effects

- increase sodium excretion by decreasing sodium-hydrogen ion exchange throughout the renal tubule
- can induce respiratory and metabolic acidosis --> increase oxygenation by increasing ventilation
- also decrease secretion of aqueous humor in the eye and thus decrease intraocular pressure
- elevation of blood glucose level and glycosuria in diabetic patients
- reduce formation of hydrogen and bicarbonate ions from carbon dioxide and water through inhibition of carbonic anhydrase activity - results in availability of ions (hydrogen)

Contraindications

- drug allergy
- hyponatremia
- hypokalemia
- severe renal or hepatic dysfunction
- adrenal gland insufficiency
- cirrhosis

Adverse Effects

- metabolic abnormalities (ex: acidosis and hypokalemia)
- anorexia
- hematuria
- photosensitivity
- drowsiness
- paresthesias
- urticaria
- melena (blood in stool)

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