

The Q-Net™ Monthly

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What's News



Happy New Year! Custom Ultrasonics, Inc. and I would like to wish all of you Happy Holidays and a safe and prosperous New Year!

Q-Net is very excited about launching its third year, which began in the fall of 1995. For a free subscription, please call or write us.



GI: 'General Interest'

We frequently receive requests for specific issues of this newsletter. To obtain a bound booklet of 'Q-Net 96,' which contains all of 1996's (and 1995's) newsletters, please call or write us.

What is Q-Net?

Q-Net is a network and database for questions and answers. Its monthly newsletter is *The Q-Net Monthly*.

Q-Net's main goal is to encourage the infection control and endoscopy communities to not only ask good questions but to also demand succinct and well referenced responses.

Q-Net addresses the needs of both the health care provider whose goal is to provide the best care possible, and the patient who deserves affordable quality health care.

Reprocessing biopsy forceps

"How do you recommend we clean our reusable flexible biopsy forceps?"

Background and Answer

Biopsy forceps are often used during flexible endoscopic procedures to grasp and remove tissue. They are passed down the endoscope's instrument channel via the biopsy port and out its distal end.

The design of biopsy forceps features a long and flexible shaft, surrounded by a tightly-wound coil, with a pair of 'jaws' at its tip.

A significant shortcoming of this spring-like design is the inaccessible internal and external surfaces that make thorough cleaning difficult, if not impossible.¹ During use, patient debris harboring potentially infectious agents may become trapped deep inside these surfaces. Not surprisingly, biopsy forceps have been associated with cross-infection.^{2,3}

To minimize the likelihood of disease transmission, the following steps should be performed in accordance with user instructions:⁴⁻⁷ *Immediately after its use, the biopsy forceps should be:*

- ✓ soaked in a cleaning solution to avoid drying of retained organic debris;
- ✓ washed using a brush and detergent, and then rinsed. When present, its

cleaning port should be flushed with detergent, and, to the extent possible, the accessory disassembled as recommended;

- ✓ ultrasonically cleaned using an appropriate detergent formulation;
- ✓ ultrasonically rinsed with clean water to remove remaining debris; and
- ✓ sterilized with pressurized steam (before or after reassembly, as recommended).

If steam sterilization is not possible, disposable accessories are recommended.⁸ Strict adherence to recommended

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What is a 'log reduction'?

In microbiology, a log reduction describes the number of microorganisms destroyed or removed by a process, such as disinfection.

For example, let's assume that an endoscope has been contaminated with 100 microorganisms. If a cleaning process were to remove 90 of them, we say that the instrument's initial bioburden was reduced by 90%, or that a 1 log reduction was achieved. (The time to achieve this 1 log reduction is called the 'D-value'.)

Now let's assume that a 'sterilization' process reduced an initial population of microorganisms from 1,000,000 to 100. The 'log reduction' can be calculated using the following equation:

$$\log_{10} \frac{\text{FINAL microbial population}}{\text{INITIAL microbial population}}$$

Inserting the values from above into this equation

(Continued on page 2, column 1, BOTTOM)

(Continued, 'Reprocessing biopsy forceps')

processing guidelines is essential to prevent disease transmission.

Because most biopsy forceps have an inaccessible internal channel, low-temperature 'sterilizing' agents, such as ethylene oxide gas and liquid sterilants, are *not* viable alternatives to heat sterilization:

- ➔ **Only pressurized steam can reliably penetrate residual organic debris and contact underlying microorganisms shielded by an instrument's complex physical design.**⁴

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- 8 Association of Operating Room Nurses. *AORN J* 1993;57(2):543-550.

Thank you for reading this newsletter. *I have responded to these issues to the best of my ability. Respectfully, the Editor:* Lawrence F. Muscarella, PhD. Please direct all correspondence and requests for a subscription to:

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(Continued 'What is a log reduction?')

yields: ' $\log_{10}(100/1,000,000)$,' or ' $\log_{10}(0.0001)$,' which equals '-4.' We say, therefore, that a 4 log reduction, or a 99.99% reduction, was achieved. (Because the number of microorganisms were reduced, as opposed to gained, a negative sign precedes the '4.')

Alternatively, multiplying '0.0001' by '100' (to convert to a percentage) equals '0.01%.' Subtracting this quantity from 100% yields: '99.99%,' which is the percentage of microorganisms destroyed by this 'sterilization' process.



CHEAT SHEET: The number of '9's seen in the percentage indicates the log reduction. For example, '99.999%' indicates a '5' log reduction.

'iQ': Interactive Q-Net



Test your knowledge of instrument processing. Before selecting an answer, read all of the choices provided for each question. The answers will appear in next month's issue of this newsletter.

- 1 The infection rate associated with 'sterilized' rigid endoscopes is: (a) higher (b) lower, or (c) the same as the infection rate associated with flexible endoscopes.
- 2 Which is likely to fail if cleaning is inadequate: (a) sterilization, (b) high-level disinfection (c) intermediate-level disinfection, (d) low-level disinfection, or (e) all of the above.
- 3 If an endoscope were to be contaminated during final water rinsing, which of the following would most likely be responsible: (a) hepatitis B, (b) *Mycobacterium chelonae*, (c) *Helicobacter pylori*, (d) hepatitis C, or (e) HIV.
- 4 Which of the following microorganisms is least likely to be identified as the cause of a post-endoscopic infection? (a) *M. tuberculosis*, (b) *Bacillus subtilis* (var. niger), (c) *M. gordonae*, (d) *Pseudomonas aeruginosa*, (e) *Campylobacter pylori*, or (f) *M. chelonae*.
- 5 Under ideal conditions, water filtered through a bacterial filter (0.2 micron) is expected to be: (a) free of all endotoxins, (b) sterile, (c) only bacteria-free, (d) free of all known viruses, (e) all of the above, or (f) none of the above.
- 6 A 70% alcohol rinse is recommended to: (a) immediately kill all nonlipid (but not lipid) viruses in the endoscope's channels, (b) sterilize the endoscope, (c) facilitate channel drying before storage, or (d) clean the endoscope's channels.
- 7 Liquid sterilants cannot be reliably monitored biologically because: (a) a wet 'BI' (biological indicator) can transfer germicidal residues to the growth medium, inhibiting the growth of surviving spores, (b) the liquid sterilant can rinse the spores off of the BI, (c) the BI must be removed from its packaging in order to be exposed to the liquid sterilant, which violates its integrity, or (d) all of the above.
- 8 "Sterilization" can be defined as a 6 log reduction of: (a) *B. subtilis* (var. niger) spores during a full cycle, (b) *B. subtilis* spores during a half-cycle, (c) *M. tuberculosis* during a full cycle, (d) *M. tuberculosis* during a half-cycle, (e) all of the above, or (f) none of the above.
- 9 If the biological indicator yields a 'negative' result (i.e., no growth), the instrument is: (a) inferred to be sterile although may not be, (b) known to be sterile, (c) only disinfected, (d) definitely clean, or (e) none of the above.
- 10 Which of the following does not exist: (a) *M. xenopi*, (b) *M. abscessus*, (c) *M. aquae-extracellular*, (d) *Klebsiella oxytoca*, (e) *M. fortuitum*, or (f) a trick question, since all of these mycobacteria exist.

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