The importance of high-level disinfection (HLD) of ultrasound probes in the Emergency Department (ED)

Critical Summary

- The emergency department (ED) is one of the most complex healthcare delivery environments. trophon® can help meet your ultrasound probe HLD needs in the Emergency Department.
- According to Federal guidelines, the use of a protective barrier does not change the reprocessing needs of ultrasound probes, and merely acts as another mechanism to reduce infection risk.
- With increasing use of ultrasound in ED, it is important to ensure probes are properly prepared for use as infection transmission risks have been associated with the use of ultrasound probes in ED settings.

The emergency department (ED) is one of the most complex healthcare delivery environments. Procedures are often performed under time pressure, with patients of unknown infectious status and ultrasound is often used in invasive procedures.

Ultrasound has brought tremendous benefits to ED, becoming an essential diagnostic tool, and in recent years, has been increasingly used to guide a variety of interventions. This increased use corresponds to a need to properly maintain this equipment to ensure it is ready for safe use.

A study has shown that 61% of ultrasound probes in EDs are heavily contaminated with blood and a further 48% with microoganisms.[1] Given these probes may contact sterile tissue, the bloodstream, broken skin or mucous membranes, it is important to ensure they are appropriately disinfected to protect patients from infection risk.

Adequate cleaning and disinfection is necessary to prepare a probe for use. The Spaulding classification is used by Federal guidelines, national standards and accrediting organizations to determine when the level of disinfection required, based on the patient contact site (see Table 1).[2-6] High level disinfection (HLD) should be used when a probe contacts broken skin or mucous membranes. HLD can also be used when the probe contacts sterile tissue in conjunction with a sterile sheath, if sterilization is not possible.[2]

An external ultrasound probe with visible blood contamination in an emergency department.

Table 1. The Spaulding Classification

Classification	Patient Contact Site	Disinfection Level	Efficacy Spectrum
Critical	Device enters or contacts sterile tissue or bloodstream	Sterilization or HLD and use with a sterile sheath*	All viable microorganisms must be destroyed.
Semi-critical	Device contacts mucous membranes or non-intact skin	High Level Disinfection	All viable microorganisms must be destroyed, except bacterial spores.
Non-critical	Device only contacts intact, healthy skin	Low Level Disinfection	Most vegetative bacteria and viruses destroyed, except bacterial spores, mycobacteria, fungi, or small non-lipid viruses.

*If sterilization of critical devices is not possible the CDC and TJC permit HLD, however critical ultrasound probes must also be used with a sterile sheath.[2,6]

Use of a sheath does not replace the need for HLD

According to Federal guidelines, the use of a protective barrier does not change the reprocessing needs of ultrasound probes, and merely acts as another mechanism to reduce infection risk.[2,3]

Ultrasound procedures performed in ED

Both endocavitary ultrasound examinations and ultrasound guided procedures using external probes are performed in the ED (see Table 2). Endocavitary probes always contact mucous membranes and consequently always require high level disinfection and use with a sheath.[2,3] External probes may come into contact with a variety of patient sites and should be adequately disinfected before patient use in those applications.

Table 2. The Spaulding Classification of procedures performed in the ED.

Sample Procedure performed in ED	Potential patient contact sites	Classification	Minimum disinfection and use requirements
Transvaginal ultrasound	Mucous membranes	Semi-critical	HLD[2,3]
Ultrasound scans over non-intact skin	Rash, dermatitis, superficial wounds	Semi-critical	HLD[2]
Probes used in surgical procedures	Contact sterile tissue or the bloodstream	Critical	HLD with use of a sterile sheath*
Probes used in percutaneous interventions (e.g. biopsies, thoracentesis, CVC)	May contact sterile tissue or the bloodstream at the puncture/ incision site.	Critical	HLD with use of a sterile sheath*

*If sterilization of critical devices is not possible the CDC and TJC permit HLD, however critical ultrasound probes must also be used with a sterile sheath.[2,6]

trophon has been designed to meet your ultrasound probe HLD needs in the ED

Traditionally it has been difficult to implement HLD in the ED. Typically soaking has been used to disinfect probes, but is laborious, hazardous to patients and staff, and requires the probe to be transported to a dedicated disinfection room.

trophon totally transforms the way HLD can be performed in the ED. Simply HLD your probe after use to ensure it is ready for the next procedure. The trophon family includes the trophon EPR and trophon 2 devices, which share the same core technology of sonically-activated hydrogen peroxide.

Conclusion

With increasing use of ultrasound in ED, it is important to ensure probes are properly prepared for use. Infection transmission risks have been associated with the use of ultrasound probes in ED settings. It is important to correctly apply Spaulding and follow Federal guidelines on the reprocessing of semi-critical and critical probes to keep patients safe from infection.

Contact us today for your specific needs on point-of-care reprocessing, understanding when to HLD or for an educational session at your facility.

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References: **1.** Keys M, Sim BZ, Thom O, et al. Crit Care Resusc. 2015;17(1):43-6. **2.** Centre for Disease Control and Prevention (CDC). Guideline for Disinfection and Sterilization in Healthcare Facilities. 2008. **3.** Food and Drug Administration (FDA). Marketing Clearance of Diagnostic Ultrasound Systems and Transducers. 2019. **4.** Food and Drug Administration (FDA). Reprocessing Medical Devices in Health Care Settings: Validation Methods and Labeling. 2015. **5.** American National Standards Institute (ANSI), Association for the Advancement of Medical Instrumentation (AAMI). ST58:2013 Chemical sterilization and high-level disinfection in health care facilities. 2013. **6.** The Joint Commission (TJC). Comprehensive Accreditation Manual for Hospitals. 2019.

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