

# IDENTIFYING WOUND INFECTION: TAKING A SWAB

Hannah Patten is Tissue Viability Nurse Specialist, Redbridge, Outer North East London

Throughout the UK, wound swabbing is the most common method of microbiological investigation when attempting to identify wound infection. There appears to be no consensus of expert opinion on the procedure of obtaining a wound swab for culture, however inappropriate swabbing techniques are ineffective, unnecessarily time-consuming and expensive.

Wound infection is initially identified by the recognition of clinical signs and symptoms such as pus and/or cellulitis. Wounds are swabbed in order to develop a laboratory culture, which will establish the causative organism and ensure appropriate treatment is started.

A 'gold standard' method for wound sampling has not been confirmed. The literature indicates that wound swabbing is, in principle the ideal technique, but looks at the variations in practice within this method. A number of procedural issues have been raised, which prompts the need for further study to help eliminate these variables and reach consensus as to how best to achieve meaningful results, thereby increasing the validity and reliability of this procedure (Kelly, 2003).

## Background

Several factors contribute to the potential unreliability of the wound swab technique. Although wound

swabbing is a simple, convenient and non-invasive procedure, audits of nursing practice in both primary and secondary care have revealed wide variations. This has led to the implementation of many locally based protocols in order to standardise the procedure (Kingsley and Winfield-Davis, 2003).

Wound swabbing is an investigatory procedure that is considered a core competency of all registered nurses. The nurse has to monitor their own competency

and take appropriate action to update his or her knowledge as required. The nurse performing this procedure is legally accountable for their actions and omissions, therefore she or he needs to be aware of the correct method of swabbing a wound (Nursing and Midwifery Council [NMC], 2008).

Following local protocols will help nurses to follow a skills-based competency, however individual practitioners need to ensure that taking a swab is



Figure 1. The swab and collection tube.

appropriate. Routine swabbing in the absence of clinical indicators of infection is neither helpful nor cost-effective. Depending on the health setting, the average cost of sending a swab for tests is £15–25, with an additional £5 for each requested antibiotic sensitivity (per organism) (Collier, 2004). This is an unnecessary cost to both the NHS and the patient — this is without considering the cost of additional antibiotics.

The technique of swabbing must be performed accurately, with all relevant paperwork being completed in full and with as much information as possible being gathered (Ferguson, 2005). Wound swabbing is not a tool that can be used to diagnose in isolation. Diagnosis of wound infection should be a combination of the clinician's professional judgement and a clinical presentation that leads to the wound being swabbed. It is this information that will assist the microbiologist in correctly culturing the specimen and offering the appropriate antibiotic/treatment options.

Using an effective technique to take a swab is paramount, as is ensuring that the procedure is appropriate, i.e. the wound is exhibiting clinical signs of infection (see below). Attempting to culture swabs that have been taken incorrectly leads either to a false negative result, due to poor technique, or a false positive, where only colonising bacteria is captured but with no clinical indication.

Many nurses perform clinical procedures that are based on



Figure 2. The wound site being cleansed with normal saline before the procedure.

ritual, without understanding the rationale behind them — wound swabbing is a good example. By standardising the technique with emphasis on simple but important facts, such as when to actually take swabs, guidelines and protocols can be established to improve the quality of service provided to patients (Starr, 2003).

### When to swab?

A swab should be taken when a wound or lesion shows clinical signs of infection, including:

- ▶▶ Local heat
- ▶▶ Redness/erythema
- ▶▶ Pain or tenderness
- ▶▶ Oedema
- ▶▶ Inflammation
- ▶▶ Increased exudate
- ▶▶ Cellulitis
- ▶▶ Abscess/pus
- ▶▶ Purulent discharge
- ▶▶ Malodour
- ▶▶ Delayed healing (compared with normal rate for site and condition) (Beldon, 2001)
- ▶▶ Discoloration of wound bed
- ▶▶ Friable granulation tissue that bleeds easily
- ▶▶ Pocketing/ bridging at the base of the wound
- ▶▶ Wound breakdown/

enlargement (Cutting and Harding, 1994).

Other clinical signs include:

- ▶▶ Patient shows signs of a systemic infection such as pyrexia, raised white cell count, blood C reactive protein levels (CRP) and/or blood erythrocyte sedimentation rate
- ▶▶ Patients that are elderly or immunosuppressed tend to be more susceptible to wound infections and present with other symptoms exhibiting drowsiness, loss of appetite, nausea, restlessness and confusion
- ▶▶ The swab is part of a screening programme, for methicillin-resistant *Staphylococcus aureus* (MRSA).

It should be noted that inflammation at a wound site can be part of the healing process and is not a clinical indicator for infection, therefore inflammation in isolation is not a reliable indication for taking a swab or treating a wound for infection (Ferguson, 2005).

### The procedure

The swab is similar to a long

cotton bud. Both the swab and the tube container are supplied in sterile packaging (*Figure 1*). When the sample has been collected, the swab should be put into the tube, which contains a culture medium to promote organism growth. Care must be taken to avoid contaminating the bud and tube with anything other than the sample material. The following steps should be taken:

- ▶ Explain the procedure and purpose of the sampling to the patient and gain verbal consent
- ▶ Wash and dry the hands thoroughly
- ▶ Apply gloves and apron
- ▶ Position the patient comfortably, ensuring that their privacy and dignity are maintained throughout
- ▶ Cleanse the wound using either normal saline or water (*Figure 2*), depending on site of the wound, ensuring all debris, pus or any other foreign matter is removed
- ▶ Remove the swab from the sterile packaging (*Figure 1*).
- ▶ If the area to be swabbed is relatively dry, such as a nostril or axilla, the swab may be moistened using sterile sodium chloride — this will help to ensure that any organisms adhere to it

- ▶ Gently pass the swab over the area in a zig-zag motion (*Figure 3*), ensuring it is turning in a circular movement to totally cover the swab. The nurse should ensure that there is minimal discomfort for the patient
- ▶ Swab from the centre to the outside of the wound
- ▶ If there is exudate present, ensure it is thoroughly absorbed by the swab
- ▶ Use a separate swab if there is a pocket or sinus in the wound
- ▶ Remove the top from the culture tube and place the swab inside, closing firmly.

After the procedure has been successfully completed, the nurse should label the sample and the pathological request form with the following:

- ▶ The patient's name, date of birth and identification number
- ▶ Location of the patient
- ▶ Site where swab was taken
- ▶ Date and time of the sample
- ▶ Clinical indicators for taking the sample
- ▶ Any medication that may affect the results, i.e. antibiotics
- ▶ The clinical investigations required.

It is important that this procedure is

documented in the patient's notes, describing the location and reason for the swab.

Ensure the sample is sent to microbiology as soon as possible and, if necessary, stored according to local policies. A full explanation should be given to the patient with an estimated date for the return of the results. **WE**

Beldon P (2001) Recognising wound infection. *Nurs Times* **97(03)**: 3

Collier M (2004) *Recognition and Management of Wound Infections*. Available at: <http://www.worldwidewounds.com/2004/january/Collier/Management-of-Wound-infections.html> (accessed 24 May 2010)

Cutting K, Harding K (1994) Criteria for identifying wound infection. *J Wound Care* **3(4)**: 198–201

Ferguson A (2005) Taking a swab. *Nurs Times* **101(39)**: 27

Kelly F (2003) Infection control: validity and reliability in wound swabbing. *Br J Nurs* **12(16)**: 959–64

Kingsley A, Winfield-Davis S (2003) Audit of wound swab sampling: why protocols could improve practice. *Prof Nurse* **18(6)**: 338–43

NMC (2008) *Scope of Professional Practice. The Code: Standards of conduct, performance and ethics for nurses and midwives*. NMC, London

Starr S, MacLeod T (2003) Wound swabbing technique. *Nurs Times* **99(5)**: 57



*Figure 3. It is important to swab from the centre to the outside of the wound using a zig zag motion.*