Skin cleansing and infection control in peripheral venepuncture and cannulation

Research into the importance of skin cleansing before venepuncture is inconclusive. This article suggests that erring on the side of caution is the best way forward until more firm evidence is found.

VENEPUNCTURE AND cannulation are procedures which are increasingly being performed by nurses. Therefore, it is appropriate for nurses to review the practice of infection control in relation to skin cleansing before these procedures.

A review of the literature on this subject was carried out with the aim of establishing the current best practice and actual practice, as used on the ward. During venepuncture and cannulation, the body’s skin barrier is breached and microbial contamination is likely; therefore there are two areas to consider:

- Protection from skin flora of the practitioner.
- Protection from the patient’s skin flora.

There seems to be some controversy about the need for skin cleansing. Dann (1969) concluded that routine skin preparation before injection, other than where strict asepsis is required — for example, intrathecal and intra-articular — is unnecessary, at best reducing the risk of infection and probably having no useful effect in reducing risk from the patient’s own skin flora. Despite this finding in 1969 and a lack of research on venepuncture and short-term cannulation, most literature still recommends skin cleansing.

Pearson et al (1996) cited trials between various cleansing agents, but with reference to central venous and arterial catheter-related infections. The Royal Marsden Hospital Manual of Clinical Nursing Procedures (1990) states the need for asepsis when performing venepuncture — the two major sources of contamination being the hands of the practitioner and the skin of the patient — recommending an alcohol-based solution, such as 70 per cent chlorhexidine in spirit.

Dougherty (1996) agreed that removing skin flora is necessary and also recommended chlorhexidine in 70 per cent alcohol or aqueous solution based on the results of a trial by Maki et al (1991). Dougherty (1996) also stressed that good handwashing techniques and use of gloves are essential for central venous and arterial catheter access. Millam (1992 and 1993) recommended either 10 per cent povidone-iodine solution, 2 per cent tincture of iodine, or 70 per cent ethyl alcohol for cleansing, but provided no research or rationale to back up this advice. Rowland (1991) also recommended good handwashing and use of gloves, but suggested the use of alcohol-prepared cleansing pads, allowing at least 30 seconds to allow sufficient time to dry.

Inwood and Taylor (1996) recommended that good handwashing technique should be included, along with a discussion of the basic principles of cross-infection and contamination in a nurse training programme for venepuncture, but does not refer to skin cleansing.

Rees (1997) considered the issues of hand hygiene and provided a general reminder of the need for good handwashing technique, but did not refer to skin cleansing, only mentioning that the ever-increasing use of invasive devices adds to the risk of cross infection.

Campbell (1995) added that although skin can be cleansed, therefore reducing the number of bacteria, it is not necessary. However, if cleansers are used, time should be given for the area to dry.

Kiernan (1997) discussed infection risk but did not mention skin cleansing before insertion of a cannula. Care of the insertion site in relation to length of time a catheter is in situ and use of sterile dressings is discussed, concluding that an appropriate sterile dressing and removal of device as soon as possible is the simplest way of reducing infection complications.

The need for cleansing

These key words are based on the subject headings from the British Nursing Index. This article has been subject to double-blind review.

Which cleanser?

The recommended cleanser varies, but all the authors agreed that a cursory wipe with anything
is not effective, and that at least 30 seconds spent cleansing is required. However, this does not appear to be the general practice and may therefore be difficult to put into practice, especially with children and anxious adults, as once started, the procedure is likely to cause less distress if concluded swiftly with no pauses. Personal experience at blood donor sessions has been a quick wipe with an alcohol-impregnated swab, followed by immediate cannulation.

Castledine (1996) records how, at a workshop for peripheral venous cannulation, many of the staff did not realise the importance of washing their hands and putting on gloves before performing the procedure.

### Handwashing

According to Pearson et al (1996) of the Hospital Acquired Infection Control Practices Advisory Committee, the most important of the general recommendations for intravascular device use are:

- Handwashing before and after palpating and inserting or dressing any intravascular device.
- Wearing gloves when inserting an intravascular device or changing a dressing. No recommendation is given regarding the use of sterile versus non-sterile clean gloves.
- Clean skin site with antiseptic, including 70 per cent alcohol, 10 per cent povidone-iodine or 2 per cent tincture of iodine.
- Leave for an appropriate length of time, though time required for cleansing is not stated.
- Do not palpate the site after skin cleansing.
- Use either sterile gauze or transparent dressing to cover site.

Kiernan (1997) recommends a transparent polyurethane dressing as it is less likely to need changing and the insertion site can be easily seen.

### Conclusion

Although there is some controversy about whether skin cleansing of the site prior to venepuncture or cannulation is necessary, cleansing with some agent is generally recommended. Using a 70 per cent isopropyl alcohol swab is quicker and easier than povidone-iodine or chlorhexidine for peripheral venepuncture and cannulation.

There does not seem to be any conclusive evidence about effectiveness, but infection control recommendations are likely to remain as they are until further evidence becomes available. At present, there seems to be no reason to change the guidelines for good practice, as infection control practice will always err on the side of caution. There is much more evidence and documentation on the need for good handwashing technique and the use of gloves during this procedure as recommended in guidelines. One approach may be to ask the patient to wash his or her hands thoroughly just before venepuncture and cannulation (if the hand is to be used). This does not seem to have been considered in research but could be a simple, cost-effective precaution.

The guidelines for good practice for these procedures seem to follow the present accepted best practice. The most important conclusion, therefore, is that they be practised consistently.

### REFERENCES