Quality Care Network

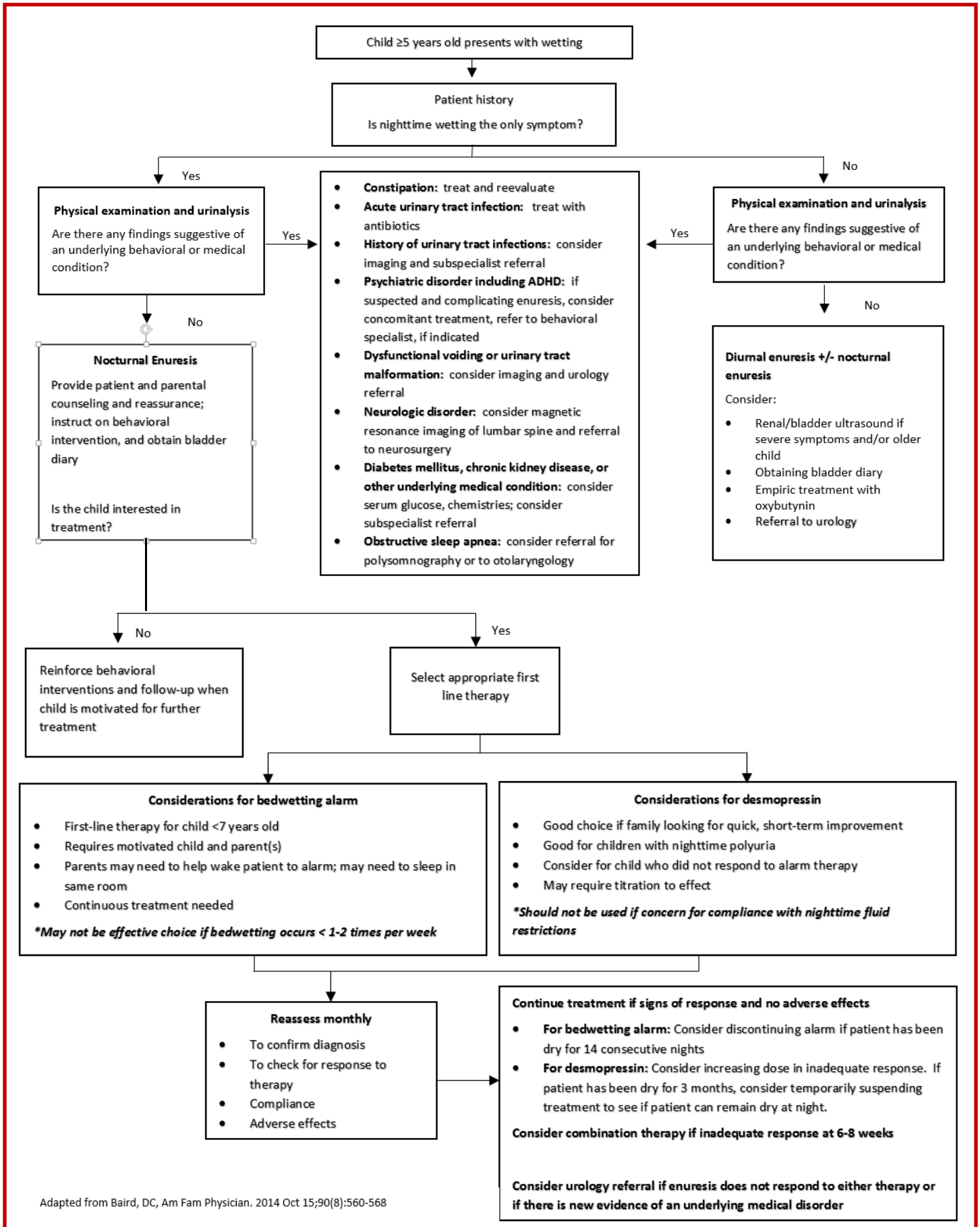
Rainbow Care Connection

Bladder Problems In Children

Bladder continence normally occurs by 4 years of age, while nighttime continence is normally achieved by 5-7 years of age. At 5 years of age 16-20% of children have nocturnal enuresis and 10% have a daytime accident at least once every 2 weeks, while by 15 years of age 1-2% of children continue to have nocturnal enuresis.

Bladder Problems	Description
Primary nocturnal enuresis	This is bed-wetting in a child who has wet the bed since toilet-training. This is a common problem and in children who have no daytime wetting problems or history of bladder infections, there is very little concern for some underlying physical or psychological problem.
Secondary nocturnal enuresis	This is bed-wetting in a child who was dry for at least 6 months after toilet-training and then suddenly starts wetting the bed. This new bed-wetting is more concerning for some underlying physical problem (such as diabetes or a spine problem) or a psychological problem (such as stress at home or bullying at school).
Overactive bladder	This is a condition in which the bladder has a tendency to try and empty (by contracting the bladder muscle) without the child's permission. These children often will urinate frequently and with urgency (often seen as "potty dancing") and may have accidents because they go to the bathroom "too late." However, some children with overactive bladder seem to wet themselves with no apparent sense that they had to go.
Dysfunctional voiding	These children fail to relax the pelvic floor muscles/urethral sphincter muscle when urinating. This makes the bladder work harder to get the urine out. The bladder is a muscle, and when it works harder, it gets thicker and more irritable. So these children often have the same symptoms as children with overactive bladder though the underlying bladder problem is different. Dysfunctional voiding is often associated with constipation which, in children, is also often caused, at least in part, by a failure to relax the pelvic floor muscles when having a bowel movement.
Neurogenic bladder	This refers to any bladder problem that is due to an underlying neurological disorder such as a spinal cord problem or cerebral palsy. While the underlying problem is often obvious and diagnosed before the bladder issue occurs, these neurological problems can sometimes show up with wetting as the first sign. These, fortunately rare conditions, require more extensive evaluation and aggressive treatment.

Children whose only problem is nocturnal enuresis do not require any evaluation beyond a history and physical examination and a urinalysis. The same is true for younger children with diurnal enuresis, especially when it is improving. Children with primary enuresis (diurnal and/or nocturnal) who are older or have more severe wetting and children with secondary enuresis will usually undergo additional evaluation.


Child ≥5 years old presents with wetting
Patient history
Is nighttime wetting the only symptom?
Yes
No
Physical examination and urinalysis
Are there any findings suggestive of an underlying behavioral or medical condition?
Yes
No
Nocturnal Enuresis
Provide patient and parental counseling and reassurance; instruct on behavioral intervention, and obtain bladder diary
Is the child interested in treatment?
Constipation: treat and reevaluate
Acute urinary tract infection: treat with antibiotics
History of urinary tract infections: consider imaging and subspecialist referral
Psychiatric disorder including ADHD: if suspected and complicating enuresis, consider concomitant treatment, refer to behavioral specialist, if indicated
Dysfunctional voiding or urinary tract malformation: consider imaging and urology referral
Neurologic disorder: consider magnetic resonance imaging of lumbar spine and referral to neurosurgery
Diabetes mellitus, chronic kidney disease, or other underlying medical condition: consider serum glucose, chemistries; consider subspecialist referral
Obstructive sleep apnea: consider referral for polysomnography or to otolaryngology
Physical examination and urinalysis
Are there any findings suggestive of an underlying behavioral or medical condition?
Yes
No
Diurnal enuresis +/- nocturnal enuresis
Consider:
Renal/bladder ultrasound if severe symptoms and/or older child
Obtaining bladder diary
Empiric treatment with oxybutynin
Referral to urology
No
Yes
Reinforce behavioral interventions and follow-up when child is motivated for further treatment
Select appropriate first line therapy
Considerations for bedwetting alarm
First-line therapy for child <7 years old
Requires motivated child and parent(s)
Parents may need to help wake patient to alarm; may need to sleep in same room
Continuous treatment needed
*May not be effective choice if bedwetting occurs < 1-2 times per week
Considerations for desmopressin
Good choice if family looking for quick, short-term improvement
Good for children with nighttime polyuria
Consider for child who did not respond to alarm therapy
May require titration to effect
*Should not be used if concern for compliance with nighttime fluid restrictions
Reassess monthly
To confirm diagnosis
To check for response to therapy
Compliance
Adverse effects
Continue treatment if signs of response and no adverse effects
For bedwetting alarm: Consider discontinuing alarm if patient has been dry for 14 consecutive nights
For desmopressin: Consider increasing dose in inadequate response. If patient has been dry for 3 months, consider temporarily suspending treatment to see if patient can remain dry at night.
Consider combination therapy if inadequate response at 6-8 weeks
Consider urology referral if enuresis does not respond to either therapy or if there is new evidence of an underlying medical disorder
Adapted from Baird, DC, Am Fam Physician. 2014 Oct 15;90(8):560-568

Treatment Options

Nocturnal and diurnal enuresis usually have different causes as the control of the bladder while asleep is different than while awake. Therefore, many children have just one problem or the other. But some children will have both day and night wetting. For those children who have both problems, we usually start with treatment of the daytime issue as that is usually more socially and psychologically troublesome and as treatment of diurnal enuresis will occasionally help the bed-wetting as well.

All children with wetting problems are advised on good "bladder hygiene." This includes drinking plenty of water, urinating frequently on a timed schedule, and avoiding bladder irritants such as caffeinated soda and citrus. Since constipation can cause wetting problems, any constipation that is present should be treated aggressively.

Treatment for Diurnal Enuresis

- **Biofeedback:** Measuring electrodes are placed on the child's pelvic floor in the area between the genitalia and the anus and then connected to a video game. The child then plays the video game by tightening and relaxing the sphincter muscles. Learning to do this in addition to home pelvic floor exercises (such as Kegels) can cure wetting in some children. This may be particularly effective for children with dysfunctional voiding and/or constipation.
- **Oxybutynin (Ditropan):** Oxybutynin is a medicine that relaxes the bladder muscle (not the sphincter muscle) and helps the bladder to hold more urine and leads to less urinary frequency, urgency, and wetting. This may be particularly effective for children with an overactive bladder. Possible side effects of oxybutynin include constipation, overheating more easily with exercise, dry mouth, double vision, or, rarely, nightmares or hallucinations. The constipation is particularly worrisome as it can make the bladder problem worse. Therefore it is important to treat any underlying constipation before starting oxybutynin (and, of course, there is a chance that treating the constipation will cure the problem and the medicine will not be needed).

  Oxybutynin dosing:

  - Immediate release: 0.5mg/kg/day divided TID (max dose 15mg/day)
  - Extended release: 0.5mg/kg/day given in single dose (max dose 15mg/day)

Treatment for Nocturnal Enuresis

There are 2 proven treatments for bed-wetting if restricting fluids for an hour and a half before bedtime and good bladder hygiene are not effective.

- **Bed-*wetting alarm*:** This is the most effective therapy but is very time intensive and works best in a motivated child/family. Treatment works best for a child who wets at least 1-2nights/week. The alarm should be used until the child is dry for 14 consecutive nights., which often takes up to three months of nightly alarm use.
- ***Desmopressin* (aka *DDAVP*):** This is a medication taken at bedtime that decreases the amount of urine made over the next 6 – 8 hours which can lessen the chance of wetting the bed. This medicine rarely causes side effects, but can lead to serious electrolyte abnormalities if the child drinks a significant amount of fluid during the hour and a half prior to taking the medication. The starting dose is usually 0.1-0.2mg and can be titrated up to 0.6mg. The desmopressin nasal spray **should not** be used due to increased likelihood of electrolyte abnormalities.

Both the alarm and the medication work in about 2/3 of children. Beyond these standard treatments, some success has been reported with hypnosis or self-hypnosis. Children who snore, may also benefit from a sleep study as treatment of underlying sleep problems, such as sleep apnea, may stop the bedwetting.

Invasive treatments – in rare conditions where standard treatments fail and the wetting is still very troublesome, more invasive treatments are available. Injecting *onabotulinumtoxin A* (the botulism toxin) into the bladder wall and/or the sphincter muscle can help an overactive bladder or dysfunctional voiding. This requires general anesthesia in children and the effect wears off after 6 months often requiring injections twice a year. Another option is *neuromodulation*. This is usually accomplished under general anesthesia by placing a fine wire through the skin into the nerves where they exit the spinal cord. This wire is then connected to a device that delivers low levels of electric current to the nerves to change their behavior and improve bladder function.

Important Facts About Wetting in Children

1. **Wetting is rarely caused by "laziness" or behavioral issues, though cooperation from the child may be important in managing the problem.**
2. **Very little evaluation is needed for patients with common bed-wetting or mild daytime wetting problems.**
3. **Many children can be "cured" with good bladder hygiene including treatment of any constipation that is present.**
4. **For those with persistent troublesome wetting, effective treatments are available. However, if the problem is mild and the child is not troubled by it, then nothing need be done as most of these problems will improve and go away as the child gets older.**

References

Baird DC, Seehusen DA, Bode, DV. Enuresis n children: A Case-Based Approach. Am Fam Physician 2014 Oct 15;90(8):560-568.

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Neveus T, Eggert, P, Evans, J, et al. Evaluation of and Treatment for Monosymptomatic Enuresis: A Standardization Document From the International Children's Continence Society. J Urol 2010 Feb;183(2):441-447.