

The Q-Net™ Monthly

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What's News

Happy Holidays

Q-Net welcomes new subscribers from: **Canada, Egypt, Malaysia, Pakistan, Saudi Arabia, Serbia, and the United States.** Use this month's quiz to test your knowledge and to identify topics to review. The answers are on p. 24. Remember to browse and search **Q-Net's** website—www.myendosite.com—to answer your infection control and endoscopy questions. Best wishes for a healthy and happy New Year!

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.

What is 'Q-Net'?

Q-Net is a technology-assessment network of questions and answers. Its newsletter is *The Q-Net™ Monthly*.

The main goal of **Q-Net** is to encourage the infection control and endoscopy communities to not only ask good questions but also to demand 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.

End of Year Quiz

Presented is a quiz designed to assist in understanding the topics discussed in this newsletter during the past year. Only one answer applies to each question, unless otherwise indicated. This quiz may be used for periodic competency testing.

PART 1. "Dear AORN" (Endoscope drying): Topics discussed in the January-February 2004 issue:

1. Which of the following organizations unconditionally recommends drying flexible endoscopes between-patient-procedure and before storage? (A) AORN (*Association of periOperative Registered Nurses*) (B) SGNA (*Society of Gastroenterology Nurses and Associates*) (C) APIC (*Association for Professionals in Infection Control and Epidemiology*) (D) all of the above.

2. Which of the following organizations does not recommend drying flexible endoscopes between-patient-procedures when sterile water is used for rinsing (or after "liquid sterilization")? (A) APIC (B) AORN (C) SGNA (D) A and B (E) B and C.

3. Which of the following organizations does not recommend drying flexible endoscopes between-patient-

procedures after high-level disinfection or a tap-water rinse? (A) AORN (B) SGNA (C) APIC (D) A and B.

4. Which of the following organizations recommends drying the endoscope before storage after high-level disinfection or a tap water rinse? (A) AORN (B) SGNA (C) APIC (D) all of the above (E) none of the above.

5. Which of the following organizations recommends drying the endoscope between-patient-procedures except when sterile water is used for rinsing (or after "liquid sterilization")? (A) SGNA (B) AORN (C) APIC (D) B and C (E) A and C.

6. Which of the following organizations recommends drying each endoscope in the morning before its first use of the day? (A) AORN (B) SGNA (C) A and B (D) APIC (E) none of the above.

7. For which of the following medical departments is it important to obtain documentation (i.e., microbiological

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log-reduction data) from the manufacturer demonstrating the effectiveness of the automated endoscope reprocessor (AER) or "liquid sterilizing system"? (A) risk management (B) gastrointestinal endoscopy (C) quality control (D) infection control (E) pulmonary (F) all of the above.

8. Which of the following statements is **false**? (A) Wet or inadequately dried endoscopes have been reported to pose a risk of nosocomial infection. (B) Contaminated rinse water does not yield contaminated and potentially unsafe endoscopes. (C) The risk of infection during bronchoscopy is reported to be greater than during colonoscopy. (D) Failure to monitor the rinse water may render meaningless any claim or "guarantee" that an endoscope was successfully reprocessed.

9. This newsletter recommends reprocessing the endoscope before the first patient of the day whenever: (A) the endoscope is removed from storage and found to be wet. (B) there is confusion or doubt that after its last use the endoscope was reprocessed, dried, and stored in accordance with published guidelines. (C) high concentrations of bacteria have been cultured from the rinse water. (D) all of the above.

PART 2A. Flexible laryngoscopes: Topics discussed in the March-April 2004 issue:

1. Instrument reprocessing practices that vary from one facility to another are problematic because they can cause: (A) an increase in the risk of nosocomial infection (B) ineffective reprocessing (C) variations in the standard of care (D) all of the above (E) none of the above.

2. Quaternary ammonium cleaner/disinfectants are appropriate and approved to clean and terminally disinfect: (A) flexible rhino-laryngoscopes (B) rigid laryngoscopes' blades and handles (C) flexible nasopharyngo-laryngoscopes (D) rigid laryngoscopes' blades, but not their handles (E) none of the above.

3. Quaternary ammonium cleaner/disinfectants are typically labeled for: (A) low-level disinfection (B) sterilization (C) high-level disinfection (D) intermediate-level disinfection (E) pre-cleaning *critical* and *semi-critical* instruments prior to high-level disinfection or sterilization (F) A, D and E.

4. Quaternary ammonium cleaner/disinfectants are typically used to clean, deodorize, and terminally disinfect: (A) *non-critical* devices (B) rigid laryngoscopes (C) gastrointestinal endoscopes (D) rhino-laryngoscopes, but not nasopharyngo-laryngoscopes (E) B and C.

5. Medical devices are typically classified into each of the following categories, based on the risk of infection associated with their use, **except**: (A) *non-critical* (B) *critical* (C) *pseudo-critical* (D) *semi-critical* (E) all of the above.

6. All of the following are levels of disinfection **except**: (A) sterilization (B) low-level disinfection (C) high-level disinfection (D) intermediate-level disinfection (E) quasi-disinfection (F) A and E.

7. All of the following are *non-critical* devices (or surfaces) **except**: (A) blood pressure cuffs (B) bedpans (C) stethoscopes (D) laryngoscopes (E) floors (F) chairs.

8. All of the following are *critical* devices **except**: (A) rigid laryngoscopes (B) implants (C) biopsy forceps (D) cardiac catheters (E) vascular needles.

9. Which of the following statements is **true**: (A) high-level disinfection kills mycobacteria but not viruses (B) intermediate-level disinfection kills viruses but not mycobacteria (C) high-level disinfection kills mycobacteria and some types of bacterial endospores (D) low-level disinfection is tuberculocidal but not sporicidal (E) none of the above are true.

10. Which of the following species of bacterial endospores are readily destroyed by high-level disinfection: (A) *Clostridium difficile* (B) *Bacillus subtilis* (C) *Geobacillus stearothermophilus* (D) *Clostridium sporogenes*.

11. Which of the following are classified as high-level disinfectants: (A) quaternary ammonium products (B) 2% glutaraldehyde (C) iodophor and phenolic compounds (D) 70% alcohol (E) A, B and D (F) all of the above.

12. Which of the following are classified as low-level disinfectants: (A) hospital cleaner/disinfectants with a tuberculocidal claim (B) 70% isopropyl alcohol (C) 7.5% hydrogen peroxide (D) hospital cleaner/disinfectants without a tuberculocidal claim (E) A and B (F) all of the above.

13. Which of the following statements is **false**: (A) *Candida albicans* is a fungus. (B) *Bacillus subtilis* is a bacterial endospore. (C) prions are a type of aberrant isomeric virus. (D) *Pseudomonas aeruginosa* is a gram-negative bacterium. (E) None of the above are false (all are true).

14. Which one of the following microorganisms and viruses is the least resistant to sterilization and disinfection processes and, therefore, easiest to destroy: (A) lipid or medium-sized viruses (B) non-lipid or small viruses (C) mycobacteria (D) fungi (E) the polio virus.

PART 2B. Flexible laryngoscopes (continued): Topics discussed in the May-June 2004 issue:

1. Which of the following statements about flexible laryngoscopes is **false**: (A) Nasopharyngo-laryngoscopes are similar in design and function to rhino-laryngoscopes.

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(B) Some models feature an air/water channel. (C) Some models feature a biopsy inlet port. (D) Some models are “channel-less.” (E) All of the above are false.

2. **Universally accepted instructions for reprocessing both flexible and rigid laryngoscopes:** (A) are important for compliance (B) have not been published (C) are crucial to the prevention of disease transmission (D) are needed to eliminate variations in the standard of care (E) all of the above.

3. **It is recommended that a medical facility’s quality assurance program include which of the following:** (A) policies and procedures for reprocessing each endoscope model in inventory (B) competency testing that is conducted at least annually, to ensure staff are aware of the reprocessing nuances and requirements of each endoscope model in inventory (C) educational programs that emphasize the potential risk of infection associated with improper endoscope reprocessing (D) all of the above (E) none of the above.

4. **When removed from a closed carrying case, it is important that prior to reuse on a patient the flexible laryngoscope first be:** (A) examined to confirm it is operating properly and not damaged (B) reprocessed, due to the potential for bacterial colonization during storage in its carrying case (C) A and B (D) soaked overnight in 70% alcohol.

5. **This newsletter’s article expressed which of the following as the ingredients for a ‘perfect storm’?** (A) the complex physical designs of some models of flexible endoscopes (B) the reuse throughout the day of a single flexible endoscope on several different patients (C) the low inventory and high cost of flexible endoscopes (D) the inadequate attention, emphasis, and financial resources that endoscope reprocessing often receives (E) complacency and a “lowering of the guard” (F) all of the above.

6. **Which of the following statements are false:** (A) Bronchoscopes are *critical* instruments. (B) The laryngoscope’s blade and handle are *critical* instruments. (C) Nasopharyngo-laryngoscopes are *critical* instruments. (D) A, B and C. (E) Gastrointestinal endoscopes are *semi-critical* instruments. (F) Rhino-laryngoscopes are *semi-critical* instruments. (G) Biopsy forceps are *critical* instruments.

7. **Which of the following reprocessing steps is contraindicated and does not prevent disease transmission?** (A) Leave the battery in the rigid laryngoscope’s handle prior to cleaning and high-level disinfection (or sterilization). (B) Perform both a ‘dry’ and ‘wet’ leak test before cleaning the flexible laryngoscope. (C) Immediately after use, wipe down the flexible laryngoscope’s insertion tube using a gauze pad or sponge soaked in a freshly prepared solution of detergent. (D) Dry the flexible laryngoscope’s working channel by flushing it with 70% alcohol followed by forced air.

PART 3A. Rigid laryngoscopes: Topics discussed in the July-August 2004 issue:

1. **Which of the following are critical devices:** (A) rhinolaryngoscopes (B) nasopharyngo-laryngoscopes (C) rigid laryngoscopes’ blades and handles (D) rigid laryngoscopes’ blades, but not their handles (E) rigid laryngoscopes’ handles, but not their blades (F) none of the above.

2. **Which of the following statements is true:** (A) Quaternary ammonium compounds are contraindicated for terminal disinfection of a rigid laryngoscope’s blade and handle. (B) Laryngoscopes blades may be curved or straight, disposable or reusable. (C) Reports document contamination of the rigid laryngoscope’s handle with antibiotic-resistant bacteria. (D) All of the above are true.

3. **Which of the following statements is false:** (A) According to the FDA, the laryngoscope must be reprocessed even if it were covered with a disposable sheath during use. (B) The laryngoscope’s blade routinely contacts mucous membranes. (C) The laryngoscope’s handle is a *critical* device (D) The laryngoscope’s blade is a *semi-critical* device. (E) Not every guideline appreciates the importance of high-level disinfecting (or sterilizing) the laryngoscope’s handle.

4. **Which of the following discussed in the “For the Record” article is true:** (A) Tap water, sinks, and other environmental surfaces have been identified as sources of antibiotic-resistant *Pseudomonas aeruginosa*. (B) Drying a bronchoscope can prevent transmission of antibiotic-susceptible—but not antibiotic-resistant—strains of bacteria. (C) Antibiotic-resistant *P. aeruginosa* is exclusive to patient colonization and infection and has never been identified on an environmental surface. (D) Patients can only become infected with antibiotic-resistant *P. aeruginosa* via the *patient-to-patient* mode of transmission.

PART 3B. Rigid laryngoscopes (continued): Topics discussed in the September-October 2004 issue:

1. **Which of the following statements is true?** (A) Pasteurization may be a suitable method for reprocessing the laryngoscope’s blade (and handle). (B) Flash sterilization is usually contraindicated for rigid laryngoscopes, because of the potential damage caused by rapid cooling. (C) Laryngoscope handles usually contain batteries that must be removed before reprocessing. (D) Attachment of a laryngoscope’s sterile blade to a low-level disinfected handle compromises the integrity of the blade, rendering the blade also low-level disinfected. (E) All of the above are true.

2. **Which of the following discussed in the “Dear AORN, Part II” article is true:** (A) Some organizations condone, if

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not encourage, the introduction of wet bronchoscopes into the lungs of critically-ill patients. (B) There are no published data to support the claim that sterile rinse water can be produced by filtering a hospital's tap water through a 0.2 micron bacterial membrane. (C) Drying an endoscope after reprocessing virtually eliminates the risk of transmission of bacteria. (D) Despite the laryngoscope's handle being classified by the American Association of Nurse Anesthetists as a semi-critical device, some organizations recommend it be cleaned and low-level disinfected between uses. (E) All of the above are true.

3. Which of the following discussed in the "Dear AORN, Part II" article is false: (A) Published guidelines are inconsistent with regard to drying flexible endoscopes. (B) Use of a sheath to cover the laryngoscope eliminates the need for reprocessing. (C) A chain is only as strong as its weakest link. Therefore, the handle must be at least high-level disinfected; otherwise, the integrity of the blade, which requires at least high-level disinfection, would become compromised. (D) Both the laryngoscope's blade and handle can become contaminated during routine use. ● End of Quiz. LFM

Answers to Quiz

Part 3B. Rigid laryngoscopes (continued):
 Question 1: E. Answer "D" is indeed true, although often overlooked.
 Question 2: E.
 Question 3: B. Reprocessing of the instrument is required after removal of the sheath. There is some confusion about the required level of disinfection. Refer to this newsletter's "Dear AORN, Part II" article published in the September-October 2004 issue of this newsletter.

Part 3A. Rigid laryngoscopes:
 Question 1: F.
 Question 2: D.
 Question 3: C. The laryngoscope's handle is a semi-critical device.
 Question 4: A. Environmental surfaces have been found to be sources of antibiotic-resistant *Pseudomonas aeruginosa*. (See: Muscarella LF. Contribution of tap water and environmental surfaces to nosocomial transmission of antibiotic-resistant *Pseudomonas aeruginosa*. *Infect Control Hosp Epidemiol* 2004 Apr;25(4):342-5.)

Part 2B. Flexible laryngoscopes (continued):
 Question 1: B.
 Question 2: E.
 Question 3: D.
 Question 4: C.
 Question 5: F. All of these factors combine to produce a unique scenario.
 Question 6: D. All of the listed instruments are semi-critical.
 Question 7: A. Batteries generally must be removed from the handle before cleaning and disinfection or sterilization.

Question 14: A. Lipids or medium-sized viruses, such as the hepatitis B virus, are the least resistant to sterilization and disinfection processes.

Part 2A. Flexible laryngoscopes:
 Question 1: D.
 Question 2: E.
 Question 3: F.
 Question 4: A. Quaternary ammonium cleaner/disinfectants are only intended to be used to clean and terminally disinfect non-critical devices.
 Question 5: C. There is no such classification.
 Question 6: F.
 Question 7: D. Laryngoscopes are semi-critical devices.
 Question 8: A.
 Question 9: C.
 Question 10: A. Although an endospore, *Clostridium difficile* is quickly killed by high-level disinfection (and sterilization).
 Question 11: B.
 Question 12: D. Hospital cleaner/disinfectants with a tuberculocidal claim are classified as intermediate-level disinfectants.
 Question 13: C. Prions are not viruses—rather, they are infectious proteins.

Part 1. Endoscope drying:
 Question 1: B. Only SGN A unconditionally recommends drying the endoscope between-patient-procedures and before storage.
 Question 2: D. Neither APIC nor AORN recommends drying the endoscope between-patient-procedures when sterile water is used for rinsing.
 Question 3: A. Only AORN does not recommend endoscope drying between-patient-procedures after high-level disinfection.
 Question 4: D.
 Question 5: C.
 Question 6: A. Only AORN recommends this practice.
 Question 7: F.
 Question 8: B.
 Question 9: D. (See: Muscarella LF. Disinfecting endoscopes immediately before the first patient of the day. *AORN J*. 2001;73(6):1159-63.)

Thank you for your interest in this newsletter. I have addressed each issue to the best of my ability. Respectfully, the Publisher: Lawrence F. Muscarella, PhD. Please direct all correspondence to:

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