

Enuresis: The Basics

What is Enuresis?

Enuresis (ehn-yoor-EE-sis) is a term used to describe a condition where a child has wetting accidents beyond the age at which the child is expected to be dry. There are several different types of enuresis.

- **Nocturnal enuresis (bed-wetting):** Accidents that occur only at night or during sleep.
- **Diurnal enuresis:** Awake, or daytime wetting.
- **Primary enuresis:** Continuous accidents without a period of being dry for more than 6 months.
- **Secondary enuresis:** Accidents that occur after at least six months of continuous dryness.
- **Complicated enuresis:** Nocturnal enuresis that occurs with additional problems, which may indicate a more severe problem.

Most often when doctors talk about enuresis, they are referring to nocturnal enuresis or nighttime bedwetting.

Children develop urinary control at different ages. In most cases children develop daytime bladder control before nighttime control. Daytime control usually occurs between the ages of 2.5 and 5 years. Nighttime control usually occurs about 6 months after daytime control.

Statistics show that:

- 15% of 5-year-olds have enuresis.
- 5% of 10-year-olds have enuresis.
- 1% of 15-year-olds have enuresis.
- 15% of children “grow out” of their enuresis each year.
- 25% have secondary enuresis.
- Enuresis is more common in boys.

Enuresis can be a nuisance, but it is not life threatening.

What Causes Enuresis?

No one knows exactly why children have enuresis. We do know that almost all children with enuresis do not have any urologic, neurologic or psychiatric problems. We also know that most children will “outgrow” their enuresis.

Factors That MAY Contribute to a Child Having Enuresis

Genetics

Scientists have not yet identified a specific “bedwetting gene” but evidence has shown that bedwetting definitely runs in families. Enuresis is inherited in an Autosomal Dominant fashion. This means that only one parent needs to have the condition for it to be passed on to the child. If both parents had enuresis, the child has a 75% chance of having enuresis. If one parent was a bed wetter, the child has about a 50% chance of having enuresis. Children can have enuresis even if neither parent was affected, though. About 15% of children with enuresis have no family history of bedwetting.

A careful review of a child’s family history is helpful in predicting when the child will become dry. For example, if one parent had enuresis into the teenage years, the child may have wetting accidents into the teenage years.

Patterns of Fluid Intake

Two trends exist in the drinking patterns of children with enuresis. First, most children with enuresis have a low total daily fluid intake. Second, children with enuresis tend to drink most of their fluid in the evening.

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Patterns of Fluid Intake, continued

Many parents restrict their child's fluid intake in an attempt to stop enuresis. A better approach might be to balance the daily fluid intake during the morning and daytime. This will decrease thirst at night and limit the nocturnal challenge to the bladder.

Developmental Delay

Children reach developmental milestones at different rates. Bladder control requires very complex coordination between the nerves and the muscles. Other factors that might play a role in a child developing normal bladder control include stress and social pressures.

A child with enuresis may be subjected to embarrassment, punishment, and even abuse. The anxiety and fear that occurs may only hinder the development of bladder control.

Functional Bladder Capacity

In general, children with enuresis have smaller bladder capacities compared to children who do not have enuresis. The *anatomic capacity* is the same in enuretic and non-enuretic children. This means that both types of bladders have the potential to hold the same amount of urine. However, how much a child is actually able to hold in the bladder, or the *functional capacity*, is less in children with enuresis.

Children with enuresis do not have smaller bladders. They are just unable to hold the same amount of urine as non-enuretic children. It is not known exactly why this occurs.

Infections

Although urinary tract infections in children can cause wetting episodes, they are not a common cause of enuresis. Chronic bacterial infections in the bladder and pinworm infections of the bowels are easily diagnosed and treatable causes of enuresis.

Factors That Do NOT Cause Enuresis

- **Sleep Disorder**
Children with enuresis do not sleep more soundly and are not more difficult to wake up than children without enuresis. This is a common misconception. Most children without enuresis are not awakened at night for any reason. But, if they were to be awakened, it would be observed that these children are "sound sleepers," too.
- Unstable bladders
- Allergies

What Will Happen at the Doctor's Office?

For children with enuresis, a complete history, physical exam, and urinalysis should be performed. These questions may be asked about your child's medical history:

- **Urinary History**
 - Timing and onset of enuresis
 - Number of wet episodes per night
 - Are there any wet episodes during the day
 - Amount of water consumed during the day/night
 - History of urinary tract infections or other urinary problems
 - Average number of dry periods during the week
 - Any other symptoms such as daytime frequency and/or urgency, poor urinary stream, urinary infections, posturing
- **Medical History**
 - Other developmental milestones
 - Other medical problems
 - Bowel habits (constipation)
- **Family History**

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What Will Happen at the Doctor's Office? continued

As part of the medical examination, your child will be asked to give a urine sample for analysis. Also, after providing the urine sample, the doctor will perform a bladder scan (a type of ultrasound) to check the amount of urine left in the bladder after the child urinates.

What Can Be Done?

Parents need to know that the treatment for enuresis can be very frustrating and has a high relapse rate. Be assured that it is not your child's fault that the wetting accidents occur and that in most cases, the problem resolves over time on its own. There are several treatment plans that may assist in making the child dry at night. Before starting a treatment program, your child must: (1) want to be dry and (2) be willing to participate in the recommended program.

Possible Treatment Plans For Enuresis

Watch and Wait

Most cases of enuresis will resolve by themselves over time. There is no way to predict how soon this will happen. For a child who is not ready or willing to be involved in a treatment program, "watchful waiting" is an option. While enuresis can be a nuisance, it is not life threatening.

Non-Pharmacological Treatments

These options do not involve the child taking medicines. Many of these strategies are good skills for any child with enuresis. Combining these therapies with medicines can improve the success rate of becoming dry at night:

- **Reinforcement/Motivation**

This helps to make the child responsible for staying dry. Positive reinforcement with credits and awards (stickers, stars) are given

for dry nights. Before going to bed, positive self-talk helps to retrain the brain to become alert to the need to wake up. While preparing for bed, have your child say out loud, "I am going to wake up tonight to go pee in the toilet." Urinating two times (double voiding) before bedtime helps to ensure that the bladder is completely empty.

- **Fluid Intake Program**

Most children with enuresis do not drink enough fluid during the day and drink too much before bedtime. Children should try to drink 32 to 48 ounces of water throughout the day before dinnertime. You can monitor your child's drinking habits by taking your child to buy a large (32 to 48 ounce) container of his or her choice. Have the child decorate the container and personalize the container by writing his or her name on it. In this way, no one else will drink from the container.

Each morning, refill the container with water—or a water-based fluid. Make the child responsible for drinking all of the water from the container each day. At the end of the day, check and record the amount consumed.

Taking a water bottle to school can help to monitor fluid intake, too. Fluid should be limited two hours before bedtime.

- **Bladder Re-training**

This involves training the bladder to hold more urine. Since we know that most children with enuresis have smaller functional bladder capacities, having your child hold urine for increasingly longer times after getting the urge to urinate can increase the success rate of becoming dry at night. Keeping a voiding diary of frequency and volume of urine can establish that there is a problem and chart your child's success.

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Non-Pharmacological Treatments, continued

- **Night Alarms**

Night alarms are devices that clip onto the underwear and are programmed to awaken the child at night. The alarms are activated to make a loud noise by a few drops of urine. Ideally, the alarm wakes up your child who stops the uncontrolled peeing, gets out of bed, and uses the toilet. The alarms can be very successful in stopping enuresis. But, they are usually a family affair and require a lot of patience from the entire family. Complaints include failure to wake the child, length of time to see improvement (2 to 3 months), family disruption, and involvement of parents to wake their child. About 80% of children stay dry after they stop using the alarm.

Medicines

There are three types of medicines that your doctor can prescribe to help with enuresis. Most, but not all, children will respond to medicine. After stopping the medicine, many children may begin wetting again.

- **Imipramine Hydrochloride/Tofranil**

Doctors initially prescribed this medicine to treat depression. However, in this situation, it is not given for depression. It is thought that Tofranil works on the bladder muscle to relax it, allowing it to hold more urine. Almost 80% of children will show improvement in nighttime wet episodes. Tofranil is a small pill and must be taken every night before bedtime. Side effects are uncommon but include nervousness, sleep disturbances, gastrointestinal disturbances and personality changes. Toxic overdoses can occur so it should be kept out of the reach of children. In case of overdoses, call the Poison Control Center or consult an emergency room doctor right away. Tofranil is inexpensive.

- **Desmopressin Acetate/DDAVP**

This is an antidiurectic hormone. It works by decreasing the amount of urine produced. It comes as a pill or a nasal spray. It may be taken daily to prevent nighttime wetness or it can be taken for situations where the child wants to be dry (sleep-overs). About 70% of children have improvement, however there is a high relapse rate. Side effects are rare and include flushing, headache and nausea. It is an expensive medicine.

- **Oxybutynin Chloride/Ditropan or Detrol**

This is a second line medicine for enuresis. It is effective in less than 50% of children. It is very effective in children who have daytime symptoms of urgency and frequency. It comes in pill and liquid forms. Side effects are common and include dry mouth, dizziness, fatigue and constipation. It is a very inexpensive medicine.

Conclusions

- Enuresis occurs in 15% of 5-year-old children.
- Most children outgrow their wetting; only 1% of 15-year-olds have enuresis.
- We do not know exactly what causes enuresis, but it does run in families.
- The work-up includes a detailed history, physical exam, and urinalysis.
- Treatment includes both behavioral and medical therapies; relapses are common.

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Referral Criteria

For a referring physician, the following signs and symptoms warrant referral to a urologist:

- Evidence of spinal dysraphism: lumbosacral abnormalities including hairy patches, lipomas or dimples
- Reduced anal sphincter tone
- Palpable bladder
- Daytime frequency and wetting
- Painful urination
- Straining to urinate

How Can My Child and I Learn More?

Take note of any questions that you or your child may have and ask the doctor. Speak to your doctor about anything you have heard or read. This way, your doctor can let you and your child know what is best for your child's case.

This patient education handout was written by Byron D. Joyner, M.D.

This handout has been reviewed by clinical staff at Children's Hospital. However, your child's needs are unique. Before you act or rely upon this information, please talk with your child's health care provider.

For More Information

- Your health care provider
- Children's Resource Line:
(206) 987-2500 or 1-866-987-2500
toll-free Washington, Alaska, Montana, Idaho
- www.seattlechildrens.org
- A Walt Disney cartoon video on enuresis is available: *Bedwetting: Jasper to the Rescue*. Contact Disney Educational Productions at (800) 295-5010.

Children's

Hospital & Regional Medical Center
4800 Sand Point Way N.E.
Seattle, Washington 98105-0371
206-987-2000 (Voice)
206-987-2280 (TTY)
866-987-2000 (Toll-free/Voice)
www.seattlechildrens.org