

Probe Care

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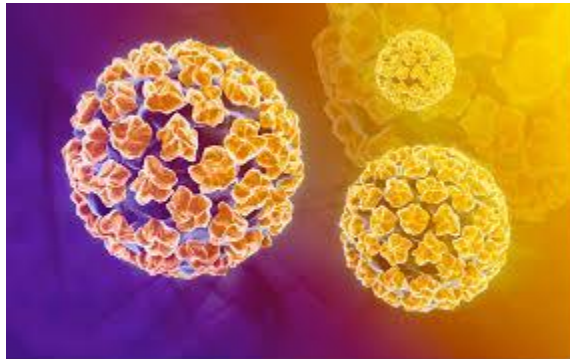


Great Staff - Great Care - Great Future

Hull and East Yorkshire Hospitals
NHS Trust



Bugs –a -Plenty



HPV now
showing at
a probe
face near
you!

Background

- US increasingly utilised as an imaging modality in a diversity of care environments
- Each ultrasound procedure involves contact between an ultrasound transducer and the patient's skin, mucous membranes, or sterile tissues

Background

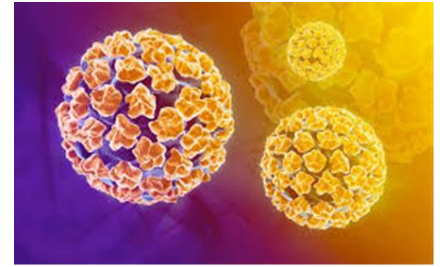
- Failure to adhere to minimum infection control standards, including the proper cleaning and reprocessing of the equipment and transducers, increases the risk of pathogen transmission and subsequent infection.

Guidelines

- 'Guidelines for Professional Ultrasound Practice', (Dec 2016) Section 1.7, page 15. This is available to download from the SCoR or BMUS websites
- 'Guidance for the decontamination of semi-critical ultrasound probes, semi-invasive and non-invasive ultrasound probes' NHS Scotland (March 2016)
<http://www.hps.scot.nhs.uk/documents/hai/infection-control/guidelines/NHSScotland-Guidance-for-Decontamination-of-Semi-Critical-Ultrasound-Probes.pdf>
- The following published information (2014) applies to Wales. Welsh Health Technical Memorandum 01-06.
<http://www.wales.nhs.uk/sites3/Documents/254/WHTM%2001%2D06%20Part%20C.pdf>
- Guidelines for Reprocessing Ultrasound Transducers AJUM February 2017 20 (1) © 2017 Australasian Society for Ultrasound in Medicine and the Australasian College for Infection Prevention and Control
- AND MANY MORE



Read the facts!



- Centers for Disease Control and Prevention (CDC). *Pseudomonas aeruginosa* Respiratory Tract Infections Associated with Contaminated Ultrasound Gel Used for Transesophageal Echocardiography— Michigan, December 2011–January 2012 (Morbidity and Mortality Weekly Report No. 61(15);262-264); 2012. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6115a3.htm>
- Cheng A, Sheng W-H, Huang Y-C, Sun H-Y, Tsai Y-T, Chen M-L, et al. Prolonged postprocedural outbreak of *Mycobacterium massiliense* infections associated with ultrasound transmission gel. *Clin Microbiol Infect* 2016; 22: 382.e1–11.
- Chittick P, Russo V, Sims M, Robinson-Dunn B, Oleszkowicz S, Sawarynski K, et al. An outbreak of *Pseudomonas aeruginosa* respiratory tract infections associated with intrinsically contaminated ultrasound transmission gel. *Infect Control Hosp Epidemiol* 2013; 34: 850–3.
- Gaillot O, Maruejols C, Abachin E, Lecuru F, Arlet G, Simonet M, et al. Nosocomial outbreak of *Klebsiella pneumoniae* producing SHV-5 extended-spectrum b-lactamase, originating from a contaminated ultrasonography coupling gel. *J Clin Microbiol* 1998; 36: 1357–60.
- Jacobson M, Wray R, Kovach D, Henry D, Speert D, Matlow A. Sustained endemicity of *Burkholderia cepacia* complex in a pediatric institution, associated with contaminated ultrasound gel. *Infect Control Hosp Epidemiol* 2006; 27: 362–6.
- Nannini EC, Ponessa A, Muratori R, Marchiaro P, Ballerini V, Flynn L, et al. Polyclonal outbreak of bacteremia caused by *Burkholderia cepacia* complex and the presumptive role of ultrasound gel. *Braz J Infect Dis* 2015; 19: 543–5.
- Olshtain-Pops K, Block C, Temper V, Hidalgo-Grass C, Gross I, Moses AE, et al. An outbreak of *achromobacter xylosoxidans* associated with ultrasound gel used during transrectal ultrasound guided prostate biopsy. *J Urol* 2011; 185: 144–7.
- Organ M, Grantmyre J, Hutchinson J. *Burkholderia cepacia* infection of the prostate caused by inoculation of contaminated ultrasound gel during transrectal biopsy of the prostate. *Can Urol Assoc J* 2010; 4: E58–60.
- Weist K, Wendt C, Petersen LR, Versmold H, R uden H. An outbreak of pyoderma among neonates caused by ultrasound gel contaminated with methicillin-susceptible *Staphylococcus aureus*. *Infect Control Hosp Epidemiol* 2000; 21: 761–4.



Or the tabloids!



Actor reveals to the Guardian that HPV, was responsible for his throat cancer

Mechanisms of infection

Endogenous infection

- Endogenous infection occurs as a result of breakdown of a normal barrier, thereby allowing the patient's own flora to access a normally sterile site. This can occur during ultrasound-assisted biopsy and other procedures where normally sterile sites are accessed.
- This mode of infection is an intrinsic risk in the collection of a biopsy from an ordinarily sterile site and is not related to the cleaning, disinfecting or sterilising of ultrasound equipment.

Mechanisms of infection

Exogenous infection

- Exogenous infection results from an organism extrinsic to the patient's own microbiota. Disinfection and cleaning procedures are intended to prevent this type of infection.

Agents potentially transmitted by ultrasound procedures

- Staphylococcus aureus (including Methicillin-Resistant S. aureus (MRSA))
- Vancomycin-Resistant Enterococci (VRE)
- Multi-resistant gram-negative organisms (MRGN)
- Carbapenem-resistant enterobacteraciae (CRE)
- Mycobacterium tuberculosis complex (MBTC)
- Clostridium difficile
- Neisseria gonorrhoeae, Chlamydia trachomatis, Treponema pallidum (syphilis), Mycoplasma genitalium
- Human herpes virus 1 (HHV1) and human herpes virus 2 (HHV2)
- Human papilloma viruses (HPVs)

Recommended cleaning and disinfection procedures

- Low Level Disinfection (LLD)
- High Level Disinfection (HLD)

Recommended cleaning and disinfection procedures

- Cleaning is an essential prerequisite for all LLD and HLD processes.
- Organic residue may prevent the disinfectant from contacting all surfaces of the medical device being processed and may also bind and inactivate chemical disinfectants
- Get rid of the gel!

LLD or HLD

Table 2: Reference guide to cleaning ultrasound transducers in the Radiology Department.

Transducer	Procedure	Use of transducer cover	Recommended cleaning method Low-Level Disinfection (LLD) or High-Level Disinfection (HLD)
External	Intact skin	No	LLD
	Open wound, for example ulcers	Yes	HLD
	Intact infected skin	No	HLD
		Yes	HLD*
External* Needle-guided procedures	MSK injection	Yes	HLD*
	Joint aspiration; abscess drainage; foreign body removal; suprapubic bladder tap; nerve block	Yes	HLD*
	Peripheral IV line insertion	Yes	HLD*
	CVC / PICC insertion	Yes	HLD*
	Pleural tap, ascites tap or drainage	Yes	HLD
Intracavity	Transvaginal	Yes	HLD
	Transrectal / TRUSS	Yes	HLD
Intraoperative		Yes	HLD

LLD or HLD

Table 3: Reference guide to cleaning ultrasound transducers in the O&G Department.

Transducer	Procedure	Use of transducer cover	Recommended cleaning method Low-Level Disinfection (LLD) or High-Level Disinfection (HLD)
External	Intact skin	No	LLD
	Non-intact skin	Yes	HLD
External* Needle-guided procedure	Amniocentesis CVS Suprapubic bladder tap for urine retention	Yes	HLD*
Intracavity	Transvaginal	Yes	HLD
Intraoperative		Yes	HLD

*LLD can be performed if the transducer is classified as non-critical. Non-critical transducers do not contact non-intact skin, blood or mucous membranes. If the transducer comes in direct contact with non-intact skin, blood or mucous membranes transducers should be cleaned with HLD irrespective of the use of a transducer cover. If transducer cover is broken during a procedure, then HLD must be performed.

Low-level disinfection (LLD)

Manually remove all ultrasound gel prior to cleaning.

(a) Clean transducer using a TGA-approved disposable cleaning wipe or system intended for use on medical devices.

Or

(b) Clean transducer using freshly made up solution of cleaning agent at the correct concentration. Rinse thoroughly under running water to remove cleaning agent residues.

Dry using a single-use low linting cloth.

High Level Disinfection (HLD)

Following LLD , transducers must undergo high-level disinfection (HLD) using a TGA-approved instrument grade disinfection method following the manufacturer's instructions for use (IFU).

Methods of high-level disinfection include, but may not be limited to, the following:

- (a) Liquid high-level instrument grade chemical disinfectants
or
- (b) Automated high-level disinfection systems, for example chemical or light-based
or
- (c) High-level instrument grade disinfectant wipes.

Rinsing / neutralisation is an important step POST HLD

HLD – The next steps

- Storage
 - After cleaning, all transducers must be stored in an appropriate environment to protect from environmental contamination
- Traceability (as a minimum to include:)
 - Date of reprocessing;
 - Type of transducer and unique identification number, e.g. the serial number;
 - Person responsible for the cleaning and disinfection
 - Batch numbers and expiry dates of the disinfectant

Other considerations

- Any equipment that has been in contact with the patient or operator should be cleaned with a detergent / disinfectant wipe or solution between use
- Workflows should promote best practice to reduce risk of contamination of clean areas with contaminated equipment.

Other Considerations

- Every patient must be regarded as a potential source of harmful microorganisms, and appropriate precautions should be taken to prevent cross-infection



Other Considerations

- All intracavity transducers should be covered with a single-use high-quality transducer cover.
- PPE to be worn
- PPE to be changed between procedure, LLD and HLD processes

Ultrasound Gel Recommendations

- Due to the risk of bacterial contamination and growth within a warm environment, heating of gel is **not** recommended. In circumstances where warm gel is necessary, the use of dry heat preferred
- Ensure reusable dispenser bottles are completely emptied, thoroughly washed and dried daily / weekly according to your facility's infection control practices
- Clean all reusable equipment according to the manufacturer's instructions
- For procedures that require the use of sterile gel, ensure that only unopened containers / sachets labelled 'sterile' are used
- Single-use sterile gel packets must be discarded and not reused

Bugs –a – Go Go Gone



HPV - No
longer
showing at a
probe face
near you!

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Thanks & Acknowledgements

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