

# Pediatric Urology Associates, Ltd.

## & Pediatric Enuresis Center of Arizona

Robert B. Bailey, MD  
Luis R. Argueso, MD  
Michael L. Ritchey, MD  
Michael T. Nguyen, MD  
Zachary V. Zuniga, MD

Marilyn L. Tigges, PA-C  
Kelly M. Parker, PA-C  
Karen R. Dunivant, CPNP  
Diana L. Braskett, CPNP

### **NOCTURNAL ENURESIS – BEDWETTING**

Nocturnal enuresis, or bedwetting, is very common during the first few years after toilet training. At age 3, over 40% of children are still wetting the bed, and by age 6, less than 15% of children are bedwetting. This decreases to around 7% at age 8 and 2% by age 10. Twenty-five percent of all bed-wetters begin wetting after initially being dry after toilet training. Isolated bedwetting should not be considered a disease in most cases.

There are several causes for bedwetting. It is certain that the full bladder fails to awaken the child. This is a defect in sleep arousal but not a specific sleep disorder in children. Another cause is a small bladder capacity. Treatment will be initially directed toward the bladder if the child also has daytime urinary problems. The last cause of bedwetting is production of too much urine at night.

Our evaluation of bedwetting consists of history and physical examination, voiding diary and urinalysis. Routine x-ray studies are not obtained unless there is a history of urinary tract infection or underlying urological or neurological problems

Bedwetting has an increased incidence within families. If one parent wet the bed, there is a 40% chance that a son or daughter will wet the bed. If both parents experienced problems with nocturnal enuresis, there is a 70% chance that their offspring will wet the bed. If one sibling has nocturnal enuresis, there is a 40% chance that another brother or sister will wet the bed.

Treatment of nocturnal enuresis does not usually begin until after age 6. At that point, children often become concerned about their persistent nocturnal wetting. It will begin to interfere with social activities, such as sleepovers with friends, etc. The initial treatment of bedwetting is fluid restriction. We recommend that this be done two hours before bedtime. Fluid restriction alone will cure bedwetting in very few children. However, even if it is not successful, we continue it with other treatment programs that are used. Another common practice by parents is to awaken the child at some point after going to bed. This awakening in a random pattern after the child goes to sleep has historically not been felt to be very effective. However, recent studies have shown that if the child is awakened 3 hours after going to bed in a consistent fashion over several months, that it may be helpful. This arrangement is only used if it doesn't disrupt the sleep patterns of either the parent or the child!

The most successful treatment for nocturnal enuresis is the use of a bed alarm system. Up to 80% of children can be helped through the use of an alarm. However, it does require active participation by the child and success may not be evident until after 3 to 4 months of usage. Initially, most parents will have to awaken the child at the sound of the alarm, since most children will sleep through the alarm for the first few weeks of treatment. It is imperative in treating bedwetting that the child not be punished in any way. In fact a positive reward system is most helpful whereby the child is recognized for having dry nights.

Medications are used in the treatment of nocturnal enuresis after behavioral methods have been tried and failed. There are a number of options including medications to increase bladder capacity and to decrease urine production. All of the medications are associated with a high relapse rate after the medication is stopped. Imipramine, also known as Tofranil, has a success rate of up to 50 to 60%. Imipramine can cause mood changes and nightmares and needs to be administered by an adult and kept out of the reach of children. Ditropan and Detrol are medications that help increase bladder capacity. These medications also have side effects and are used mainly for patients who fail other measures or have day and night wetting.

DDAVP is the most common medication prescribed for the treatment of nocturnal enuresis. DDAVP is a synthetic form of vasopressin, which is a hormone that the human body normally produces. This hormone causes a decreased urine output at nighttime. Many bed-wetters do not increase their production of vasopressin at night, thereby making more than the usual amount of urine which can lead to bedwetting. However, not all bed-wetters have this problem.

DDAVP comes in two forms, a nasal spray and tablets. We have switched to the tablets since they are a little easier for the child to use. The medicine is taken 30 to 45 minutes before bedtime. The starting tablet is one tablet, 0.2 mg 30 to 45 minutes before bedtime. After the child has been maintained on this does for several weeks, we monitor the response. If there has been no success rate, then we double the dose. The maximum recommended dose is 3 tablets or 0.6 mg. The use of DDAVP usually results in cessation of bedwetting in up to 60% of children and an improvement in up to 80%. However, bedwetting recurs in a significant number of children after stopping DDAVP.