Objective
To assess the safety and convenience of injecting insulin through clothing.

Design
20 week randomised cross over trial.

Setting
University hospital diabetes clinic in Detroit, Michigan, USA.

Patients
50 patients who had type I or type II diabetes and had been injecting insulin for ≥ 1 year. 42 patients (84%) (mean age 41 y, 50% women, 78% type I diabetes, 50% attended ≥ 16 y formal education) with a mean duration of diabetes of 14 years completed the study.

Intervention
Patients were allocated to a method of injecting insulin through clothing or to the conventional method in which the skin had to be wiped with alcohol and allowed to dry before injecting the insulin. Patients proceeded with their allocated injection method for 10 weeks and then switched to the alternate method for another 10 weeks. Injections through clothing could only be done through 1 layer of fabric; a written list of fabric options was provided. Patients received no specific instructions about the rotation of injection sites, other than to limit the sites to the thighs. Patients recorded information about injections in daily logs and noted benefits and problems.

Main outcome measures
Leucocyte count, differential count, and glycated haemoglobin concentrations were compared at baseline, 10 weeks, and 20 weeks. The problems (blood, bruising, pain, and infection) and benefits (saves time, convenient, less noticeable, and less awareness) associated with the 2 methods recorded in the daily logs were compared.

Main results
The groups did not differ for leucocyte count (p = 0.30), neutrophil count (p = 0.14), or glycated haemoglobin concentration (p = 0.63). No patients reported adverse skin reactions. The mean number of recorded problems per day did not differ between groups. A mean of 0.32 problems per day was reported with the conventional method of injection compared with 0.40 problems per day with injections through clothing (p = 0.19). A greater mean number of benefits was recorded with injecting insulin through clothing compared with the conventional method (1.34 v 0, p < 0.01). The written comments of participants indicated that injecting insulin through clothing was more convenient and did not increase bleeding or bruising at injection sites.

Conclusion
Injection of insulin through clothing was as safe as, and more convenient than, the conventional injection technique requiring skin preparation.

Source of funding: not stated.

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