

Diabetes Insipidus

WHAT IS DIABETES INSIPIDUS (DI)?

Diabetes insipidus, also called DI, is a rare condition that leads to frequent urination (passing a lot of clear urine) and excessive thirst. The condition may be caused by problems with your pituitary gland and/or your kidneys.

DID YOU KNOW?

DI is not related to diabetes mellitus (type 1 and type 2 diabetes), which is when your levels of blood sugar (glucose) are too high.

DEFINITIONS

Antidiuretic hormone (ADH): A hormone that helps the kidneys work well and keeps blood levels of sodium (salt) and water in the normal range. ADH is also called vasopressin.

Hypothalamus: An area of the brain that makes ADH.

Pituitary gland: A tiny gland found at the base of the brain; it stores and releases ADH and other hormones into the bloodstream.

TYPES OF DI, THEIR CAUSES, AND TREATMENTS

There are four types of DI. The goal of treatment for all types of DI is to relieve thirst and to decrease the amount of urine being made. The specific treatment depends on the type.

Type	Cause	Treatment
Central DI (the most common type)	Damage to your pituitary gland or hypothalamus from head injury, surgery, or tumors. This can lead to a lack of ADH.	<ul style="list-style-type: none"> • Synthetic ADH: desmopressin, given by injection, nasal spray, or pill • In mild cases, treatment is increased water intake
Nephrogenic DI	The pituitary releases enough ADH into the body but your kidneys can't respond to it. This can result from the prescription drug lithium, sickle cell disease, or genetic problems.	<ul style="list-style-type: none"> • Anti-inflammatory medicine (indomethacin) • Medications such as water pills (HCTZ and amiloride) • Low-sodium diet (if needed) • Fluids as needed

Type	Cause	Treatment
Dipsogenic DI	Excess fluid intake, caused by <ul style="list-style-type: none"> a problem with your thirst mechanism, or deliberately drinking too many fluids (may occur with mental illness) This can lead to low blood sodium and possible brain damage.	No known treatment yet except for restricting fluid intake
Pregnancy-related DI	A substance made by the placenta that prevents the mother's ADH from working.	Desmopressin (nasal spray or pill)

You also might have an imaging test of your head (an MRI) to check for problems with your pituitary gland. Your doctor also may order genetic tests.

WHAT ARE THE COMPLICATIONS OF DI?

Taking too much desmopressin and/or drinking lots of fluids may cause low sodium levels in the blood, which can lead to headache, nausea, confusion, seizures or, in rare cases, death. Other complications are dehydration, low blood pressure, and high sodium levels in the blood.

WHAT IS THE LONG-TERM OUTLOOK FOR PEOPLE WITH DI?

Long-term outlook depends on the type of DI. Usually, adults don't have serious problems unless they do not have access to water or other fluids.

HOW DOES YOUR BODY REGULATE FLUID?

The amount of fluid in your body is a balance between how much liquid you drink and how much urine you make. Your kidneys and bladder are part of the system.

Your kidneys remove extra fluid from your blood. If there's extra fluid in your system, your kidneys send it to your bladder. Your bladder stores and then excretes extra fluid as urine. If you take in less water, the kidneys make less urine and send water back into your blood. ADH is released if you get dehydrated and the sodium level in the blood rises, which helps your kidneys retain water.

WHAT ARE THE SYMPTOMS OF DI?

Symptoms include

- Being very thirsty
- Urinating a lot
- Wetting the bed at night

Children might be listless and feverish. They also might vomit and/or have diarrhea. They may have delayed growth.

HOW IS DI DIAGNOSED?

Your doctor has several ways to check for DI and to find the cause:

- Analysis of urine samples
- Blood tests to see how your pituitary gland is working
- A fluid deprivation test, which shows how well the kidneys are working. The test monitors the amount of urine made over the course of several hours without drinking fluids.

Questions to ask your doctor

- What is causing my DI?
- What are my options for treatment?
- What are the risks and benefits of the each treatment option?
- How long will I need treatment?
- How often will I need check-ups and blood tests?
- How much water or other fluids should I drink every day?

RESOURCES

- Find-an-Endocrinologist: www.hormone.org or call 1-800-HORMONE (1-800-467-6663)
- Hormone Health Network information about pituitary gland disorders: www.hormone.org/Pituitary/overview.cfm
- National Institutes of Health information about DI: — kidney.niddk.nih.gov/kudiseases/pubs/insipidus/ — www.nlm.nih.gov/medlineplus/diabetesinsipidus.html
- Mayo Clinic information about DI: www.mayoclinic.com/health/diabetes-insipidus/DS00799
- American Academy of Family Physicians information about DI: familydoctor.org/familydoctor/en/diseases-conditions/diabetes-insipidus.html

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The Hormone Health Network offers free, online resources based on the most advanced clinical and scientific knowledge from The Endocrine Society (www.endo-society.org). The Network's goal is to move patients from educated to engaged, from informed to active partners in their health care. This fact sheet is also available in Spanish at www.hormone.org/Spanish.

