such a procedure, but as long as the safety is not proven and the manufacturers of such disposable items place warnings on the packaging of such items against their re-use, it would appear to be prudent to obtain appropriate legal consultation before embarking on a policy of recommending such procedures.

REFERENCES

1. Toal FM: Disposable needles for diabetics. *Lancet* 1978; 1:44-45.
2. Greenough A, Cockcroft PM, Bloom A: Disposable syringes for insulin injection. *Br Med J* 1979; 1:1467-1468.
3. Hodge RH, Krongaard L, Sande MA, et al: Multiple use of disposable insulin syringe-needle units. *JAMA* 1980; 244:266.

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Today, the majority of insulin-dependent diabetics use the disposable plastic syringes that are intended for one-time use only. In this era of cost containment however, some diabetics have been using the disposable syringe for multiple injections. Your question regarding the safety of this procedure focused on two published articles that examined this issue.

Work done prior to these studies resulted in varying conclusions. Tuazon et al[1] stated that there may be a greater carrier rate for *Staphylococcus aureus* among diabetic patients. Yet, Elek[2] indicated that a minimum of 7.5×10^6 staphylococcal organisms had to be injected intradermally for the occurrence of pus formation, while Koivisto and Felig[3] failed to note such high bacterial skin counts during their investigation. The latter study even showed that routine skin swabbing may not be necessary at all.

Recent studies undertaken to determine the risk of infection with this procedure showed promising results. Greenough et al[4] initiated a study of 30 patients, all of whom reused the same syringe for up to two months. After each injection the needle was capped, placed in the original container and stored in the refrigerator. Throughout the study there was no soreness, redness, or infection at the site of injection. Some patients only changed needles every three to four days. Syringes sent for culture grew no organisms, except for one which yielded *Staphylococcus aureus*.

In another study, Hodge et al[5] investigated 14 diabetic patients and the effects of re-using the same syringe three times in succession. Each patient participated in a one-month control period prior to the study. After an average duration of 20 weeks, no patient showed signs of infection at the injection site, and all the syringes cultured sterile. During the study the needles were wiped with alcohol, capped, and stored in the refrigerator after use. There was a less than 0.25% risk of infection estimated from this procedure. Also, to test for possible reservoirs of growth, six vials of insulin were injected with *Staphylococcus aureus*. No bacterial growth was found after 48 hours.

The most recent study was undertaken in the developing country of Nigeria, where, according to the authors, some rural diabetics do not have refrigerators for storing syringes and insulin. Oli et al[6,7] investigated the repeated use of an insulin syringe in 21 diabetics. After use, the needle was recapped and stored with the insulin in a dry, clean container covered with a lid. The average duration of use for a syringe and needle was 26 days and five days respectively. Only one patient complained of soreness at the injection site. Cultures of each patient's insulin also yielded no organisms.

Judging from these initial studies, multiple use of a disposable insulin syringe appears to be relatively safe and cost effective. However, in evaluating these studies, it would be imprudent to correlate their results with your situation. The articles discussed above have drawn positive conclusions based on their own individual situation and predefined criteria. Using the studies as a guide, each separate environment can test and judge new ideas accordingly.

REFERENCES

1. Tuazon CU, Perez A, Kishaba T, et al: Staphylococcus aureus among insulin-injecting diabetic patients: An increased carrier rate. JAMA 1975; 231:1272.
2. Elek SD: Experimental staphylococcal infections in the skin of man. *Ann NY Acad Sci* 1956; 65:85.
3. Koivisto VA, Felig P: Is skin preparation necessary before insulin injection? *Lancet* 1978; 1:1072-1073.
4. Greenough A, Cockcroft PM, Bloom A: Disposable syringes for insulin injection. *Br Med J* 1979; 1:1467-1468.
5. Hodge RH, Krongaard L, Sande M, et al: Multiple use of disposable insulin syringe-needle units *JAMA* 1980; 244:266.
6. Oli JM: Disposable syringes for insulin injection. *Br Med J* 1979; 2:273.
7. Oli JM, Gugnani HC, Ojiegbe GC: Multiple use of ordinary disposable syringes for insulin injections. *Br Med J* 1982; 284:236.

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Chemical Versus Physical Cleansing

To the Editor:

The May-June issue of *Infection Control* (3:240-244, 1982) contained an article by Townsend et al entitled, "An Efficacy Evaluation of a Synergized Glutaraldehyde-Phenate Solution in Disinfecting Respiratory Therapy Equipment During Patient Use." The content, and especially the title, is a good example of equipment-disinfection articles in which there is too much emphasis on the contribution of the chemical and not enough on physical cleansing.

In-use tests are definitely the best way to evaluate equipment-disinfection procedures; this one used ventilator tubes. The study reflects a good deal of careful work particularly in the identification of survivors, a step too often neglected. However, I find the report misleading because the authors attribute to the chemical solution a greater role in decontamination than their results demonstrate.

This is not at all unusual. It has been my observation over the years that a majority of such reports tend to emphasize the chemical component and minimize or ignore the large proportion of contaminating microorganisms and organic soil removed by mechanical cleansing (*physical* disinfection). This is an unfortunate situation because it gives non-experts the wrong impression. Indeed, precleansing, rinses, etc., are the basic and often major part of satisfactory procedures for decontaminating reusable equipment. How much the subsequent chemical exposure contributes to the overall result depends upon the potency of the chemical (whether it is a low-level disinfectant, a high-level disinfectant or a sterilant) and upon