# Reprocessing of Ultrasound Transducer Probes

## Purpose

The purpose of this procedure is to provide medical imaging (MI) staff with a process for low-level and high-level disinfection for reusable non-critical and semi-critical ultrasound transducer probes to prepare for safe reuse on another patient.

## Site Applicability

This procedure is applicable to all MI departments with a satellite reprocessing area within Fraser Health (FH) and Vancouver Coastal Health (VCH).

## Practice Level

| Profession: | Responsibilities: |
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| Sonographer and all MI Staff | • Appropriately perform low-level or high-level disinfect processes to non-critical and semi-critical ultrasound transducer probes after use. Appendix A: Ultrasound Probe Clean and Disinfection Decision Tree |

## Requirements

It is the responsibility of sonographers and MI staff to ensure compliance with this procedure. Staff must complete continuing competency and testing requirements prior to performing any of the steps of reprocessing. (eg: pre-cleaning, cleaning, high-level disinfection, storage and transportation)

## Procedure

Table 1: **High Level Disinfection of Ultrasound Probe**

| Step | Action |
|---|---|
| **Pre-Cleaning** | 1. **Remove** gross soil and gel from transducer with a cloth immediately after procedure at point-of-use.<br>2. **Clean** transducer with accelerated hydrogen peroxide wipe using force & friction (rub/scrub) motion to remove any foreign matter starting from the least contaminated area to the most contaminated area (i.e. cable to end of transducer). Discard wipe.<br>3. **Disinfect** transducer with a second accelerated hydrogen peroxide wipe using force & friction(rub/scrub) motion. Allow for disinfection contact time, as indicated on package. |
| **Transportation** | Transport pre-cleaned item to a designated reprocessing location in a clean and covered container or wrapped in a clean towel. The container or designated area of where the soiled probe will be place must be labeled "soiled" or "contaminated". |
| **Perform Hand Hygiene & Don PPE** | In this order:<br>1. **Perform Hand Hygiene:** Clean all surfaces of hands and wrists.<br>2. **Don Gown:** Must be level 2 or 3 and fully cover torso from neck to knees, arms to wrists. Fasten ties at the back of neck and at the waist.<br>3. **Don Face and Eye protection:** Goggles, full face shield, or visor attached to mask are all acceptable methods. |

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| | If using a face shield/visor, it should fit over the brow.<br>Prescription or fashion eyeglasses do not offer sufficient eye protection.<br>Place over face and eyes, adjust to fit.<br>4. **Don Gloves:** Extend over the cuffs of the gown. |
| **Manual Cleaning** | **1.** If it is not possible to clean the transducer with an enzymatic detergent as soon as possible after use, it must be kept moist by enclosing it in a wet towel until it can be manually cleaned. The probe must be placed in a designated area where is it visibly distinguished that the probe is soiled/dirty.<br>**2. Clean** with Revital-Ox Enzymatic Sponge using force and friction.<br>**3. Rinse** the detergent off the probe with utility water. (tap water)<br>**4. Drain** excess water. |
| **Drying** | **Dry** probe thoroughly by wiping off moisture with a clean, dry, lint-free, soft absorbent cloth |
| **Chemical High-Level Disinfection** | **1.** Move clean, dry transducer to designated location for high-level disinfection<br>**2.** Confirm minimum effective concentration (MEC) of Revital-Ox solution with test strip (See Quality Testing of Revital-Ox Resert Test Strips and Solution)<br>**3.** Ensure that the temperature of the HLD Solution (Revital-Ox Resert) is ≥ 20°C<br>**4.** Place the transducer in Revital-Ox Resert solution and set a timer for 5 minutes. |
| **Low-Level Disinfect Dirty Sink** | Low-level disinfect 'dirty' sink with accelerated hydrogen peroxide wipe and allow for appropriate contact time as indicated on package to complete low-level disinfection. Allow to dry prior to reusing. |
| **Doff PPE**<br>**Perform Hand Hygiene** | In this order:<br>1. **Doff Gloves:**<br>- Pinch the outer glove surface and remove the first glove; hold this in your gloved hand.<br>- Slide fingers of ungloved hand under the other glove at the wrist.<br>- Peel glove over wrist and discard.<br>2. **Perform Hand Hygiene:** Clean all surfaces of hands and wrists.<br>3. **Doff Gown:**<br>- Unfasten ties.<br>- Cross your arms and pull the gown away from your neck and shoulders.<br>- Turn the gown inside out and roll the gown into a bundle and discard in soiled linen cart (cloth) or regular waste (disposable).<br>4. **Perform Hand Hygiene:** Clean all surfaces of hands and wrists<br>5. **Doff Face and Eye Protection:**<br>The outer surface may be contaminated.<br>- When removing goggles/face shield, handle only the sides/elastic band<br>**Disposable:** Discard in regular waste.<br>**Resusable**: Set aside: Once doffing complete, clean and disinfect fro the inside out with wipe. Allow 1 minute wet contact time. Rinse with water. Air dry.<br>6. **Perform Hand Hygiene:** Clean all surfaces of hands and wrists. |

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| **Document Ultrasound Probe Reprocessing** | Document the following on (Appendix B: Ultrasound Probe High Level Disinfection Reprocessing Record)<br>a. Date<br>b. Patient Name<br>c. Patient MRN<br>d. Type of procedure<br>e. Type of Probe<br>f. Probe identifier<br>g. HLD Method<br>h. MEC<br>i. Time probe is placed in solution<br>j. Initials of person performing HLD |
| **Perform Hand Hygiene & Don PPE** | In this order:<br>1. **Perform Hand Hygiene:** Clean all surfaces of hands and wrists.<br>2. **Don Gown:** Must be level 2 or 3 and fully cover torso from neck to knees, arms to wrists. Fasten ties at the back of neck and at the waist.<br>3. **Don Face and Eye protection:** Goggles, full face shield or visor attached to the mask are all acceptable methods.<br>If using a face shield/visor, it should fit over the brow.<br>Prescription or fashion eyeglasses do not offer sufficient eye protection.<br>Place over face and eyes, adjust to fit.<br>4. **Don Gloves:** Extend over the cuffs of the gown. |
| **Clean Rinse**<br>(choose the most appropriate option for the reprocessing area) | Option 1: Reprocessing area with 1 sink:<br>**1.** After 5 minutes, fill one graduated container with water from a submicron filter and place it on a designated clean surface/area<br>**2.** Take the transducer out of the GUS unit<br>**3.** Soak the probe in the one graduated container and set timer for 1 minute<br>**4.** After 1 minute, remove the transducer<br>**5.** Dry the probe<br>**6.** Attach 'Clean' label with date and time of reprocessing to probe and place on rack in a cupboard (dedicated, closed, HEPA filter cabinet) or place a clean cover on the probe<br>**7.** Document the time the probe was taken out of the GUS container on Appendix B: Ultrasound Probe High Level Disinfection Reprocessing Record |
| | Option 2: Reprocessing area with 2 sinks:<br>**1.** After 5 minutes, take the transducer out of the GUS unit and place it in the designated "clean" sink<br>**2.** Fill one graduated container with water from a submicron filter<br>**3.** Soak the probe in the graduated container and set time for 1 minute.<br>**4.** After 1 minute, remove the transducer<br>**5.** Dry the probe<br>**6.** Attach 'Clean' label with date and time of reprocessing to probe and place on rack in a cupboard (dedicated, closed, HEPA filter cabinet) or place a clean cover on the probe<br>**7.** Document the time the probe was taken out of the GUS container on Appendix B: Ultrasound Probe High Level Disinfection Reprocessing Record |

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| **Clean Containers and Clean Sink** | **1.** Discard rinse water from graduated container<br>**2.** Low level disinfect the containers and 'clean' sink with accelerated hydrogen peroxide wipe and allow for appropriate contact time as indicated on package to complete low-level disinfection. Allow to dry prior to reusing. |
| **Doff PPE**<br>**Perform Hand Hygiene** | In this order:<br>1. **Doff Gloves:**<br>- Pinch the outer glove surface and remove the first glove; hold this in your gloved hand.<br>- Slide fingers of ungloved hand under the other glove at the wrist.<br>- Peel glove over wrist and discard.<br>2. **Perform Hand Hygiene:** Clean all surfaces of hands and wrists.<br>3. **Doff Gown:**<br>- Unfasten ties.<br>- Cross your arms and pull the gown away from your neck and shoulders.<br>- Turn the gown inside out and roll the gown into a bundle and discard in soiled linen cart (cloth) or regular waste (disposable).<br>4. **Perform Hand Hygiene:** Clean all surfaces of hands and wrists<br>5. **Doff Face and Eye Protection:**<br>The outer surface may be contaminated.<br>- When removing goggles/face shield, handle only the sides/elastic band<br>**Disposable:** Discard in regular waste.<br>**Resusable**: Set aside: Once doffing complete, clean and disinfect fro the inside out with wipe. Allow 1 minute wet contact time. Rinse with water. Air dry.<br>6. **Perform Hand Hygiene:** Clean all surfaces of hands and wrists. |
| **Final Step** | At the end of the day, it is recommended that all graduated containers are taken to MDRD for terminal cleaning. If MDRD services are not available at your site, low level disinfect the containers at a minimum. |

Table 2: **Low-Level Disinfection of Ultrasound Probe**

| Step | Action |
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| **Remove Gross Soil** | Immediately after use, remove gross soil by wiping transducer with clean lint-free cloth |
| **Clean** | **1.** Clean transducer with accelerated hydrogen peroxide wipe using force & friction (rub/scrub) motion to remove any foreign matter starting from the least contaminated area to the most contaminated area (i.e. cable to end of transducer).<br>**2.** Discard wipe |
| **Disinfect** | **1.** Disinfect transducer with a second accelerated hydrogen peroxide wipe using force & friction(rub/scrub) motion from the cable to end of the transducer<br>**2.** Ensure appropriate contact time as indicated on package to complete low level disinfection to dry prior to reusing<br>**3.** Discard the wipe |
| **Drying** | Allow probe and cable to air dry to complete the disinfection process |

## Related Documents

### Related Policies

- RSA-SOP 0100 Work area design
- RSA–SOP: 0200 Pre-Cleaning Work Instruction
- RSA–SOP: 0400 Transportation of Soiled Reusable Medical Devices and Equipment
- RSA–SOP: 0500 Cleaning Reusable Medical Devices and Equipment
- RSA-SOP 0900 External, endocavitary and transesophageal (TEE) ultrasound probes

### Guidelines/Procedures/Forms

- Quality Testing of Revital-Ox Resert Test Strips and Solution

## References

BC Ministry of Health (2011) *Best practice guidelines for cleaning, disinfection and sterilization of criticaland semi-critical medical devices in BC Health authorities.* https://www.health.gov.bc.ca/library/publications/year/2011/Best-practice-guidelines-cleaning.pdf

Canadian Standards Association / National Standard of Canada (2023) *CAN/CSA Z314:23 Canadian medical device reprocessing in all health care settings.* Retrieved from: https://subscriptions.techstreet.com/products/945583

Vancouver Coastal Health (2019) *Infection prevention and control*. Retrieved from: http://ipac.vch.ca/

Vancouver Coastal Health (2023) *Reprocessing practice improvement program.* Retrieved from: https://one.vch.ca/dept-project/quality-and-patient-safety/RPIP/Pages/default.aspx

General Electric Co. (2020). *Logiq E10 instruction for use.* Retrieved from: https://customer-doc.cloud.gehealthcare.com/copyDoc/5750001-1EN/4

## Definitions

**Non-critical medical devices**: External probes used for skin surface imaging (ie, abdominal, pelvic, needle guided procedures) that only come into contact with intact skin. These devices require cleaning followed by low-level disinfection. If MI staff anticipates the non-critical external probe will come in contact with non-intact skin (ie. abrasions, lesions, dermatitis etc.), a sterile probe cover shall be used during the ultrasound examination. The probe can be low-level disinfected following the procedure.

**External ultrasound probes:** Probe that come in contact with intact skin

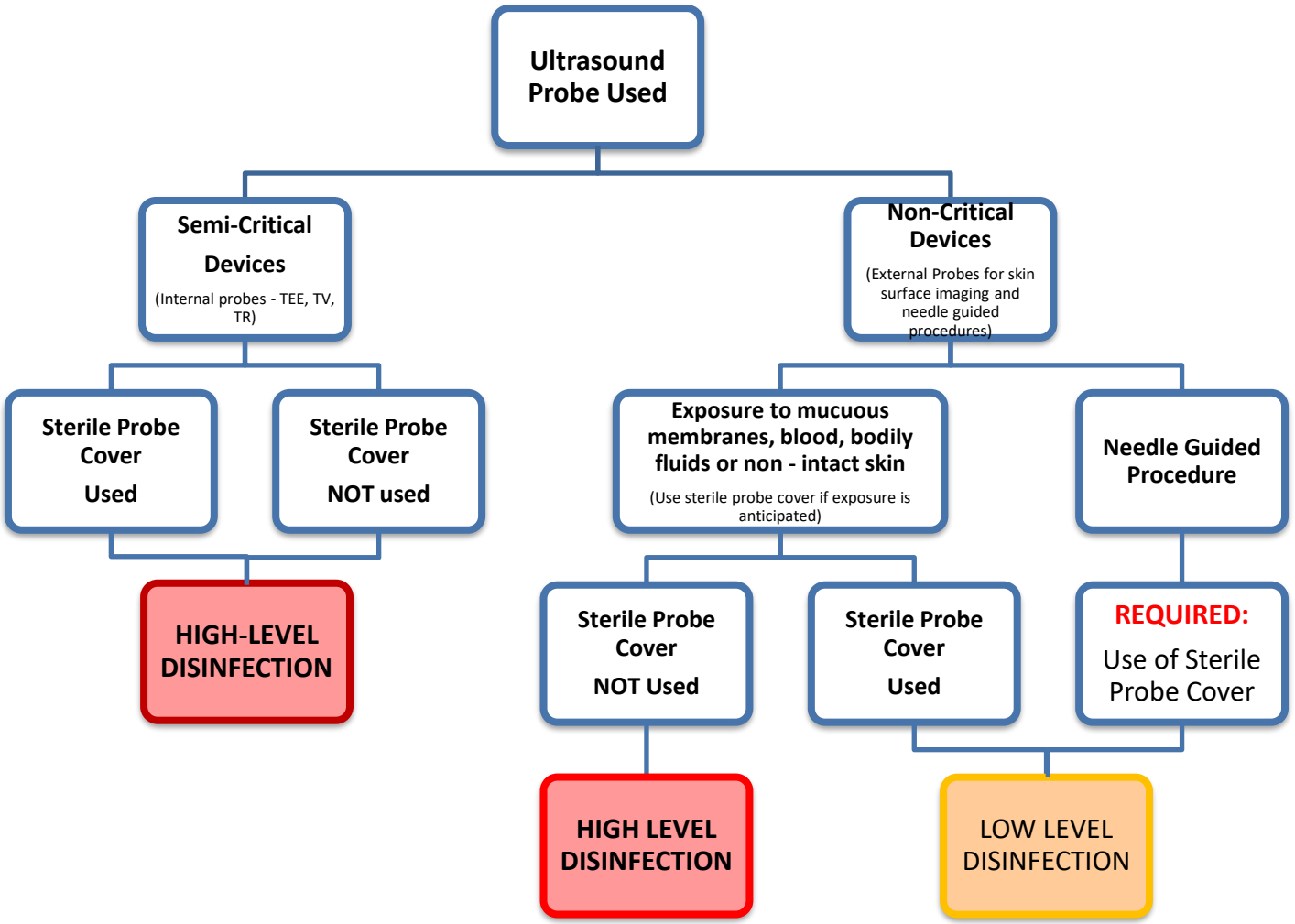
**Semi-critical medical devices**: Internal probes used for endocavitary imaging (ie. Vaginal, rectal, transesophageal, intraoperative, intravascular). These devices require a sterile probe cover and must be cleaned and high-level disinfected at the end of the procedure. Semi-critical medical devices may be sterilized if validated by the device manufacturer.

**Internal ultrasound probes:** Probe that come in contact with mucous membranes

## Appendices

- Appendix A: Ultrasound Probe Clean and Disinfection Decision Tree
- Appendix B: Ultrasound Probe High Level Disinfection Reprocessing Record

## Appendix A: Ultrasound Probe Clean and Disinfection Decision Tree



## Appendix B: Ultrasound Probe High Level Disinfection Reprocessing Record

| Date | Patient Name / Patient MRN | Type of Procedure | Type of Probe / Probe Identifier | HLD Method | MEC | HLD Temperature Min. 20°C *(Revital-Ox only)* | Start Time of HLD | Initials | End time of HLD | Initials |
|---|---|---|---|---|---|---|---|---|---|---|
| *01-Jan-24* | *Example Name* / *12345678* | *EV* | *Ultrasound* / *18* | Revital-Ox | ☑ Pass ☐ Fail | *21°C* | *12:00pm* | *E.N.* | *12:05pm* | *E.N.* |
| | | | *Ultrasound* | Revital-Ox | ☐ Pass ☐ Fail | | | | | |
| | | | *Ultrasound* | Revital-Ox | ☐ Pass ☐ Fail | | | | | |
| | | | *Ultrasound* | Revital-Ox | ☐ Pass ☐ Fail | | | | | |
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| **First Released Date:** | 16-FEB-2024 | | |
| **Posted Date:** | 27-FEB-2024 | | |
| **Last Revised:** | 01-MAR-2024 | | |
| **Last Reviewed:** | 01-MAR-2024 | | |
| **Approved By:** | Ultrasound & Echo Regional Practice Lead | VCH RPIP | FHA MDR |
| | 07-FEB-2024 | 15-DEC-2023 | 08-JAN-2024 |
| **Owners:** | Ultrasound and Echocardiography Regional Practice Lead, MI | | |

| **Revision History:** | **Version** | **Date** | **Description/ Key Changes** | **Revised By** (Name and Position) |
|---|---|---|---|---|
| | 1.0 | 4-OCT-2019 | Initial release of HLD/LLD of US transducers & Log of Disinfection of transducers | Brent Barton, US & Echo RPL |
| | 2.0 | 16-FEB-2024 | Amalgamate and revise outdated original document & forms and put into SHOP format (assign SHOP#) | Catherine Lo, Ultrasound and Echocardiography Reg Practice Lead |
| | 3.0 | 01-MAR-2024 | Remove Link to IPAC Routine Practices and replace with specific instructions on hand hygiene and donning/ doffing PPE | Catherine Lo, Ultrasound and Echocardiography Reg Practice Lead |