Hazards of Enuresis Alarms

Sirs,

Your correspondent of April 1969, Dr. M. W. Greaves, has discussed the problem of ulceration and scarring produced by bed-pads of enuresis alarms and suggested preventive measures. A number of other authors have discussed the problem (Gillison and Skinner, 1958; Borrie and Fenton, 1966; Forrester, 1966; Terry, 1967; Coote, 1965; Lovibond and Coote, 1969).

Bed-pads having smaller perforations in the upper foils than those mentioned by Dr. Greaves are already in existence, but this modification cannot prevent conduction through skin apposed to the edges of misaligned foils in a disarranged bed and hence cannot entirely exclude the possibility of burns. The suggestion that turning off the alarm should disconnect the whole electrical system, including the pad, is already met by most alarms, the better of which also provide automatic disconnection of the bed-pad immediately upon triggering.

There is a general unawareness that electrical conduction by perspiration and any interposed tissue occurs between the electrodes of bed-pads over long periods, and to the extent that it causes many of the instruments to false alarm. Appreciable currents may be measured even when draw-sheets are not perceptibly damp. That the presence of urine is not necessary for the production of cutaneous ulcers was shown in the account by Coote (1965) of how easily self-inflicted ones were acquired in the presence of perspiration alone. It appears that this electrolysis, rather than that of urine which is usually momentary (particularly with the circuits which automatically disconnect the pad upon triggering), is mainly responsible for ulcers. The main damage must originate when the equipment is idling and particularly if the draw-sheet is displaced so that the skin is apposed to electrodes.

A very satisfactory solution to this problem has already been described (Coote, 1965), using a recessed electrode bed-pad structure in which coplanar electrodes are recessed in channels far

enough below a rubber surface to prevent intimate physical and electrical contact between electrodes and draw-sheet or, if the latter is displaced, between electrodes and skin. The electrodes, of braided nichrome wire, need checking after each treatment to ensure that they remain intact and recessed.

It was not until after using pads of this type in more than 2000 treatments that one of us encountered the first mild case of ulceration, and this was clearly due to careless checking or maltreatment of the pad. In more than 300 treatments carried out exclusively with this equipment at the Enuresis Clinic at the Royal Children's Hospital, Melbourne, no ulceration has occurred.

Other important advantages have accrued from recessing the electrodes: false alarms due to perspiration conduction or interelectrode contact are eliminated, and electrolytic corrosion of the electrodes themselves is so diminished that they provide years of continuous service instead of months.

It is distressing to learn that children are still being exposed to an unnecessary hazard of a very useful form of treatment.

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