SOUTHWEST CHILDREN'S CENTER

Enuresis

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This disorder has a variation or two, but this discussion will be limited primarily to simple bed wetting (primary nocturnal enuresis). Continence of urine and feces occurs in a predictable pattern in most babies and young children. Nocturnal control of feces is first, followed in order by daytime control of urine, daytime control of feces and lastly by nocturnal control of urine. There are exceptions to this pattern of acquiring continence but they are unusual. Nighttime urinary continence is a somewhat genetic issue. If one parent was a "wetter", approaching forty-five percent of children in that family will be "wetters". If both parents were "wetters", nearly seventy-five percent of children in that family will be "wetters". If you query parents about the age at which they achieved dryness as a child, that is a reasonable approximation of when their child will achieve dryness spontaneously. At age five, about sixteen percent of children are consistent "wetters". Spontaneous resolution occurs at about fifteen to twenty percent per year. By adulthood, only about one percent of the population has persistent "wetting". So the approximate prevalence by age is listed below:

Age five	16%
Age six	13%
Age seven	10%
Age eight	7%
Age ten	5%
Age twelve	2-3%
Age > fifteen	1-2%

Before discussing therapy, there are some basics to discuss. For the most part, active intervention should wait until parental impatience is replaced by the child's interest in being dry. If this key feature is not in place, intervention is not likely to succeed and frustration will likely be the fruit that is borne.

It is ordinary to not be dry at age five and many experts suggest seeking medical counsel if a child is still regularly wetting the bed at age seven. Never berate or discipline a child for bed wetting

because the wetting is involuntary and if mature enough, the child is typically the one of you most interested in being dry. Remember we are talking about young children and effectively communicating the desire to be dry is a sophisticated idea that will elude most children's expressive skills. Many children are reluctant to lead or engage in conversation about wetting because without thinking, some parent's language in this area has subtly or not so subtly connoted a degree of negativism.

Seek medical care more urgently if:

1. Your child has been dry for six months and begins to wet again
2. Your child wets while awake
3. There is pain associated with urination
4. There is unusual thirst associated with wetting
5. The urine is red, pink or foul smelling
6. There is persistent constipation or large formed stools
7. There is weight loss associated with wetting
8. There is snoring or persistent sleep interruption

So if there are none of the concerns in the list above and you have a child interested in dryness approaching age seven or beyond, your child likely has mono-symptomatic enuresis. Begin a pleasant, reassuring conversation about achieving dryness at a time separate from the most recent "cleaning-up" after wetting. Remember the youngster you are talking with could be the future adult charged with helping you with your incontinence in old age. Be nice!!

Enuresis can be categorized as monosymptomatic (nighttime wetting only) and non-monosymptomatic (symptoms of lower urinary tract dysfunction). Non-monosymptomatic enuresis will have one or more of the historical features listed below. About twenty percent of nighttime wetters will have one or more of the symptoms listed below and therefore be classified as non-monosymptomatic enuretics. These children may need more than a basic evaluation and therapy to resolve their more complex wetting difficulties. Referral to a pediatric urologist for these more complex symptoms is often the most direct route to achieving dryness.

Symptoms for non-monosymptomatic enuretics:

1. Consistently increased (>7) or decreased (<4) voids per day
2. Daytime incontinence
3. Urgency
4. Difficulty initiating urination (hesitancy)
5. Straining
6. A weak stream
7. Urination occurs in several distinct spurts (intermittency)
8. Holding maneuvers-strategies used to postpone urinating
9. A feeling of incomplete emptying
10. Dribbling
11. Genital or lower urinary tract pain
12. Constipation- large stools, infrequent stools, firm stools

If none of the historical concerns listed above are part of the history, sophisticated medical testing will not be indicated as part of the initial evaluation. If the physical examination is unremarkable, most experts will perform a urinalysis and a urine culture as part of the initial evaluation, but that is likely to be all of the testing in isolated nocturnal bed wetting.

Causes of isolated (monosymptomatic) bed wetting include production of large volumes of urine after falling asleep (nocturnal polyuria), bladder wall (detrussor) over activity and disturbed sleep. Maturational delay, genetics and abnormal (diminished) secretion of the hormone (vasopressin) that causes the kidneys to concentrate urine are also part of the spectrum of causes of delay in achieving dryness.

The next phase of the investigation is to develop a diary of liquid consumption (how much and what--some beverages are notable bladder irritants and increase urinary frequency). Offending beverages in a child's diet are mostly caffeinated beverages and citrus juices. Some foods are potential offenders as well. That list would include chocolate, citrus fruit, capsaicins (spicy peppers- i.e. jalapeños) and for some, tomatoes.

A record of daytime and nighttime urination recorded to the nearest hour with an estimate of volume and whether you were wet or dry at the time of urination will be helpful information. A printable copy of the diary can be found at the end of this article. Several days of data should be collected and reviewed at a subsequent visit to help in developing a therapeutic plan to achieve dryness. At least a few accurate estimates of the maximum urine volume a child can "hold" should be made. Most children with ordinary functional bladder capacity can "hold" in a full bladder, ounces equal to their age plus two. So an ordinary seven-year-old can hold seven ounces plus two ounces, so nine ounces. This rule of thumb is applicable up to age ten when twelve ounces is an ordinary functional bladder capacity. Part of the office evaluation of the wetting child should also include the first morning urine specimen so the making of a normal concentrated urine can be verified. It should be noted that the "small" bladders are not structurally small. They are functionally small, hence the term **functional** bladder capacity. This information is also valuable in developing a plan to achieve dryness.

If you have a child with a small functional bladder capacity, the likely problem is an overactive detrussor muscle that sends signals to the brain to empty the bladder at an inappropriately small volume. This will usually result in frequent and urgent visits to the bathroom in the daytime and wetting at night unless the child rouses to urinate at night. The signals to the brain to empty the bladder can, with effort, be voluntarily overridden for a short period of time helping the detrussor muscle to become more tolerant of increasing volumes of urine. The key in this will be repeated practice and a tolerance for some failure with wetting or considerable urgency in getting to the bathroom. To work on this "retraining", large volumes of liquid should be consumed during the early part of the day (so there are lots of chances to practice overriding the detrussor) on days with ready access to the toilet. So you may not want to do this if you are going to be in the car all day, or at school, unless arrangements have been made to grant urgent access to the toileting facilities. I suppose disposable underwear aimed at the incontinence "market" could be considered. Pads, inserts or underwear with absorbent capacity can help to reduce the consequences of wetting as the detrussor is being "retrained". Some experts will say that use of disposable incontinence clothing/products can engender laziness and perpetuate wetting. You'll need to be sensitive to that possibility in your child. Later in the day, slow down the liquid consumption so the flow of urine at night is reduced and a chance at dryness can be more likely. Overall through the day, 40% of liquids should be consumed by noon, another

40% by five pm and the remaining 20% after five pm. Keeping a diary about liquid intake can be a helpful "eye-opener". Detrussor retraining can be a slow process, especially in the beginning. A patient and encouraging tone can go a long way in cultivating success. Keeping a diary at home to document the gradual successes can be helpful in validating the praise from you (the ever faithful coach) to your child. If your tone is one of frustration, progress will be slowed or the process may even be doomed to failure. *Be nice!!*

Strengthening the "pelvic floor" muscles can be helpful as well. Females and males have these muscles and strengthening them can aid in developing an awareness of "bladder fullness" and maintaining dryness. Interrupting the flow of urine each time the bladder is being emptied will help to strengthen the "pelvic floor" and can be an effective technique to increasing awareness of overall bladder status. On nights when liquid consumption has been such that the child's functional bladder capacity will be exceeded, this bladder awareness and wakening to urinate during sleeping hours may be the only way to be dry on certain nights. If progress in teaching this at home cannot be achieved, physical therapy referrals can be made for this specific function.

Nocturnal bladder awareness can be improved with a "wetting alarm". This is a battery powered (hearing aid batteries, typically) device worn in/on the underwear with an electrode strip that allows for a circuit to be completed by the salt in urine. This completed circuit would set off an alarm connected by insulated wire and worn at the neck collar of sleepwear. Remember these batteries can be a medical crisis if ingested, so keep careful supervision over the batteries. This is especially true if there is a younger sibling(s) in the family. Wetting alarms can be ordered on the Internet and are supported in medical literature as one of the most successful tools in achieving nighttime dryness. However, there is one caveat. Most children will need a patient and encouraging coach *(that's you)* to be taught to waken in response to the alarm's sounding. The process of waking reliably to the alarm often takes a couple of months of coaching. *Be nice!!*

Giving a sense of control to the child about his/her bladder can be helpful and is warranted. Give a gentle speech about how you are in control (with the "coach's" help) of the wetting and the consequences that come with it. Put in place an infrastructure that will allow the child to keep bedding as dry as possible. Protect mattresses, box springs, pillows etc. Make the choices of linens

etc. easy to launder. Have spare sets for easy rotation of clean bedding. Consider (unless this fosters laziness) having a supply of disposable blue pads and maybe linens will not get wet every night. Teach a child to help with protecting bedding, removing wet linens, laundering wet linens and recovering a bare mattress with clean linens. Think of all the labor saving supplies you'd want for yourself and get that infrastructure in place for the child. Rinsing off urine in the mornings before leaving for school is a must along with care of the linens and wet clothing. All of this can be taught to a child. As the child ages, the energy **you** will need to invest in these matters will gradually decrease until all of this is the work of the "wetting" child. Never should this be perceived by the child as a punitive measure. The goal is to build self-esteem through empowering the child to be in control of wetting and the consequences. When dryness is achieved, the more the child has helped in the process, the sweeter the victory will be.

Having read all this, many would be asking about medication. We're a 'pill and convenience-oriented' culture and the "magic pill" to achieve dryness would be nice. No time investment, no patience, no coaching, no sacrifice and no "being nice". If you're after a pill to do the lion's share of the work, stop now and save the copayment. Medication is never more than a role player. The real victory in this quest is all of the behavioral medicine discussed thus far. Nevertheless, let's discuss medication. There are only two medications FDA approved for use in the medical therapy of bed wetting, Desmopresin acetate (DDAVP) and imipramine (Tofranil). If you bring these medications into the home, toxic potential exists for younger sibling(s) if unintentional ingestions occur and those ingestions can be very serious. Imipramine has the older/first indication for the medical care of bed wetting. It is a tri-cyclic antidepressant and typically when used for bed wetting, the dose is about twenty percent of the dose used in treating depression. The exact mechanism of action is a little sketchy but seems to increase awareness of bladder fullness and the suppression of the urge to empty the bladder at "inappropriate moments" (when sleeping) at the level of the brain stem. DDAVP has the newer indication for use in bed wetting. It is a synthetic pituitary hormone that helps the kidney to concentrate urine and thereby reduce volume and perhaps stay below the functional bladder capacity of the child and reduce "wetting" nights. The best application for DDAVP will be in a child with ordinary to reduced functional bladder capacity for age. No matter how successful DDAVP might be in reducing urine volume, work on detrussor retraining, pelvic floor strengthening, overall bladder awareness, and arousal in response to nocturnal signals of impending bladder emptying will

be more important than the pill itself. Regardless, if one of these two medication is used (without the patient coaching) and the medication is stopped, the restarting of bed wetting is common unless the child has aged enough to expect dryness simply through the aging process. So we're back to the team of the "wetting" child and the ever supportive, patient coach and behavioral retraining to carry the bulk of the efforts to achieve dryness. As was said in the beginning of this, until you have a fully committed child and a patient coach at that child's side, you'd be better off waiting for nature and spontaneous resolution rates to fix this.

Above all other things, involve your child, develop a plan that is empathetic and protects your child's dignity. *What goes around comes around. Be nice!*

In summary:

1. The child should be seven years old or older
2. The child should be fully committed to achieving dryness
3. A patient coach will be essential to success
4. A diary to analyze urinary patterns helps to recognize complex wetting
5. Children with complex symptoms should be referred to experts
6. Controlling liquid intake through the "day" can be helpful
7. Strengthening and stretching bladder exercises can be helpful
8. A wetting alarm can help but works best with a coach helping
9. Medication is prescribable, but there is no "magic pill"
10. The best tools to achieve dryness are behavioral in nature
11. While working to achieve dryness, preserve dignity above all things
12. Be nice!

Bring to the evaluation:

1. Several days of drinking, urination and stooling data
2. Accurate assessment of maximum bladder capacity in ounces
3. A first in the morning urine specimen in a cup **and** a full bladder

VOIDING DIARY BELOW

SOUTHWEST CHILDREN'S CENTER

VOIDING DIARY

DATE: _____ WOKE UP AT: _____ AM WENT TO SLEEP AT: _____ PM

	DRINKS		PEE			POOP		
	Type	Amount	In Toilet	Not In Toilet	Amount	In Toilet	Not In Toilet	Amount
12:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
1:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
2:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
3:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
4:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
5:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
6:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
7:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
8:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
9:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
10:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
11:00 AM		oz.			damp / wet / soaked			tiny / medium / huge
12:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
1:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
2:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
3:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
4:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
5:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
6:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
7:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
8:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
9:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
10:00 PM		oz.			damp / wet / soaked			tiny / medium / huge
11:00 PM		oz.			damp / wet / soaked			tiny / medium / huge

MAXIMUM URINE VOLUME: _____