

PROPOSED MANAGEMENT OF NOCTURNAL ENURESIS

This document has been created by the Swedish Enuresis Academy as an aid to physicians and other healthcare professionals

1. THE CHILD'S FIRST HEALTHCARE VISIT DUE TO ENURESIS

At the first visit the family may meet a general practitioner, a school nurse or a nurse in primary care. What is important is not the profession of the caregiver but that he/she knows which questions to ask and is acquainted with the firstline therapies, i.e. the enuresis alarm and desmopressin. A good case history and a urine dipstick test is usually sufficient as an evaluation at this stage.

Goals

- 1) Detect the children who need extra evaluation
- 2) Provide good advice to the child and family
- 3) Start active therapy to those children who are old enough to need this

Evaluation

HISTORY

1) General signs/complaints

Fatigue, weight loss, nausea? Exaggerated thirst with a need to drink at night?

2) The enuresis

Every night or less often? Has there ever been prolonged dry periods?

3) Micturition habits during the day

Does the child void often or seldom? Does the child often experience urgency (sudden, unexpected need to void)? Is the child dry during the day? If no, does the incontinence appear in discrete portions or continuously dripping?

Does the child void with a good stream? Does the child need to push or strain to empty the bladder?

4) Bowel habits

Is the bowel emptied unfrequently (every other day or less often)? Is the poo hard? Is there soiling of the underwear?

5) Sleep

Most enuretic children are regarded as "deep sleepers" by their parents. Is the child so difficult to arouse from sleep that he/she never becomes fully awake and afterwards doesn't remember being awoken? Is the child snoring or having sleep apneas most nights?

6) Previous health and development

Has the child passed the usual milestones at a normal age? Has there previously been daytime incontinence? Urinary tract infections?

7) Heredity

Is there anyone in the family who was or is wetting the bed?

8) Psychology, psychiatry

Is the child overactive or has problems concentrating? Are there problems at school?

Is the child him/herself much bothered by the enuresis?

STATUS

If no warning signs (see below) appear when talking to the family, the measurement of height and weight is all that is needed. If, however, the child has voiding difficulties, poor urinary stream or recurrent urinary tract infections a basic neurological examination, including inspection of the lower back and buttocks, is mandatory. If constipation is suspected then a rectal examination is very useful (provided this can be done without discomfort for the child), since the presence of solid stool in the rectum strongly reinforces this suspicion. If general signs such as weight loss, nausea or exaggerated thirst is present then a complete physical examination, including blood pressure, is of course needed.

VOIDING CHART/BLADDER DIARY

Much information is gained by having the child (supported by parents) complete a bladder diary (see appendix 1). It will also increase the child's bladder awareness and make him/her an active participant of the treatment. The family's ability to complete the diary may also provide clues regarding their ability to comply with labor-intensive therapies.

The *expected bladder capacity* for the child's age is calculated using the following formula: $[\text{age (in years)} + 1] \times 30 \text{ mL}$. In lower teen age the adult capacity of approximately 400 mL is reached. If the child usually voids with amounts far below the expected capacity then this is a sign that the enuresis is caused by detrusor over-activity (i.e. that it is related to bladder function rather than urine production).

If the family is also asked to measure the amount of urine lost in bed (see appendix 2) the presence of *nocturnal polyuria* can be detected; this means that the sum of the enuresis urine and the first micturition the next morning (after wet nights) exceeds 130% of the expected bladder capacity.

URINE TESTS

A urine dipstick test for analysis of glucose, leukocytes and nitrite, is recommended.

Warning signs, children who need extra evaluation

SERIOUS WARNING SIGNS

Weight loss, nausea or the need to drink at night: to be evaluated by a pediatrician

Glucosuria: immediate test for blood glucose

Continuous incontinence, urine always dripping: to be evaluated by a pediatric urologist

Poor stream, need to strain to void: uroflowmetry and residual urine measurement needed

OTHER CHILDREN WHO NEED MORE EVALUATION BEFORE ENURESIS TREATMENT

Children with suspected *constipation* (unfrequent or hard stools, fecal incontinence) should be treated with laxatives and advice about regular stool habits for at least one month before the enuresis is addressed.

Daytime incontinence should be treated before the enuresis. The first step is to ensure regular toilet habits with approximately 6 daily voidings and that any constipation is thoroughly treated.

Leukocyturia and/or positive nitrite test. Make a urine culture and, if this turns out positive, consult a pediatrician and decide whether a urinary tract infection should be suspected or treated. Urinary tract infection is only very rarely the cause of enuresis unless there are concomitant daytime symptoms such as dysuria.

Heavy snoring or sleep apneas. Consider contact with an otorhinolaryngologist.

Bladder advice and first-line active therapy

Children aged 6 years or more who are bothered by their bedwetting need active therapy. Below this age usually only general counselling is warranted. We should treat the child, not parental frustration or laundry costs!

BASIC BLADDER ADVICE

The child needs to be educated about how the bladder works and informed that the bedwetting is not his/her fault.

Many parents regularly wake their child at night and bring him/her to the toilet. They should be informed that this is neither necessary nor curative – if it helps then it helps only that specific night. Likewise, strict fluid restriction in the evening and afternoon is not necessary and will usually not result in reliable dryness.

The first-line therapy of daytime incontinence is basic bladder training, i.e. regular voidings around six times per day. Perhaps this may help against enuresis as well.

ACTIVE ENURESIS THERAPY

There are two recommended first-line therapies in enuresis: the enuresis alarm and the antidiuretic drug desmopressin. The alarm works best in well-motivated families and if the enuresis happens most nights and the child is not impossible to arouse from sleep at night. The chance for desmopressin to make the child dry is greatest in the presence of nocturnal polyuria and normal daytime voided volumes.

There are two alternative approved strategies for the choice of first therapy. Either the assets and drawbacks of both therapies are presented and the family makes their own informed choice or else the choice is based on the results of a bladder diary including measurements of the amount of urine lost in bed (Appendix 2). If the latter strategy is chosen then desmopressin is recommended as first treatment to children with nocturnal polyuria, and the alarm to the rest.

If the first treatment chosen did not make the child dry then the other alternative should usually be tried, and *vice versa*. If neither the alarm nor desmopressin has the desired effect then the child should meet a pediatrician and second-line therapies be considered

THE ENURESIS ALARM

The alarm has a high chance of curing the child (not just making the nights dry during therapy), but demands lots of work by the family and will not have immediate effect. The central principles for successful alarm therapy are the following:

- A) The alarm must be carefully demonstrated and explained to the child and family.
- B) Therapy needs to be consistent, every night without interruption.
- C) Often, during the first week or weeks of therapy, everyone in the house *except* the enuretic child will be awoken by the alarm. For this reason, parents need to be prepared to sleep in the child's room and help him/her to awaken by the signal during the first weeks of therapy.

E) The healthcare professional should make contact with the family after approximately 14 days for support and problem-solving during the first and most demanding part of the treatment.

F) If signs of progress are evident within 6 weeks of therapy then this should continue until 14 consecutive dry nights (without activation of the alarm signal) have been achieved. If, on the other hand, no positive signs have appeared within this time-frame then the alarm therapy should be stopped and other treatment be offered.

DESMOPRESSIN (MINIRIN®, NOCUTIL®)

Desmopressin is an antidiuretic drug. The chance of it making the child dry is thus greatest if there is nocturnal polyuria as a cause behind the bedwetting. The main assets of the drug are the low toxicity and the fact that the antidiuretic effect – if present – will be evident immediately. The drawbacks are the low curative potential and the small risk for water balance derangements (hyponatremia). The practicalities of desmopressin therapy are the following:

A) Desmopressin is given as an ordinary tablet 0.2-0.4 mg or as a fast-melting MELT-tablet 120-240 ug. In both cases the drug is to be taken orally 30-60 minutes before bedtime. Most children will prefer the MELT variant which doesn't need to be swallowed.

B) The combination of desmopressin medication and excessive drinking in the evening, such as may occur during school parties and similar activities, may be dangerous. If the family asks for specific instructions regarding safe drinking then one strategy can be, during the time period from one hour before until eight hours after medication, to only allow drinking to compensate for thirst (such as thirst due to strenuous physical activity).

C) If the treatment is effective then this will be apparent within at least one or two weeks. We recommend that therapy is started with the higher dosage – two 0.2 mg oral tablets or two 120 ug MELT tablets. If this works well then the family can test if half the dose still makes the child dry and then continue with the lowest effective dosage. If, on the other hand, the drug is not effective then there is no point in prolonging the treatment.

D) For children who have a good desmopressin effect it's up to the family to choose between giving the drug every evening or before "important nights" only. If the former strategy is chosen regular drug holidays are needed in order to see if treatment is still needed.

E) Desmopressin may be given for prolonged time periods, if needed, without risk. But if the family wishes a curative treatment option then desmopressin should be discontinued and alarm treatment started.

2. THERAPY-RESISTANT ENURESIS

Children who have not become dry on. Either the alarm or desmopressin need to see a pediatrician.

The recommended evaluations for these children, in addition to the steps recommended above, are a full physical examination, uroflow measurement and the assessment of residual urine. Usually, neither blood samples, radiology or invasive urodynamic examinations are needed.

The therapy most commonly recommended to these children, provided constipation is ruled out or eradicated, is anticholinergic medication, often combined with desmopressin. Anticholinergics can not be given if the child has persistent residual urine.

If anticholinergics, combined with desmopressin, are not successful, then antidepressant therapy may be indicated. This needs to be managed by a specialist.

We recommend that the enuresis alarm is used again every second year in therapy-resistant children. Sooner or later it will work!

Referenses

Mattsson S, Nevéus T, editors. Enures och annan inkontinens hos barn. Lund: Studentlitteratur; 2011.

Nevéus T, Eggert P, Evans J, Macedo A, Rittig S, Tekgül S, et al. Evaluation and treatment of monosymptomatic enuresis - a standardisation document from the International Children's Continence Society (ICCS). J Urol. 2010;183:441-7.

Nevéus T. The evaluation and treatment of therapy-resistant enuresis: a review. Upsala J Med Sci. 2006;111(1):61-72.

One week bladder diary

Date							
time	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
natt							

During two days we want you to note how much you pee every time you go to the toilet, the rest of the week you only need to note the letters listed below

- X = voiding in toilet without leakage
- V = small leakage (damp underwear)
- W = large leakage (wet underwear and trousers/skirt)
- B = sudden, unexpected need to go to the toilet

Weekend bladder diary for children with bedwetting

We want you to complete this list during three nights and two days. You will need a vessel to measure your pee and a household scales to weigh your diapers or bed sheets. During these nights we suggest you use diapers even though you may use other kinds of protection normally.

With this diary we can get to know lots about how your bladder and kidneys function.

Name:

Social security number:

	Day 1	Day 2	Day 3	Day 4
Date here				
Mark with a cross if the night was dry or wet		Dry night ☹ Wet night ☺	Dry night ☹ Wet night ☺	Dry night ☹ Wet night ☺
Wet night: note the weight of the diaper or sheet protection in the morning here!		Weight: g	Weight : g	Weight : g
Every time you pee, please note the time of day and urine amount here (we want to know if you woke up and peed in the toilet during the night as well)		ml	ml	kl: ml
		ml	ml	
In the evening: write down the weight of diapers or sheet covers here	Weight: g	Weight: g	Weight: g	