

The Q-Net™ Monthly

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What's News

In the current September-October 2001 issue of SGNA's *Gastroenterology Nursing*, the results of a national survey the editor of this newsletter (LFM) conducted are published. This survey addresses current instrument reprocessing and infection control practices.

This month's newsletter discusses two articles published in the July 2001 issue of *Infection Control and Hospital Epidemiology*. Several questions that arise from these two articles are discussed.

Editor-in-Chief

The articles published in this newsletter are written by: **Lawrence F Muscarella, PhD, Chief, Infection Control** at Custom Ultrasonics, Inc. Ivyland, PA 18974 (215-364-8577).

What is 'Q-Net'?

Q-Net is a technology-assessment network of questions and answers. Its 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 healthcare.

Review of a *P. aeruginosa* outbreak

Déjà vu ... yet again?

"Upon the error that you heard debated." (Shakespeare)

Introduction: In its July 2001 issue, *Infection Control and Hospital Epidemiology (ICHE)* published an editorial and a study that discuss a *Pseudomonas aeruginosa* outbreak that occurred in a New York City (NYC) hospital in 1998.^{1,2} This outbreak, which was reported in *Morbidity and Mortality Weekly Report*³ (MMWR) in 1999 and termed *cluster 3*, resulted in over a dozen patient infections and one death.

Investigators linked this *cluster 3* outbreak to bronchoscopes that remained contaminated with *P. aeruginosa* after being reprocessed by an automated endoscope reprocessor (AER).^{2,3} According to these investigators, hospital personnel purportedly connected bronchoscopes improperly to the AER,^{1,3} resulting in inadequate endoscope reprocessing and patient infection.

Objective: The objective of this newsletter's issue is to discuss these two recently published articles in *ICHE*,^{1,2} to address remaining questions, and to provide recommendations that prevent patient infection from endoscopes contaminated with waterborne bacteria.

Discussion: Several questions remain after reading the two articles published in *ICHE's* July 2001 issue.^{1,2} First:

If, as the investigators concluded,² improper connection of bronchoscopes to an AER was primarily to blame for this *P. aeruginosa* outbreak,^{1,3} what does this reprocessing mishap portend for gastrointestinal (GI) endoscopes? Because they are more complex, harder to clean, and have many more internal channels and connectors, GI endoscopes would then be expected to be even more susceptible to improper connection to an AER (and therefore patient infection) than bronchoscopes. The implications of these investigators' conclusion, if true, are far reaching and profound.

Second, Sorin et al.² concluded that the flow of the AER's sterilant through the endoscope's channels was probably "insufficient or obstructed," which likely contributed to, if not caused, the *cluster 3* outbreak.³ While Sorin et al.'s conclusion may be valid, why was the crucial flow and pressure data not published?

Third: To what extent might the environment have contributed to this outbreak? In general, epidemiological investigations of similar outbreaks routinely sample the environment⁴ and relevant water sites to determine the outbreak's source. Indeed, several reports have linked contaminated water supplies to nosocomial infections.^{5,6} One report linked contaminated filtered rinse water to an outbreak following GI endoscopy.⁷

The well-published contribution of the environment to *P. aeruginosa* outbreaks begs yet more questions: During the investigations of the *cluster 3* outbreak in NYC,^{2,3} was the filtered rinse

water (0.2 micron rated) sampled microbiologically? And if so, was it tested for *P. aeruginosa*?

These are important questions. Sampling the AER and its filtered rinse water is crucial to investigating and identifying the source of the *cluster 3* outbreak. Whether these investigators sampled the rinse water is unclear, as its data were not published.^{2,3} If it was not sampled, then ruling out the filtered rinse water as a possible source of the *P. aeruginosa* outbreak would in effect be precluded, and therefore the conclusion presented by the investigators – that is, that improper connection of an AER to bronchoscopes by personnel was primarily at fault for the outbreak – may be more speculative and incomplete than valid.¹⁻³

As pointed out previously by Muscarella in this newsletter's June 1999 issue and in an article published in *ICHE* last year,⁸ if the filtered rinse water, which contacts the endoscope *after* chemical immersion, had been sampled microbiologically and found to be contaminated with *P. aeruginosa*, then the rinse water could have re-contaminated the endoscope inside the AER and the outbreak might have occurred even if the bronchoscopes had been *properly* connected to the AER. Hence the importance of publishing the filtered rinse water's sampling data.

Despite Muscarella's article previously published in *ICHE* that concluded, based on the investigators' reports,^{2,3} that the filtered rinse water could potentially have been a source of the *cluster 3* outbreak,⁸ neither of the two articles published subsequently in *ICHE*'s July 2001 issue discussed the plausibility of his conclusion.^{1,2} The reasons for omitting Muscarella's important reference and viewpoint are unclear.

Ironically, one of the two articles published in *ICHE*'s July 2001 issue lends credence to Muscarella's⁸ suggestion that the filtered rinse water (or another environmental site) could have been a source of the *P. aeruginosa* outbreak.² As acknowledged by Sorin et al.,² *P. aeruginosa* is a waterborne microorganism and patient-to-patient transmission of this organism was not determined. Without an index patient or an identified route for disease transmission, the potential exists for the environment to be a source of the outbreak.

What is the FDA's current position on this outbreak?

Because the two articles published in *ICHE*'s July 2001 issue^{1,2} neither referenced nor discussed Muscarella's viewpoint, the suggestion that each article's authors might not agree with his conclusion seems reasonable.⁸ The Food and Drug Administration (FDA), on the other hand, arguably concurs with the plausibility of Muscarella's conclusion: that the rinse water may have been contaminated with *P. aeruginosa*, contributing to the *cluster 3* outbreak in NYC.

Consider this: On April 23, 2001, the FDA wrote a letter to an AER manufacturer that in part read: "*We (the FDA have) concerns pertaining to continued reports of patient infections ... associated with (the STERIS System 1). Review of the various reports submitted to (the) FDA indicates that the infections are usually caused by waterborne organisms. The association of (this device) with patient infections usually*

caused by waterborne organisms leads us to question the ability of (your AER) to provide a sterile water rinse (using a 0.2 micron filter). We believe that (the Steris System 1) may not be functioning as it is labeled ..." Several other unpublished reports of injuries linked to *P. aeruginosa* may have also contributed to this letter's writing.

Recommendations: To prevent patient infection, dry thoroughly the endoscope by rinsing all of its internal channels with 70% alcohol (to facilitate drying), followed by forced air drying.^{4,7-10} Bacterial colonization during overnight storage has been linked to patient infection.^{5,7,9} *No cases of patient infection have been reported when the endoscope was reprocessed and dried before storage in accordance with published guidelines.* Also, monitor the rinse water to ensure it is not contaminated with gram-negative bacteria or mycobacteria.¹¹ And, frequently educate personnel on how to properly connect the AER to each of the endoscope's channels. *The End* (By: LF Muscarella, PhD)

Acknowledgement: Some say: "*Once a New Yorker, always a New Yorker.*" I was born in New York, raised in Manhattan and went to high school in the Bronx. One thing is for sure: New Yorkers are resilient. They are survivors. They persevere. This issue is dedicated to all who suffered during the *September 11, 2001* attack. Special respect and gratitude are extended to the firefighters, policemen, port authority workers, and emergency personnel who stood by their valued principles and gave their lives in the line of duty. A special tribute to their families is respectfully acknowledged.

References for this newsletter are available at:
[Http://www.myendosite.com/refs0901.htm](http://www.myendosite.com/refs0901.htm)

Thank you for your interest in this newsletter. *I have addressed each issue to the best of my ability. Respectfully*
Lawrence F. Muscarella, Ph.D.

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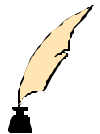
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