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**COCHRANE FOR CLINICIANS:  
PUTTING EVIDENCE INTO PRACTICE**

## Is Alarm Intervention Effective in the Treatment of Enuresis?

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The Cochrane Abstract below is a summary of a review from the Cochrane Library. It is accompanied by an interpretation that will help clinicians put evidence into practice. Linda M. French, M.D., presents a clinical scenario and question based on the Cochrane Abstract, along with the evidence-based answer and a full critique of the abstract.

### Clinical Scenario

An eight-year-old child is brought to a physician's office by his mother because he wets the bed most nights. He has never been dry at night for an entire week.

### Clinical Question

Are alarm treatments as effective as medications in the management of nocturnal enuresis in childhood?

### Evidence-Based Answer

Pharmacologic treatments (desmopressin and tricyclic antidepressants) and alarm devices are effective for controlling nocturnal enuresis during treatment. There is limited evidence of lower relapse rates after stopping alarm-device treatment than after stopping medication.

## Cochrane Abstract

**Background.** Enuresis (bedwetting) is a socially disruptive and stressful condition that affects 15 to 20 percent of five year olds, and up to 2 percent of young adults. Although there is a high rate of spontaneous remission, the social, emotional, and psychologic costs to the children can be great.<sup>1</sup>

**Objectives.** To assess the effects of alarm interventions on nocturnal enuresis in children and to compare alarms with other interventions.

**Search Strategy.** The following electronic databases were searched: MEDLINE to June 1997; AMED; ASSIA; BIDS; BIOSIS Previews (1985 to 1996); CINAHL; DHSS Data; EMBASE (1974 to June 1997); PsychLIT and SIGLE. Organizations, manufacturers, researchers, and health professionals concerned with enuresis were contacted for information. The reference sections of obtained studies were checked for further trials. Date of the most recent search: July 1997.

**Selection Criteria.** All randomized trials of alarm interventions for nocturnal enuresis in children were included in the review. Trials were eligible for inclusion if children were randomized to alarm treatment compared with control subjects, other behavior methods, or drugs for nocturnal bedwetting; if participants with organic causes for bedwetting were excluded; and if baseline assessments of the level of bedwetting were reported. Trials focused solely on daytime wetting were excluded.

**Data Collection and Analysis.** Two reviewers independently assessed the quality of the eligible trials and extracted data.

**Primary Results.** Twenty-two randomized trials, involving 1,125 children who received treatment with alarms, met the inclusion criteria. The quality of many of the trials was poor, and many comparisons were addressed only by single trials. Children treated with alarms were significantly more likely than untreated control subjects to become dry during treatment (relative risk [RR] for failing to achieve 14 dry nights, 0.27; 95 percent confidence interval [CI], 0.19 to 0.39) and failing to remain dry (RR, 0.58; 95 percent CI, 0.46 to 0.74). There was insufficient evidence to judge whether one type of alarm is better than another and whether alarms alone are as good as or better than other behavior interventions alone or as supplements to alarm treatment. Desmopressin or tricyclic antidepressants seem as effective as alarms during treatment. Limited evidence suggested that the relapse rate might be lower after stopping alarm treatment than after stopping desmopressin treatment (RR, 0.11; 95 percent CI, 0.02 to 0.78).

**Reviewers' Conclusions.** Alarm interventions are an effective treatment for nocturnal bedwetting in children. Desmopressin and tricyclic antidepressants appeared

equally effective during treatment, but this effect was not sustained after treatment stopped, and alarms may be more effective in the long term. Comparisons between drug and behavior treatments are needed and should include relapse rates after treatment is finished.



*These summaries have been derived from Cochrane reviews published in the Cochrane Database of Systematic Reviews in The Cochrane Library. Their content has, as far as possible, been checked with the authors of the original reviews, but the summaries should not be regarded as an official product of the Cochrane Collaboration; minor editing changes have been made to the text ([www.cochrane.org](http://www.cochrane.org)).*

## Cochrane Critique

*Did the authors address a focused clinical question?* Yes.

*Were the criteria used to select articles for inclusion appropriate?* Yes.

*Is it likely that important relevant articles were missed?* No.

*Was the validity of the individual articles appraised?* Yes. The methodologic quality of the included studies was considered to be poor overall. In 19 of the studies, it was not clear if allocation was concealed, and in the other three, it was definitely not concealed.

*Were the assessments of studies reproducible?* Six trials compared treatment using an alarm device with no treatment or placebo drug. Because standard deviations were not given, usual meta-analytic techniques could not be applied. However, the studies were consistent in achieving means of less than three wet nights per week with alarms versus four to five wet nights per week in untreated or placebo-drug control subjects.

*Were the results similar from study to study?* Yes.

*Can the results be applied to patient care?* Yes. Most studies recruited children from specialty clinics, which may limit the ability to generalize.

*Do the conclusions make biologic and clinical sense?* Yes.

*Are the benefits worth the harms and cost?* Yes.

## Practice Pointers

This is one of seven reviews planned by the Cochrane Library to assess interventions for bedwetting. Three reviews by the same authors<sup>2-4</sup> have been published in the Cochrane Library to date. Alarm devices, all activated by micturition, included bells, buzzers, lights, and vibrators. The authors identified four small trials

comparing different devices. None of these trials demonstrated differences in success rates based on the type of device used.

The other reviews focus on desmopressin, tricyclics and related drugs, and other medications. Desmopressin and imipramine or other tricyclics are well-known treatments for bedwetting. They have significant drawbacks, however; for one thing, desmopressin is very costly. In addition, there is also some concern that treatment with this drug may actually lead to a decrease in bladder capacity.

While tricyclic agents are inexpensive, they have troubling side effects. There is evidence to establish that alarm devices are equally effective as these drugs, leading to a mean of about two fewer wet nights per week. The relatively low one-time cost of about \$100 makes them an attractive option. There was too little evidence to draw conclusions about other alarms versus other behavior approaches or versus an alarm augmented by other behavior approaches.

To date, use of an alarm is the only treatment that has demonstrated any decrease in bedwetting after treatment is stopped, beyond the approximately 15 percent of children who remit spontaneously each year. This is another reason to advocate the routine use of bedwetting alarms.

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