



Enuresis = persistent nocturnal incontinence

>2 episodes/week | Occurs during sleep | Uncontrolled urinary voiding

- In children ≥5 years old. Also known as “**bedwetting**”
- Occurs when child does not wake up from sleep to void
- Results from a combination of: **genetic factors, maturational delay, excessively deep sleep, reduced bladder capacity, nocturnal polyuria**

1 Primary Enuresis

Never previously achieved period of nighttime dryness. ~80% of nocturnal enuresis cases, high rate of spontaneous resolution

2 Secondary Enuresis

Enuresis developed after ≥6 consecutive months of nighttime continence. Often triggered by **stressors** (divorce, birth of sibling, school), sleep disordered breathing, constipation, suboptimal voiding habits.

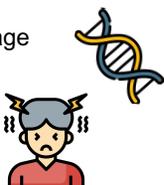
Goal: rule out presence of underlying medical problem



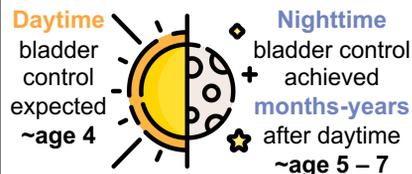
Such as urinary tract infection, constipation, obstructive sleep apnea, and diabetes insipidus.

PRESENTATION

HISTORY	PHYSICAL EXAM
<ul style="list-style-type: none"> ? Frequency (# /night, # /week, timing of episodes) ? Trend (improving vs. worsening) ? Daytime symptoms and/or LUTS* / ? Constipation or fecal incontinence ? Previous period of dryness (>6mths?) ? Volume voided (large volumes are indicative of nocturnal polyuria) ? Fluid intake (majority in evening?) ? Previous interventions? Were they successful? ? PMHx (sleep apnea, diabetes, UTIs, sickle cell, neurologic abnormalities, ADHD, ASD) ? Neurodevelopmental delays? Behavioural or psychologic concerns? ? FHx of nocturnal enuresis (what age did parent resolve enuresis?) ? SHx (recent stressors?) ? Impact on child and family ? Review voiding diary if available 	<ul style="list-style-type: none"> ○ Genital exam usually normal in primary enuresis ○ Fever may indicate UTI ○ Abdominal palpation for stool ○ Lower back for stigmata of spinal dysraphism (midline hair tufts, sacral dimple) ○ Lower limb strength, tone, reflexes, sensation for evidence of neurogenic bladder



EPIDEMIOLOGY & NATURAL HISTORY



Age	Prevalence
5	15%
6	13%
7	10%
8	7%
10	5%
12-14	2-3%
≥15	1-2%

- Common!
- Resolves spontaneously ~15%/year
- Longer persistence = lower probability of spontaneous resolution

2 : 1 Male : Female

20% also have **daytime** symptoms

15% also have **fecal incontinence**

* Lower Urinary Tract Symptoms (LUTS)

Voiding	Storage
<ul style="list-style-type: none"> ▪ Hesitancy ▪ Weak stream ▪ Intermittent stream ▪ Straining ▪ Incomplete emptying ▪ Dribbling 	<ul style="list-style-type: none"> ▪ Urgency ▪ Frequency ≥8 or ≤3 times/day ▪ Genital or lower urinary tract pain ▪ Holding maneuvers

Presence of daytime symptoms and/or LUTS is suggestive of dysfunctional voiding or anatomical abnormalities, thus should be **referred to Urology**

INVESTIGATIONS

If reassuring presentation...	If concerning history and physical exam...
No routine tests are required	Urinalysis & Culture To rule out UTI, DM, DKA, DI Renal/Bladder Ultrasound Only if otherwise indicated



INITIAL MANAGEMENT

- Determine if...**
 - Both child and parent see enuresis as problematic, and are **motivated** to participate in treatment
 - The child is **mature** enough to engage in and assume responsibility for treatment
- Treat co-existing conditions:**
 - Constipation**, sleep disordered breathing, ADHD, underlying stressors, poor self-concept, psychologic
- Educate, emphasizing...**
 - High prevalence** and generally **self-resolving** natural history
 - Child should **NOT** be punished for bedwetting
 - Usefulness of bed protection, absorbent undergarments, room deodorizers
 - Avoiding sugary and caffeinated beverages
- Establish goals and expectations:**
 - Determine family **priorities** (Reassurance? Staying dry for sleepovers? Decreasing # wet nights?)
 - May involve several methods, be prolonged, fail in short term, often relapses
 - Slow, steady improvement** is more realistic

Personalized Calendar

Record:

- Daytime incontinence
- Enuresis events
- Encopresis
- Frequency & timing of bowel movements

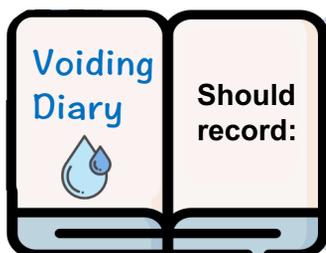


- Helps to follow progress
- Parents should be cautious of implementing a reward system
- AVOID** punishment and humiliation

BEHAVIOURAL THERAPY

Goal: achieve good bladder and bowel habits

- ✓ Encourage **frequent voids**
 - Introduce timed voiding **every 2 hours**, regardless of if child feels the need to void
 - Avoid holding urine, urgency, and incontinence
 - Ensure easy access to toilets at school & home
 - Always have child void immediately before sleep
- ✓ Encourage **daily bowel movements**
 - Establish a schedule at specific time of day such as after breakfast before leaving for school
 - PEG 3350 for constipation
- ✓ Consume **majority of fluids in morning** and afternoon, minimize after dinner
- ✓ Encourage **physical activity** and discourage prolonged sitting
- ✓ Requires supportive environment, child motivation, patience, and time (average 6 months)



Should record:

- Time of void**
- Volume** voided
- Relationship** to events (meals, school recess, play activities, stress)
- Episodes of **urgency** or **incontinence**

ACTIVE THERAPY

Similar outcomes, choose based on patient preference and fit with family



Pharmacologic Therapy

- Desmopressin:**

Goal: optimize oral medication to **reduce production of urine overnight** (ADH analogue).

 - Take medication **60 minutes** before bedtime
 - No fluid intake** 1 hour prior to and 8 hours after taking medication
 - WATCH FOR:** signs of symptomatic hyponatremia with water intoxication: discontinue if developing headache, nausea, vomiting.

Can be used **intermittently**, thus a good option for **special occasions** such as sleepovers and camps.
- Anticholinergics and tricyclic agents** (second and third line): may be considered if other therapeutic options have failed.



Bed Alarms

- Goal:** teach child to awaken from sensation of a full bladder. Sensors attached to child's undergarments are connected to an **alarm** that **awakens the child at the moment of bed wetting**.
- Should be using **every night**
 - Initially, child may not awaken from alarm, requiring parent to awaken child instead
 - Child should then void in the **washroom**
 - Return to sleep
 - Most effective in children **>7 years old**
 - Generally see **initial response in 1 – 2 months**
 - 3 – 4 month** trial of continuous therapy is recommended
 - Discontinue when dry for 14 consecutive nights, or if no improvement at one month
 - Effective long term in **< 50%** of children
 - Recommend for older, motivated children from cooperative families**

