Medicine and Economics

Disposable or non-disposable syringes and needles for diabetics?

STRATHCLYDE DIABETIC GROUP*

Abstract

In a survey undertaken in the west of Scotland 801 adult diabetics taking insulin were questioned about their use of disposable or non-disposable needles and syringes, the life of such equipment, infected injection sites, and future preferences. Six hundred and eight preferred to use disposable equipment even if it meant reusing it; of the 413 who already bought disposable needles, 211 reused them, and of the 234 who bought disposable syringes, 153 reused them. Comparison of total annual costs showed that disposable equipment used only once was more expensive than non-disposable equipment. Reuse of disposable equipment for a few days, however, considerably reduced annual costs when compared with non-disposable equipment. Fewer infected injection sites were recorded in patients reusing disposable equipment without sterilisation than in patients sterilising non-disposable equipment according to government recommendations.

Introduction

Many insulin dependent diabetics prefer to use disposable syringes and needles rather than the glass syringes and steel needles supplied on the drug tariffs since they are lighter, less likely to stick or break, and do not require spirit. The government, however, estimates that it would cost an extra £9·5m a year to supply disposable syringes and needles that may be used only once to diabetics in England and Wales and has refused to make disposable equipment available on prescription on the grounds of cost.[1]

Recent work[2-4] has, however, shown that disposable syringes and needles may be safely reused for limited periods and that such reuse may actually be cheaper than present equipment.[5]

An approach by the Strathclyde Diabetic Group to the then Scottish Minister of Health, Mr Allan Stewart, about the provision of disposable syringes and needles for reuse produced in February 1982 the reply: ". . . If the manufacturers and the profession could guarantee that disposable syringes and needles could be reused safely for two to three weeks, we would be prepared to consider making them available on prescription."

This survey was therefore undertaken to determine the safety of reused disposable syringes and needles under uncontrolled everyday conditions and to assess the comparative costs of disposable and non-disposable equipment.

Methods

Consecutive adult insulin taking diabetics attending diabetic clinics in the west of Scotland were questioned by medical or nursing staff according to the following protocol:

(1) Do you use glass or plastic syringes, and how long do they last?

(2) Do you use steel or disposable needles, and how long do they last?

(3) If you change disposable syringes and needles after one or two uses, is this because of the instruction to "use once only" or because the equipment becomes unusable?

(4) Do you keep your glass syringe and steel needles in spirit?

(5) How often do you boil non-disposable equipment?

(6) Have you ever had unusual redness, swelling, or both, at the site of injection? (No independent confirmation was sought of reported infections.)

(7) Would you prefer to use disposable equipment if it was supplied by the NHS, even if it meant reusing it three or four times?

In calculating annual costs of equipment all prices were hospital contract excluding value added tax as at October 1981. Plastipak was an insulin syringe with a fixed microfine 27 G needle favoured by some diabetics. The other plastic syringes were conventional 2 ml insulin syringes and the needles 25 G (orange).

The number of diabetics taking insulin in the United Kingdom used to calculate the price differentials was based on a prevalence of 3/1000[6 7] in a population of 55·7 million (1981 census).

Sterilisation practice was defined as approved by the government if the equipment was kept in spirit and boiled occasionally or not kept in spirit but boiled before each injection. Patients who reused disposable equipment did not sterilise it but were advised to keep the equipment with their insulin in a cool place between injections.

Results

The 801 patients who were questioned included patients living in the central industrial belt and the rural areas of Ayrshire and Stirlingshire. Six hundred and eight preferred to use disposable equipment even if it had to be reused; of the 413 who already bought their own disposable needles, 211 reused them, and of the 234 who bought their own syringes, 153 reused them. Figure 1 shows the annual use of non-disposable syringes and needles. The mean annual usage was 1·72 syringes and 62 steel needles.

Figure 2 shows the actual annual use of disposable needles and syringes with the mean. The shaded area represents an estimate of the patients who discard disposable equipment after one or two days because of the instructions to "use once only" marked on the syringes.

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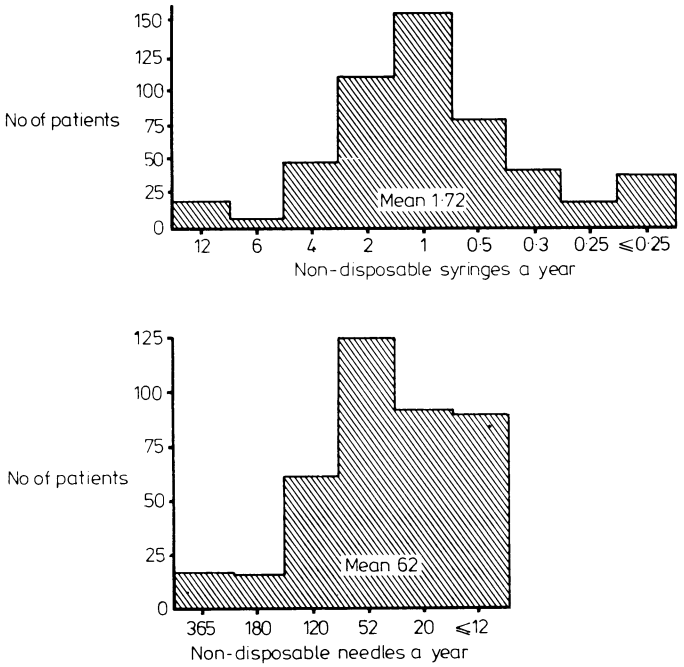

FIG 1—Actual annual and mean annual use of non-disposable syringes and needles.

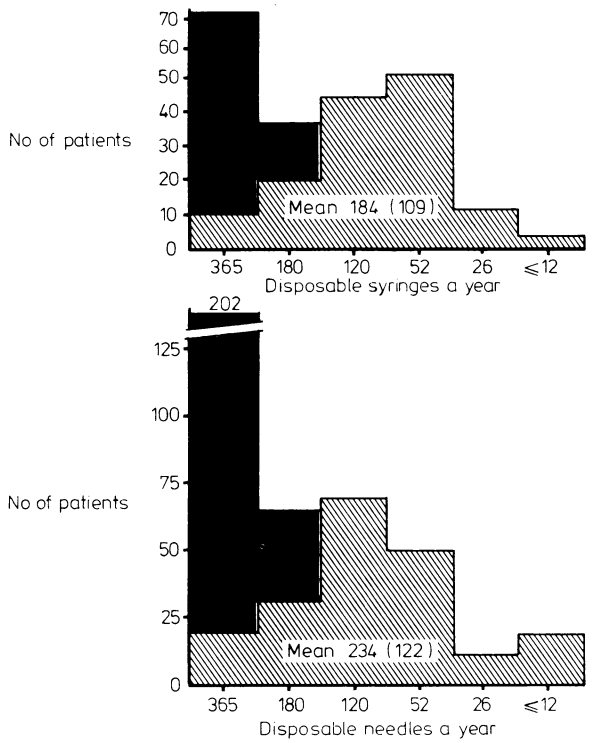

FIG 2—Actual annual and mean annual use of disposable syringes and needles. (Mean annual use if patients who discard their equipment after one or two days are excluded is given in parentheses.)

The mean annual use if these patients are excluded is shown in parentheses.

The table compares the annual cost per patient of non-disposable equipment as shown in the survey with the cost of once daily disposable equipment and likely patterns of disposable reuse, and gives an estimate of the annual cost differential for the United Kingdom. The number of infected injection sites reported by patients using different methods of sterilisation were as follows: 490 patients using the method of sterilisation approved by the Department of Health and Social Services had seven infections, 62 using non-disposable non-sterilised equipment had one, and 153 using reused disposable equipment had one.

Annual costs of disposable and non-disposable needles and syringes

		Annual cost per patient (£)	Extra annual cost UK (assuming 167 000 ITDs) (£m)
Non-disposable syringes 1·72 @ £3·69		6·34	
Non-disposable needles 62 @ 0·11		6·82	
Industrial methylated spirit (1 l)		1·00	
		14·16	
Plastipak	365 @ 7·7p	28·10	+2·3
	120 @ 7·7p	9·24	−0·8
Disposables	365 syringes @ 7·0p	27·19	
	365 needles @ 2·5p	9·19	
		36·38	+3·7
Best use	26 syringes	1·84	
	120 needles	3·15	
		4·99	−1·5

ITD = Insulin taking diabetics.

Discussion

This survey shows that the reuse of disposable equipment by diabetics is already widespread and much preferred by patients. Our figures for the number of syringes used correspond with those in Leicester,[5] although in London an average use of four syringes a year is reported,[2] perhaps owing to the hard water, so that annual costs may be even higher in the south. Comparison of costs indicates that any reuse of disposable equipment is equal to or cheaper than the present non-disposable equipment.

Mechanically, plastic syringes may be used for a minimum of two weeks,[2] and disposable needles may be used for about three days.[2 3] With education probably most patients could conform to this pattern, which produces a modest annual saving. There is ample evidence from laboratory experiments and small carefully controlled trials that such a pattern of reuse is bacteriologically safe.[2–5]

Our survey confirms this safety under uncontrolled conditions and, indeed, although the numbers are small and the reporting unreliable, indicates that reuse of disposable equipment is actually safer than using the methods of sterilising non-disposable equipment approved by the DHSS.

It is ironic that in these times of financial stringency the government is prepared to waste large sums of money in issuing unwanted U-100 glass syringes to every insulin taking diabetic when a cheaper and preferred alternative is available.

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References

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