CLINICAL STATEMENT | THE SAFE USE AND STORAGE OF ULTRASOUND GEL

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Summary

This revised clinical statement outlines current best practices for the safe use and storage of ultrasound gel in medical imaging. This update builds on the original 2021 publication, it incorporates updated evidence and international guidelines to support infection prevention and patient safety. The document provides clear recommendations for gel selection based on clinical risk, handling protocols for both sterile and non-sterile gel, safe warming practices, and appropriate storage conditions. It is intended to guide sonographers and other healthcare professionals in maintaining high standards of hygiene and care across diverse ultrasound procedures.

Why Safe Gel Use Matters

Ultrasound coupling gel plays an important role in ensuring clear imaging during ultrasound examinations. However, improper handling and storage of the gel can lead to contamination, posing significant infection risks to patients.[1] Contaminated gel has been implicated in outbreaks involving multidrug-resistant organisms such as *Staphylococcus aureus* and *Pseudomonas aeruginosa*.[2–8] Infections may occur through direct contact with non-intact skin or mucous membranes, or via cross-contamination from inadequately cleaned gel bottles and transducers.[1,7]

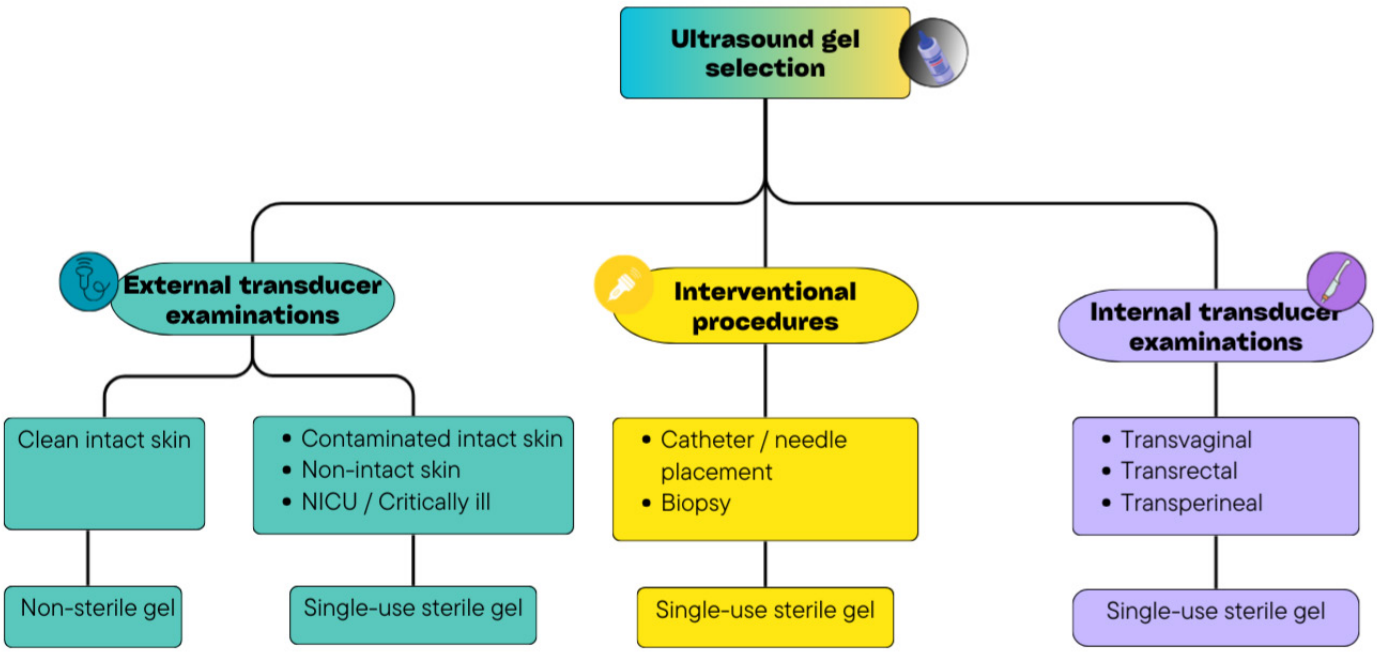
Ultrasound Gel: Recomendations for Safe Practice

Gel selection should align with the Spaulding classification, which categorises ultrasound procedures as non-critical, semi-critical, or critical based on infection transmission risk.[5,9,10] This framework supports informed decisions about when sterile gel is required.

To minimise risk:

- **Use sterile, single-use gel** for invasive procedures or when scanning open wounds.
- **Follow strict hygiene protocols** when handling multi-use gel containers.
- **Ensure thorough cleaning** of transducers between patients.
- **Avoid contact** between the gel bottle tip and the transducer or patient.
- **Maintaining high standards** in gel use and infection control is vital to patient safety and professional practice.

Spaulding classification	Ultrasound gel
Critical	Single-use, sterile gel only
Semi-critical	Single-use sterile gel (preferred), non-sterile single use gel
Non-critical	Multi-use non sterile gel (i.e., dispensed from gel bottle)



Use of Non-Sterile Gel in Low-Risk Ultrasound Examinations

Non-sterile ultrasound gel is suitable for low-risk procedures involving intact skin.[11] Apply sufficient gel to ensure effective acoustic coupling and image clarity, apply generously to eliminate air pockets between the transducer and skin.

When using multi-use gel bottles:

- Handle according to infection control protocols and follow workplace policy.[11]
- Avoid direct contact between the dispensing tip and the patient's skin.[9,11]
- Wipe the entire bottle, starting at the nozzle, with disinfectant before and after each use.[1,13]
- Keep bottles sealed when not in use to prevent contamination. [7]
- Inspect regularly for damage or leakage.
- Discard any gel that appears soiled. [9,15]

For patients under droplet or contact precautions, discard multi-use bottles after use. Alternatively, use single-use gel sachets to minimise cross contamination.[12]

The ASA advocates using multi-use gel bottles rather than refilling from bulk containers, to minimise contamination risks and maintain accurate batch traceability.

Sterile Gel: Best Practice for High-Risk Ultrasound Examinations

Sterile, single-use ultrasound gel is essential for procedures involving sterile tissues or non-intact skin. [3,12,14,16,17]

Sterile gel is suggested for:

- Biopsies
- Catheter insertions
- Scanning over open wounds [12,16]

In neonatal intensive care units (NICUs), and when imaging critically ill paediatric patients, sterile gel is strongly recommended to protect vulnerable populations. [12,14,15] The same applies in intensive care and high-dependency units, where the risk of cross contamination is elevated. [15]

To ensure patient safety:

- Follow established guidelines for sterile gel use.
- Discard any unused gel immediately after the procedure. [11,14]

Gel Warming: Balancing Comfort and Safety

Warming ultrasound gel can enhance patient comfort, but it must be managed carefully to avoid bacterial growth. Moist heat warmers, in particular, create an environment conducive to microbial contamination.[1] Improper storage or reuse of warmed gel bottles increases the risk of cross contamination.[1,14]

Routine gel warming is not recommended.[10,14] When clinically justified, dry heat is preferred due to its lower risk of microbial proliferation.[7,9,13] Do not use microwaves to heat gel. Gel warmers should be cleaned and disinfected at least weekly, or more often, based on institutional protocols or manufacturer guidelines.

To maintain gel integrity and minimise contamination:

- Do not store gel bottles in warmers for extended periods, including overnight. [9,13]
- Always follow infection control procedures when handling warmed gel.

Storage: Maintaining Gel Integrity and Safety

Ultrasound gel should be stored in a cool, dry environment, ideally between 15°C and 30°C, and kept away from direct sunlight to prevent bacterial growth and product degradation.[1,9,11,13,14]

To ensure safe and effective use:

- Keep storage areas clean and free from dust and moisture to protect gel quality and packaging. [12,13,18]
- Always store bottles upright to avoid contaminating the dispensing tip. [9,13,18]
- Label each bottle with the date of opening. [13,14,16]
- Discard gel after one month or in accordance with the manufacturer's guidelines. [13,14,16]

Proper storage helps maintain gel integrity and supports infection control in clinical practice.

Conclusion

The safe use and storage of ultrasound gel is essential to maintaining high standards of infection control and patient care. By selecting the appropriate gel type based on clinical risk, adhering to strict hygiene protocols, and following best practices for handling, warming, and storage, sonographers can significantly reduce the risk of contamination and associated infections. By adhering to this updated clinical statement, sonographers can uphold best practice standards and reduce infection risks across all ultrasound settings.

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