# Hydrochlorothiazide HCTZ

Hydrochlorothiazide is the most commonly used thiazide diuretic due to its function in treating high blood pressure and fluid retention. This drug can be used to treat essential hypertension, edema, and diabetes insipidus. It is also commonly used as a first line treatment for hypertension in the African American population.




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## Mechanism of Action

**Inhibits Reabsorption NaCl and H<sub>2</sub>O**
Inhibiting-chains pulling Salt-shaker and Water-bottle from Sponge
Hydrochlorothiazide promotes urine production by blocking the reabsorption of NaCl in the early segment of the distal convoluted tubule. Since “water follows salt”, water reabsorption is also inhibited.

## Indications

**Edema**
Edamame
Thiazides can be used in moderate heart failure patients to decrease excess fluid in the system. The patient needs to have proper renal function or renal function addressed by a nephrologist with renal-minded dosing prescribed in order to meet therapeutic effect.

**Mild to Moderate Hypertension**
Mild to Moderate Hiker-BP
Thiazides lower BP by reducing intravascular blood volume, reducing intra-arterial volume and pressure. Thiazides can be used alone or in combination with other hypertension medications to treat a spectrum of variable severities.

## Side Effects

**Hypokalemia**
Hippo-banana
Hypokalemia is an adverse effect of thiazides as a possible adverse effect due to inadvertent loss of potassium in the urine. Countering this effect can occur when the patient consumes potassium-rich foods or uses potassium supplements, but potassium should be periodically monitored to address potential hypokalemia associated with therapy.

**Hyponatremia**
Hippo-salt-shaker
Because hydrochlorothiazide decreases the body's ability to reabsorb sodium or chloride, patients are at a risk for developing hyponatremia and/or hypochloremia. Periodic monitoring of serum levels of sodium and chloride is recommended and based on the severity of the disease.

**Dehydration**
Empty-canteen
Hydrochlorothiazide inhibits reabsorption of NaCl and water, decreasing the intravascular level of fluid, and may lead to dehydration. An indirect recommendation to measure total body water is weighing the patient daily and associating this data with the patient’s current health. Free water weighs 8.34 pounds per gallon (3.785 kg per gallon), and the increase/decrease of weight in a short period of time (24-72 hours) could indicate significant changes in total body water.

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**Hyperglycemia**

Hiker-glue-bottle

Thiazide medications can lead to elevated plasma glucose due to its interaction with insulin, antidiabetic agents and through overt inhibition on insulin. Patients with prediabetes and diabetes of any significance should have periodic and regular monitoring of their serum glucose levels with consideration toward any interaction to their anti-diabetic or insulin management.

**Gout**

Gout-goat

Thiazide medications can elevate a variety of compounds in the blood, including total cholesterol, triglycerides, and uric acid. An elevated serum uric acid (hyperuricemia) is typically asymptomatic but can also lead to buildup of uric acid affecting a patient's joints, kidney stone development or contribute to the development of biliary dysfunction secondary to gallstone development.

## Contraindications

**Sulfa Allergy**

Sulfur-match Allergy-alligator

Some diuretics are sulfa-based, which can cause an allergic reaction in susceptible patients. If these medications are prescribed to a patient, education on risks needs to be discussed and the first dose should be given under direct medical supervision.

**Pregnancy and Breastfeeding**

Pregnant and Breast-feeding

This medication should not be given to women who are breastfeeding because the medication is excreted into breast milk. Additionally, hydrochlorothiazide (HCTZ) is a category B risk during pregnancy. Diuretics may reduce overall circulating volume and reduce blood flow to the placenta leading to the risk of birth defects. For this reason, diuretics like HCTZ are often avoided as first line agents.

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