Urinary Incontinence in Children

National Kidney and Urologic Diseases Information Clearinghouse

National Institute of Diabetes and Digestive and Kidney Diseases

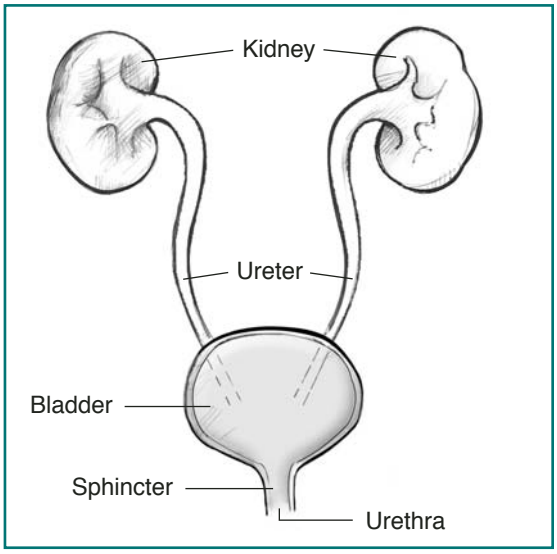
NATIONAL INSTITUTES OF HEALTH

Parents or guardians of children who experience bedwetting at night or accidents during the day should treat this problem with understanding and patience. This loss of urinary control is called urinary incontinence or just incontinence. Although it affects many young people, it usually disappears naturally over time, which suggests that incontinence, for some people, may be a normal part of growing up. Incontinence at the normal age of toilet training may cause great distress. Daytime or nighttime incontinence can be embarrassing. It is important to understand that many children experience occasional incontinence and that treatment is available for most children who have difficulty controlling their bladders.

How does the urinary system work?

Urination, or voiding, is a complex activity. The bladder is a balloon-like organ that lies in the lowest part of the abdomen. The bladder stores urine, then releases it through the urethra, the canal that carries urine to the outside of the body. Controlling this activity involves nerves, muscles, the spinal cord, and the brain.

The bladder is composed of two types of muscles: the detrusor, a muscular sac that stores urine and squeezes to empty; and the sphincter, a circular group of muscles at the bottom or neck of the bladder that automatically stay contracted to hold the urine in and automatically relax when the detrusor contracts to let the urine into



the urethra. A third group of muscles below the bladder (pelvic floor muscles) can contract to keep urine back.

A baby's bladder fills to a set point, then automatically contracts and empties. As the child gets older, the nervous system matures. The child's brain begins to get messages from the filling bladder and begins to send messages to the bladder to keep it from automatically emptying until the child decides it is the time and place to void.

Incontinence happens less often after age 5: About 10 percent of 5-year-olds, 5 percent of 10-year-olds, and 1 percent of 18-year-olds experience episodes of incontinence. It is twice as common in boys as in girls.

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Failures in this control mechanism result in incontinence. Reasons for this failure range from simple to complex.

What causes nighttime incontinence?

After age 5, wetting at night—often called bedwetting or sleepwetting—is more common than daytime wetting. Experts do not know what causes nighttime incontinence. Young people who experience nighttime wetting are usually physically and emotionally normal. Most cases probably result from a mix of factors including slower physical development, an overproduction of urine at night, a lack of ability to recognize bladder filling when asleep, and, infrequently, anxiety. For many, there is a strong family history of bedwetting, suggesting an inherited factor.

Slower Physical Development

Between the ages of 5 and 10, bedwetting may be the result of a small bladder capacity, long sleeping periods, and underdevelopment of the body's alarms that signal a full or emptying bladder. This form of incontinence will fade away as the bladder grows and the natural alarms become operational.

Excessive Output of Urine During Sleep

Normally, the body produces a hormone that can slow the production of urine. This hormone is called antidiuretic hormone, or ADH. The body normally produces more ADH at night so that the need to urinate is lower. If the body doesn't produce enough ADH at night, the production of urine may not be slowed down, leading to bladder overfilling. If a child does not sense the bladder filling and awaken to urinate, then wetting will occur.

Anxiety

Experts suggest that anxiety-causing events occurring in the lives of children ages 2 to 4 might lead to incontinence before the child achieves total bladder control. Anxiety experienced after age 4 might lead to wetting after the child has been dry for a period of 6 months or more. Such events include angry parents, unfamiliar social situations, and overwhelming family events such as the birth of a brother or sister.

Incontinence itself is an anxiety-causing event. Strong bladder contractions leading to leakage in the daytime can cause embarrassment and anxiety that lead to wetting at night.

Genetics

Certain inherited genes appear to contribute to incontinence. In 1995, Swedish researchers announced they had found a site on human chromosome 13 that is responsible, at least in part, for nighttime wetting. If both parents were bedwetters, a child has an 80 percent chance of also being a bedwetter. Experts believe that other, undetermined genes also may be involved in incontinence.

Obstructive Sleep Apnea

Nighttime incontinence may be one sign of another condition called obstructive sleep apnea, in which the child's breathing is interrupted during sleep, often because of inflamed or enlarged tonsils or adenoids. Other symptoms of this condition include snoring, mouth breathing, frequent ear and sinus infections, sore throat, choking, and daytime drowsiness. In some cases, successful treatment of this breathing disorder may also resolve the associated nighttime incontinence.

Structural Problems

Finally, a small number of cases of incontinence are caused by physical problems in the urinary system in children. Rarely, a blocked bladder or urethra may cause the bladder to overfill and leak. Nerve damage associated with the birth defect spina bifida can cause incontinence. In these cases, the incontinence can appear as a constant dribbling of urine.

What causes daytime incontinence?

Daytime incontinence that is not associated with urinary infection or anatomic abnormalities is less common than nighttime incontinence and tends to disappear much earlier than the nighttime versions. One possible cause of daytime incontinence is an overactive bladder. Many children with daytime incontinence have abnormal elimination habits, the most common being infrequent voiding and constipation.

An Overactive Bladder

Muscles surrounding the urethra—the tube that takes urine away from the bladder—have the job of keeping the passage closed, preventing urine from passing out of the body. If the bladder contracts strongly and without warning, the muscles surrounding the urethra may not be able to keep urine from passing. This often happens as a consequence of urinary tract infection (UTI) and is more common in girls.

Infrequent Voiding

Infrequent voiding refers to a child's voluntarily holding urine for prolonged intervals. For example, a child may not want to use the toilets at school or may not want to interrupt enjoyable activities, so he or she ignores the body's signal of a full bladder. In these cases, the bladder can overfill and leak urine. In addition, these children often develop UTIs, leading to an irritable or overactive bladder.

Other Causes

Some of the same factors that contribute to nighttime incontinence may act together with infrequent voiding to produce daytime incontinence. These factors include

- small bladder capacity
- structural problems
- anxiety-causing events
- pressure from a hard bowel movement (constipation)
- drinks or foods that contain caffeine, which increases urine output and may also cause spasms of the bladder muscle, or other ingredients to which the child may have an allergic reaction, such as chocolate or artificial coloring

Sometimes overly strenuous toilet training may make the child unable to relax the sphincter and the pelvic floor to completely empty the bladder. Retaining urine, or incomplete emptying, sets the stage for UTIs.

What treats or cures incontinence?

Growth and Development

Most urinary incontinence fades away naturally. Here are examples of what can happen over time:

- Bladder capacity increases.
- Natural body alarms become activated.
- An overactive bladder settles down.
- Production of ADH becomes normal.
- The child learns to respond to the body's signal that it is time to void.
- Stressful events or periods pass.

Many children overcome incontinence naturally—without treatment—as they grow older. The number of cases of incontinence goes down by 15 percent for each year after the age of 5.

Medications

Nighttime incontinence may be treated by increasing ADH levels. The hormone can be boosted by a synthetic version known as desmopressin, or DDAVP, which is available in pill form, nasal spray, or nose drops. Desmopressin is approved for use in children.

Another medication, called imipramine, is also used to treat sleepwetting. It acts on both the brain and the urinary bladder. Researchers estimate that these medications may help as many as 70 percent of patients achieve short-term success. Many patients, however, relapse once the medication is withdrawn.

If a young person experiences incontinence resulting from an overactive bladder, a doctor might prescribe a medicine that helps to calm the bladder muscle. This medicine controls muscle spasms and belongs to a class of medications called anticholinergics.

Bladder Training and Related Strategies

Bladder training consists of exercises for strengthening and coordinating muscles of the bladder and urethra, and may help the control of urination. These techniques teach the child to anticipate the need to urinate and prevent urination when away from a toilet. Techniques that may help nighttime incontinence include

- determining bladder capacity
- drinking less fluid before sleeping
- developing routines for waking up

Unfortunately, none of these techniques guarantees success.

Techniques that may help daytime incontinence include

- urinating on a schedule—timed voiding—such as every 2 hours
- avoiding caffeine or other foods or drinks that you suspect may contribute to your child's incontinence
- following suggestions for healthy urination, such as relaxing muscles and taking your time

Moisture Alarms

At night, moisture alarms can awaken a person when he or she begins to urinate. These devices include a water-sensitive pad worn in pajamas, a wire connecting to a battery-driven control, and an alarm that sounds when moisture is first detected. For the alarm to be effective, the child must awaken as soon as the alarm goes off, go to the bathroom, and change the bedding. Using alarms may require having another person sleep in the same room to awaken the bedwetter.

Incontinence is also called enuresis

- Primary enuresis is wetting in a person who has never been dry for at least 6 months.
- Secondary enuresis is wetting that begins after at least 6 months of dryness.
- Nocturnal enuresis is wetting that usually occurs during sleep, also called nighttime incontinence.
- Diurnal enuresis is wetting when awake, also called daytime incontinence.

Points to Remember

- Urinary incontinence in children is common.
- Nighttime wetting occurs more commonly in boys.
- Daytime wetting is more common in girls.
- After age 5, incontinence disappears naturally at a rate of 15 percent of cases per year.
- Treatments include waiting, dietary modification, moisture alarms, medications, and bladder training.

For More Information

American Academy of Pediatrics
141 Northwest Point Boulevard
Elk Grove Village, IL 60007–1098
Phone: 847–434–4000
Email: kidsdocs@aap.org
Internet: www.aap.org

American Urological Association Foundation
1000 Corporate Boulevard
Linthicum, MD 21090
Phone: 1–866–RING–AUA (746–4282)
or 410–689–3700
Email: patienteducation@auafoundation.org
Internet: www.UrologyHealth.org

National Association for Continence
P.O. Box 1019
Charleston, SC 29402–1019
Phone: 1–800–BLADDER (252–3337)
or 843–377–0900
Email: memberservices@nafc.org
Internet: www.nafc.org

National Kidney Foundation
30 East 33rd Street
New York, NY 10016
Phone: 1–800–622–9010 or 212–889–2210
Internet: www.kidney.org

The Simon Foundation for Continence
P.O. Box 835
Wilmette, IL 60091
Phone: 1–800–23–SIMON (237–4666)
or 847–864–3913
Email: simoninfo@simonfoundation.org
Internet: www.simonfoundation.org

Society of Urologic Nurses and Associates
P.O. Box 56
East Holly Avenue
Pitman, NJ 08071–0056
Phone: 1–888–TAP–SUNA (827–7862)
or 856–256–2335
Email: suna@ajj.com
Internet: www.suna.org

You may also find additional information on this topic using the following databases:

The NIDDK Reference Collection is a collection of thousands of materials produced for patients and health care professionals, including fact sheets, brochures, and audiovisual materials. Visit *www.catalog.niddk.nih.gov/resources*.

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3 Information Way
Bethesda, MD 20892–3580
Phone: 1–800–891–5390
Fax: 703–738–4929
Email: nkudic@info.niddk.nih.gov
Internet: www.kidney.niddk.nih.gov

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Publications produced by the Clearinghouse are carefully reviewed by both NIDDK scientists and outside experts. This publication was also reviewed by Stuart B. Bauer, M.D., Harvard Medical School and Children's Hospital, Boston.

This fact sheet is also available at *www.kidney.niddk.nih.gov.*

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