Clinical Topics

How to use buzzer alarms to cure bed-wetting

ROY MEADOW

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Nocturnal enuresis is a common and distressing condition for which many different treatments may be helpful.¹ Although general measures, including an energetic, confident, and sympathetic doctor, are of prime importance, the enuresis alarm is easily the most successful specific treatment available.

Given the careful analyses of its use,² and the helpful advice that has been published about its use,³ it is sad that doctors interested in enuresis continue to see many children who have been issued with enuresis alarms without adequate instruction, supervision, or help. The family have lost faith unnecessarily in what should be a successful treatment. I will therefore try to provide a practical guide to the use of enuresis alarms for children who wet the bed.

Principle

The child sleeps on a detector mechanism such as mesh or foil mats that are connected to an alarm buzzer (fig 1). The mechanism is triggered by voided urine completing the electrical circuit. The alarm should awaken the child, who then gets out of bed, turns off the alarm, and goes to the lavatory. At first the child tends to wet the bed thoroughly before awakening to the alarm, but with continued use he awakes earlier, the wet patch becoming steadily smaller. Eventually he either awakens before the alarm goes—that is, before he has wet—or he sleeps through the night without needing to micturate.

FIG 1—Eastleigh MOH 1 Enuresis Alarm with mesh detector mats.

Equipment

Several firms produce enuresis alarms (see appendix). They vary in their cost, safety features, the pitch and intensity of the alarm, and in their provision for testing and for extension alarms. Most cost

between £10 and £15, and as most treatment failures result from faulty use rather than faulty equipment there is usually little point in using more expensive models.

The detector pads are either in the form of two separate mesh or foil mats (which have to be put on the bed separated by a flannelette sheet), or as a single detector mat. The single mats have, for example, two soft aluminium strips stitched in spiral or other interwoven arrangement that requires urine to bridge the gap between the strips in order to complete the electrical circuit.

Since most children will use the mats for about four months, and will soak them many times, the mats need to be sturdy. Flimsy detector mats with weak stitching disintegrate after a few weeks. I prefer the twin mesh mats produced by Eastwood (fig 1). They are made of non-corrosive fine wire. Even though sturdy, the binding at the edges becomes worn with prolonged use and needs strengthening. They are attached to the alarm cable by crocodile clips. The Wessex mats have eyelets that are convenient for taping firmly round the mattress. Theoretically, they should be particularly suitable for the restless sleeper.

Disposable mats of strong paper with a printed circuit have been introduced recently. Most will withstand only one soaking, so many would be needed for one course of treatment.

The usual mesh, plastic-backed, or foil mats perish with prolonged use. Therefore it is as well to prevent future embarrassment by warning the child and parents that the mats are for their use only, and that, although the alarm is used again, the mats are thrown away at the end of the treatment. They should be told that if the mats perish a fresh set can be provided.

Care of the mats—that is, cleaning with a damp cloth—varies according to the type used. The manufacturer's instructions should be followed.

Children suitable for the alarm

Age—Children over the age of 7 use the alarm easily. Depending on the child's personality and intelligence the alarm can be used successfully down to the age of 5. Mentally subnormal children are unlikely to use it successfully until they have reached a mental age of 6 or 7.

Home—Provided the child has a bed of his own, most homes are suitable. If the child usually shares a bed it is best to try to alter the sleeping arrangements temporarily to allow a period of alarm treatment. Ideally the child should also be alone in the bedroom so that non-wetting siblings are not awoken.

Issuing the alarm

SUPERVISION

Many hospitals, health centres, and local authority clinics have a stock of alarms. Some parents will choose to buy alarms themselves. Wherever the source from which families obtain an alarm, all need expert help and advice as well as the alarm. This can be from a psychologist, doctor, nurse, health visitor, or hospital appliance supervisor. The rank and qualification are unimportant: what matters is that there should be one experienced person who instructs the child, and subsequently sees the child regularly to supervise treatment.

Department of Paediatrics and Child Health, University of Leeds, Leeds LS1 3ET

ROY MEADOW, FRCP, DCH, senior lecturer and consultant paediatrician

DEMONSTRATION AND INSTRUCTION

It is the child who will get dry, and it is the child who must co-operate and be instructed. The mother is instructed incidentally, as the person to support and help the child with a troublesome complaint and awkward treatment.

The child is shown how to arrange the mats in the bed and how to test them (following the makers' instruction leaflet). With twin detector pads the piece of material or drawsheet separating the mats must be thick enough to prevent false alarms from perspiration, yet not so thick as to prevent the first voided urine triggering the alarm (fig 2). The alarm should be placed away from the bed so that the child has to get up to switch it off.

FIG 2—Bed with alarm in use (alarm is connected to opposite corners of detector mats).

The child is told that each night he must check that the alarm is working, and then get into bed determined that if it buzzes he will wake up fast and "beat the buzzer" by leaping out of bed and switching it off very fast before anyone else hears it. Most children wet only once a night; therefore it is rarely necessary to insist on the alarm and mats being set up afresh in the middle of the night.

In the clinic a practice session is arranged with the equipment set up on a couch. The child "goes to bed" on it, and the alarm is triggered by pouring a little saline (not water, which does not conduct electricity) on the mats.

No alteration to the normal drinking habit is advised. The child should not wear pyjama trousers or pants as one wants the first drop of urine to trigger the alarm. Parents who usually "lift" their child to get him to micturate when they are going to bed are told not to do so.

RECORD KEEPING

The child is given a diary record card on which to record "Dry" or "Wet", the time of the wetting, and the size of the wet patch. At first the card is likely to show "sodden bed" or "2 foot". But in a week or two the recordings change to "saucer," "2 inches," and "tiny blob."

ROLE OF PARENTS

Gaining the parents' co-operation is potentially difficult. They are needed to help the child with the treatment, but must not take it over or dominate the visits to the clinic. It is the child who is going to get dry, and it is he who must use the buzzer and get up when it sounds.

The child needs to realise that the parents want him to be dry, but too much pressure is unhelpful: he should feel secure in the knowledge

that both the doctor (or other trainer) and parents are confident that he will become dry. For that reason I usually give the child a date by which he will be dry, not as an extravagant promise, but as a simple matter of fact, mentioning, "so you'll have stopped wetting by Easter the summer holiday—that will be nice."

Regular supervision

Most children have initial difficulties using the alarm. They should be warned that it is troublesome and difficult to use, but that they are clever enough to use it and that help is available for any problems. I like to see the child one week after issuing the alarm to deal with any immediate problems, and then at two-weekly intervals for a period before increasing to three-weekly intervals. It is absolutely no use to issue the alarm and a set of printed instructions and arrange to see the child six or eight weeks later. By that time the alarm will be sitting out of use, covered in dust, on the top of the wardrobe because "it didn't work for him." At each visit the trainer studies the record card, praises the dry nights, and also those nights on which the wet patch was small (because that signifies maximum co-operation and quick awakening by the child).

After the child has been dry for six consecutive weeks the mats are removed from the bed, but the alarm is kept at home ready for use if necessary. After a further six weeks of dryness the alarm is returned.

Results

Most children become dry within four months, the majority of these in the first two months of treatment. In a personal series of 100 children who wet the bed and were treated with the buzzer alarm, 85 became reliably dry (fig 3). Clearly dryness is most commonly achieved between two and eight weeks after initial use of the alarm, but it is worth persisting for at least four months, provided that there is still satisfactory co-operation from the child and family.

FIG 3—Rate at which children become dry using enuresis alarm. Of 100 children, 60 were dry by 12th week.

The usual number of wet beds (and buzzes) before complete dryness is 15–20.

In the first few months of dryness about half the children are awakening to go to the lavatory at night, while the other half regularly sleep through without the need to micturate.

RELAPSES

About 10% of children who achieve dryness while using the alarm subsequently start wetting again. They usually respond speedily to a second course of buzzer alarm treatment.

If it is essential that relapse should not occur an "overlearning" technique may be used.⁴ When dryness is almost achieved with the buzzer the child is encouraged to drink copious fluids at night to precipitate wetting events. Though this is likely to slow down the initial acquisition of dryness, it is said to make relapse less common.

Problems

FALSE ALARMS

A buzzer which sounds when the child has not wet annoys everyone. Likely causes are:

Short circuit because of (a) cable clips touching. They should be clipped to the detector mats at opposite ends to avoid this occurrence. (b) Detector mats rubbing against each other. The separating draw sheet may be too thin, or mesh sheets that are frayed at the edges may be piercing the draw sheet. Alternatively, the mats may have been inadequately secured to withstand a restless sleeper.

Perspiration completing the circuit—In hot weather excess bed clothes need to be avoided to prevent this sort of false alarm. Improper care of the mats may contribute to false alarms. It is important to follow the makers' instructions about sponging down or cleaning the mats.

FAILURE TO AWAKEN TO THE ALARM

"He's such a deep sleeper he simply doesn't wake up—everyone else in the house does." This is a common complaint at the first return visit. Few of us are eager to leap out of bed when the alarm clock sounds in the morning: nor are children in the middle of the night, but they can be trained to do so. If the child does not awake a parent is told to go to the child and gently awaken him until he does hear it and turn it off (the parent must not turn off the alarm). Sometimes this may necessitate the parent changing bedrooms or even sleeping in the same room as the child for the first week or two of treatment. With parental help, children will be awakening reliably to the alarm within two weeks and the parents should resume normal sleeping arrangements by that time since it is important to impress on the child that it is all his responsibility and not the parents'.

In exceptional cases it may be necessary to give a drug to make arousal easier. Dexamphetamine (Spansule), 10 mg every night, or imipramine, 50–75 mg every night may be useful but should only be used for a brief period until the habit of awakening to the buzzer is acquired.

For a child who shares a bedroom with siblings a vibrator alarm may help. This is placed beneath the pillow and vibrates strongly to awaken the wetting child, without disturbing other children in the room. These alarms are available from Headingley Scientific Services (see appendix).

FAILURE TO VOID AFTER AWAKENING

"He just switches it off and goes back to sleep." The alarm box should be put far away from the bed so that he has to get out of bed to turn it off. In exceptional cases the cable can be lengthened to give the child a deliberately long walk to turn it off. This can be coupled with an extra extension buzzer sited in the lavatory, so that he has to go there to turn it off.

TERROR AND CONFUSION

Terror and confusion are most likely in young or immature children. They awaken but cannot cope with the alarm. Nevertheless, a sensible and kind mother, perhaps sleeping in the same room for the first week, can often calm the nervous child and encourage him to respond appropriately to the buzzer.

FAILURE OF ALARM TO SOUND WHEN CHILD WETS

If the alarm fails to sound when the child wets the metal detector strip on a single detector mat may be cracked and no longer conducting electricity; the cable may be disconnected or faulty between mat and alarm; or the alarm may need a new battery.

SABOTAGE

If the child consistently interferes with the alarm or pad it is useless persisting. The alarm works only if there is reasonable co-operation and motivation. The child should be seen alone, told this, and asked in a straightforward way if he wishes to use the alarm and get dry or not.

BUZZER ULCER

Early models of the enuresis alarm were sometimes associated with a blistering rash on the thighs and buttocks, thought to be the result of a chemical burn from electrolysis of sodium chloride.⁵ Modern alarms incorporate safety features (recommended by the Ministry of Health, 1968⁶), which should preclude the possibility of buzzer ulcers. Buzzer ulcers should not be confused with the ammoniacal dermatitis that any child may get from sleeping in urine-sodden bed clothes.

NO CURE AFTER FOUR MONTHS

No cure after four months is unusual. One needs to check that the alarm is being used correctly and that the child is in charge of the procedure, not the parents. If parents interfere too much it may be worth persuading them to be more in the background, or to allow an older child to come to the follow-up appointments alone. Even when the parent does accompany the child the doctor should see the child alone at some stage during the visit.

Depending on the children selected for enuresis alarm treatment, 5–20% may still be wetting after four months' treatment. Unless one feels sure that cure is near—that is, progressively smaller wet patches or fewer wetting incidents—it is as well to discontinue treatment rather than to persist half-heartedly in an atmosphere of increasing disillusion. That is the moment to refer the child to a special enuretic clinic—if one is available. If you already work in such a clinic there is little alternative to looking the child straight in the eye and saying with as much conviction as you can "Your bladder is not yet ready to be dry, but in nine months it will be older and if you come back then and use the alarm again you will quickly stop wetting the bed."

Appendix

The following firms supply alarms that are widely used:

Eastleigh Alarms:	N H Eastwood and Son Ltd, 70 Nursery Road, London N14 5QH.
Chiron Alarm:	Down Bros., Church Path, Mitcham, Surrey.
Wessex Transistorised Alarm:	Wessex Medical Equipment Company, Romsey, Hampshire.
Astric Dry-Bed:	Astric Products Ltd, 261 Queens Park Road, Brighton, Sussex.
Headingley Enuresis Alarm:	Headingley Scientific Services: 29 St Chads Avenue, Leeds LS6 3QF.

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WORDS No distinction was made in Greek between NERVES and TENDONS—not surprisingly, because both are predominantly white, thonglike structures. Both were called *neuron*, whence we have neurone, neurology, neuropathy, neurosis, and so forth. One type of neurosis, however, is tendinous—namely, an APONEUROSIS. This, being a flat sheet, is oddly the opposite of thonglike. The expression to strain every nerve, meaning to use one's utmost endeavours, refers to the nerves as sinews, whereas when nerve denotes courage, and in recent years with an element of cheek (You've got a nerve), the neurological variety is implied.