NICE National Institute for Health and Care Excellence

Surveillance proposal consultation document

2018 surveillance of Bedwetting in under 19s (NICE guideline CG111)

Proposed surveillance decision

We propose to not update the NICE guideline on bedwetting in under 19s at this time.

Reasons for the proposal to not update the guideline

The majority of new evidence was found to be broadly consistent with the current recommendations. New evidence was identified for areas not covered by the guideline on electrical nerve stimulation and acupuncture that showed the treatments may decrease the number of wet-nights in children with nocturnal enuresis. However, the evidence was based on small scale studies and was considered to be insufficient to have an impact on the guideline at this time.

For further details and a summary of all evidence identified in surveillance, see appendix A below.

Overview of 2018 surveillance methods

NICE's surveillance team checked whether recommendations in bedwetting in under 19s (NICE guideline CG111) remain up to date.

The surveillance process consisted of:

- Initial feedback from topic experts via a questionnaire.
- Literature searches to identify relevant evidence.
- Assessing the new evidence against current recommendations and deciding whether or not to update sections of the guideline, or the whole guideline.
- Consulting on the proposal with stakeholders (this document)

After consultation on the proposal we will consider the comments received and make any necessary changes to the decision. We will then publish the final surveillance report containing the decision, the summary of the evidence used to reach the decision, and responses to comments received in consultation.

For further details about the process and the possible update decisions that are available, see ensuring that published guidelines are current and accurate in developing NICE guidelines: the manual.

See appendix A: summary of evidence from surveillance below for details of all evidence considered, with references.

Evidence considered in surveillance

Search and selection strategy

We searched for new evidence related to the whole guideline.

We found 43 studies in a search for randomised controlled trials, systematic reviews and non-randomised studies published between 26 August 2014 and 27 July 2018.

We also included:

- 6 relevant studies from a total of 16 identified by topic experts, 5 of which were also identified through our search
- 17 studies identified by search in previous surveillance in 2012 and 2014.

From all sources, we considered 61 studies to be relevant to the guideline.

See appendix A: summary of evidence from surveillance below for details of all evidence considered, and references.

Ongoing research

We checked for relevant ongoing research; of the ongoing studies identified, 5 studies were assessed as having the potential to change recommendations; therefore we plan to check the publication status regularly, and evaluate the impact of the results on current recommendations as quickly as possible. These studies are:

- Treatment of Enuresis Nocturna by Circular Muscle Exercise (Paula Method)
- Desmopressin as a Therapy for Bedwetting in Children With Sickle Cell Disease
- Clinical Values of Voiding Diary for Diagnosis and Treatment for Monosymptomatic Enuresis in Children
- Transcutaneous Electric Nerve Stimulation (TENS) for the Treatment of Nocturnal Enuresis in Children
- Scheduled Awakenings for the Treatment of Nocturnal Enuresis

Intelligence gathered during surveillance

Views of topic experts

We considered the views of topic experts, including those who helped to develop the guideline. For this surveillance review topic experts completed a questionnaire about developments in evidence, policy and services related to NICE guideline CG111.

We sent questionnaires to 9 topic experts and received 5 responses. The topic experts either:

- participated in the guideline committee who developed the guideline
- were recruited to the NICE Centre for Guidelines Expert Advisers Panel to represent their specialty.

The main areas that they highlighted for update included:

- concern over the lack of clarity within the guideline on the age that a child can be expected to receive desmopressin treatment for nocturnal enuresis
- felt that the recommendation on enuresis alarms in the management of bedwetting has caused some confusion and it has been interpreted that all children with bedwetting should be offered alarm treatment before medication
- concern over the lack of UK service provision for children with bedwetting following the move of school nursing to Public Health.

See appendix A: summary of evidence from surveillance below for details of how these concerns have been addressed.

Other sources of information

We considered all other correspondence received since the guideline was published. During the 2018 surveillance review, we followed up a meeting with the Cochrane incontinence group that had taken place during the previous surveillance review in 2014. We discussed Cochrane systematic reviews and related randomised controlled trials that potentially impacted on our review proposal.

The Cochrane Incontinence Group highlighted that the Standardisation Committee of the International Children's Continence Society (ICCS) has now updated their Standardisation of Terminology documents and recommend that all studies on nocturnal enuresis should conform to standardised terminology. The main impact for this guideline on children and young people with bedwetting is distinguishing those who wet only at night and those with other underlying bladder problems and daytime symptoms which may not respond to treatment. Before 2010, many papers did not distinguish between these two groups. NICE have checked the guideline recommendations which were based on both evidence and committee discussion and are confident that the guideline does reflect different management for these two groups where appropriate. This has been taken into account in the surveillance

reviews of the guideline. NICE surveillance team will ensure that terminology is also noted for future reviews of the guideline.

Views of stakeholders

Stakeholders are consulted on all surveillance proposals except if the whole guideline will be updated and replaced. Because this surveillance decision was to not update the guideline, we are consulting on the decision.

See ensuring that published guidelines are current and accurate in developing NICE guidelines: the manual for more details on our consultation processes.

Equalities

One expert noted that children with physical and learning difficulties are sometimes excluded from services and the guidance should emphasise that it relates to all children, including children with disabilities. This issue is covered in the guideline which states 'Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient's needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English' (Page 6 NICE guideline CG111). In addition, inequalities in access to paediatric continence services is addressed in a NICE-accredited commissioning guide (Paediatric Continence Commissioning Guide) by the Paediatric continence services. This commissioning guide provides support for the local implementation of NICE guidance through commissioning and should be read together with NICE guideline CG111.

Editorial amendments

During surveillance of the guideline we identified the following points in the guideline that should be amended.

Recommendation 1.8.1: there are concerns that the current wording might be misinterpreted that first line treatment is always alarms. Therefore the text 'as the first-line treatment' will be deleted and the revised recommendation will read as follows:

- Offer an alarm to children and young people whose bedwetting has not responded to advice on fluids, toileting or an appropriate reward system, unless:
  - an alarm is considered undesirable to the child or young person or their parents or carers or
  - an alarm is considered inappropriate, particularly if:

- ◊ bedwetting is very infrequent (that is, less than 1–2 wet beds per week)
- ◊ the parents or carers are having emotional difficulty coping with the burden of bedwetting
- ◊ the parents or carers are expressing anger, negativity or blame towards the child or young person.

Recommendation 1.10.4: addition of dosage frequency of desmopressin will be helpful for users of the guideline. Therefore, the recommendation will be edited to read as follows:

- In children and young people who are not completely dry after 1 to 2 weeks of the initial dose of desmopressin (200 micrograms daily (at bedtime) for Desmotabs or 120 micrograms daily for sublingual DesmoMelt), consider increasing the dose (to 400 micrograms daily for Desmotabs or 240 micrograms daily for DesmoMelt).

Overall decision

After considering all sources of evidence and the impact on current recommendations, we propose that no update is necessary.

Appendix A: Summary of evidence from surveillance

2018 surveillance of Bedwetting in under 19s (2010) NICE guideline CG111

Summary of evidence from surveillance

Studies identified in searches are summarised from the information presented in their abstracts.

Feedback from topic experts who advised us on the approach to this surveillance review, was considered alongside the evidence to reach a final decision on the need to update each section of the guideline.

1.1 Principles of care

Recommendations in this section of the guideline

1.1.1 Inform children and young people with bedwetting and their parents or carers that bedwetting is not the child or young person's fault and that punitive measures should not be used in the management of bedwetting

1.1.2 Offer support, assessment and treatment tailored to the circumstances and needs of the child or young person and parents or carers.

1.1.3 Do not exclude younger children (for example, those under 7 years) from the management of bedwetting on the basis of age alone.

1.1.4 Perform regular medication reviews for children and young people on repeated courses of drug treatment for bedwetting.

Surveillance decision

This section should not be updated.

Principles of care

Previous surveillance summary

No evidence was identified at the 2012 or 2014 review.

2018 surveillance summary

A prospective cohort study (1) from a non-UK setting investigated the role of punishment in 218 children with nocturnal

enuresis. Punishment methods were reprimanding in 70.4%, depriving of sleep in 40.7%, mildly beating in 11.1%, leaving the child wet in 3.7% and other methods in 7.4%. A full or partial response in terms of a decreased number of wet nights was achieved in 40.7% in the group of children who had been punished versus 59.2% in children who had not been punished.

Intelligence gathering

Topic expert feedback indicated concern regarding the lack of UK service provision for children with bedwetting following the move of school nursing to Public Health.

Impact statement

Evidence from a non-UK setting suggests that punishment may not be an effective method for treatment of nocturnal enuresis. The recommendation 1.1.1 indicates 'Inform children and young people with bedwetting and their parents or carers that bedwetting is not the child or young person's fault and that punitive measures should not be used in the management of bedwetting.'

The topic experts expressed concern about the lack of service provision for children with bedwetting following the move of school nursing to Public Health. A commissioning guide (Paediatric Continence Commissioning Guide) prepared by the Paediatric continence services addresses service provision and has been accredited by NICE. This commissioning guide provides support for the local implementation of NICE guidance through commissioning and should be read together with CG111.

New evidence is unlikely to change guideline recommendations.

1.2 Information for the child or young person and family

Recommendations in this section of the guideline

1.2.1 Offer information tailored to the needs of children and young people being treated for bedwetting and their parents and carer.

1.2.2 Offer information and details of support groups to children and young people being treated for bedwetting and their parents or carers.

1.2.3 Offer information about practical ways to reduce the impact of bedwetting before and during treatment (for example, using bed protection and washable and disposable products).

Surveillance decision

No new information was identified at any surveillance review.

1.3 Assessment and investigation

Recommendations in this section of the guideline

1.3.1 Ask whether the bedwetting started in the last few days or weeks. If so, consider whether this is a presentation of a systemic illness.

1.3.2 Ask if the child or young person had previously been dry at night without assistance for 6 months. If so, enquire about any possible medical, emotional or physical triggers, and consider whether assessment and treatment is needed for any identified triggers.

1.3.3 Ask about the pattern of bedwetting, including questions such as:

- How many nights a week does bedwetting occur?
- How many times a night does bedwetting occur?
- Does there seem to be a large amount of urine?
- At what times of night does the bedwetting occur?
- Does the child or young person wake up after bedwetting?

1.3.4 Ask about the presence of daytime symptoms in a child or young person with bedwetting, including:

- daytime frequency (that is, passing urine more than seven times a day)
- daytime urgency
- daytime wetting
- passing urine infrequently (fewer than four times a day)
- abdominal straining or poor urinary stream
- pain passing urine.

1.3.5 Ask about daytime toileting patterns in a child or young person with bedwetting, including:

- whether daytime symptoms occur only in some situations
- avoidance of toilets at school or other settings
- whether the child or young person goes to the toilet more or less frequently than his or her peers.

1.3.6 Ask about the child or young person's fluid intake throughout the day. In particular, ask whether the child or young person, or the parents or carers are restricting fluids.

1.3.7 Consider whether a record of the child or young person's fluid intake, daytime symptoms, bedwetting and toileting patterns would be useful in the assessment

and management of bedwetting. If so, consider asking the child or young person and parents or carers to record this information

1.3.8 Do not perform urinalysis routinely in children and young people with bedwetting, unless any of the following apply:

- bedwetting started in the last few days or weeks
- there are daytime symptoms
- there are any signs of ill health
- there is a history, symptoms or signs suggestive of urinary tract infection
- there is a history, symptoms or signs suggestive of diabetes mellitus.

1.3.9 Assess whether the child or young person has any comorbidities or there are other factors to consider, in particular:

- constipation and/or soiling
- developmental, attention or learning difficulties
- diabetes mellitus
- behavioural or emotional problems
- family problems or a vulnerable child or young person or family.

1.3.10 Consider assessment, investigation and/or referral when bedwetting is associated with:

- severe daytime symptoms
- a history of recurrent urinary infections
- known or suspected physical or neurological problems
- comorbidities or other factors (for example, those listed in recommendation 1.3.9).

1.3.11 Investigate and treat children and young people with suspected urinary tract infection in line with urinary tract infection (NICE guideline CG54).

1.3.12 Investigate and treat children and young people with soiling or constipation in line with constipation in children and young people (NICE guideline CG99).

1.3.13 Refer children and young people with suspected type 1 diabetes immediately (on the same day) to a multidisciplinary paediatric diabetes team with the competencies needed to confirm diagnosis and to provide immediate care. [This recommendation is from the NICE guideline on diabetes (type 1 and type 2) in children and young people]

1.3.14 Consider investigating and treating daytime symptoms before bedwetting if daytime symptoms predominate.

1.3.15 Consider involving a professional with psychological expertise for children and young people with bedwetting and emotional or behavioural problems.

1.3.16 Discuss factors that might affect treatment and support needs, such as:

- sleeping arrangements (for example, does the child or young person have his or her own bed or bedroom)
- the impact of bedwetting on the child or young person and family
- whether the child or young person and parents or carers have the necessary level of
- commitment, including time available, to engage in a treatment programme.

1.3.17 Discuss with the parents or carers whether they need support, particularly if they are having difficulty coping with the burden of bedwetting, or if they are expressing anger, negativity or blame towards the child or young person.

1.3.18 Consider maltreatment* if:

- a child or young person is reported to be deliberately bedwetting
- parents or carers are seen or reported to punish a child or young person for
- bedwetting despite professional advice that the symptom is involuntary
- a child or young person has secondary daytime wetting or secondary bedwetting that persists despite adequate assessment and management unless there is a medical explanation (for example, urinary tract infection) or clearly identified stressful situation that is not part of maltreatment (for example, bereavement, parental separation).

[This recommendation is adapted from when to suspect child maltreatment (NICE guideline CG89)]

1.3.19 Use the findings of the history to inform the diagnosis (according to table 1) and management of bedwetting.

Table 1 Findings from the history and their possible interpretation

Findings from history	**Possible interpretation**
Large volume of urine in the first few hours of night	Typical pattern for bedwetting only.
Variable volume of urine, often more than once a night	Typical pattern for children and young people who have bedwetting and daytime symptoms with possible underlying overactive bladder.

Bedwetting every night	Severe bedwetting, which is less likely to resolve spontaneously than infrequent bedwetting.
Previously dry for more than 6 months	Bedwetting is defined as secondary.
Daytime frequency Daytime urgency Daytime wetting Abdominal straining or poor urinary stream Pain passing urine	Any of these may indicate the presence of a bladder disorder such as over active bladder or more rarely (when symptoms are very severe and persistent) an underlying urological disease.
Constipation	A common comorbidity that can cause bedwetting and requires treatment (see constipation in children and young people [NICE guideline CG99]).
Soiling	Frequent soiling is usually secondary to underlying faecal impaction and constipation which may have been unrecognised.
Inadequate fluid intake	May mask an underlying bladder problem, such as overactive bladder disorder, and may impede the development of an adequate bladder capacity.
Behavioural and emotional problems	These may be a cause or a consequence of bedwetting. Treatment may need to be tailored to the specific requirements of each child or young person and family.
Family problems	A difficult or 'stressful' environment may be a trigger for bedwetting. These factors should be addressed alongside the management of bedwetting.
Practical issues	Easy access to a toilet at night, sharing a bedroom or bed and proximity of parents to provide support are all important issues to consider and address when considering treatment, especially with an alarm.

* For the purposes of the child mistreatment guideline, to consider maltreatment means that maltreatment is one possible explanation for the alerting feature or is included in the differential diagnosis.

Surveillance decision

This section should not be updated.

Assessment for children with Bedwetting

Previous surveillance summary

No evidence was identified at the 2012 review.

A randomised controlled trial (2) from 2014 surveillance review was identified that looked at the effect of exogenous melatonin in children with therapy-resistant monosymptomatic nocturnal enuresis. Twenty four children were randomised to synthetic melatonin or placebo. The authors found no change in enuresis frequency or in the sleep-wake cycle in either group.

2018 surveillance summary

A prospective cohort study (3) assessed the association between biopsychosocial factors and development of childhood urinary incontinence in 12,995 children aged 4 to 9 years. Maternal history of bedwetting was associated with almost a fourfold increase in odds of persistent wetting in the child. Behaviour and psychological problems in early childhood were associated with increased odds of bedwetting at 4–9 years old children. Early behaviour problems were also associated with frequent and persistent bedwetting ($p<0.001$) but there was less evidence that early emotional difficulties were risk factors for bedwetting.

Intelligence gathering

Topic expert feedback noted that the guideline does not include consideration of breathing problems during sleep as part of the assessment of bedwetting.

Impact statement

A large cohort study found that childhood urinary incontinence may be associated with biopsychosocial factors. This evidence is consistent with the recommendation in CG111 that indicates behavioural and emotional problems may be a cause or a consequence of bedwetting and treatment may need to be tailored to the specific requirements of each child and family.

The original guideline did not make further recommendations on breathing problems and no relevant evidence was identified during surveillance. However comorbidities is covered by CG111 recommendations for, investigation and/or referral when bedwetting is associated with comorbidities.

New evidence is unlikely to change guideline recommendations.

1.4 Planning management

Recommendations in this section of the guideline

1.4.1 Explain the condition, the effect and aims of treatment, and the advantages and disadvantages of the possible treatments to the child or young person and parents or carers (see recommendations 1.8.13 and 1.10.9).

1.4.2 Clarify what the child or young person and parents or carers hope the treatment will achieve. Ask whether short-term dryness is a priority for family or recreational reasons (for example, for a sleep-over).

1.4.3 Explore the child or young person's views about their bedwetting, including:

- what they think the main problem is
- whether they think the problem needs treatment.

1.4.4 Explore and assess the ability of the family to cope with using an alarm for the treatment of bedwetting.

1.4.5 Consider whether or not it is appropriate to offer alarm or drug treatment, depending on the age of the child or young person, the frequency of bedwetting and the motivation and needs of the child or young person and their family.

Surveillance decision

No new information was identified at any surveillance review.

1.5 Advice on fluid intake, diet and toileting patterns

Recommendations in this section of the guideline

1.5.1 Advise children and young people with bedwetting and their parents or carers that:

- adequate daily fluid intake is important in the management of bedwetting
- daily fluid intake varies according to ambient temperature, dietary intake and physical activity. A suggested intake of drinks is given in table 2:

Table 2 Suggested daily intake of drinks for children and young people

Age	Sex	Total drink per day
4–8 years	Female	1000–1400 ml

	Male	1000–1400 ml
9–13 years	Female Male	1200–2100 ml 1400–2300 ml
14–18 years	Female Male	1400–2500 ml 2100–3200 ml

1.5.2 Advise the child or young person and parents or carers that the consumption of caffeine-based drinks should be avoided in children and young people with bedwetting.

1.5.3 Advise the child or young person and parents or carers to eat a healthy diet and not to restrict diet as a form of treatment for bedwetting.

1.5.4 Advise the child or young person of the importance of using the toilet at regular intervals throughout the day.

1.5.5 Advise parents or carers to encourage the child or young person to use the toilet to pass urine at regular intervals during the day and before sleep (typically between four and seven times in total). This should be continued alongside the chosen treatment for bedwetting.

1.5.6 Address excessive or insufficient fluid intake or abnormal toileting patterns before starting other treatment for bedwetting in children and young people.

1.5.7 Suggest a trial without nappies or pull-ups for a child or young person with bedwetting who is toilet trained by day and is wearing nappies or pull-ups at night. Offer advice on alternative bed protection to parents and carers.

Surveillance decision

This section should not be updated.

Fluid and diet restriction for the management of bedwetting

Previous surveillance summary

No evidence was identified at the 2012 or 2014 review.

2018 surveillance summary

A prospective cohort study (4) assessed the efficacy of combined specific dietary advice and desmopressin (group A) compared with desmopressin alone (Group B) for treating nocturnal enuresis in 137 children aged between 5 and 14 years. There was a higher response rate (decreased number of wet nights) and a lower number of relapse in group A compared with group B after 3 months of treatment (67.2% versus 58.6%).

A prospective cohort study (5) assessed the efficacy of exogenous melatonin combined with desmopressin and dietary recommendations for treating enuresis in

153 children, aged between 5 and 14 years. Children were assigned to receive treatment in one of 3 groups: group 1, desmopressin (120 micrograms daily); group 2, desmopressin (120 micrograms daily) and dietary recommendations; or group 3, desmopressin (120 micrograms daily) and dietary recommendations plus melatonin (1 mg daily). After 3 months of treatment, a desirable response in terms of a decreased number of wet nights was achieved in 58.82% patients treated in group 1, 66.04% patients treated in group 2, and 71.43% patients treated in group 3. The difference was non-significant.

A prospective cohort study (6) assessed the effectiveness of a range of common strategies used by parents to overcome bedwetting (including lifting, restricting drinks before bedtime, regular daytime toilet trips, rewards, showing displeasure and using protection pants) in 7½-year-old children (n=1258). The primary outcome was the risk of bedwetting two years later at age 9½. Common strategies used to overcome bedwetting in 7½-year-olds appeared not to be effective in reducing the risk of bedwetting at age 9½ years.

A cohort study (7) assessed the effect of increased fluid intake, prior to going to bed, on the efficacy of alarm therapy in 294 children with nocturnal enuresis. Children were allocated to two groups; group A (n = 141, mean age 10.9 years), used alarm and group B (n = 153, mean age 11.5 years) drank either water or any other transparent non-coloured fluid prior to sleep at a volume of 4-5 ml/kg of body weight. The effectiveness of therapy was assessed by the change in frequency of urination episodes during sleep per week and episodes of spontaneous awakenings. Complete resolution of nocturnal enuresis was significantly higher in group B (39%) compared with group A (24%) two weeks after the end of the treatment.

Intelligence gathering

Topic expert feedback indicated that reducing dairy products and protein rich food before bedtime can help reduce bedwetting. The feedback also suggests that there is no assessment of evening intake of salt and protein in the guideline, as high consumption of these may cause increased diuresis, contributing to the bedwetting.

Impact statement

The new evidence suggests that dietary advice combined with desmopressin or combined with desmopressin plus melatonin may be effective in treatment of nocturnal enuresis. Further evidence on effectiveness of a range of common strategies used by parents in 7½-year-olds children to reduce the risk of bedwetting at age 9½ was inconclusive and appears not to be effective. Evidence from a cohort study indicates that frequency of urination episodes during sleep can be improved in children with nocturnal enuresis by increasing intake of fluid prior to going to bed. Currently, CG111 recommends considering a healthy diet for children or young person with bedwetting (1.5.3). The evidence is consistent with the recommendations in CG111. No evidence was identified on effect of dairy products and protein rich food on bedwetting in children.

New evidence is unlikely to change guideline recommendations

1.6 Lifting and waking

1.6.1 Offer advice on waking and lifting during the night** as follows:

- Neither waking nor lifting children and young people with bedwetting, at regular times or randomly, will promote long-term dryness.
- Waking of children and young people by parents or carers, either at regular times or randomly, should be used only as a practical measure in the short-term management of bedwetting.
- Young people with bedwetting that has not responded to treatment may find self-instigated waking (for example, using a mobile phone alarm or alarm clock) a useful management strategy.

* Lifting is carrying or walking a child to toilet. Lifting without waking means that effort is not made to ensure the child is fully woken. Waking means waking a child from sleep to take them to the toilet.

Surveillance decision

This section should not be updated.

Lifting and waking in the management of bedwetting

Previous surveillance summary

No evidence was identified at the 2012 or 2014 review.

2018 surveillance summary

A retrospective cohort study (8) assessed the effect of family assistance to wake children with monosymptomatic enuresis undergoing alarm therapy. Children were allocated to a family assisted group (n= 44 i.e. children were awakened by family members when the alarm sounded) or an alarm control group (n=34 i.e. children were self-responsible for waking to the alarm). Full response and partial response were observed in 36.4% and 20.5% of patients in the family assisted group, and 26.5% and 29.4% of patients in the alarm control group respectively (p=1.00).

Intelligence gathering

No topic expert feedback was relevant to this section.

Impact statement

The new evidence suggests that there is no significant difference in effectiveness between family assisted alarm therapy and self-responsible alarm therapy. The evidence appears to be consistent with the recommendation in CG111 that indicates 'waking of children and young people by parents or carers, either at regular times or randomly, should be used only as a practical measure in the short-term management of bedwetting' (1.6.1).

New evidence is unlikely to change guideline recommendations.

1.7 Reward systems

1.7.1 Explain that reward systems with positive rewards for agreed behaviour rather than dry nights should be used either alone or in conjunction with other treatments for bedwetting. For example, rewards may be given for:

- drinking recommended levels of fluid during the day
- using the toilet to pass urine before sleep
- engaging in management (for example, taking medication or helping to change sheets).

1.7.2 Inform parents or carers that they should not use systems that penalise or remove previously gained rewards.

1.7.3 Advise parents or carers to try a reward system alone (as described in recommendation 1.7.1) for the initial treatment of bedwetting in young children who have some dry nights.

Surveillance decision

No new information was identified at any surveillance review.

1.8 Initial treatment – alarms

Recommendations in this section of the guideline

1.8.1 Offer an alarm as the first-line treatment to children and young people whose bedwetting has not responded to advice on fluids, toileting or an appropriate reward system, unless:.

- an alarm is considered undesirable to the child or young person or their parents or carers or
- an alarm is considered inappropriate, particularly if:
  - bedwetting is very infrequent (that is, less than 1–2 wet beds per week)
  - the parents or carers are having emotional difficulty coping with the burden of bedwetting

- the parents or carers are expressing anger, negativity or blame towards the child or young person.

1.8.2 Assess the response to an alarm by 4 weeks and continue with treatment if the child or young person is showing early signs of response*. Stop treatment only if there are no early signs of response.

1.8.3 Continue alarm treatment in children and young people with bedwetting who are showing signs of response until a minimum of 2 weeks' uninterrupted dry nights has been achieved.

1.8.4 Assess whether it is appropriate to continue with alarm treatment if complete dryness is not achieved after 3 months. Only continue with alarm treatment if the bedwetting is still improving and the child or young person and parents or carers are motivated to continue.

1.8.5 Do not exclude alarm treatment as an option for bedwetting in children and young people with:

- daytime symptoms as well as bedwetting
- secondary bedwetting.

1.8.6 Consider an alternative type of alarm (for example, a vibrating alarm) for the treatment of bedwetting in children and young people who have a hearing impairment.

1.8.7 Consider an alarm for the treatment of bedwetting in children and young people with learning difficulties and/or physical disabilities. Tailor the type of alarm to each individual's needs and abilities

1.8.8 Consider an alarm for the treatment of bedwetting in children under 7 years, depending on their ability, maturity, motivation and understanding of the alarm.

1.8.9 Inform children and young people and parents or carers about the benefits of alarms combined with reward systems. Advise on the use of positive rewards for desired behaviour, such as waking up when the alarm goes off, going to the toilet after the alarm has gone off, returning to bed and resetting the alarm.

1.8.10 Encourage children and young people with bedwetting and their parents or carers to discuss and agree on their roles and responsibilities for using the alarm and the use of rewards.

1.8.11 Ensure that advice and support are available to children and young people and their parents or carers who are given an alarm, and agree how these should be obtained. Be aware that they may need a considerable amount of help in learning how to use an alarm.

1.8.12 Inform the child or young person and their parents or carers that the aims of alarm treatment for bedwetting are to train the child or young person to:

- recognise the need to pass urine
- wake to go to the toilet or hold on

- learn over time to hold on or to wake spontaneously and stop wetting the bed.

1.8.13 Inform the child or young person and their parents or carers that:

- alarms have a high long-term success rate
- using an alarm can disrupt sleep
- that parents or carers may need to help the child or young person to wake to the alarm
- using an alarm requires sustained commitment, involvement and effort from the child or young person and their parents or carers
- they will need to record their progress (for example, if and when the child or young person wakes and how wet they and the bed are)
- alarms are not suitable for all children and young people and their families.

1.8.14 If offering an alarm for bedwetting, inform the child and young person and their parents or carers how to:

- set and use the alarm
- respond to the alarm when it goes off
- maintain the alarm
- deal with problems with the alarm, including who to contact when there is a problem
- return the alarm when they no longer need it.

1.8.15 Inform the child and young person and their parents or carers that it may take a few weeks for the early signs of a response to the alarm to occur and that these may include:

- smaller wet patches
- waking to the alarm
- the alarm going off later and fewer times per night
- fewer wet nights.

1.8.16 Inform the child or young person and their parents or carers that dry nights may be a late sign of response to the alarm and may take weeks to achieve.

1.8.17 Inform the parents or carers that they can restart using the alarm immediately, without consulting a healthcare professional, if the child or young person starts bedwetting again following a response to alarm treatment.

* Early signs of a response may include smaller wet patches, waking to the alarm, the alarm going off later and fewer times per night and fewer wet nights.

Surveillance decision

This section should not be updated.

Enuresis Alarms in the management of bedwetting

Previous surveillance summary

No evidence was identified at the 2012 or 2014 review.

2018 surveillance summary

A randomised controlled trial assessed (9) the efficacy of prolonged alarm intervention (length of the alarm) in 455 children aged 9-14 years with nocturnal enuresis. Children were randomly divided in three groups. In group A (n = 139) alarm treatment was carried out within 12 weeks, in group B (n = 136) 16 weeks, and in group C (n = 139) 20 weeks. The percentage of patients who no longer wet the bed (for 2 weeks or more) immediately after treatment was 67.4% in group A, 80.7% in group B and 85.5% in group C. The percentage of patients who no longer wet the bed 3 months after the end of treatment in groups B (71.2%) and C (77.1%) were higher than in group A (45.9%).

A randomised controlled trial (10) assessed the efficiency of the alarm intervention on different age groups (7-9 years; 10-12 years; 13-15 years) in 399 children with nocturnal enuresis. The average number of dry nights per week after two months of treatment was 3.9 in 7-9 years old and 5.9 in 10-12 years old and 4.7 in 13-15 years old.

A retrospective clinical audit (11) assessed bell and pad alarm therapy in 2861 children aged 5-16 years for nocturnal enuresis. The bell and pad treatment had high success rate (76%) irrespective of age. The mean treatment time to achieve dryness was 62.1 ± 30.8 days and the relapse rate was 23%.

Intelligence gathering

Topic expert feedback indicated the recommendations (in particular recommendation 1.8.1) in this section have caused some confusion as readers have interpreted that guidance as meaning all children with bedwetting should be offered alarm treatment before medication. Topic experts also suggested that first choice treatment should be based on the outcome of assessment alongside child/family preference.

Topic experts felt that children with physical and learning difficulties are sometimes excluded from services and the guidance should emphasise that it relates to all children aged 5 years, including children with disabilities.

Impact statement

New evidence from 3 studies suggests that alarm interventions appear to have direct and long-term effect on improvement of

nocturnal enuresis. This is consistent with current recommendation that suggests use of an alarm as a non-pharmacological intervention in children and young people.

The topic experts felt that the recommendation on enuresis alarms in the management of bedwetting has caused some confusion and it has been interpreted that all children with bedwetting should be offered alarm treatment before medication. This point was raised and considered previously in the 2014 surveillance review and it was decided that 'At present, we do not believe that the wording of these recommendations needs clarification. However, for interpretation of the guideline, users of NICE guidance should refer to the NICE Pathway which brings together all of the nocturnal enuresis recommendations in a clear pathway that is easy to follow.'

Furthermore, to avoid any unintended ambiguity, the NICE editorial team have suggested a minor editorial amendment to clarify the recommendation 1.8.1: the text 'as the first-line treatment' will be deleted.

The topic experts also commented that first choice treatment should be based on the outcome of assessment along with child/family preference. Recommendation 1.4.5 clearly states: consider whether or not it is appropriate to offer alarm or drug treatment, depending on the age of the child or young person, the frequency of bedwetting and the motivation and needs of the child or young person and their family (1.4.5). Recommendation 1.8.1 also states that alarms should be initial treatment in those whose bedwetting has not responded to advice on fluids, toileting or an appropriate rewards system unless they are considered undesirable by the child, young person or parent/ carer or are considered inappropriate.

The guideline indicates 'Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient's needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English' (Page 6 NICE guideline CG111).

Overall, there is no indication of a need to update the guideline in this area.

New evidence is unlikely to change guideline recommendations.

1.9 Lack of response to alarm treatment

Recommendations in this section of the guideline

1.9.1 If bedwetting does not respond to initial alarm treatment, offer:

- combination treatment with an alarm and desmopressin or
- desmopressin alone if continued use of an alarm is no longer acceptable to the child or young person or their parents and carers.

1.9.2 Offer desmopressin alone to children and young people with bedwetting if there has been a partial response to a combination of an alarm and desmopressin following initial treatment with an alarm.

Surveillance decision

No new information was identified at any surveillance review.

1.10 Initial treatment – desmopressin

Recommendations in this section of the guideline

1.10.1 Offer desmopressin to children and young people over 7 years, if:

- rapid-onset and/or short-term improvement in bedwetting is the priority of treatment

  or

- an alarm is inappropriate or undesirable (see recommendation 1.8.1).

1.10.2 Consider desmopressin for children aged 5–7 years if treatment is required and:

- rapid-onset and/or short-term improvement in bedwetting is the priority of treatment

  or

- an alarm is inappropriate or undesirable (see recommendation 1.8.1).

1.10.3 Do not exclude desmopressin as an option for the management of bedwetting in children and young people who also have daytime symptoms. However, do not use desmopressin in the treatment of children and young people who only have daytime wetting.

1.10.4 In children and young people who are not completely dry after 1 to 2 weeks of the initial dose of desmopressin (200 micrograms for Desmotabs or 120 micrograms for DesmoMelt), consider increasing the dose (to 400 micrograms for Desmotabs or 240 micrograms for DesmoMelt).

1.10.5 Assess the response to desmopressin at 4 weeks and continue treatment for 3 months if there are signs of a response. Consider stopping if there are no signs of response. Signs of response include:

- smaller wet patches
- fewer wetting episodes per night
- fewer wet nights.

1.10.6 Do not exclude desmopressin as an option for the treatment of bedwetting in children and young people with sickle cell disease if an alarm is inappropriate or undesirable and they can comply with night-time fluid restriction. Provide advice about withdrawal of desmopressin at times of sickle cell crisis.

1.10.7 Do not exclude desmopressin as an option for the treatment of bedwetting in children and young people with emotional, attention or behavioural problems or developmental and learning difficulties if an alarm is inappropriate or undesirable and they can comply with night-time fluid restriction.

1.10.8 Do not routinely measure weight, serum electrolytes, blood pressure and urine osmolality in children and young people being treated with desmopressin for bedwetting.

1.10.9 If offering desmopressin for bedwetting, inform the child or young person and their parents or carers:

- that many children and young people, but not all, will experience a reduction in wetness
- that many children and young people, but not all, will relapse when treatment is withdrawn
- how desmopressin works
- of the importance of fluid restriction from 1 hour before until 8 hours after taking desmopressin
- that it should be taken at bedtime
- if appropriate, how to increase the dose if there is an inadequate response to the starting dose
- to continue treatment with desmopressin for 3 months
- that repeated courses of desmopressin can be used.

1.10.10 Consider advising that desmopressin should be taken 1–2 hours before bedtime in children and young people with bedwetting that has either partially responded or not responded to desmopressin taken at bedtime. Ensure that the child or young person can comply with fluid restriction starting from 1 hour before the drug is taken.

1.10.11 Consider continuing treatment with desmopressin for children and young people with bedwetting that has partially responded, as bedwetting may improve for up to 6 months after starting treatment.

Surveillance decision

This section should not be updated.

Desmopressin and the management of bedwetting

Previous surveillance summary

A UK based multicentre randomised controlled trial (12) was identified in 2012 review that compared desmopressin with enuresis alarm in 251 children aged between 5 to 16 years who had severe primary monosymptomatic nocturnal enuresis. The results showed that there was no significant difference in response rates between the two groups at the end of treatment.

An updated Cochrane review (13) was identified in 2014 surveillance that assessed the efficacy of drugs other than desmopressin and tricyclics on nocturnal enuresis in children up to the age of 16 years. Results from 40 studies showed that indomethacin, diazepam, mestorelone and atomoxetine were beneficial compared to placebo. However, indomethacin and diclofenac were not as effective as desmopressin. None of the drugs were effective in reducing relapse rates. Combination therapy with imipramine and oxybutynin was more effective than imipramine monotherapy. When compared with behavioural interventions, enuresis alarms were found to be more beneficial than amphetamine, oxybutynin and oxybutynin plus holding exercises.

A randomised controlled trial (14) identified in 2014 surveillance review investigated the efficacy of an enuresis alarm, desmopressin and a combination of the two for the treatment of children with monosymptomatic nocturnal enuresis (n=136). All three treatments appeared to be effective in treating nocturnal enuresis in children. However the combination therapy did not improve the long-term success rate.

A post-hoc analysis (15) that was identified in 2014 surveillance reviews, investigated the efficacy of desmopressin sublingual melt compared with an oral tablet. Two hundred and twenty-one children aged 5 to 15 years were randomised to either melt/tablet treatment sequence or tablet/melt sequence. The probability of being a responder was improved with melt compared to tablet formulation.

2018 surveillance summary

Desmopressin formulation

A randomised controlled trial (16) assessed the long-term success of desmopressin sublingual lyophilisate formulation with and without alarm therapy in 142 children with primary monosymptomatic nocturnal enuresis. Success rate (more than 90% reduction in wet nights per month) was achieved in 76.8% of children in the desmopressin and 61.8% of children in the desmopressin plus alarm group, in patients who completed 6 months of treatment. At 12 months, the success rate was 77.8% for those receiving desmopressin and 75% for those treated with desmopressin plus alarm. However, the result from intention

to treat analysis was in favour of desmopressin group.

A prospective cohort study (17) assessed increasing doses of oral desmopressin lyophilisate (melt) in 237 children with nocturnal enuresis (mean age 10.32 years). Of the children treated with melt 120 micrograms at bedtime, a full response was achieved in 56.9% and a partial response was achieved in 8.9%. The symptoms were further improved when the dose increased to 180 micrograms daily (additional 14.3% in full response and 9.5% in partial response). No additional improvement was observed when the dose was increased to 240 micrograms daily.

A sub-study of an open-label randomised controlled trial (18) assessed the safety profile of once-daily oral desmopressin tablets in 936 children aged 5-15 years with primary nocturnal enuresis. Desmopressin tablet treatment was well tolerated in children regardless of patient gender or age.

A prospective cohort study (19) assessed the adverse effects of oral desmopressin lyophilisate (120 micrograms daily) in 237 children with nocturnal enuresis (mean age 10.06). Overall 22 adverse effect events were reported including 5 neurological symptoms, 3 gastrointestinal effects, 4 sleep disturbances, 8 psycho-behavioural disorders, and 2 symptoms of fatigue.

Other drugs

A trial (20) assessed the effectiveness of 3 months' combination therapy with desmopressin plus oxybutynin compared with desmopressin plus tolterodine in 59 children aged 4-14 years with primary nocturnal enuresis. In the desmopressin and oxybutynin group, 86.7% of children achieved a complete remission. Recovery was higher in desmopressin plus tolterodine group than desmopressin plus oxybutynin group (P = 0.001).

A randomised controlled trial (21) assessed the effect of various monotherapies, in 92 children aged 5-14 years with primary nocturnal enuresis. Children were allocated to: desmopressin (n = 30), imipramine (n = 31), and oxybutynin (n = 31) for 6 weeks. The response rate (decreased number of wet nights) was 71.0% in oxybutynin group, 63.3% in desmopressin group and 61.3% in imipramine group (P = 0.701). The relapse rate was 31.8% in oxybutynin group, 57.9% in desmopressin group and 63.2% in imipramine group (P = 0.095).

A retrospective cohort study (22) compared the clinical results of monotherapy with combination treatment in 176 children with primary monosymptomatic nocturnal enuresis. Children received either 120 micrograms of desmopressin melt or combination treatment with 120 micrograms of desmopressin melt plus 1-2 mg oral tablet of tolterodine once daily. The result was evaluated at 1-3 months during the treatment and 6 months after complete cessation of treatment. At baseline, children had an overall mean of 23.6±5.6 wet nights per month, which decreased to 10.8±5.6 (1 month after treatment had finished) and 7.3±5.3 (3 months after treatment) in monotherapy group and 8.9±9.5 and 3.3±4.9 in combination therapy group at 1 and 3 months after treatment. The relapse at 6 months after end of treatment was 16.39% in monotherapy group and 9.09% in combination therapy group.

In a prospective cohort study (23), treatment of monosymptomatic enuresis was assessed in 82 children aged 6-16 years. Children were allocated to three treatment groups: alarm, desmopressin, and alarm plus desmopressin. There was continued success (decreased number of wet nights) 12 months after treatment withdrawal in 70% of the alarm group, 84.2% of the desmopressin group and 100% of the combined group (p=0.21). Recurrence occurred in 15% patients in the alarm group and 5.2% patients of the desmopressin group.

An updated Cochrane review (13) was identified in 2014 surveillance that assessed the efficacy of drugs other than desmopressin and tricyclics on nocturnal enuresis in children up to the age of 16 years. Results from 40 studies showed that indomethacin, diazepam, mestorelone and atomoxetine were beneficial compared to placebo. However, indomethacin and diclofenac were not as effective as desmopressin. None of the drugs were effective in reducing relapse rates. Combination therapy with imipramine and oxybutynin was more effective than imipramine monotherapy. When compared with behavioural interventions, enuresis alarms were found to be more beneficial than amphetamine, oxybutynin and oxybutynin plus holding exercises.

Intelligence gathering

Topic expert feedback suggested that the recommendation '*Offer desmopressin to children and young people over 7 years'* is confusing as it implies that the treatments should not start with desmopressin until the child is 7 years old.

Topic expert feedback indicated that it would be clearer if only one suggestion is given about the timing of desmopressin administration.

Impact statement

Desmopressin formulation

The new evidence suggests that melt formulation of desmopressin 120 micrograms daily may improve the probability of being a responder and also improves compliance compared with tablet formulation. A further increase up to 240 micrograms may not improve the symptoms and may increase the side effects. This evidence is consistent with recommended dose of desmopressin in the guideline. Further evidence suggests that desmopressin oral tablet is well tolerated in children with primary nocturnal enuresis, regardless of patient gender or age. The new evidence on different formulations of desmopressin is currently limited and more research is needed before considering more detailed guidance on different formulations of desmopressin.

Other drugs

New evidence indicated that the combination of alarms with desmopressin was more effective than alarms alone in reducing the number of wet nights at the end of the treatment but combination therapy did not improve the long-term success rate and is supported by findings from the 2014 surveillance review. This suggests whilst combination therapies are beneficial in the short term, over the long term the effect of alarms is better.

The evidence is consistent with current recommendations in CG111 which suggest offering either alarms or desmopressin as

initial treatment depending on the needs and circumstances of the family.

A Cochrane systematic review on indomethacin, diazepam, mestorelone and atomoxetine (none of these are licensed in the UK for nocturnal enuresis in children) showed that they were not as effective as desmopressin or alarms in treatment of nocturnal enuresis. This evidence supports current recommendations which propose enuresis alarms and desmopressin as first line treatment.

Limited evidence suggests that combination treatment with desmopressin plus tolterodine is more effective than desmopressin plus oxybutynin, or monotherapy with desmopressin, in decreasing number of wet nights and improving relapse. However, the evidence identified does not allow conclusions to be drawn on which of these treatments is superior in terms of efficacy, cost effectiveness, or patients' preferences.

Topic experts' feedback

The topic experts thought that there should be more clarity within the guideline on the age that a child can be expected to receive desmopressin treatment for nocturnal enuresis.

The guideline does not currently define a lower age limit and bedwetting is common in children under 5 years old and often spontaneously improves. Furthermore, treatments available for bedwetting are often not licensed or suitable for those under 5 years old. CG111 states: Consider whether or not it is appropriate to offer alarm or drug treatment, depending on the age of the child or young person, the frequency of bedwetting and the motivation and needs of the child or young person and their family (1.4.5).

The guideline also states in recommendation 1.1.3 'Do not exclude younger children (for example, those under 7 years) from the management of bedwetting on the basis of age alone'

Topic expert feedback indicated that it would be more succinct and less confusing if one suggestion is given re the timing of administration.

Recommendation 1.10.9 suggests 'If offering desmopressin for bedwetting, inform the child or young person and their parents or carers:

- that it should be taken at bedtime'

Recommendation 1.10.10 indicates 'Consider advising that desmopressin should be taken 1–2 hours before bedtime in children and young people with bedwetting that has either partially responded or not responded to desmopressin taken at bedtime. Ensure that the child or young person can comply with fluid restriction starting from 1 hour before the drug is taken'.

Overall, there is no indication of a need to update the guideline in this area.

New evidence is unlikely to change guideline recommendations.

1.11 Children and young people experiencing recurrence of bedwetting

Recommendations in this section of the guideline

1.11.1 Consider alarm treatment again if a child or young person who was previously dry with an alarm has started regularly bedwetting again.

1.11.2 Offer combination treatment with an alarm and desmopressin to children and young people who have more than one recurrence of bedwetting following successful treatment with an alarm.

1.11.3 Consider using repeated courses of desmopressin for children and young people with bedwetting that has responded to desmopressin treatment but who experience repeated recurrences. Withdraw desmopressin treatment at regular intervals (for 1 week every 3 months) to check if dryness has been achieved when using it for the long-term treatment of bedwetting.

1.11.4 Gradually withdraw desmopressin rather than suddenly stopping it if a child or young person has had a recurrence of bedwetting following response to previous desmopressin treatment courses.

1.11.5 Consider alarm treatment as an alternative to continuing drug treatment for children and young people who have recurrences of bedwetting, if an alarm is now considered appropriate and desirable.

Surveillance decision

This section should not be updated.

Children and young people experiencing recurrence of bedwetting

Previous surveillance summary

No evidence was identified at the 2012 review.

A randomised controlled trial (24) identified in the 2014 surveillance review investigated whether a structured withdrawal programme from a sublingual formulation of fast-melting desmopressin lyophilisate was superior to sudden withdrawal. One hundred and three children with monosymptomatic nocturnal enuresis aged between 5.5 to 14 years participated. At one month, relapse rates were 47.83% in the structured program group and 45.83% in the sudden withdrawal group.

2018 surveillance summary

Withdrawal of desmopressin

A systematic review (25) of 4 studies (n=5,685 children with nocturnal enuresis) assessed the effect of gradual dose reduction of desmopressin compared with abrupt cessation. Structured withdrawal significantly reduced the number of wetting incidents in the month following cessation of desmopressin, compared with abrupt withdrawal. In subgroup analysis, reducing the daily dose over time (dose dependant withdrawal) led to significantly less wetting events compared with increasing the time between doses (time dependant withdrawal).

A prospective cohort study (26) assessed the relapse rates of structured and direct withdrawal of desmopressin in 259 patients with enuresis. Two different structured withdrawal strategies were compared with placebo and direct withdrawal. Non-structured withdrawal were associated with higher relapse rates.

A systematic review (27) of 4 randomised controlled trials (n=500) assessed the efficacy of a structured withdrawal strategy of desmopressin on the relapse-free rate of response. Structured withdrawal significantly improved relapse-free rate compared with abrupt withdrawal (P=0.0001). Subgroup analysis of a dose-dependent structured withdrawal regimen also showed a significantly better relapse-free rate (P=0.0001).

New evidence is unlikely to change guideline recommendations.

Intelligence gathering

No topic expert feedback was relevant to this section.

Impact statement

The new evidence on withdrawal of desmopressin indicated that structured withdrawal tends to reduce relapse rate compared with sudden withdrawal. This is consistent with the current guideline recommendation that recommends gradually withdrawing desmopressin rather than suddenly stopping it for bedwetting recurrence following response to previous treatment courses.

1.12 Lack of response to initial treatment options

Recommendations in this section of the guideline

1.12.1 Refer children and young people with bedwetting that has not responded to courses of treatment with an alarm and/or desmopressin for further review and assessment of factors that may be associated with a poor response, such as an overactive bladder, an underlying disease or social and emotional factors.

Surveillance decision

This section should not be updated.

Lack of response to initial treatment options

Previous surveillance summary

No evidence was identified at the 2014 review.

A crossover randomised controlled trial (28) from 2012 surveillance review was identified that investigated the efficacy of both enuresis alarm and desmopressin as first and second line treatments in children aged 6 to 15 years with monosymptomatic nocturnal enuresis (n=104). The results showed that desmopressin and alarm were equally effective in reducing wet nights as a first line treatment. There was also no significant difference between groups in response rate. For second line treatment, there was no significant difference in the reduction of wet nights between the two groups and no significant difference in the rate of successful responses between the alarm and desmopressin groups.

2018 surveillance summary

A clinical trial (29) assessed the effectiveness and safety of combination of alarm intervention and reboxetine, in 218 patients (average age 11.3 years) with therapy-resistant enuresis (alarm intervention and desmopressin). Participants were divided into three groups: treatment A to alarm intervention (n=71), treatment B to reboxetine as monotherapy (n=79) and treatment C to alarm intervention plus reboxetine (n=69). The combined treatment of alarm plus reboxetine (group C) resulted in a higher number of dry nights in patients both immediately and three months after the therapy compared with treatment A and treatment C.

A very small double blind cross over trial (30) assessed the role of reboxetine, as monotherapy or combined with

desmopressin, in the treatment of enuresis in 18 children who have not responded to standard therapy. All participants underwent treatment during three 4-week periods, one period they received reboxetine 4 mg daily and placebo, in one they received reboxetine 4 mg and desmopressin, and in one they received double placebo treatment. The number of wet nights was reduced most with reboxetine either as monotherapy or in combination with desmopressin compared with placebo (p = 0.002).

A randomised crossover trial (31) assessed the effect of combining indomethacin and desmopressin in treating nocturnal enuresis in 23 children with partial or no response to desmopressin. Children received two 3-week treatments with a combination of desmopressin (0.4 mg) and indomethacin (50 mg) or desmopressin and placebo at bedtime. The addition of indomethacin to desmopressin reduced nocturnal urine output but did not lead to more dry nights in all children (p=0.24).

Intelligence gathering

No topic expert feedback was relevant to this section.

Impact statement

The new evidence suggests that reboxetine plus alarm or desmopressin is effective for treating therapy-resistant enuresis. Further evidence from a cross over trial suggests that addition of indomethacin to desmopressin is effective in treating nocturnal enuresis in children with partial or no response to desmopressin. The guideline did not examine any evidence for these combination treatments and so does not make any recommendations on it. The studies found in this surveillance review contained very small numbers of participants. Therefore, further evidence from large randomised controlled trials confirming these findings would be useful before considering any impact on the guideline. In addition, neither reboxetine nor indomethacin are currently licensed in the UK for bedwetting.

New evidence is unlikely to change guideline recommendations.

1.13 Anticholinergics

Recommendations in this section of the guideline

The use of anticholinergics for bedwetting in children and young people is discussed in the recommendations in this section. Not all anticholinergics have a UK marketing authorisation for treating bedwetting in children and young people. If a drug without a marketing authorisation for this indication is prescribed, informed consent should be obtained and documented.

1.13.1 Do not use an anticholinergic alone for the management of bedwetting in children and young people without daytime symptoms.

1.13.2 Consider an anticholinergic combined with desmopressin for bedwetting in children and young people who also have daytime symptoms and have been assessed by a healthcare professional with expertise in prescribing the combination of an anticholinergic and desmopressin.

1.13.3 Consider an anticholinergic combined with desmopressin for children and young people who have been assessed by a healthcare professional with expertise in the management of bedwetting that has not responded to an alarm and/or desmopressin and have any of the following:

- bedwetting that has partially responded to desmopressin alone
- bedwetting that has not responded to desmopressin alone
- bedwetting that has not responded to a combination of alarm and desmopressin

1.13.4 Consider continuing treatment for children and young people with bedwetting that has partially responded to desmopressin combined with an anticholinergic, as bedwetting may continue to improve for up to 6 months after starting treatment.

1.13.5 Consider using repeated courses of desmopressin combined with an anticholinergic in children and young people who have responded to this combination but experience repeated recurrences of bedwetting following previous response to treatment.

1.13.6 If offering an anticholinergic combined with desmopressin for bedwetting, inform the child or young person and their parents or carers:

- that success rates are difficult to predict, but more children and young people are drier with this combination than with desmopressin alone
- that desmopressin and an anticholinergic can be taken together at bedtime
- to continue treatment for 3 months
- that repeated courses can be used.

1.13.7 Do not offer an anticholinergic combined with imipramine for the treatment of bedwetting in children and young people.

Surveillance decision

This section should not be updated.

Anticholinergic medication for the management of Nocturnal Enuresis

Previous surveillance summary

No evidence was identified at the 2012 review.

2018 surveillance summary

A systematic review (32) of 4 randomised controlled trials assessed the short-term efficacy and safety of desmopressin and anticholinergic combination therapy compared with desmopressin monotherapy in the treatment of paediatric enuresis. Combination therapy was associated with a significantly better immediate 1-month response rate (defined as ≥90% reduction of wet nights) compared with desmopressin monotherapy.

A systematic review of 8 randomised controlled trials (33) assessed the clinical efficacy and safety of combination therapy comprising desmopressin plus anticholinergic agent compared with desmopressin alone for children with nocturnal enuresis. Following 1 month of treatment, the proportion of full responders and the change in the mean wet nights for patients treated with the combination therapy was higher compared with patients treated with monotherapy. The combination therapy did not lead to more adverse events in the treatment of nocturnal enuresis.

A multicentre clinical trial (34) assessed the efficacy of combination therapy with desmopressin and an anticholinergic compared with desmopressin monotherapy for the first-line treatment of 98 children (age 5-16 years) with primary monosymptomatic nocturnal enuresis. Patients in the monotherapy group (n=49) were given oral desmopressin alone, and those in the combination therapy group (n=49) were given desmopressin plus an anticholinergic (propiverine 10 mg; not licensed for use in children in the UK). The combination therapy group showed significantly a higher rate of complete response compared with the monotherapy group (20.4 versus 6.1% at 1 month of treatment; 46.9 versus 22.4% at 3 months of treatment p=0.002).

A randomised controlled trial (35) assessed the effectiveness and safety of desmopressin and oxybutynin for treatment of nocturnal enuresis in 66 children over 5 years old. Patients were randomised to 2 groups. Group 1 received 120 micrograms desmopressin daily for 2 months, then 60 micrograms daily for 2 months, then 60 micrograms every 2 days for further 2 months. The second group received 5 mg oxybutynin twice a day for 6 months. The patients were followed after 1, 3, and 6 months. Incontinency, urgency, and frequency of nocturnal enuresis was significantly lower in desmopressin treatment group compared to the oxybutynin treated group after 1 and 3 months ($p<0.05$). In addition, constipation was more frequent among the oxybutynin group after 1, 3, and 6 months ($p<0.01$). Blurred vision was also more frequent among oxybutynin group after 3 months ($p<0.01$). After 6 months the frequency of nocturnal enuresis and its frequency was higher in oxybutynin group to the desmopressin group ($p<0.05$).

A cohort study (36) assessed the effect of clonidine treatment (in addition to desmopressin, anti-cholinergic treatment and alarm) on refractory nocturnal enuresis in 148 patients (age 6-14 years). Clonidine (maximum, 75 micrograms/day) were added to the usual treatment and its effects were evaluated after 4 weeks of treatment. A total of 83 patients (56.1%) achieved partial or complete response with the additional clonidine and no significant adverse reactions were reported. Clonidine is not licensed for bedwetting in children in the UK.

Intelligence gathering

No topic expert feedback was relevant to this section.

Impact statement

Evidence from 2 systematic reviews and 3 studies suggests that combination therapy of desmopressin plus anticholinergics is associated with a better response rate than desmopressin monotherapy. This is consistent with current recommendation indicating 'Consider an anticholinergic combined with desmopressin for bedwetting in children and young people who also have daytime symptoms and have been assessed by a healthcare professional with expertise in prescribing the combination of an anticholinergic and desmopressin' (1.13.2).

New evidence is unlikely to change guideline recommendations.

1.14 Tricyclics

Recommendations in this section of the guideline

1.14.1 Do not use tricyclics as the first-line treatment for bedwetting in children and young people.

1.14.2 If offering a tricyclic, imipramine should be used for the treatment of bedwetting in children and young people.

1.14.3 Consider imipramine for children and young people with bedwetting who:

- have not responded to all other treatments **and**
- have been assessed by a healthcare professional with expertise in the management of bedwetting that has not responded to an alarm and/or desmopressin.

1.14.4 If offering imipramine for bedwetting, inform the child or young person and their parents or carers:

- that many children and young people, but not all, will experience a reduction in wetness
- how imipramine works

- that it should be taken at bedtime
- that the dose should be increased gradually
- about relapse rates (for example, more than two out of three children and young people will relapse after a 3-month course of imipramine)
- that the initial treatment course is for 3 months and further courses may be considered
- about the particular dangers of imipramine overdose, and the importance of taking only the prescribed amount and storing it safely.

1.14.5 Perform a medical review every 3 months in children and young people who using repeated courses of imipramine for the management of bedwetting.

1.14.6 Withdraw imipramine gradually when stopping treatment for bedwetting in children and young people.

Surveillance decision

This section should not be updated.

Tricyclic medication and the management of bedwetting

Previous surveillance summary

No evidence was identified at the 2012 review.

A randomised controlled trial (37) was identified in 2014 surveillance that examined the efficacy of nortriptyline for treating nocturnal enuresis in 43 children aged 5 to 14 years who had attention deficit hyperactivity disorder (ADHD). Children were randomised to methylphenidate plus nortriptyline or methylphenidate plus placebo. It was found that nortriptyline was superior to placebo at decreasing the incidence of nocturnal enuresis during treatment. However, nocturnal enuresis was found to relapse after nortriptyline was stopped.

2018 surveillance summary

A Cochrane systematic review (38) of 64 trials (n=4,071) assessed the effects of tricyclic and related drugs compared with other interventions for treating children with nocturnal enuresis. Amitriptyline, desipramine, imipramine were more effective than placebo at reducing the number of wet nights during treatment, but had no sustained effect after treatment was stopped. Nortriptyline and mianserin showed no difference at reducing the number of wet nights compared with placebo. Tricyclics were less effective than alarms. Alarm therapy had better short- and long-term outcomes.

Intelligence gathering

No topic expert feedback was relevant to this section.

Impact statement

New evidence suggests that tricyclics are less effective than alarms. Alarm therapy had better short- and long-term outcomes.

The evidence from 2014 surveillance suggested that nortriptyline was effective in reducing nocturnal enuresis in children with ADHD. However, patients were found to relapse once treatment had stopped.

The evidence is consistent with current recommendation indicating not to use tricyclics as a first line treatment.

New evidence is unlikely to change guideline recommendations.

1.15 Training programmes for the management of bedwetting

Recommendations in this section of the guideline

1.15.1 Do not use strategies that recommend the interruption of urinary stream or encourage infrequent passing of urine during the day.

1.15.2 Do not use dry-bed training*with or without an alarm for the treatment of bedwetting in children and young people.

* Dry-bed training is a training programme that may include combinations of a number of different behavioural interventions, and that may include rewards, punishment, training routines and waking routines, and may be undertaken with or without an alarm.

Surveillance decision

This section should not be updated.

Information and Educational interventions for the management of bedwetting

Previous surveillance summary

A randomised controlled trial (39) from 2012 surveillance review was identified that investigated the effects of behavioural interventions for bedwetting in 4 to 5 year old children with monosymptomatic nocturnal enuresis (n= 570). Patients were randomised to lifting with password, lifting without a password, award stars on a chart for dry nights with a reward given after a preset number of dry nights or no intervention. Results showed that only those using lifting without a password showed a significantly higher rate of dryness compared to controls at the end of the six month intervention period. At further follow-up (mean 2.6 years) there was no significant difference in dryness

rate between any of the groups. The lack of long-term adverse outcomes with this intervention is potentially important since lifting is frequently reported as a management strategy.

A Cochrane review (40) from 2014 surveillance review was identified that assessed the efficacy of simple behavioural interventions in children up to the age of 16 with nocturnal enuresis. Sixteen randomised and quasi-randomised trials were included (n=1643). The results showed that simple behavioural interventions were superior to no active treatment but were not superior to enuresis alarms and some drug therapies, such as imipramine and amitriptyline.

A randomised controlled trial (41) from 2014 surveillance review was identified that compared behavioural modification plus pelvic floor muscle training to behavioural modification plus oxybutynin. Children (n=47) with non-monosymptomatic enuresis were randomised to either the oxybutynin group or to pelvic floor exercises. The results showed that there was a significant difference between groups at months two and three in the number of dry nights, with the pelvic floor muscle training groups showing more dry nights than the oxybutynin group. The authors concluded that pelvic floor muscle training was more effective than oxybutynin.

2018 surveillance summary

A randomised controlled trial (42) assessed whether basic bladder advice and training during the daytime has any positive effect on nocturnal enuresis. Forty children aged 6 years or more with previously untreated enuresis, and no daytime incontinence, were randomised to receive either first basic bladder advice for 1 month and then alarm therapy (group A) or just the alarm therapy (group B). The basic bladder advice did not reduce the enuresis frequency in group A ($p = 0.089$) and the end result after alarm therapy did not differ between the two groups ($p = 0.74$).

A prospective cohort study (43) assessed the impact of a motivational therapy on treating nocturnal enuresis in 137 children (median age 8.8 years). The patients were assigned to receive desmopressin (Group 1, n=51), motivational therapy (Group 2, n=33) and both of them (Group 3 n=53). The response rate was 58.82% in group 1, 3.0% in group 2 and 66.04% in group 3.

A prospective cohort study (44) assessed the efficacy of bladder basic advice in 49 previously untreated children (mean age 7.2 years) with primary monosymptomatic nocturnal enuresis. The mean number of wet nights decreased significantly only after 3 months of bladder basic advice from 8.9 to 5.9 episodes every 2 weeks. Bladder basic advice was fully successful in 2% of the children after 30 day, 12% after 60 days, and 18% after 90 days.

A retrospective cohort (45) assessed the effectiveness of the alarm with overlearning for treatment of primary nocturnal enuresis in 126 patients aged ≥5 years. The treatment significantly reduced mean wetting from baseline levels during both treatment and overlearning phases. Alarm treatment with overlearning produced a treatment response of 87%, compared with 59% for alarm treatment only.

A prospective cohort study (46) assessed the therapeutic effect of hydrochlorothiazide and bladder training on primary monosymptomatic nocturnal enuresis in 110 children. Children were divided into 2 groups; intervention group were given hydrochlorothiazide (tablet 1 mg/kg and maximum 50 mg) in the morning and the control group were only given necessary training about enuresis. For 3 times and with 1 month interval the frequency of nocturnal enuresis was checked. The mean number of wet nights was significantly lower in the intervention group compared with the control group (P=0.0001).

A prospective cohort study (47) assessed the efficacy of desmopressin therapy and behavioural modifications in the treatment of primary monosymptomatic nocturnal enuresis in 40 children (age 6-15 years) who were divided into 2 groups. Group 1 received desmopressin tablets (0.2 mg) once daily before bedtime for 8 weeks in addition to behavioural modifications. Group 2 received only behavioural modifications. At 8 weeks follow up the wetting frequency decreased by 70% in group 1 and 65% in group 2. The complete and partial response rates were 45% and 25% respectively in group 1 and were 35% and 30% respectively in group 2. The difference was not statistically significant.

Intelligence gathering

Topic expert feedback indicated that bladder training programmes should not be used on their own as treatment of bedwetting.

Impact statement

Evidence suggests that bladder training as a first line therapy is not effective for reducing enuresis frequency however training adjunct to other treatments appears beneficial. The evidence is consistent with the recommendation 1.15.1 that indicates 'Do not use strategies that recommend the interruption of urinary stream or encourage infrequent passing of urine during the day' and recommendation 1.15.2 that indicates' Do not use dry-bed training with or without an alarm for the treatment of bedwetting in children and young people'.

New evidence is unlikely to change guideline recommendations

1.16 Children under 5 years with bedwetting

Recommendations in this section of the guideline

Children are generally expected to be dry at night by a developmental age of 5 years, and historically it has been common practice not to offer advice to families of children who are younger than 5 years and are bedwetting. This section provides recommendations specific to the under 5 age group indicating situations where healthcare professionals can offer useful advice and interventions.

1.16.1 Reassure parents or carers that many children under 5 years wet the bed, for example, approximately one in five children of 4 and a half years wets the bed at least once a week.

1.16.2 Ask whether toilet training has been attempted, and if not, ask about the reasons for this and offer support and advice. If there are no reasons why toilet training should not be attempted, advise parents or carers to toilet train their

1.16.3 Suggest a trial of at least 2 nights in a row without nappies or pull-ups for a child with bedwetting who is under 5 years and has been toilet trained by day for longer than 6 months. Offer advice on alternative bed protection to parents and carers. Consider a longer trial in children:

- who are older
- who achieve a reduction in wetness
- whose family circumstances allow the trial to continue.

1.16.4 Advise the parents or carers of a child under 5 years with bedwetting that if the child wakes at night, they should take him or her to the toilet.

1.16.5 Consider further assessment and investigation to exclude a specific medical problem for children over 2 years who, despite awareness of toileting needs and showing appropriate toileting behaviour, are struggling to not wet themselves during the day as well as the night.

Assess children under 5 years with bedwetting for constipation, in line with constipation in children and young people (NICE guideline CG99), as undiagnosed chronic constipation is a common cause of wetting and soiling in younger children.

Surveillance decision

This section should not be updated.

Previous surveillance summary

No evidence was identified at the 2012 or 2014 review.

Intelligence gathering

Topic expert feedback suggested that the separate section on 'Children under 5 years with bedwetting' is misleading as it suggests that they should not routinely be offered treatment.

Impact statement

The topic experts felt that the separate section on 'Children under 5 years with bedwetting' is misleading as implies that they should not routinely be offered treatment. The guideline does not currently define a lower age limit. However, bedwetting is common in children under 5 years old and often spontaneously improves. Furthermore, treatments available for bedwetting are often not licensed or suitable for those under 5 years old. Therefore, the guideline provides separate recommendations for

children under 5 years old with nocturnal enuresis.

Overall, there is no indication of a need to change the guideline in this area.

New evidence is unlikely to change guideline recommendations.

Areas not currently covered in the guideline

In surveillance, evidence was identified for areas not covered by the guideline. This new evidence has been considered for possible addition as a new section of the guideline.

Surveillance decision

Although the new evidence does not indicate a need to add this section, the decision to do a full guideline update means that this question may be added.

New section considered in surveillance

Complementary therapies for Nocturnal Enuresis

Previous surveillance summary

Electrical Nerve Stimulation

A randomised controlled trial (48) from 2014 surveillance review assessed the effectiveness of parasacral transcutaneous electrical nerve stimulation for the treatment of monosymptomatic primary nocturnal enuresis. Children (n=45) over six years old were either randomised to behavioural therapy plus ten sessions of parasacral transcutaneous electrical nerve stimulation or to behavioural therapy alone. Results showed a greater increase in dry nights in the intervention group compared with the control group.

Laser acupuncture

Two randomised controlled trials on laser acupuncture were identified in 2012 surveillance review. The first (49) assessed laser acupuncture in children aged 5 to 16 years with monosymptomatic nocturnal enuresis (n=91). Children were randomised to laser acupuncture or placebo acupuncture with a nonlaser light source. Results at six months showed that those in the laser acupuncture group experienced a reduction in mean number of weekly bed wetting episodes and a significantly higher complete improvement (defined as no bed wetting episodes). The second randomised controlled trial (50) randomised 31 children (aged 7 to 11.8 years) with monosymptomatic nocturnal enuresis to three groups: laser acupuncture, placebo acupuncture without laser light but with skin contact and placebo acupuncture without laser light and without skin contact. No significant differences were

observed between the three groups for maximal volume, voiding frequency, enuresis frequency or nocturnal urine production.

Other complementary therapies treatments

A Cochrane review (51) was identified in 2012 surveillance review that assessed the effect of several complementary therapies on nocturnal enuresis in children. It included 24 randomised controlled trials which looked at hypnosis, psychotherapy and counselling, acupuncture, chiropractic, diet or food restriction, medicinal herbs and faradisation. The review found some indication of an effect for acupuncture, hypnosis, medicinal herbs, psychotherapy and chiropractic however, the results were based on single trials.

2018 surveillance summary

Electrical Nerve Stimulation

A prospective cohort study (52) assessed the effect of an electrical foot stimulation on the frequency of nocturnal enuresis episodes in 22 children aged 5-18 years. There was a significant reduction in mean total wet nights during the stimulation period ($P<0.01$) and a sustained significant reduction to wet nights during the poststimulation period ($P=0.02$). No adverse events were reported by children.

A randomised double blind study (53) assessed the long term efficacy of repetitive sacral root magnetic stimulation (rSMS) in 42 (under 20 years old) patients with monosymptomatic nocturnal enuresis. Participants were randomised to receive either sham or real rSMS for 10 sessions. Evaluation was performed before starting treatment, immediately after the 5th and 10th treatment session, and 1 month later. The mean number of wet nights/week was significantly reduced and maintained 1 month after the end of treatment in patients who received real-rSMS. Patients receiving real-rSMS also reported an improvement in visual analogue scale ratings and quality of life.

A cohort study (54) assessed the effect of percutaneous electrical stimulation therapy on 30 children (age 7-17 years) with monosymptomatic nocturnal enuresis for 12 weeks. After 6 months follow-up, 7 (23.3%) patients presented 100% improvement of wet nights, 12 (40%) patients showed 90-99% improvement, 3 (10%) patients experienced partial improvement (50-89%), and 8 (26.6%) patients did not respond response (0-49%).

A systematic review (55) of 7 studies (n=292) assessed the efficacy and safety of neurostimulation compared with control groups in the treatment of paediatric primary enuresis. Post-treatment wet-night reduction (≥50% and ≥90%) was significantly better in neurostimulation groups compared with controls. A significant mean difference in wet-night reduction per week was reported for treatment groups in favour of neurostimulation treatment.

A randomised clinical trial (56) assessed the effect of transcutaneous electrical nerve stimulation in 52 children with nocturnal enuresis. Children (mean age 9.5 years) were randomised to active or sham transcutaneous electrical nerve stimulation involving 1-hour sessions twice daily for 10 weeks in a double-blind design. Treatment with transcutaneous electrical nerve stimulation did not lead to significant changes in number of wet

nights, nocturnal urine production on wet or dry nights, maximum voided volume or voiding frequency.

Acupuncture

A systematic review (57) of 10 studies (7 randomised controlled trials and 3 non-randomised controlled trials, total n= 888) assessed the effectiveness of acupuncture treatment on paediatric nocturnal enuresis. The findings showed a favourable, but non-significant, effect of acupuncture compared with conventional care and placebo. Side effects in the acupuncture group were minor and rarely reported.

A randomised controlled trial (58) assessed the effect of using laser acupuncture and medication for the treatment in 45 children with nocturnal enuresis. Children were randomised into 3 equal groups: group A were treated with desmopressin acetate; group B were treated with laser acupuncture; and group C were treated with a combination of laser acupuncture and desmopressin. All groups received behavioural therapy. At 3 month follow up higher response rate was reported in children treated with acupuncture (73.3%), while in groups A and C, improvement was reported in 20.0% and 13.3%, respectively.

Other complementary therapies treatments

A randomised controlled trial (59) assessed the effect of traditional Chinese and western medicine on nocturnal enuresis in 369 children. Children were randomised to receive either desmopressin plus suoquan, desmopressin, or behavioural intervention for 2 months. The complete response rate was 37.5% in desmopressin plus suoquan group, 22.5% in desmopressin group, and 6.3% in behavioural intervention. The relapse rate in the desmopressin group was significantly higher than that in the desmopressin plus suoquan group (72.2% versus 30.6%, P<0.007)

A double-blind parallel randomised controlled trial (60) assessed the efficacy of topical use of Matricaria recutita L (chamomile) oil in the treatment of enuresis in 80 children. Children were allocated to receive Matricaria recutita L oil or placebo topically for 6 weeks. The mean frequency of enuresis at the first, second, and third 2 weeks was significantly lower in the intervention group compared with the placebo group, There was no report of any adverse event in the study groups.

A randomised controlled trial (61) assessed the effect of the Kinesio taping application on the number of night and day wet incidents in 62 children. There was statistically significant decrease (p<0.001) in the number of wet incidents after Kinesio taping compared with the placebo control group. After 4 days of Kinesio taping application the number decreased by half within 24 hours.

Intelligence gathering

Topic experts noted that there is limited evidence on superficial neuromodulation for treatment of nocturnal enuresis and the evidence is insufficient for updating current recommendations.

Impact statement

Electrical Nerve Stimulation

Findings from studies on the effectiveness of electrical nerve stimulation indicated that this intervention lead to significantly less wet nights compared with control.

However, the evidence is insufficient and more studies are needed to draw conclusions about the usefulness of these interventions.

Acupuncture

There is weak evidence that acupuncture may be effective option for treatment of nocturnal enuresis. The findings in favour of acupuncture were statistically non-significant and derived from low quality studies. The 2014 surveillance review and 2012 Evidence Update suggested that further research on acupuncture is needed, especially with regards to laser acupuncture compared with standard interventions.

Other complementary therapies treatments

New evidence indicates that use of Chinese medicine (suoquan) adjunct to desmopressin may decrease the rate of relapse and number of wet-nights in children with nocturnal enuresis. Further evidence supports the use of chamomile oil in treatment of nocturnal or daytime enuresis. Application of Kinesio taping also appears to improve nocturnal enuresis. The evidence is considered insufficient to currently impact on CG111. Further evidence confirming findings would be useful before considering any impact on the guideline.

New evidence is unlikely to impact on the guideline.

Research recommendations

4.1 Multicomponent treatments

What elements of multicomponent treatments (for example dry bed training and retention control training) are clinically effective and cost effective for treating bedwetting in children and young people under 19 years old?

Summary of findings

No new evidence relevant to the research recommendation was found and no ongoing studies were identified.

Surveillance decision

This research recommendation will be considered again at the next surveillance point.

4.2 Standard interventions

What is the clinical and cost effectiveness of standard interventions, for example alarm and desmopressin, for treating bedwetting in children and young people under 19 years old?

Summary of findings

New evidence relevant to the research recommendation on alarms and desmopressin was found but an update of the related review question is not planned because evidence supports current recommendations.

Surveillance decision

The research recommendation will be removed from the NICE version of the guideline and the NICE research recommendations database because further research is unlikely to impact on the guideline.

4.3 Psychological functioning and quality of life

What is the impact of bedwetting upon the psychological functioning and quality of life of children and young people and their families? How do these change with treatment?

Summary of findings

No new evidence relevant to the research recommendation was found and no ongoing studies were identified.

Surveillance decision

This research recommendation will be considered again at the next surveillance point.

4.4 Complementary therapies

What is the effectiveness of complementary therapies (acupuncture and hypnotherapy) for reducing the number of wet beds and improving self-esteem in children and young people who wet the bed, when they are used independently or in conjunction with conventional treatments?

Summary of findings

The new evidence reported in the sections on Areas not currently covered in the guideline may provide an insight into treatment of bedwetting using complementary therapies.

Surveillance decision

This research recommendation will be considered again at the next surveillance point.

4.5 Bedwetting in adolescents

What is the prevalence of wetting and/or soiling in adolescence and what are the long-term consequences for adolescents with these problems?

Summary of findings

No new evidence relevant to the research recommendation was found and no ongoing studies were identified.

Surveillance decision

This research recommendation will be considered again at the next surveillance point.

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