

## DIABETES INSIPIDUS

### What is Diabetes Insipidus?

Diabetes insipidus is an uncommon condition that occurs when the kidneys are unable to conserve water as they perform their function of filtering blood. The amount of water conserved is controlled by antidiuretic hormone (ADH), also called vasopressin.

ADH is a hormone produced in a region of the brain called the hypothalamus. It is then stored and released from the pituitary gland, a small gland at the base of the brain.

- Diabetes Insipidus caused by a lack of ADH is called central diabetes Insipidus
- When it is caused by a failure of the kidneys to respond to ADH, the condition is called nephrogenic diabetes insipidus

### What causes it?

**Central diabetes insipidus** can be caused by damage to the hypothalamus or pituitary gland as a result of:

- Head injury
- Infection
- Surgery
- Tumour

There is also a form of central diabetes insipidus that runs in families (congenital).

**Nephrogenic diabetes Insipidus** involves a defect in the parts of the kidneys that reabsorb water back into the bloodstream. It occurs less often than central diabetes Insipidus. Nephrogenic diabetes Insipidus may occur as an inherited disorder in which male children receive the abnormal gene that causes the disease from their mothers.

Nephrogenic diabetes Insipidus may also be caused by:

- Certain drugs (such as lithium, amphotericin B)
- High levels of calcium in the body (hypocalcaemia)
- Low potassium levels- kidney disease (such as polycystic kidney disease)
- Blockage in the urinary tract

### What are the symptoms?

- Excessive thirst
  - May be intense or uncontrollable
  - May involve a craving for ice water
- Excessive urine volume (3-15 litres a day)

### How is it diagnosed?

Special investigations:

- MRI of the head- may show a problem in or near the pituitary gland
- Urinalysis - low osmolality- low concentration of salt in the urine
- Urine output - more than 3 litres of urine a day
- High serum osmolality
- Water restriction test- is used to look at how well the kidney works and how much urine is produced. This test is done during a hospital stay. A weight check, urine collection, and a blood test to check sodium concentration are done every hour. The blood sodium concentration may become high if the condition is untreated, and a person is not allowed to drink water
- ADH levels- normal or high
- Kidneys don't concentrate urine when the person is given ADH

### How can Diabetes Insipidus affect my health?

The outcome depends on the underlying disorder. If treated, diabetes insipidus does not cause severe problems or reduce life expectancy. If thirst mechanisms are normal and you drink enough fluids, there are no significant effects on the body's fluid or salt balance. Not drinking enough fluids can lead to the following complications:

- Dehydration
  - Dry skin
  - Dry mucus membranes
  - Fever
  - Rapid heart rate
  - Sunken appearance to eyes
  - Sunken fontanelles (soft spot) in infants
  - Unintentional weight loss
- Electrolyte imbalance
  - Fatigue, lethargy
  - Headache
  - Irritability
  - Muscle pains
- Confusion and changes in mental status may develop if the condition is not treated
- Shock

## Treatment

The cause of the underlying condition should be treated when possible.

**Central diabetes insipidus** may be controlled with vasopressin (desmopressin, DDAVP). You can take vasopressin as either a nasal spray or tablets. This controls the urine output and fluid balance and prevents dehydration.

In mild cases, drinking more water may be all that is needed. If the thirst mechanism is not working (for example, if the hypothalamus is damaged), a prescription for a certain amount of water intake may also be needed (usually 2- 2.5 litres per day) to ensure proper hydration.

If **nephrogenic diabetes insipidus** is caused by medication (for example, lithium), stopping the medication may help restore normal kidney function. However, after many years of lithium use, the nephrogenic diabetes insipidus may be permanent.

Hereditary nephrogenic diabetes insipidus and lithium-induced nephrogenic diabetes insipidus are treated by drinking enough fluids to match urine output and with drugs that lower urine output. Drugs used to treat nephrogenic diabetes insipidus include:

- Anti-inflammatory medication (indomethacin)
- Diuretics [hydrochlorothiazide (HCTZ) and amiloride]

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## Your role in managing this condition

If you have diabetes insipidus, contact your health care provider if frequent urination or extreme thirst return.

All patients with diabetes insipidus should wear a medic alert bracelet or necklace to alert caregivers to this condition in an emergency situation.

Treating the disorders that can lead to the acquired form of the condition may prevent it from developing in some cases. Medications should only be used under the supervision of the health care provider.

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## Disclaimer

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