

Pediatric Urology Associates, Ltd.

& Pediatric Enuresis Center of Arizona

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VOIDING DISORDERS

Symptoms of voiding dysfunction such as frequent voiding (frequency), urgent need to void (urgency), and wetting (incontinence, enuresis) occur frequently in childhood and are a common cause for parental concern. These symptoms are normal in the very young and are usually due to an immature bladder. Young children need diapers because reflex voiding and involuntary bladder contractions result in wetting. Toilet training and a successful transition to an adult type of bladder control depends on the maturation of 3 functions. First, the bladder capacity must increase and second, the child must develop voluntary control over the sphincter muscle in order to start and stop voiding. Third, the child must develop voluntary control over the infantile voiding reflex which allows the child to stop involuntary bladder contractions. Usually, by the age of 4 years, most children have developed the adult pattern of bladder control. At this point, the child will have no involuntary bladder contractions while the bladder fills with urine. Also, the sphincter muscle will tighten as the bladder fills and voluntary bladder contractions will cause the sphincter muscle to relax resulting in complete bladder emptying.

During the period of time when the child is making the transition from an infantile to an adult pattern of bladder control, almost every child will transiently display some symptoms of a voiding disorder. One must be cautious about over-interpreting symptoms which are transient and a normal part of the bladder maturation process. However, when symptoms of voiding dysfunction persist after toilet training, then anatomic or neurological causes must be excluded. The goal in evaluating symptomatic children is to differentiate between those children whose voiding symptoms are only due to a delay in normal bladder maturation versus those children with significant urological or neurological abnormalities. The initial examination includes both a history and physical examination, as well as a urine examination. Families will frequently be asked to keep a diary of a child's voiding habits so that an accurate determination can be made of how often a child voids and at which time in the voiding cycle the child has an episode of incontinence (wetting). Many children's symptoms will resolve when their attention is focused on their voiding habits solely by keeping a detailed enuresis diary.

Certain physical findings and symptoms may require further diagnostic studies beyond the initial office evaluation. These include lumbosacral spinal abnormalities on physical exam, as well as a history of urinary tract infection, difficult or painful urination, and persistent day and nighttime wetting. Further investigative studies will be individualized depending on the particular child's history and physical examination. The initial imaging test is usually an ultrasound study of the kidneys, ureters, and bladder. This study looks for abnormal dilation of the upper urinary tract or hydronephrosis. A voiding cystogram (x-ray) will be recommended for some children in order to evaluate the lower urinary tract. This study shows the anatomy of the bladder and urethra and evaluates bladder emptying. The initial evaluation and additional imaging studies will identify those children with complicated conditions who may require surgery or additional specialized evaluations such as a neurosurgical evaluation.

The majority of children who display symptoms of urgency, frequency, and/or enuresis have an immature bladder for their age and treatment can be started after the initial evaluation. Many children do not heed the bladder's message that it is full and develop enuresis due to a delay in using the bathroom. This leads to the frequent complaint of parents that their child does not have any sensation of the need to void. Most of these children will display signs of a full bladder by squatting, grabbing themselves, fidgeting, dashing to the bathroom at the last minute, etc. Timed voiding is when the child is required to void at a predetermined interval which is based upon the child's history. Initially, it is usually recommended that the child void every 60 to 90 minutes. The interval is increased as success is achieved. A timed voiding schedule has great success in treating wetting due to a delay in voiding. In some cases, a pocket timer is indicated to remind the child to void. Children with urgency and frequency who cannot make it to the toilet on time, which leads to wetting accidents (urge incontinence), will respond in many cases to anticholinergic medication. These medications, such as oxybutynin (Ditropan), cause relaxation of the bladder and decrease the feeling of urgency which helps prevent episodes of urge incontinence. Anticholinergic medications can cause facial flushing and dry mouth. These are not allergic reactions but are side effects of the medication.

The use of a timed voiding schedule and anticholinergic medication is aimed at treating daytime symptoms. In many cases, anticholinergic medication needs to be used only for a short period of time, such as 3 or 4 weeks. A child's voiding habits may respond relatively quickly to the recommended treatment plan. However, some children do regress periodically, especially at times of stress such as at the beginning of a new school year, etc. In those children with day and nighttime enuresis, these treatment modalities may have little effect on nighttime wetting. The goal is to remedy the daytime symptoms first and then treatment of the nighttime wetting would be indicated. Treatment for nighttime wetting includes the use of a bed alarm system, Imipramine (Tofranil) or vasopressin (DDAVP).

Children with significant behavioral problems may show little response to urological treatment programs and may benefit from behavioral counseling. Children with developmental delays will frequently demonstrate a delay in toilet training due to a persistent immature bladder. Consequently, the age at which evaluation and treatment for enuresis is initiated may need to be adjusted accordingly.

In children with significant daytime voiding symptoms who are refractory to treatment, special testing of bladder function may be indicated (urodynamic studies). This examination measures bladder and sphincter pressures during bladder filling and emptying. The results of the urodynamic testing may indicate different forms of treatment are indicated.

Ultimately, most children with uncomplicated enuresis will develop adult urinary bladder control as the bladder matures with time.