

## Enuresis

### Definition / Supporting Information

(See Bedwetting in children and young people [[NICE quality standard QS70](#)])

Enuresis (nocturnal enuresis (NE)) is defined as spontaneous involuntary voiding of urine during sleep:

- At least twice a week
- In a child 5 years or older
- Estimated prevalence rates are:
  - 15–20% of children 5 years of age
  - 5% of children 10 years of age
  - 2–3% of teenagers
  - 0.5–2% of adults

Nocturnal enuresis (NE) can be classified as:

- Primary
  - Children who have never had a period of sustained dryness
- Secondary
  - Children who have been dry at night in the past for > 6 months
- Monosymptomatic nocturnal enuresis (MNE)
  - No daytime symptoms to suggest lower urinary tract disorders
- Non-monosymptomatic nocturnal enuresis (NMNE)
  - Lower urinary tract symptoms are present also

Symptoms suggestive of lower urinary tract disorders (NMNE):

- Urgency
- Frequency
- Daytime incontinence
- Hesitancy
- Straining
- A weak stream
- Intermittence
- Holding manoeuvres
- Feeling of incomplete voiding
- Post-micturition dribbling
- Genital or lower urinary tract pain

Monosymptomatic nocturnal enuresis (MNE):

- Relative nocturnal polyuria that exceeds the child's bladder capacity
  - In children with NE, bladder capacity has been found to be smaller at night compared with normal controls
- In some children with MNE, secretion of antidiuretic hormone is decreased at night, resulting in increased urine production
- Voided volumes have been demonstrated to vary in the daytime and night-time
- Many children with MNE are more difficult to arouse from sleep than normal controls or children with primary NE
- Family history
  - Strong hereditary component

**Keywords / also known as:** bedwetting, involuntary urination, nocturnal enuresis, overactive bladder

## Essential History

**Ask about:**

- Daytime urinary symptoms:
  - Daytime urinary incontinence
    - If it occurs, how often, and in what situations?
  - Frequency
    - Frequent > 7 voids
    - Infrequent < 4 voids
  - Urgency
  - Holding manoeuvres
    - Standing on tiptoe
    - Pressing the heel into the perineum etc.
  - Hesitancy
  - Straining
  - Post-micturition dribbling
  - Poor stream
  - Genital or lower urinary tract pain and / or dysuria
  - History of urinary tract infection
- Positive daytime urinary symptoms suggest NMNE
- Bedwetting pattern:
  - When did it start, has the child ever been dry?
    - Primary or secondary NE
  - How many nights per week?
  - How many times per night?

- Volume of urine passed, small, medium or large wet patch?
- What time does the bedwetting occur?
- Does the child or young person wake up after bedwetting?
- Fluid intake:
  - Which fluids?
  - How much?
  - When?
  - Is child or parents restricting fluids?
- Sleep habits:
  - Is the child difficult to wake from sleep?
  - Are there any signs of obstructive sleep apnoea?
    - Mouth breathing
    - Snoring
    - Restless sleep
  - Does the child wake to void urine?
- Bowel habit
  - Frequency
  - Type [[Bristol stool chart](#)]
  - Size of stool passed
  - Straining
  - Soiling
- Medical history
  - Has the child had normal development?
  - History of polydipsia and polyuria
  - History of recent weight loss and / or tiredness
  - Recent illnesses?
  - Other conditions such as attention-deficit hyperactivity disorder (ADHD)
  - Insulin-dependent diabetes
- Family history of NE
  - Strong hereditary component
- Previous interventions or treatments
- Social situation:
  - How does the family handle wet nights?
    - Does the child wear pull-ups or is a plastic sheet used?
    - Who is responsible for washing sheets and clothing?
    - Do siblings or peers at school tease the child?
    - Is the child punished for wetting?
    - Access to bathroom
    - Sleeping arrangements?

- Any recent traumatic events or changes in social situation at home or in school?
- Is this a vulnerable child?

## ‘Red Flag’ Symptoms and Signs

### Ask about:

- See Urinary tract infection [[NICE clinical guideline CG54](#)]
- Constipation and / or soiling
- Polyuria and polydipsia
  - Diabetes mellitus
- Obstructive sleep apnoea
- Weight loss
- Seizure disorder
- Hyperthyroidism
- Diabetes insipidus
- Emotional and / or behavioural problems
- Family problems or vulnerable child or young person.
- Developmental, attention or learning difficulties
- Other neurological conditions
- Safeguarding concerns

### Look for:

- Unexplained weight loss
- Check growth parameters
- Hypertension
- Spinal abnormalities:
  - Sacral dimple
  - Tuft of hair
  - Naevi
- Abnormal neurological examination
- Abnormal genital examination
- Palpable bladder post voiding
- Impacted stool

## Differential Diagnosis / Conditions

Focuses on excluding underlying disorders:

- Urinary tract infection

- Neurological disorders (in NMNE)
  - Neurogenic bladder
  - Spinal cord conditions
- Constipation
- Overactive bladder
- Endocrine disorders
  - Diabetes mellitus
  - Diabetes insipidus
- Sickle cell disease
- Obstructive sleep apnoea
- Child sexual abuse
- Psychosocial stressors
  - Including child abuse, parental divorce or separation, and death in the family

## Investigations

To be undertaken by non-specialist practitioners (eg, General Practitioner (GP) / School Health Advisor / Children's Community Nurse Team(s)):

- Drinking and voiding charts (48 hours minimum)
- Stool chart for at least 1 week
- Nocturnal urine volume (measured by weight of wet nappy or pull-up in the morning minus the weight of the dry one, plus first voided morning volume).
  - Nocturnal Polyuria defined as: Urine production >130% of expected bladder capacity. Expected Bladder capacity (age 5-12 years) in milliliters = (age in years +1) x30.
- Record over a 7 day period

In secondary MNE and NMNE:

- Urinalysis
  - Glycosuria
  - Proteinuria
  - Nitrites
  - Leucocytes
- Urine culture
  - Diagnostic for urinary tract infection

To be undertaken by specialist practitioners (eg, Paediatric and / or Nephrology / Urology Team(s)):

- Renal ultrasound with pre- and post- void bladder volumes
- Urea and electrolytes to assess renal function where appropriate

## Treatment Approach

To be undertaken by non-specialist practitioners (eg, General Practitioner (GP) / School Health Advisor / Children's Community Nurse Team(s)):

- Treat any underlying cause(s), including constipation.
  - Stool charts for 2 weeks to assess for underlying constipation if unsure.
- Careful / detailed explanation to parents and child
  - General advice: should include explaining to the family that NE is not the child's fault
  - Explain to the child that NE is common
- Advise regarding adequate fluid intake during the day
  - See Bedwetting in children and young people [NICE quality standard QS70]
- Caffeine-based drinks and fizzy drinks should be avoided
- To eat a healthy diet and not to restrict diet or fluid intake
- Good voiding habits and hygiene should be reinforced
- Encourage 4–7 bladder voids during the day including just before going to sleep
- Last drink to be the smallest and 1 hour before bedtime
- Advise on using a reward system
  - In older children give positive rewards for agreed behaviour rather than dry nights for example:
    - Drinking recommended fluid throughout the day
    - Voiding before sleep
    - Helping with changing the bed
    - Taking medication correctly, if prescribed
- Suggest a trial without nappies or pull-ups for children and young people wearing them at night or underwear worn underneath disposables if not tolerated.
  - A 2-week trial every 3 months
- Offer advice on alternative bed protection
- Primary and secondary NE are treated similarly

Consider whether alarm or drug treatment is appropriate

- See Bedwetting in children and young people [NICE quality standard QS70]
- The decision will depend on
  - Age, maturity and abilities of the child or young person
  - The frequency of the bedwetting
  - Needs and motivation / support of the family
- Present the assets and drawbacks of the alarm to the child or young person and family and assess the ability of the family to cope with an alarm

## Enuresis alarm therapy

- Alarm therapy results in dryness in about two-thirds of children
  - It is presumed to cure NE due to conditioning effects on arousal and / or by increasing nocturnal bladder reservoir function
  - An enuresis alarm is activated when urine makes contact with the device sensor
  - Several types of alarm are available:
    - Body worn alarms (whose small sensor is attached to the underwear of the child or young person). These alert the user by means of a noise either in a small device attached to the upper pyjamas or in a device placed next to the bed
    - “Bell and pad” alarms have a sensor positioned in a special sheet placed beneath the child or young person in the bed
  - Alarms can also vibrate with or in addition to sound

Offer alarm as initial treatment strategy to children and young people whose bedwetting has not responded to conservative measures and advice unless:

- The child, young person or parents or carers do not want to try it
- The healthcare team think it is unsuitable for the child, young person, parents or carers

Alarm may not be appropriate if:

- The child or young person wets the bed infrequently (once or twice a week)
- If parents or carers are expressing blame, anger and negativity towards the child or young person, and are struggling with the burden of the bedwetting
- If the priority is for fast- or short-term improvement

Many children will not initially awaken with the alarm and need a parent or carer to assist with awakening.

The alarm should be used for 2–3 months or until the child is dry for 14 consecutive nights, whichever comes first.

Although response is not as rapid, **alarm therapy is more effective than pharmacological therapy in the treatment of enuresis**. Response rate to the alarm is high in families who continue uninterrupted treatment for a sufficient period, with relatively low relapse rates.

Relapses do not preclude future success.

## Medication

### Desmopressin (DDAVP)

- Offer desmopressin as initial treatment in primary care if there is evidence of, MNE and:
  - The child or young person, parents or carers do not want to try the alarm
  - Rapid-onset and / or short-term dryness is a priority
- The healthcare team decides that the alarm is not suitable
  - Desmopressin is best for children or young people where nocturnal polyuria is present and daytime voided volumes are normal
- Dose
  - Oral desmopressin acetate 200 micrograms at night, increased to 400 micrograms at night, if necessary
  - Oral lyophilisate or sublingual desmopressin base 120 micrograms increased to 240 micrograms, if necessary
- Taken 30–60 minutes before sleep
- Fluid restriction from 1 hour before until 8 hours after taking desmopressin
  
- Important that there is no night-time drinking after taking desmopressin
  - There is risk of hyponatraemia from water intoxication
- Use low dose for 1–2 weeks, if not successful or only partial response go to high dose
- If unsuccessful after 4 weeks of high dose, stop and re-evaluate
- If treatment is successful, a 1-week interruption every 3 months is recommended to see if enuresis has resolved
- Continued treatment if not resolved with “breaks” every 3 months or treatment on “important” nights depending on desire of child or young person and parents or carers

If bedwetting stopped when using the alarm, but started again after treatment ended or alarm treatment resulted only in a partial response, offer desmopressin as well as using the alarm.

## Specific Treatment

To be undertaken by specialist practitioners (eg, Paediatric and / or Nephrology / Urology Team(s)):

If alarm and / or treatment with desmopressin are not successful, review presentation.

If evidence of NMNE secondary to overactive bladder:

- Treat daytime symptoms first with anticholinergic drug such as oxybutynin or tolterodine
- These may be of benefit to enuretic children with restricted bladder capacity caused by bladder overactivity
- Do not use an anticholinergic:
  - Alone for children and young people with bedwetting without daytime symptoms (NMNE)
  - Combined with tricyclic antidepressants (imipramine)

See Bedwetting in children and young people [[NICE quality standard QS70](#)]

When daytime functional bladder capacity has improved, and if still bedwetting consider the addition of desmopressin to anticholinergic treatment.

Third-line therapy:

- Tricyclic antidepressants / imipramine
  - Only to be used by specialist when child or young person has not responded to other treatments
  - Not to be used in combination with anticholinergics
  - The anti-enuretic dose of imipramine for a child > 6 years old is 25 mg at night, increased by 25 mg if no response after 1 week
    - Average dose 25 mg for children aged 6–7 years
    - 25–50 mg for children aged 8–10 years
    - 50–75 mg, for children aged 11–17 years
  - Use for 3-month period, then gradually wean off therapy
  - Side-effects
    - Potential for lethal effects in the setting of accidental or intentional overdose
      - Clinicians must use caution in prescribing these agents. Consider 12-lead electrocardiography (ECG) prior to therapy to confirm normal QT interval
      - Families must be aware of dangerous potential of overdose and need for safe storage and supervision
    - Nausea
    - Vomiting
    - Constipation
    - Blurred vision
    - Urinary retention
    - Cardiac arrhythmias
    - Hypotension

## When to Refer

Refer urgently to specialist practitioners (eg, Paediatric Team) if:

- Concerns regarding child maltreatment or safeguarding concerns
- Suspected type 1 diabetes mellitus

Escalate care to specialist practitioners (eg, Paediatric / Paediatric Surgery / Paediatric Nephrology/ Paediatric Urology Team(s)) if:

- Suspect underlying pathology such as suspected congenital physical abnormalities
  - Posterior urethral valves or myelomeningocele
  - Neurological problems (such as cerebral palsy)
- Concerns of neurological bladder dysfunction
- Presence of any structural urinary tract abnormalities on imaging studies
- History of:
  - Recurrent urinary tract infections
  - Significant constipation and encopresis
  - Findings suggestive of obstructive sleep apnoea
- Significant behavioural or emotional problems
- Significant parent–child conflict or parental difficulties with coping with child's enuresis
- Attention deficit or learning problems
- Evidence of daytime urinary symptoms such as:
  - Continuous incontinence
  - Daytime urinary incontinence
  - Overactive bladder
- Failure to respond to appropriate therapy

## 'Safety Netting' Advice

- Advise parents or carers to seek medical advice if symptoms change from MNE to NMNE
- Advise in cases of NE:
  - Annual spontaneous resolution rate is ~15%
  - With alarm therapy
    - Long-term cure rate of MNE with alarm therapy
      - 25% by 2 months
      - 50% by 3 months
      - 90% by 6 months
    - 47% remain dry long-term after alarm therapy is stopped

## Patient / Carer Information

***\*Please note: whilst these resources have been developed to a high standard they may not be specific to children.***

- [Nocturnal Enuresis in Children](#) (Webpage), Patient
- [ERIC \(Education and Resources for Improving Childhood Continence\)](#) (Website), The Children's Bowel & Bladder Charity
- [Bedwetting](#) (Webpage), the NHS website

## Resources

### National Clinical Guidance

[Bedwetting in children and young people](#) (Webpage), NICE quality standard QS70, National Institute for Health and Care Excellence

[Urinary tract infection in under 16s: diagnosis and management](#) (Webpage), NICE clinical guideline CG54

### Suggested Resources

***\*Please note: these resources include links to external websites. These resources may not have national accreditation and therefore PCO UK cannot guarantee the accuracy of the content.***

[Desmopressin for bedwetting](#) (Web page), Medicines for Children

[Oxybutynin for daytime urinary symptoms](#) (Web page), Medicines for Children

[Supporting children with nocturnal enuresis](#) (PDF), Nursing Times

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