



Kapi'olani Pediatric Urology **Bedwetting (Nocturnal Enuresis)**

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How common is bedwetting?

The inability to achieve urinary control at night is common among children and often causes a significant amount of stress for them and their parents. The diagnosis is known as enuresis and it means involuntary total loss of urine. It does not really apply until after the age of 5, at which time an estimated 15 percent of children still wet the bed. By age 6, about 10 percent have the problem. As children grow, there is a continual decline of about 15 percent per year. By adulthood an estimated one percent still have nocturnal enuresis.

What causes it?

Enuresis tends to run in families, but up to now no definite genetic link has been determined. Most medical and scientific experts believe the problem is due to a delay in the maturity of the neurological and physical function of the bladder, both in the central nervous system controlling the bladder and at the bladder level.

Another cause is inadequate production of a chemical produced in the brain called antidiuretic hormone (ADH). This chemical serves as a signal to the kidneys to produce more concentrated urine in smaller quantities. ADH is usually found in higher quantities at night. Some children who have insufficient amounts of the chemical, produce higher quantities of urine at night and end up wetting the bed.

Although not well understood, bedwetting is sometimes related to psychological stressors, but this is usually temporary and not one of the more common causes.

Occasionally, children will have some other underlying physical cause for bedwetting, but these children will usually have wetting problems during the day, as well as urinary infections or problems with bowel control.

How do we evaluate this condition?

If your child suffers only from nighttime bedwetting, the evaluation comprises a medical history and physical examination. A questionnaire will pose questions about toilet training, family history, other urinary problems, and medications. The physical exam will focus on the abdomen, back, genitals, and the neurological system. A recent urinalysis and urine culture should be submitted prior to the appointment.

Children who have day and night wetting, a history of infections, or are found during examination to have an abnormality, may require more extensive testing, including an ultrasound of the kidneys and bladder, a plain abdominal x-ray, a voiding bladder x-ray called a voiding cysto-urethrogram (VCUG). More extensive neurological testing of the bladder and pelvic muscles, known as urodynamic studies, may also be necessary.

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How do you treat it?

The first step in helping your child is to better understand bedwetting. One of the best resources for parents is the book entitled, Getting to Dry, by Max Maizels. Another book, Dry All Night, by Allison Mack, is also adapted for children, and can help them understand more about the disorder and themselves. There are many other very good resources available at bookstores or online. Parents should be warned about some internet groups that advocate enrollment into their “treatment” programs, which can turn out to be very expensive and no more successful than observation alone.

Children younger than age six rarely need treatment; however, every child experiences different social and developmental effects from the problem and will be treated individually.

Three approaches are often used: behavioral modification, biofeedback (use of urinary alarms), and medication.

1. Adopting certain behaviors (behavior modification), may be helpful and may be all that is necessary. If other treatment is employed, constructive changes in behavior still should be adhered to. Here are some typical ones:

- a. avoid any oral fluids within two hours of bedtime, and then only take a sip when brushing teeth.
- b. completely empty the bladder just before getting into bed.
- c. avoid caffeinated beverages in the afternoon and evening.
- d. assess for and treat constipation.
- e. maintain a positive outlook and positively reward successful nights, and do not negatively discipline when accidents occur.
- f. get rid of the training pants (“pull-ups” or “goodnights”)
- g. obtain a good information resource to help understand all the options and to reassure your child.

2. Biofeedback is a form of conditioning that relies on a sensor attached to the child’s underwear that will cause an alarm to sound or vibrate when the sensor becomes wet. The noise or vibration will condition the child to recognize that urination is about to occur.

Audible alarms are useful in the younger child who may need the assistance of a parent to get them out of bed to go to the bathroom, void, change underwear, reattach the device and then get back in bed. The child may need parental assistance for a couple weeks before the child can manage on his or her own.

In the older and more motivated child who wishes to have more privacy, an alarm that only vibrates is quite useful. The vibratory alarm is inserted into the pouch of boys’ underwear or between two pairs of panties in girls. Children using this type of alarm should be able to respond to the alarm when it goes off by stopping their voiding, then get to the bathroom, empty their bladder, change underwear, replace the alarm and return to bed. These responsibilities may be too much for the younger child to be able to do.

Alarms should be used each night until the child is dry for two weeks after which time one can switch to every other night for a week or two and then stop. Contact voiding alarms (biofeedback) have been shown to have the highest long-term success rate of all methods used to get kids dry at night. Reasons for discontinuing alarms include difficulty arousing the child to respond to the alarm and the child’s unwillingness to use the device. Relapse rates are about 30-35% several months after discontinuing the alarm.

3. Medications. There are two main medications used for bedwetting. They are described below. A third one, Ditropan, may be used if the child also has daytime urinary frequency and wetting. Ditropan is not discussed here.

- DDAVP, also known as Desmopressin, is the most commonly prescribed medication for bedwetting. DDAVP supplements a chemical found naturally in the body, ADH, to signal the kidneys to produce less urine at night. The medication is very safe and effective; however, the relapse rate is quite high (more than 50 percent) when the medication is stopped. The medication can be given as either a nose spray or tablet. If used for more than six months or if the child experiences dizziness or headache, your physician may request that your child’s sodium level be checked. Low sodium is a very rare side effect and is most commonly found in children who do not limit fluid intake at night.

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- Tofranil (Imipramine), is a time-honored and effective drug to treat enuresis. It works in a variety of ways through the nervous system by relaxing the bladder to enable it to store more urine. But it also affects the sleeping habits of children and may make them more arouseable. Relapse rates are quite high once the medication is stopped. Side effects may include anxiety, irritability, and low appetite. An overdose of the medication can cause cardiac irregularities. For this reason, an adult must administer Tofranil and keep it out of reach of children. Occasionally, this medication can be used effectively in conjunction with an alarm. Some children are more readily aroused while on the medication and can respond to the voiding alarm better.

What is the outlook?

Overall the prognosis for stopping bedwetting is very good, and children will almost always outgrow it. Parents and the affected child must weigh the various aspects of treatment, which can be frustrating and lengthy, against the likelihood of spontaneous resolution. Bedwetting affects each child's emotional state differently, and this may be an impetus for treatment. There is not one "best" treatment regimen for your child. In the end, success may come as the result of many factors, including the motivation of the child, the help of a supporting family, and input and treatment by the pediatric specialist.

For any questions or assistance, call Kapi'olani's Pediatric Urology office at (808) 983-6210.