Technologies to improve our practice

Safe scanning: the ultrasound unit & infection control

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Have you come across this?
Would you use a probe cover on this patient?
This is MRSA - (Methicillin Resistant *Staphylococcus aureus*)

MRSA is contagious & may remain viable on surfaces for between **two to six months** if they are not washed or sterilized

**USE A PROBE COVER ➔ HLD POST SCAN**

If there are viable MRSA bacteria on objects or a person then there is potential for transmission of infection.

MRSA may affect lungs, bones, joints, bloodstream
Is your patient infectious?

If you don’t know the infectious state of a patient with a rash then

USE A PROBE COVER OR HLD POST SCAN
The entire ultrasound unit is a potential source of infection

Bacterial contamination can be present on the transducer, cord and connector, keyboard, gel bottle and unit handles (Westerway Basseal, Hyett: UMB 2017)

The pooled risk of cross infection via ultrasound probes has been estimated at 3.1% of patients (Leroy 2013)
Transvaginal Transducer

Can be contaminated with genital secretions such as cytomegalovirus, Hepatitis B, herpes simplex virus, HPV, HIV, *Neisseria gonorrhoea, C. trachomatis, T. vaginalis*, PID

**Can remain infectious for days** especially if kept moist in blood or serum

→ vector for transmission of infections to endometrial cavity
  - may result in endometritis & infertility.
What can you do about infection control?

[Image of a patient on a bed and a person with a Lego figure cooking with pots and pans]
Only use a clean probe

All ultrasound examinations should be performed with **AN APPROPRIATELY DISINFECTED** transducer.

If an intra cavity /operative scan is to be performed then ensure that the probe has undergone **HLD PRIOR** to use.
Definitions

Cleaning - removal of gross contamination eg gel
Disinfection - using an appropriate germicidal product
Sterilization - destroys viral capsids / bacterial spores

Spaulding Medical device classification

Non-critical - LLD probes used on clean intact skin
Semi-critical - HLD probes used for: surface probes on infected skin or open wounds
- intracavity scans, probes in contact with blood or body fluid
Critical - HLD probes used for intraoperative procedures
Cleaning products:

• Important to follow manufacturers instructions for use (IFU)

Breaches → Infection / cross-contamination

• LLD may not be sufficient for probes used in high-risk settings, even if probe covers are used. eg. neonatal intensive care

• Types of HLD: automated systems, wipes, chemical soaking
Reprocessing Ultrasound Probes

- **Efficient disinfection** will significantly reduce the risk of cross-contamination for the ultrasound patient.
- Analysis of relevant international guidelines show a common sequence for best practice.
Reprocessing Step 1:

• Remove visual contamination (e.g., gel) from the transducer with paper or cloth or water and non-foaming detergent

• Ensure all grooves & crevices are cleaned

• Organic residue may prevent the disinfectant from contacting all surfaces – may bind & inactivate the disinfectant

Transducers do not need to be visibly soiled to be contaminated with bacterial spores or viral capsids
Step 2: LLD on EVERY Probe

• Perform low level disinfection by using a detergent / germicidal product to remove bacterial & viral contamination
  If using a wipe → friction needed to help decontamination process
• Quaternary ammonium compounds & phenolics are not effective against non-enveloped viruses, fungi or bacterial spores
• Alcohol wipes are not germicidal & may negate probe warranty
Step 3: HLD

All probes that come in contact with:

- Infected skin
- Blood or other body fluids
- Mucous membranes  eg TV scans
- Intra-operative procedures

Should undergo steps 1 & 2 then cleaned with HLD

- HLD includes approved wipe system, chemical soaking or automated
Flow Chart for Infection Control in O&G Practice

Use an appropriately cleaned probe

- Trans-abdominal scan
  - Intact skin
    - Non-critical
  - Intact infected skin
    - Semi-critical
- Trans-vaginal
  - Mucous membranes
    - Open wounds - critical

Probe cover

- Yes
- No

Risk of blood / body fluid contamination

- Yes a risk
- No risk

Low level disinfection
Ensure all grooves are cleaned of gel prior to LLD

High level disinfection
Ensure all grooves are cleaned of gel prior to HLD

All cleaning & disinfection products must be approved by the regulatory body.
All transducers must be cleaned according to manufacturers instructions

Westerway & Basseal 2017
Adenosine Triphosphate (ATP)

ATP is a molecule found in and around living cells
- gives a direct measure of biological concentration
- the amount of ATP present in a sample is directly proportional
to the light produced through its reaction with the naturally
occurring firefly enzyme luciferase

Luminometer - measures actively growing microorganisms by detecting ATP
Improving surface cleanliness of patient ready ultrasound equipment

Susan Campbell Westerway PhD, Jocelyne Basseal PhD, Greg Whiteley PhD, Trevor Glasbey PhD, Paul Fahey MMedStat

ATP testing was performed on 250 patient ready surfaces across 5 hospital ultrasound departments

- 19% of swabbed surfaces demonstrated a lack of cleanliness with high ATP readings
- cleaning standards significantly improved on 91% of these ‘unclean’ surfaces by re-cleaning with an LLD disposable pH neutral detergent wipes
- 6% of those surfaces needed repeated cleaning to achieve an acceptable level of cleanliness

Low-level disinfection such as Ph neutral detergent wipes;
- validated role in the cleaning process in ultrasound practice
- cleans away ATP rich surface residue that may harbour bacteria or virus
- ensure all gel is removed from probe prior to LLD

LLD wipes will not replace the need for HLD of transducers that have come into contact with mucous membranes, blood or body fluids
Infection Control in O&G Ultrasound Practice

Only you can break the chain!
The 17th World Federation for Ultrasound in Medicine and Biology Congress
hosted by the Australasian Society for Ultrasound in Medicine

ASUM2019

ULTRASOUND WORLD CONGRESS 2019 MELBOURNE
5 – 9 September 2019
Melbourne Convention & Exhibition Centre Melbourne, Australia

KEY DATES

3 September 2018 Call for abstracts opens
3 December 2018 Registration opens
1 March 2019 Abstract submission deadline
1 May 2019 Early bird registration deadline

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