

Short title: Infection control BP

1. Purpose of review

This document was last reviewed in 2005 and this review is part of the standard review cycle, which is designed to ensure that the guideline keeps pace with current knowledge.

2. Scope

The principles contained within this guideline are intended to apply in all areas where anaesthesia, regional analgesia and sedation are administered including operating theatre suites, endoscopy units, radiology suites, intensive care units and labour ward suites.

3. Background

Minimisation of risks of infection plays a critical role in outcomes. Consequently, infection control aimed at minimising risks of infection related to anaesthesia practice is a significant contributory factor to patient safety.

During the evolution of infection control procedures recommendations were made to cater for high-risk situations. When it was recognised that such situations were often either unknown or unpredictable it was recommended that these procedures be adopted as routine measures. Subsequently these became known as “universal” precautions to be applied in all situations. More recently the terminology has changed to “standard” precautions.

The goal of this document is to assist in developing and implementing strategies and protocols to reduce risks of transmission of infection.

4. Discussion of issues

In view of the specialised nature of infection control the document development group received ANZCA Council approval to convene an expert group that had specific expertise in infectious diseases and infection control. The group included anaesthetists and representatives from the Australasian College for Infection Prevention and Control.

It was evident that precautions were necessary to minimise risks of transmission of all infections including prions. The recommendations within the guideline have been formulated to cover all of these risks.

The basic principles applied to this guideline revolve around the two areas for potential infection in the setting of anaesthesia practice, consisting of healthcare associated infections and anaesthesia equipment related infections.

Details of disinfection and sterilisation are beyond the scope of this document and readers are directed to the relevant standards such as Australian Standard AS 5369:2023 *Reprocessing of reusable medical devices and other devices in health and non-health related facilities*¹ for further information.

“Standard” precautions and hand hygiene are the two most important measures to protect workers and patients, respectively.

Special mention is made of Australian/New Zealand standard *AS/NZS 4187:2014* with regard to condemning the practice of reusing single-use items.

4.1 Ultrasound

- 4.1.1 With the expanding use of ultrasound in anaesthesia for vascular access, regional analgesia and transoesophageal echocardiography, consideration of infection control measures for both the technique and for the equipment have been addressed in this guideline. In particular, recommendations for ultrasound probes are provided.
- 4.1.2 Ultrasonography by anaesthetists could pose a unique high risk of hospital acquired infection. Ultrasound machines are transported from room to room in the operating suite. In some situations anaesthetists use their own machines at different hospitals. Policies and guidelines relating to the prevention and control of infection in ultrasonography are widespread throughout the world. For example, in Australia the Australasian Society for Ultrasound in Medicine and National Health and Medical Research Council have issued guidance. Their recommendations are based on Spaulding's classification.²
- 4.1.3 Ultrasound equipment can be categorised into non-critical (contact only with intact skin), semi-critical (contact with mucous membranes or non intact skin) and critical (contact with internal organs or body cavities). Policies state that medical equipment with critical and semi-critical exposure (transoesophageal and transrectal probes) require sterilisation or high level disinfection (thorough cleaning followed by immersion in chlorine dioxide or ortho-phthalaldehyde and then rinsing). Non-critical exposure requires only low-level disinfection (removal of ultrasound gel and then cleaning of the transducer). When using the probe in a semi-critical or critical environment a sterile protective probe cover should be used. This in theory obviates the need for high level disinfection. However inadvertent sheath breeches can occur, potentially resulting in probe contamination. This has a reported incidence of 2 per cent when performing intra-cavity ultrasonography.³
- 4.1.4 Real time imaging to guide needles into vessels and around nerves could result in semi-critical exposure of the probe. High-level disinfection is warranted for these procedures. General hygiene during scanning is of paramount importance and should include hand hygiene prior to applying gloves and commencing scanning. When performing a needle procedure a sterile probe cover should be used. Cross infection of the device keyboard is prevented by using a dedicated hand to interact with the keyboard or by using a disposable keyboard cover or by using an assistant. Gel contamination can be minimised by using single-use sterile gel sachets for all except non-critical uses, although single-use gel containers/packets are recommended even in non-critical applications. On completion of the procedure, the operator should remove the probe cover (without contaminating the probe) and then his or her gloves. Gel and debris are removed from the probe with a dry towel and then the probe is cleaned with detergent-impregnated wipes or washed with soap and water. Application of a disinfectant spray/wipe to the probe can be considered (70 per cent isopropyl alcohol or 17.2 per cent isopropanol). Some manufacturers may recommend a non-alcohol based disinfectant. This cleaning process is an effective way of removing bacterial and preventing nosocomial infection. The ultrasound machine should be stored in a dry clean room. If the probe has been contaminated with blood or body fluids a high level disinfection should be performed.

- 4.1.5 All risk management strategies are a drain on resources and it is acknowledged that these recommendations come at a cost (training and materials). However this is offset by the potential reduction in hospital acquired infection which is a huge economic burden worldwide.
- 4.1.6 The exact steps that should be taken to both protect the ultrasound probe and clean/sterilise it for use in a subsequent patient are not well defined in the literature. There is also an infective transmission risk associated with the use of ultrasound gel.
- 4.2 Chlorhexidine
 - 4.2.1 Chlorhexidine has been encouraged as the antiseptic preparation of choice from the infection control perspective. However, the Australian and New Zealand Anaesthetic Allergy Group and ANZCA Anaesthetic Allergy Sub-committee have alerted ANZCA to the increasing incidence of significant allergic reactions to chlorhexidine, some of which have been delayed reactions occurring in the post anaesthesia care unit. Consequently this guideline provides alternatives to chlorhexidine where relevant.
- 4.3 Antibiotics
 - 4.3.1 The inclusion of the reference to perioperative antibiotics recognises that there is a subtle distinction between “prevention of infection” versus “prevention of transmission of infection” however, since postoperative wound infections do not only contain the patient’s own bacteria, it was viewed that perioperative antibiotics may contribute to reducing transmission as well.
 - 4.3.2 The view was expressed that references to compliance with local policy may detract from this guideline; however, the consensus was that local policies are invariably more stringent.
- 4.4 Ampoule splitting
 - 4.4.1 The issue of “ampoule splitting” was considered, especially with respect to cost and waste. While this practice may not be uncommon, in addition to risks of contamination, the potential for error may be compounded. It was agreed that the College should not support practices that expose patients to increased risk. In an attempt to reconcile *PS64(G) Position statement on environmental sustainability in anaesthesia and pain medicine practice* and ANZCA professional document *PG51(A) Guideline for the safe management and use of medications in anaesthesia* guidance is provided where splitting of ampoules is undertaken (see PG51(A) item 5.5.6 and PG51(A)BP item 3.8).
 - 4.4.2 Wastage of expensive medications is a burden on the community. However, the principle of dividing ampoules is unsustainable in the current clinical practice environment and potentially difficult to defend should contamination result in infection or cross-infection, or should mis-dosing occur. Contamination from the environment can occur during preparation and so the “shelf-life” of such syringes is limited to the day of preparation (at most) and unless the labeling is comprehensive (including the name of the preparer and date/time of preparation) use is limited to the preparer. The cost of some drugs has led many hospitals to have their pharmacies prepare sealed pre-filled syringes using fractions of ampoules. This is the ideal solution to the problem as strict labelling, laminar flow preparation and a long shelf-life means even less wastage than dilutions made in the operating room which must be discarded, used or not, by the end of the day.

5. Summary

PG28(A) has been reviewed as part of ANZCA's role in supporting continuing improvement in patient safety. Infection control is a major contributory factor to patient outcomes and the goal of this revised document is to support implementation of uniform standards for infection control wherever anaesthesia, in its broadest sense, is administered.

In addition to ensuring that this document is consistent with contemporary knowledge, it also addresses issues related to the use of ultrasound.

References

1. Australian/New Zealand Standard AS/NZS 4187:2014 Reprocessing of reusable medical devices in health service organisations. *This reference has been superseded by: AS 5369:2023 Reprocessing of reusable medical devices and other devices in health and non-health related facilities. Please contact ANZCA Library if access is required. Note: this updated reference has not yet been reviewed by ANZCA.
2. Spaulding EH. Role of disinfection procedures in control of hospital staphylococcal infections. J Albert Einstein Med Cent (Phila) 1960;8:113-21.
3. Rooks VJ, Yancey MK, Elg SA, Brueske L. Comparison of probe sheaths for endovaginal sonography. Obstet Gynecol 1996;87:27-9.

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Safety and Quality Committee

ANZCA regional and national committees

Faculty of Pain Medicine Board and regional committees

ANZCA Trainee Committee

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