UCSF Health

Guidelines for Use and Care of Ultrasound Transducer Gel

Purpose:

To minimize the risk of healthcare-associated infections associated with contamination of ultrasound transducer gel and to provide guidance on shelf life, storage requirements, and the use of appropriate gel types based on the procedures performed.

References:

American Institutes of Ultrasound in Medicine: Guidelines for Cleaning and Preparing External- and Internal-Use Ultrasound Transducers Between Patients, Safe Handling, and Use of Ultrasound Coupling Gel, last approved. Dec 5, 2022.

CDC: MMWR April 20, 2011/61(15); 262-264: Pseudomonas aeruginosa Respiratory Tract Infections Associated with Contaminated Ultrasound Gel Used for Transesophageal Echocardiography — Michigan, December 2011–January 2012.

Tunstall, T. (2010), Infection Control in the Sonography Department, Journal of Diagnostic Medical Sonography, vol. 26, 4: pp. 190-197.

SOCIETY OF DIAGNOSTIC MEDICAL SONOGRAPHY Guidelines for Infection Prevention and Control in Sonography: Reprocessing the Ultrasound Transducer. Revised May 20, 2020.

Outbreak of Burkholderia stabilis Infections Associated with Contaminated Nonsterile, Multiuse Ultrasound Gel — 10 States, May–September 2021

Definitions:

- **Point-of-Care Ultrasound:** Portable ultrasound machines used at the bedside for diagnostic or therapeutic applications
- **US:** Ultrasound
- **Ultrasound transducer or probe**: a handheld device used in medical imaging to emit and receive high-frequency sound waves.
- **Intact Skin:** Skin is not broken; no wounds, punctured skin, or tissue
- **Non-Intact Skin:** Skin is broken or punctured; there is contact with mucous membranes
- **Bacteriostatic:** Capable of inhibiting the growth or reproduction of bacteria.
- **Contamination**: unintended introduction of microorganisms (e.g., bacteria, viruses, or fungi) into the gel or the container.

Guidelines

This guideline applies to all UCSF Medical Center locations, including inpatient and outpatient services that use, handle, and/or store ultrasound transducer gel.

A. Sterile, Single-Use Ultrasound Gel

1. Contains a bacteriostatic agent and is labeled as “sterile.”
2. Sterile ultrasound gel is no longer considered sterile once it is opened.

3. Discard any unused gel to prevent accidental reuse.
4. Sterile ultrasound gel must be used:
    a. In preparation for or during percutaneous procedures (e.g., placement of central or peripheral intravascular lines, amniocentesis, paracentesis, tissue biopsy, and surgical procedures)
    b. Procedures performed on nonintact skin or near fresh surgical sites
    c. All ultrasound examinations or procedures performed in the BCH-San Francisco Intensive Care Nursery (ICN)
    d. Any procedure where the probe may contact sterile tissue, regardless of setting
5. Sterile gel is preferred for procedures involving contact with mucous membranes such as procedures involving endocavitary (e.g., esophageal, gastric, rectal, vaginal) ultrasound probes.
6. Sterile single-use gel must be discarded immediately after use, regardless of the amount remaining in the packet, or by the manufacturer's printed expiration date—whichever comes first. Discard any opened gel packets that were left unattended or not witnessed being opened.

B. Non-Sterile, Single-Use Ultrasound Gel

1. Non-sterile ultrasound gel does not contain bacteriostatic agents and is labeled as "non-sterile".
2. Single-use gel packets are preferred over multi-use containers.
3. Although sterile gel is preferred for procedures involving contact with mucous membranes such as procedures involving endocavitary (e.g., esophageal, gastric, rectal, vaginal) ultrasound probes, use of non-sterile, single-use gel packets is acceptable unless procedures meet the criteria for sterile ultrasound gel use described above.
4. Non-sterile, single-use gel packets must be discarded immediately after use regardless of the amount remaining in the packet or by the manufacturer's printed expiration date, whichever comes first. Discard any opened gel packets that were left unattended or not witnessed being opened.

C. Non-Sterile, Multi-Use Ultrasound Gel Containers

1. Non-sterile, multi-use gel should only be used on intact skin for procedures that do not meet the criteria for use of sterile or non-sterile, single-use gel described above.
2. Avoid direct contact between the gel container tip and any persons or instrumentation, including the ultrasound probe, as this can contaminate the contents of the bottle. If the tip of the container is contaminated, discard the container.
3. Discard multidose containers when empty, if the integrity of the bottle is compromised (e.g., cracked, broken cap), or the tip of the container is contaminated
4. Containers should not be refilled or topped off with opened bottles of gel.
5. Multi-use gel should be discarded by the manufacturer's printed expiration date.
6. Between patients, wipe the outside of the containers with a hospital-approved disinfectant. The container should be kept closed when not in use.

D. Ultrasound procedures for patients on Transmission-Based isolation precautions (i.e., Contact, Enteric Contact, Airborne, Droplet, or Novel Respiratory Isolation).

1. Use single-use ultrasound gel packets for patients on Transmission-Based isolation. If single-use packets are unavailable and a multi-use container must be used, the container should be discarded after use.

E. Do not use bulk gel containers due to the high risk of contamination.

F. Ultrasound Gel Warmers

1. Warm ultrasound gel may provide patient comfort but it can also create an ideal temperature to promote the growth of bacteria.
2. Use only dry heat to warm gel.
3. Warm the ultrasound gel only as needed, using a dry heat gel warmer. Do not leave it in the warmer continuously.
4. Multi-use gel containers should NOT be kept upside down in the warmers to prevent cross-contamination.
5. Departments that use gel warmers are responsible for cleaning and disinfecting them in accordance with the manufacturer's instructions for use (MIFU) and their department's specific policies and procedures (e.g., Radiology, Echo, EKG, clinics, and nursing units). Gel warmers must be stored in a designated clean area between uses. For additional information, refer to *Patient Care Equipment Cleaning: Inpatient, Ambulatory, and Diagnostic Testing Areas (Policy 6.2.0)*.

G. Storing Ultrasound Gel

1. Store US gel bottles in a clean, dry area, and protect from potential sources of contamination (e.g., dust, moisture, insects, rodents).
2. Remove bottles or packets from corrugated cardboard boxes and store in appropriate designated areas.
3. Discard US gel bottles if the expiration date has passed or if bottle integrity is compromised.

Table: Summary of Ultrasound Gel Recommendations

Procedures	Use Gel	Considerations
Ultrasound procedures performed: • in preparation for or during percutaneous procedures (e.g., placement of central or peripheral intravascular lines, amniocentesis, paracentesis, tissue biopsy, and surgical procedures) or • on nonintact skin or near fresh surgical sites	Use only sterile, single-use gel, even when sterile ultrasound probe covers are used	Sterile technique must be maintained throughout the procedure
Ultrasound procedures involving contact with mucous membranes (e.g., transvaginal, transrectal, transesophageal ultrasound)	Sterile, single-use gel preferred **OR** Non-sterile, single-use gel is acceptable	Aseptic technique must be maintained throughout the procedure.

Ultrasound procedures involving contact only with intact skin (e.g., external abdominal, obstetric, vascular ultrasound)	Non-sterile gel can be used Single-use gel preferred **OR** Multi-use gel containers are acceptable	Consider using single-use packets to minimize contamination risk, especially in high-risk areas. If a multi-use gel container is used, it must be handled in a manner that prevents contamination including dispensing the gel without backflow and avoiding any direct contact between the container and surfaces.

Questions about implementing this guideline should be directed to Hospital Epidemiology and Infection Prevention.

Author(s): HEIP, Ambulatory care services, and Radiology
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