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### **EVALUATION AND MANAGEMENT OF ENURESIS IN THE GENERAL PEDIATRIC SETTING**

Developed by Anne-Sophie Munger and Dr. James Harris for PedsCases.com.  
June 12, 2025

#### **Introduction:**

Hi everyone! My name is Anne-Sophie Munger, and I am a fourth-year medical student at the University of Montreal. Today we will be discussing the evaluation and management of enuresis. This podcast was created in collaboration with Dr. James Harris, a community-based pediatrician from the University of British Columbia.

#### **Objectives:**

By the end of this podcast, listeners will be able to:

1. Define enuresis in the general pediatric setting;
2. Identify the key points in history taking for a child with enuresis;
3. Determine appropriate investigations for a child presenting with enuresis;
4. Recognize which situations need intervention and select appropriate treatment for enuresis;
5. Establish the proper follow-up for the child and their family.

#### **Clinical Case:**

To dive into it, let me present to you a clinical case:

You are a fourth-year medical student working at the outpatient general pediatric clinic today. It is your first encounter with Josh, an energetic, healthy 6-year-old boy, and his mother. She tells you that Josh still occasionally wets his bed at night. He has never been dry at night for more than 7 consecutive days. She is quite concerned.

#### **Defining enuresis:**

Before we continue with Josh's medical history, let's cover some basic definitions.

Enuresis is defined as urinary incontinence during sleep. In children, it represents a delayed maturation in a normal developmental process that is typically achieved by

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children 5 years and older. It is usually due to an inability to awaken from sleep when the bladder is full. It can also be caused by excessive nighttime voiding or a decreased functional capacity of the bladder (1-2).

It is also important to differentiate enuresis from nocturia, which is when the child is awake to void at night.

To classify enuresis, we can define it as primary or secondary. Primary enuresis applies to a child that has never had a dry spell of more than 6 months whereas secondary enuresis is a relapse after a dry period of 6 months. If you see a child with secondary enuresis, it is recommended to screen for organic comorbidities, medical conditions, psychological stressors or a behavioral condition (1, 4).

Enuresis is further divided into two types: monosymptomatic or non-monosymptomatic. Monosymptomatic enuresis is known as enuresis alone, whereas non-monosymptomatic enuresis is the presence of enuresis and any lower urinary tract symptom. These symptoms include increased or decreased urinary frequency, holding maneuvers, daytime incontinence, urgency, dysuria without a UTI, interruption of flow and incomplete emptying sensation (1, 2). We will continue by referring to these as LUTS.

Risk factors for enuresis include a younger age, male sex, obesity, a history of urinary tract infection and a family history of enuresis (2). If both parents of the child were known for primary monosymptomatic enuresis, the child has 77% chances of having the condition (3).

To state a few more facts, according to recent studies, enuresis in children has a prevalence of 10-15% in children of 6 years-old, 5% at 10 years old and 1-2% into adulthood (4-5). Usually, most children will attain daytime bladder control by age 4 and nighttime bladder control by 5-7 years old (6).

In our case, Josh has primary enuresis as he has never had a sustained period of nighttime bladder control. Let's figure out what more information we need to gather for his history.

### **History:**

The history of a child with enuresis should specifically cover the enuresis details, associated symptoms, family history and comorbidities in addition to your complete history (2). When first meeting the child, you can establish what type of enuresis they have with a few questions (4): what is the child's age?, has the child ever had a dry period of more than 6 months?, and are there any daytime urine control issues?

Secondly, gather the characteristics of the enuresis. The frequency of the episodes, the timing throughout the night and the quantity of voiding are important to know. Usually, monosymptomatic enuresis is characterized as one big void, early in the night (2). Children with subtle LUTS and/or an overactive bladder can have smaller frequent

voids during the night. If the void quantity is large, you might be dealing with polyuria which has an impact on the course of treatment. Remember to explore any symptoms, like LUTS, associated with the enuresis. Habits in relation to enuresis are also useful to know such as the quantity and timing of fluid intake (1-2), the order of the bedtime routine, postures or behaviors to suppress urination, and straining in urination.

In the family history, remember to question at what age relatives resolved their enuresis, if applicable.

A key point to remember in your history is that you should explore with the child and his or her caregiver any psychological stressors that come up during the discussion. For example, the arrival of a new sibling, the death of a parent, trouble at school, abuse, divorce or other major life stressors (1-2). These psychological stressors can precipitate enuresis.

Next, let's discuss the comorbidities. While there may not always be a direct causative effect of comorbidities, they play an important role in understanding the condition as well as optimizing opportunities for improvement. As you may know, constipation, if left untreated, can cause LUTS and enuresis, and lead to enuresis treatment failure (1). In fact, 82% of primary monosymptomatic enuretic (PMNE) children have constipation (7). This condition can often be missed in school-age children as their parents are less aware of their bowel habits. Make sure to question fecal elimination habits like the number of stools per day, any pain or bleeding associated with bowel movements, clogging or fecal incontinence (8-9). Children with enuresis might also have developmental and/or psychiatric conditions impacting the maturation needed to be dry at night (1). Did you know that if there is accompanying ADHD, the treatment for enuresis is less likely to be successful? Another known comorbidity is obstructive sleep apnea (1), probably in relation to the difficulty in sleep arousal. Ask if the child snores or has daytime somnolence. The treatment of the obstructive sleep apnea usually helps to resolve the enuresis.

It is important to remember that these comorbidities are the main ones. However, in rare cases, enuresis can be the presenting symptom of conditions like diabetes mellitus, diabetes insipidus, chronic kidney disease, hyperthyroidism, spinal dysraphism, infections, seizures or cardiac arrhythmias (1). For chronic diseases, you should inquire about polydipsia, polyuria and weight loss (5).

As you move on with your history, explore what treatments have been tried so far, if any, and the outcomes associated (2). Discuss the degree in which the child is bothered by the enuresis, for example if they limit visiting friends, are more socially isolated or worry that something is wrong with them (1), as this will affect your management strategy. You can also question the impact of the enuresis on the child's family. At this time, you should also ask about the child's interest in treatment. In the next steps, it is important to balance the treatment with the risk of overmedicalizing the issue by addressing the real impacts on the family and the child.

## **Back to the case:**

Let's dive back into the clinical case.

You discuss with Josh and his mom to gather more information. Josh is an only child, in good health. His development so far has been normal. He attained daytime continence at 4 years old. He takes no medication, has no allergies and is of European descent. Josh is in first grade and has no issues at school. His mother did not have this issue herself, which is why she is worried. His father, however, stopped wetting his bed at night at 7 years old.

Josh is 6 years old and has never been dry overnight. He does not have any daytime control issues. He has no associated symptoms. During the day, Josh drinks a regular amount of fluids. At bedtime, Josh takes a glass of water when he brushes his teeth and goes to the washroom before bed. He does not have any behaviors to suppress urination nor strain in urination. He does not snore at night or seem particularly sleepy during the day. His mother says he is happy and quite energetic.

As for his bowel habits, Josh says he has one bowel movement per day which is not associated with any pain or bleeding. He rarely clogs the toilet and has no fecal incontinence.

No weight loss has been noted from Josh's chart. He does not have polydipsia or polyuria.

When you question psychological stressors, Josh's mother mentions that they moved two years ago and wonders if this is related. You learn that this is the first time Josh has consulted for this issue. So far, he is not concerned with the enuresis. Lastly, no treatments have been tried yet.

Let's take a minute to recap: Josh is a healthy 6-year-old boy with a family history positive for enuresis. He has primary mono-symptomatic enuresis. He does not present symptoms of constipation, sleep apnea or developmental delay. There is a psychological stressor noted; however, it was 2 years ago. The child is not bothered by the enuresis and no treatments have been tried so far.

## **Physical examination:**

When examining a child presenting with enuresis, you should pay close attention to the following elements in addition to your typical pediatric exam: growth, enlarged tonsils, motor or sensory abnormalities (especially in the lumbosacral spine, the lower limbs and gait) and examine the abdomen for constipation or a palpable bladder (1, 4).

A genital and rectal exam are usually optional, guided by patient history and comfort. Look for labial adhesions in girls and meatal stenosis in boys (2). Furthermore, for a girl, if there is continuous liquid flow from the vagina, consider an ectopic ureter (3). Additionally, you can look for skin changes from chronic wetness or irritation.

If a rectal exam is indicated based on your history, assess for the presence of stool in the anus which could point to encopresis or constipation, or any fissures, which could indicate constipation (2).

Closely examine the sacrum and lumbar spine. Look for sacral dimples, tufts of hair or asymmetric gluteal clefts. If symptoms on history are concerning for neurologic abnormalities, perform a neurological exam for perineal sensation. If you have any positive findings, consider a spinal cord disease and refer to a subspecialist (2, 4).

### **Investigations:**

Usually, investigations for a child in the general pediatric setting presenting with enuresis will be limited to urinalysis if non-monosymptomatic enuresis is present and you are worried for a diagnosis other than PMNE (1-2). In rare cases an ultrasound will be performed to search for urinary tract malformations or kidney abnormalities. Urine volume measurement will measure the amount of urine voided in 24 hours to distinguish small bladder capacity from nocturnal polyuria (1). Lastly, urodynamic studies are reserved for more complicated cases as they are quite invasive.

To help clarify the symptoms, you can use a written void diary (1, 9) or app.

### **Treatment:**

The next section will detail which steps to follow when treating a child with enuresis, based on their symptoms and quality of life impact. It is important to know that enuresis in children is associated with a spontaneous resolution rate of 15% annually (2)! The decision to treat should be a discussion with the family and based on the effect of the enuresis on the child like their self-esteem, and surrounding family factors such as motivation, support and resources (1-2).

Note that if you have any severe, atypical or multiple LUTS, or when enuresis is refractory to standard treatment, pediatric urology should be consulted (1).

Remember that addressing the comorbidities discussed earlier can be beneficial in the improvement or treatment success of enuresis, so treating conditions such as constipation, sleep apnea, and psychiatric or behavioral disorders concurrently is critical (2, 8).

For primary monosymptomatic enuresis, education and reassurance are the two main steps. Explain that the enuresis should outgrow with time, and mitigate the feelings of stigma and guilt. Highlight the fact that enuresis is common and unintentional and cannot be controlled by positive incentives or negative consequences. Ideally, if the child and the family are comfortable, you could wait before initiating treatment. If there is ongoing distress after education and counseling, you may use motivational and behavioral counseling. This includes elements such as optimal voiding practices (first thing in the morning and another time before bed while regularly voiding throughout the day), limiting fluid intake after dinner, and rewarding good behaviors within the

child's control such as cleanliness training and voiding before bedtime (1). Remember to avoid punishment.

If the distress persists, you may use active therapies; However, continue to emphasize spontaneous resolution (1). Note that the older the patient gets, the more psychological distress is associated with enuresis so this step might be initiated earlier (5).

Let's discuss some active therapies that can be used in more detail. (1, 5):

- A bed alarm will wake up the child with a moisture sensor and help improve arousal. With time, the patient will have smaller voiding volumes at night, will finish emptying their bladder in the toilet and will have fewer episodes per night. The success rate is variable and unfortunately 50% of the children will relapse once the alarm is discontinued. It is important to know that the whole family will be involved in this treatment as it is very demanding and will disrupt the parent's sleep. Early signs of success will show after two weeks. Consider failure of treatment if there is no effect after 6 weeks.
- Desmopressin, a synthetic vasopressin that decreases urine volume and intravesicular pressure, can be used intermittently for periodic occasions like a sleepover or daily use for up to 3 consecutive months, in children 7 years of age and older. Daily use is for select cases only as there is a risk of water intoxication. Do not use this medication if a child has sports at night that require rehydration or an illness affecting fluid balance. Use the lowest effective dose if used intermittently. A full response is expected in 30% of daily users. Make sure to reassess the need for this medication every three months.
- Anticholinergics like solifenacin or oxybutinin target bladder overactivity and can be used for enuresis as a combined treatment. Be careful, as these have more side effects than desmopressin. Before you initiate this medication, make sure the child is emptying their bladder with no residue.
- Other medications and neuromodulation may be considered by pediatric subspecialty clinics.

For secondary enuresis, the treatments above should only be considered once you have screened for organic comorbidities, medical conditions, psychological stressors and behavioral conditions (1-2). Usually, secondary enuresis will be caused by either psychological issues or a true urinary tract malformation. The latter would necessitate a thorough workup.

If children are resistant to treatment, it is important to know that first-line therapy that did not work initially may be successful after an interval of a few years (5).

### **Back to the case:**

Now let's finish up our clinical case.

Would you be surprised if I told you Josh's physical exam is normal? Usually, in primary enuresis the physical exam is normal, as this is the case for Josh. No further investigations are needed in Josh's condition as he has no accompanying symptoms.

For the treatment plan, since neither Josh nor his parents are bothered, you reassure and counsel the mother. You explain to her that the enuresis should resolve with time, as enuresis in children has an annual spontaneous resolution rate of 15%. You are not worried about any comorbidities like constipation, sleep apnea, developmental delay, neurological issues or renal issues. For prevention, Josh should continue to have one soft stool per day. Also, since Josh's father achieved nocturnal bladder control around the age of 7, this might be the case for Josh as well. As for the psychological stressor, you explain that this might not be related, since Josh has primary and not secondary enuresis. She thanks you for your help.

However, 6 months later Josh is back in your office while you happen to be on an elective in the same clinic. He has just turned 7! He is using a bladder diary and is still having about 3 episodes per week of nocturnal incontinence. His mother noticed that he is starting to seem very self-conscious about it. He wishes to go for a sleepover at his friend's house and is scared to be made fun of if he wets his bed. Josh's mother asks if there is anything you can do to help him. First, you share with her motivational tips to help Josh attain nighttime continence. Next, since there is psychological distress associated, you suggest using a bed alarm. This will awaken Josh when he has an episode of enuresis.

When the pediatrician follows up 2 months later, Josh is thrilled that he got to go to his first sleepover and is proud to say that his enuresis is resolved! Josh's mother tells you that the motivational tips and the bed alarm helped.

Great news!

### **Conclusion/summary:**

Before we end the podcast, let's take a minute to highlight a few key points.

1. Enuresis in the general pediatric setting is defined as the presence of episodes of urinary incontinence during sleep for children aged 5 and over. It can be divided into primary or secondary enuresis depending on if the child has had a dry spell of 6 months or not. It is also divided between monosymptomatic and non-monosymptomatic enuresis, the latter indicating the need for more investigations;
2. Your history should include screening for family history, comorbidities and psychological stressors;
3. For PMNE, the physical exam will likely be normal. Remember to look specifically for signs of constipation or other chronic diseases;
4. For PMNE, you do not usually require any further investigations;

5. The treatment of PMNE starts with counseling and reassurance. Active therapies such as alarm therapy or medications are available and should be used in the case of psychological distress;
6. Secondary enuresis is often associated with a psychological or physical comorbidity so investigate and treat accordingly;
7. If there are LUTS or if the enuresis is refractory to standard and combination therapies, consult urology;
8. Establish a follow-up appointment based on the type of treatment used and the expected period of resolution. Remember that enuresis has a spontaneous rate of resolution of 15%.

Thanks for listening!

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