Review: alarms reduce nocturnal enuresis in children

Glazener CM, Evans JH, Peto RE. Alarm interventions for nocturnal enuresis in children. *Cochrane Database Syst Rev* 2003;(2):CD002911 (latest version 26 Feb 2003).

Clinical impact ratings GP/FP/Primary care ★★★★★★☆

Q What is the effectiveness of alarms for nocturnal enuresis in children? Are alarms more effective than other interventions?

METHODS

Data sources: Cochrane Incontinence Review Group's specialised register (most recent search December 2002), hand searches of journals, and reference lists of relevant articles.

Study selection and assessment: randomised or quasi-randomised controlled trials that compared alarm interventions with no active treatment, behavioural interventions, drugs, or other treatments (alone or combined with alarms) for treatment of non-organic nocturnal enuresis in children (usually ⩽16 y). Quality of individual studies was assessed.

Outcomes: included number of participants failing to attain 14 consecutive dry nights during treatment (treatment failure) and treatment failure or subsequent relapse after treatment completion (relapse).

MAIN RESULTS

53 randomised controlled trials (n = 2862) met the selection criteria. Only the results for analyses of ⩾2 trials are reported here. *Alarm v placebo/no treatment*. Alarms reduced treatment failure and relapse more than placebo/no treatment (table). *Different types or uses of alarms.* There was insufficient evidence to distinguish between different types or uses of alarms for treatment failure or relapse. *Alarms v behavioural interventions*. No evidence of difference was found between alarms and dry bed training for treatment failure (3 trials, n = 108); alarms did, however, reduce relapses (1 trial, n = 40, relative risk [RR] 0.59, 95% CI 0.37 to 0.95). *Alarms v alarms plus behavioural interventions.* Alarms were better than alarms plus retention control training for treatment failure (5 trials, n = 122, RR 0.37, CI 0.18 to 0.76), but no evidence of difference was found for relapse (4 trials, n = 98). However, relapse rates were lower when alarms were supplemented with overlearning {2 trials, n = 144, RR 1.9, CI 1.3 to 2.9}* or dry bed training {2 trials, n = 104, RR 2.0, 1.3 to 3.2}* compared with alarms alone. *Alarms v drugs.* Alarms reduced treatment failure more than desmopression (3 trials, n = 243, RR 0.71, CI 0.50 to 0.99), but no evidence of difference was found for relapse (1 trial, n = 46). Alarms reduced treatment failure (3 trials, n = 208, RR 0.73, CI 0.61 to 0.88) and relapse (1 trial, n = 24, RR 0.58, CI 0.36 to 0.94) more than imipramine. *Alarms v alarms plus drug.* No evidence of difference was found between alarms and alarms plus desmopressin for treatment failure (2 trials, n = 119) or relapse (2 trials, n = 153).

CONCLUSIONS

Alarms reduce nocturnal enuresis in children. Some evidence suggests that alarms may be more effective than dry bed training, desmopressin, and imipramine. Supplementing alarms with over-learning may reduce relapse rates.

*Updated information provided by author.

Commentary

It is instructive to have a thorough summary of the use of alarms for enuresis. Glazener *et al* have provided a useful statement on an important problem that is often frustrating to parents, children, and practitioners. The review is competently done and well presented.

The focus on outcome is obviously important. Such a focus may be incomplete for psychological and medical interventions. 3 critical questions should be addressed before drawing conclusions about treatment and using the information to guide clinical applications. Firstly, are some treatments more or less effective as a function of different child, parent, or family characteristics? That is, are there moderating influences on effectiveness? Secondly, outcome is a precondition for advocating and using a treatment. However, the evaluation of interventions, whether for enuresis or other problem domains, requires examination of whether the goal is achieved. Many other criteria determine use, adoption, and dissemination of treatment. The more or most effective treatment, among those that work, may or may not be one that is acceptable to patients or practitioners. Side effects, cost, acceptability to patients, and ease of adoption by health professionals are key issues to consider. In short, it is important to know how the effects are achieved in eliminating enuresis. Many studies have been done, and we need to know more about their emergent effects, the reactions of families, barriers to treatment, attrition, and other facets of treatment that may determine whether the treatment can be extended and used.

Finally, after decades of research, is there any evidence to convey why any of these treatments work? We would like to know why treatment works and the mechanisms through which its effects are achieved to maximise these benefits and to extend the treatment to clinical work. What we have learned from this review is important, but more is needed to move from the review to clinical use.

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Alarms *v* placebo/no treatment (control) for nocturnal enuresis in children*

Outcomes	Weighted event rates		RRR (95% CI)	NNT (CI)
	Alarm	Control		
Treatment failure during treatment (13 trials, n = 552)	35%	96%	64% (57 to 69)	2 (2 to 2)
Treatment failure or relapse after treatment completion (5 trials, n = 162)	56%	99%	44% (32 to 54)	3 (2 to 4)

*Abbreviations defined in glossary; alarm event rates, RRR, NNT, and CI calculated from data in article based on a fixed effects model.