

## Journal Citation

### Infection Control Risk with Bottles of Ultrasound Scanning Gel:

- **“Fomites and Infection transmission”** Infection Control Today magazine 11/07/2006 *In a systematic review of the literature, German researchers explored the ability of infectious organisms to survive on inanimate surfaces. They found that most gram-positive bacteria, including VRE, MRSA and streptococcus pyogenes can survive for months on dry surfaces.* **“In the hospital environment, surfaces with which hands come in contact are often contaminated with Nosocomial pathogens, and may serve as vectors for cross-contamination.”** (A fomite is any object that may be contaminated with infectious organisms and serve in their transmission.)
- **“Sustained Endemicity of Burkholderia Cepacia Complex in a Pediatric Institution, Associated with Contaminated Ultrasound Gel.”** Infection Control Hospital Epidemiology 2006, April 27; 362-6 Conclusions: **Contaminated ultrasound gel contributed to nosocomial infection due to B. cepacia complex in this institution over the course of 10 years.**
- **“Sonographers and the Fight Against Nosocomial Infections: How Are We Doing?”** JDMS 21: 7 – 11, January/February 2005: **One in six (16.7%) gel bottle tips contaminated with bacteria/fungi.**
- **Health Products and Food Branch of Canada Safety Alert October 2004: Risk of Serious Infection from Ultrasound and Medical Gels – Notice to Hospitals.** *In order to minimize the health risks associated with the use of ultrasound gels, Health Canada is making the following recommendations: Single Use Containers are recommended for non-sterile gel.*
- **“An Outbreak of Pyodermas Among Neonates caused by Ultrasound Gel Contaminated with Methicillin-Susceptible Staphylococcus Aureus”.** December 2000 *Infection Control and Hospital Epidemiology* Volume 21, No. 12. **Conclusion: Inappropriate hygienic measures in connection with lubricants (gels) during routine ultrasound scanning may lead to nosocomial S aureus infections of the skin.**
- **“An Investigation of the microbiological contamination of ultrasound equipment”** Sykes A’, Appleby M, Perry J, Gould K. *British Journal of Infection Control* August 2006 Vol 7 NO. 4. This study was undertaken to determine the extent of contamination of ultrasound equipment including probe, probe holder, keyboard and gel. **The results revealed that 64.5% of the samples were contaminated with environmental organisms, 7.7% with potential pathogens** and 27.8% were no growth.
- **“Iatrogenic urinary tract infection with Pseudomonas cepacia after transrectal ultrasound guided needle biopsy of the prostate”** *Journal of Urology* 1993, March; 149(3) **“Environmental investigations revealed the ultrasound transmission gel as the source of the contamination.”**
- **“Nosocomial Outbreak of Klebsiella pneumoniae Producing SHV-5 Extended-Spectrum  $\beta$ -Lactamase, Originating from a Contaminated Ultrasonography Coupling Gel.”** *Journal of Clinical Microbiology*, May 1998 p 1357 -1360 **“To summarize, this outbreak showed unique features., i.e., very early cross-contamination, lack of recognized risk factors of patients, transmission of the multiresistant strain by a soiled ultrasonography coupling gel, and intrapartum contamination of two neonates. It highlights the necessity of evaluation of nosocomial risks associated with procedures with good safety records such as ultrasonography.”**
- **“Ultrasound Instruments as Possible Vectors of Staphylococcal Infection.”** *Journal of Hospital Infection Control*, September 1998, 40 (1) 73 -7 **“S. Aureus was more resistant to the ultrasonic medium than Pseudomonas aeruginosa, also a significant cause of hospital-acquired infections.”**
- **“Risk of Staphylococcus Aureus Transmission during Ultrasound Investigation,”** *Journal of Ultrasound in Medicine*, November 1989 8 (11): 619 20. **“An investigation of staphylococcal transmission between patients undergoing routine abdominal ultrasound procedures was carried out to assess the potential risks of cross-infection. Two of 19 patients were shown to have become colonized as a result of the procedure and some evidence is presented of possible interpatient cross-colonization. It is suggested that this is an underestimation of the potential of cross-infection and simple inexpensive infection control procedures are suggested.”**



- **Burkholderia cepacia infections associated with intrinsically contaminated ultrasound gel: the role of microbial degradation of parabens.** Infection Control and Hospital Epidemiology. 2004 Apr;25(4):291-6. **CONCLUSIONS: Ultrasound gel is a potential source of infection.**
- **Physical methods of reducing the transmission of nosocomial infections via ultrasound and probe.** Clinical Radiology 1998 Mar; 53(3):212-4 “Nosocomial infections are posing an increasingly serious problem in the hospital setting. With the increasing use of ultrasound in medical diagnosis, there is the potential for transmission of nosocomial infections via the ultrasound transducer and coupling gel.”
- **APIC Archives established mechanisms of Gel Contamination including:**
  - *Contamination during dispensing practices* – i.e., use of large containers purchased as a bulk supply and refilling smaller containers as needed for daily use.
  - *Environmental contamination* via nipple style tip.
  - *Contamination at point of use* – a patient or ultrasound probe could harbor pathogenic organisms. The application of gel involves squeezing the bottle to dispense gel. If the bottle is not withdrawn before pressure is released, the vacuum formed within the bottle could aspirate both gel and flora from the surface of the patient or the probe into the bottle.
- **“Ultrasound Gel: a breeding ground for germs?”** *ADVANCE for Imaging and Radiation Therapy Professionals*, June 3, 2002
- **An Epidemic, Toxin Gene-Variant Strain of *Clostridium difficile*,** L. Clifford McDonald, M.D., George E. Killgore, Dr.P.H., Angela Thompson, M.M.Sc., Robert C. Owens, Jr., Pharm.D., Sophia V. Kazakova, M.D., M.P.H., Ph.D., Susan P. Sambol, M.T., Stuart Johnson, M.D., and Dale N. Gerding, M.D.
  - A previously uncommon strain of *C. difficile* with variations in toxin genes has become more resistant to fluoroquinolones and has emerged as a cause of geographically dispersed outbreaks of *C. difficile* –associated disease. Strict infection-control measures, including contact precautions, should be instituted for all patients with *C. difficile*–associated disease.
  - This article highlights the risks of using multiple use gel bottles where they are used on successive patients and Ultrasound Technicians touch the patient and the outside of the gel bottle with their gloved hands. The outside of the gel bottle becomes contaminated with microorganisms, such as *c. difficile*, and a vector for spreading infection.