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Would you use a dirty ultrasound probe on yourself?

Making the ultrasound scan a safer examination

A sonographer and a microbiologist working together to increase awareness of infection control in the ultrasound world

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Over the past few years, these two Australians have published extensively in the field of infection control in medical ultrasound practice. Whilst Sue performs ultrasound scans in her role as a research sonographer, Jocelyne has a PhD in microbiology and is passionate about infection prevention and control (IPC). It is this combination of these two professions that has been the key to the relevance of their articles. Their research journey began with Sue questioning what germs could be found on the ultrasound probes, cords, keyboards or in the coupling gel. Needing an offsider with a knowledge of microbiology, Jocelyne collaborated with Sue and used her networking skills to bring the project to reality. Swabs were taken of hundreds of surfaces across multiple ultrasound practices and the results revealed a magnitude of bacterial species, many posing a health risk to ultrasound patients (Westerway et al. 2017).

Following this research project, Jocelyne, as the Australasian Society for Ultrasound in Medicine's policy officer initiated a collaborative project to create guidelines with infection control experts from the Australasian College for Infection Prevention and Control (ACIPC). She co-led a working committee with ASUM and ACIPC and together both organisations produced the *Joint Guidelines for Reprocessing Ultrasound Transducers* (Basseal et al. 2017). These guidelines, published in the *Australasian Journal of Ultrasound in Medicine* (AJUM), were a world first collaborative team effort consisting of ultrasound practitioners, infection control experts and microbiologists.

Another major project has been with the World Federation for Ultrasound in Medicine and Biology (WFUMB) where, as members of the infection control task force, they created, dispersed and analysed a worldwide survey on IPC habits amongst ultrasound practitioners from every continent of the world. Over 1,000 respondents answered the global survey from developed and developing countries. Analysis of the data revealed that there was a lack of compliance of high-level disinfection, varied usage of probe covers and sterile gel for procedures. Furthermore, ultrasound practitioners had differing levels of training and knowledge in basic infection control practices. The results of this global survey will be published in *Ultrasound in Medicine and Biology (UMB)* (accepted; in press).

Recently, they completed a probe cover integrity research study, where commercial probe covers and condoms were assessed post-transvaginal ultrasound examination for any breaks. The results were presented at the recent International Society for Ultrasound in Obstetrics and Gynaecology (ISUOG) world congress (Basseal et al. 2018).

Both Sue and Jocelyne continue to research into best practices in infection prevention and control within ultrasound. They have presented their data at numerous local and international conferences along with running interactive hands-on infection control sessions with trade at the ASUM conferences.

Their signature message *"Would you use a dirty ultrasound probe on yourself?"* has raised awareness of this important issue in ultrasound.

They are changing the ultrasound world one probe at a time.

How safe are the millions of ultrasound examinations that are performed daily around the world?

The literature suggests that the routine ultrasound scan may be a potential source of bacterial and viral contamination and that significant healthcare-related infections could be spread by failure of the operator to appropriately clean the probe and other ultrasound machine components such as the keyboard, handles and probe cords. Low level disinfection (LLD) should

Would you use a dirty ultrasound probe on yourself?

be performed on all surface probes used on clean, intact skin whilst probes used for intracavity scans, infected skin or open wounds require high level disinfection (HLD).

Probes do not need to be visibly soiled to be contaminated with blood, bacteria or viruses viruses (Keys et al. 2015)

Although countries may have regulations in place that govern the appropriate disinfection and reprocessing of ultrasound probes, recent international surveys of ultrasound users have revealed a lack of understanding of the importance of, or poor knowledge of infection control issues. The infectious status of patients may not be disclosed to ultrasound operators at the time of scanning and so poses a potential risk to both the operator and subsequent patients if the probe has not undergone adequate disinfection. The surveys also looked at current reprocessing habits for transvaginal and transrectal probes which revealed that a common decontamination method was to remove the probe cover and wipe with alcohol. Some operators only cleaned the probe at the end of the patient list, relying on covers to protect the patient from cross-contamination. **Would you like to be the last patient on that list?**

With so many international organisations and societies producing guidelines, there is some consensus on disinfection recommendations following the Spaulding classification system (based on probes for non-critical, semi-critical and critical items). Good guidelines for reprocessing ultrasound equipment should refer to relevant literature, incorporate local/national regulations, have collaboration between ultrasound societies and infection control experts, should include alternative methods for both LLD and HLD and consider the cost of compliance. Most importantly, ultrasound operators should undertake a basic infection prevention and control training programme to further their understanding and ensure that any potential risk of acquiring a healthcare-associated infection is minimised.

Conclusion

To make the ultrasound scan a safer examination we need to address the lack of access, or operator compliance to, ultrasound infection control guidelines or protocols. Unfortunately, it may take a major infection incident to draw awareness to the importance of infection control standards for ultrasound practice. ■

KEY POINTS

- ✓ The infectious status of patients may not be disclosed to ultrasound operators at the time of scanning and so poses a potential risk to both the operator and subsequent patients if the transducer has not undergone adequate disinfection
- ✓ A visibly clean probe may still be contaminated with blood, bacteria or viruses
- ✓ Efficient disinfection will significantly reduce the risk of cross-contamination for the ultrasound patient
- ✓ Good guidelines for infection prevention in ultrasound practice should be a priority
- ✓ Basic infection prevention and control training should be provided to all ultrasound operators

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