Clinical Bulletin

nanosonics
Infection Prevention. For Life.

Understanding the stages of reprocessing

- Cleaning
- Disinfection
- Storage

Other considerations

- Traceability

An overview of ultrasound probe reprocessing

Appropriate reprocessing of ultrasound probes is required to prevent transmission of infection when probes are used on subsequent patients. There are three important stages involved in effective reprocessing – ***cleaning, disinfection and storage*** as illustrated in Figure 1 below.

The term "decontamination" is often used to describe one or all of the cleaning and disinfection steps. Manufacturer instructions as well as local regulations and guidelines should be referred to before commencing reprocessing to ensure the processes are compatible and validated.

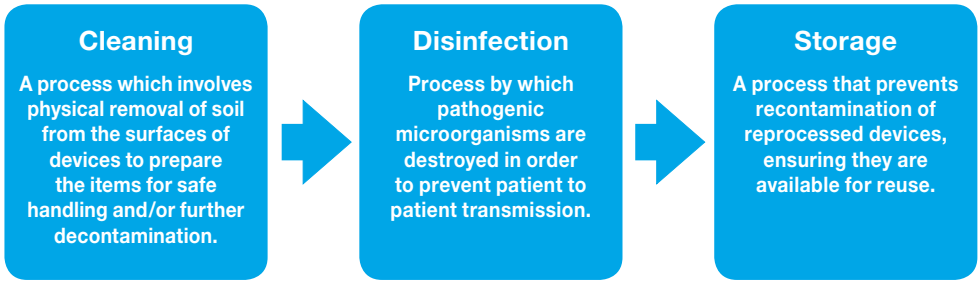

Figure 1: The stages of medical device reprocessing.
Reprocessing involves three sequential steps designed to reduce the risk of cross-infection to acceptable levels so that a medical device can be safely reused.

Cleaning

Cleaning is generally defined as the physical removal of soil (e.g. blood, protein substances, microorganisms and other debris) from the surfaces of devices to prepare the items for safe handling and/or further decontamination.

Cleaning is an important and mandatory first step of decontamination as it ensures that soil does not interfere with any subsequent disinfection process. Cleaning is generally validated by visual inspection of the device or by quantitative methods.

Common cleaning methods for ultrasound probes include soaking in detergent and water, wiping with a moist cloth or detergent wipe or soaking in an enzymatic cleaning solution. The probe manufacturer instructions should be consulted to determine which cleaning methods are compatible with the device. The probe should be completely dry after cleaning so as to not interfere with the subsequent disinfection process.

Disinfection

Disinfection is the process by which pathogenic microorganisms are destroyed in order to prevent patient to patient transmission via a medical device.

Disinfection can be further broken down into subcategories including low and high level disinfection and the specific spectrum of antimicrobial activity of these processes is described overleaf in Figure 2.

Selection of the appropriate level of disinfection is based on the risk associated with the intended use of the device.

Nanosonics Europe Limited
Unit 2, Linfit Court, Colliers Way
Clayton West, Huddersfield HD8 9WL
United Kingdom
01484 860581
ukinfo@nanosonics.co.uk
www.nanosonics.co.uk

Ultrasound probes that will only contact intact skin can be low level disinfected before use while probes that contact mucous membranes or non-intact skin should undergo high level disinfection.

Disinfection should be carried out using validated processes to ensure that endpoints are met and that devices are safe for reuse. The ultrasound manufacturer instructions must also be consulted to ensure that the disinfection process is compatible with the instrument and will not cause damage.

Comprehensive guidance is available in the United Kingdom and Ireland to assist users in determining the appropriate disinfection level required for specific ultrasound probe procedures. Please refer to the "Further Reading" section below for more information.

Disinfection

Devices used in non-invasive procedures

E.g. Probes used in abdominal ultrasound

Requires:
Low Level Disinfection (LLD)

LLD destroys all vegetative bacteria (except mycobacteria), some viruses, but not bacterial spores

Devices used in semi-critical procedures (semi-invasive and non-invasive)

E.g. Probes used for TOE/TV/TR ultrasound/ venepuncture/cannulation/wound assessments

Requires:
High Level Disinfection (HLD)

HLD destroys all bacteria except bacterial spores

Figure 2: Levels of disinfection and criteria governing their use.
Low level and high level disinfection all have different spectrums of efficacy against microorganisms.
An appropriate level of disinfection should be performed before reuse according to the intended use of the device.

Storage

Appropriate storage is required to prevent recontamination of reprocessed probes.

Standard storage conditions such as being clean, dry, away from extreme heat and UV light should be observed.

High level disinfected probes should be stored in single use clean covers for optimal protection.

Low level disinfected probes carry a similar status to other common patient contact surfaces in the patient environment and can optionally be stored in a cover. All probes should be completely dry before entering storage and should be labelled to facilitate easy identification of disinfection status.

Documentation

All processes should be documented and users should be trained on commencement and at regular intervals.

The cleaning, disinfection and storage processes should incorporate traceability of specific probes and critical parameters indicating successful reprocessing.

These records should be linked to the patient and procedure the ultrasound probe is used in.

Further Reading

1. H.P. Loveday, et. al. National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England. *Journal of Hospital Infection* 2014; 86:1-70.
2. HSE Quality Improvement Division. *HSE Guidance for Decontamination of Semi-critical Ultrasound Probes*; Semi-invasive and Non-invasive Ultrasound Probes. QPSD-GL-028-1. Dublin: HSE Quality Division; 2017.
3. Health Protection Scotland. *NHSScotland Guidance for Decontamination of Semi-critical Ultrasound Probes; Semi-invasive and Non-invasive Ultrasound Probes*. Scotland: Health Protection Scotland; 2016.
4. W.A. Rutala, et. al. Guideline for Disinfection and Sterilization in Healthcare Facilities. *Centres for Disease Control and Prevention* 2008
5. Australian Journal of Ultrasound in Medicine. Guidelines for Reprocessing Ultrasound Transducers. *Australian Journal of Ultrasound in Medicine* 2017; 20:30-40. doi:10.1002/ajum.12042.