To swab or not to swab

INTRAMUSCULAR injections are a frequently used nursing procedure with an estimated 12 billion administered on an annual basis throughout the world. Since the 1950s, nurses in inpatient and community settings have become proficient at administering intramuscular antibiotics, vaccines and depot neuroleptic agents. In recent years increasing demands have been placed on nurses to practice evidenced-based care. Many healthcare settings are addressing this by developing policies and guidelines regarding the administration of injections which include or exclude the infection control issue of skin cleansing, prior to the injection.

Nurses in clinical practice are debating the importance of skin preparation prior to intramuscular injections and are placed in the predicament of what to do when the evidence base is lacking, unclear or open to different interpretations.

Examining the evidence

Research over the last 30 years has questioned the value of skin preparation prior to injections. A landmark study by Dann was carried out at a university medical centre where more than 5,000 injections were given without skin preparation to patients between four and 66 years of age. No cases of infection, either local or systemic, were identified. As a result of this study it was suggested that routine skin preparation was unnecessary and questioned the assumption that infection could be introduced via the needle from unsterilised skin.

A study on 13 people who have diabetes, found that although a five second skin preparation with alcohol swabs prior to injection reduced skin bacterial counts by over 82%, such disinfection is not necessary to prevent infection at the injection site.

When 1,700 injections were given without an alcohol swab no infection occurred. Other studies concur with these findings and suggest that generally there was insufficient contaminating of skin to cause infection following injection without disinfection and that skin cleansing was an unnecessary procedure.

Further research has reinforced the importance of ensuring that the skin of the patient is physically clean and that healthcare providers maintain high standards of hand hygiene prior to the procedure. Scientific evidence to support the use of soap and water for skin cleansing is limited, however it has been suggested that the physical action of washing has long being accepted for the removal of transient flora which may contaminate the skin.

Another study carried out a review of best practice in relation to the prevention of injection associated infection for the World Health Organisation (WHO). In association with their Safe Injection Global Network, the WHO no longer recommend swabbing clean skin with a disinfectant before giving intradermal, subcutaneous, and intramuscular needle injections.

Regarding “live vaccines” there was little literature uncovering this topic. The American Centre for Disease Control and Prevention (2002) issued the following guidance specifically for smallpox vaccine administration. It states that alcohol, soap and water or chemical agents are not needed for preparation of the skin prior to vaccination, unless the skin is grossly contaminated in which case, cleansing with soap and water are the preferred agents. Skin must be thoroughly dry in order to prevent inactivation of the vaccine being administered. If soiled, skin should be cleaned, based on basic common standards with soap and water.

However other researchers have recommended the cleaning of the injection site in order to minimise the risk of infection, the most common solutions for preparing the skin prior to injections are ethyl alcohol and iodophors. Some studies have cautioned not to use the alcohol swab post injection as the cleaning material can be tracked along the needle path causing irritation.

Other research suggests that antiseptics in current use cannot act in the time that is generally used in practice; approximately five seconds on average and cannot possibly provide complete sterility. They suggest best practice by advising nurses to clean the skin prior to injection to reduce the risk of contamination from the patient’s skin flora.

Swabbing the injection site with a saturated 70% alcohol swab for 30 seconds and allowing to dry for 30 seconds is essential in order to reduce the number of pathogens. Allowing the site to dry pre-
vents stinging if alcohol is taken into the tissues upon needle entry. It should be borne in mind that although many authors consider skin disinfection to be unnecessary their research methodologies have been questioned. Therefore there are doubts about the reliability of their results and whether they should be generalised.

Medico-legal implications need to be considered by nurses and they should always follow the guidelines laid down by their employer/health authority in relation to skin cleansing prior to injection.

It has been suggested that it would be difficult to defend a case of local sepsis which resulted from an injection where skin disinfection had been omitted. The organisms usually responsible for causing abscesses at intramuscular site are staphylococcus aurous and haemolytic streptococcus pyogenes. These organisms are pathogenic. Nonetheless the need to remove them from the skin before injections has been debated over the last few years. One study cautionsthat failure to disinfect skin contaminated with soil or road dust could result in inoculation of gram-positive, anaerobic, spore-forming bacteria. These bacteria can survive for indefinite periods in soil or road dust and can cause gas gangrene and tetanus. Controversy remains regarding the need for skin cleansing since Dann concluded that routine skin preparation before injection was unnecessary and has no useful effect in reducing risk from the patient's own skin flora.

Despite these findings in 1969 there is a lack of research to establish a firm evidence base for cleaning the skin prior to the administration of an intramuscular injection, leaving nurses in a precarious position as to whether to perform this routine practice or not. Although the literature is far from definitive in the area, many Irish inpatient and community settings continue to advocate the practice of cleaning at the injection site.

It has been reported that it can be difficult to interrupt a well-established ritual: eight years after a policy decision to cease routine pre-injection skin swabbing, 78% of staff surveyed at a UK hospital continued the practice. The main reason given by 52% of those continuing to swab was cited as 'sterilisation'. However, another study interestingly noted that it is impossible to sterilise living skin.

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References