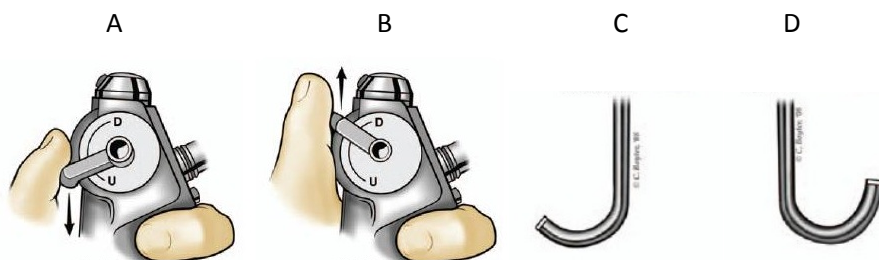


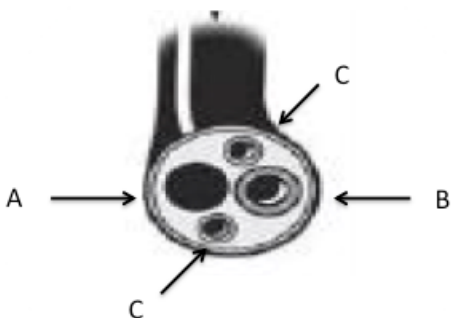
## Novice Trainees Cognitive Test

1. Flexion of the bronchoscope causes less curvature at the working end of the scope compared to extension of the bronchoscope.<sup>1</sup>
  - a. True
  - b. False**
2. You get called to do a bronchoscopy on a patient who is mechanically ventilated. When you get there, the patient has a 6.0 endotracheal tube in place and is on 50% FiO<sub>2</sub> and 5 of PEEP. What size endotracheal tube is needed to perform a bronchoscopy?<sup>2</sup>
  - a. 6.0 is fine
  - b. Just need to ensure that the inside diameter of the ETT is larger than the outside diameter of the bronchoscope
  - c. 7.0 is needed for a therapeutic scope
  - d. It is recommended that the inside diameter of the ETT be 2 mm larger than the outside diameter of the bronchoscope to minimize auto-PEEP**
3. The figure below depicts flexion and extension of the bronchoscope. Which of the following statements is correct.<sup>1</sup>
  - a. Flexion of the bronchoscope is depicted by the hand position in figure A and the curvature at the working end of the scope in Figure D.**
  - b. Flexion of the bronchoscope is depicted by the hand position in figure A and the curvature at the working end of the scope in Figure C.
  - c. Extension of the bronchoscope is depicted by the hand position in figure A and the curvature at the working end of the scope in Figure D.
  - d. Extension of the bronchoscope is depicted by the hand position in figure B and the curvature at the working end of the scope in Figure D.



4. Proper cleaning of a bronchoscope is critical to avoid nosocomial outbreaks. Which of the following is the correct sequence for bronchoscope processing?<sup>3</sup>
  - a. Wipe external surfaces with detergent immediately after each use, remove and discard suction and biopsy valves, brush all internal channels, perform high-level disinfection then perform “leak test” prior to use.

- b. Wipe external surfaces with detergent immediately after each use, remove and sterilize suction and biopsy valves, perform “leak test”, brush all internal channels then perform high-level disinfection.
  - c. **Wipe external surfaces with detergent immediately after each use, remove and discard suction and biopsy valves, perform “leak test”, brush all internal channels then submerge in detergent for high-level disinfection.**
  - d. none of the above
5. The bronchoscope is stored in hanging position to prevent moisture accumulation and recontamination of bronchoscope after adequate disinfection.<sup>3</sup>
- a. **True**
  - b. False
6. Which of the following statements is correct?<sup>3</sup>
- a. High-level disinfection eliminates all organisms except high levels of spores
  - b. Intermediate-level disinfection inactivates MTB, vegetative bacteria, most viruses, and fungi
  - c. Sterilization completely eliminates all forms of microbial life (including bacterial and fungal spores)
  - d. High-level disinfection is adequate for cleaning a bronchoscope
  - e. **All of the above are correct**
7. The suction valve on the bronchoscope should be sterilized and is reusable.<sup>3</sup>
- a. True
  - b. **False**
8. Which statement about the flexible fiberoptic bronchoscope is correct?<sup>1</sup>
- a. In the figure below, A is the lens, B is the distal end of the working channel and C is the light source
  - b. **Typical fiberoptic bronchoscopes have a working length of 600 mm.**
  - c. The image and light source are transmitted via copper wire bundles
  - d. Fiberoptic bronchoscopes have higher resolution than video bronchoscopes



9. You are consulted for abnormal chest CT findings in a patient with hypoxia. Clinical presentation and Chest CT findings are suggestive of hypersensitivity pneumonitis. After reviewing the case with your attending, you plan to proceed with bronchoscopy with TBBx. As part of the consent, you inform the patient of the risks and rate of the complications associated with the procedure. Which of the following statements is correct?<sup>4,5</sup>
- a. The overall major and minor complication rates of FOB is: 0.5% and 0.8%, respectively

- b. The risk of pneumothorax and bleeding with transbronchial biopsy is: 1-5% and 9%, respectively
  - c. Fever occurs in 16% of patients who undergo bronchoalveolar lavage
  - d. The mortality rate with FOB has been reported to be as low as 0% and as high as 0.4%
  - e. all of the above are correct**
10. Which of the following statements is correct?<sup>6-8</sup>
- a. Initial therapeutic aspiration of secretions by bronchoscopy is more effective than aggressive pulmonary toileting for acute lobar atelectasis.
  - b. Quantitative BAL with <10,000 cfu/mL of bacteria is considered colonization in the setting of suspected ventilator-associated pneumonia.**
  - c. Bronchoscopy with BAL in febrile neutropenic patients is unsafe and should be avoided.
  - d. Transbronchial biopsy significantly increases diagnostic yield in neutropenic patients.
11. Which of the following conditions are relative contraindications to elective fiberoptic bronchoscopy?<sup>4,9</sup>
- a. Acute asthma exacerbation
  - b. Hypoxemia requiring high-flow oxygen
  - c. Elective bronchoscopy within 6 weeks of AMI
  - d. All of the above**
12. When should therapeutic-dose IV unfractionated heparin be discontinued prior to FOB according to the ACCP 2012 Antithrombotic guidelines?<sup>10</sup>
- a. No need to hold
  - b. 4 to 6 hours**
  - c. 8 to 12 hours
  - d. 24 hours
13. When should therapeutic low molecular weight heparin be discontinued prior to FOB according to the ACCP 2012 Antithrombotic guidelines?<sup>10</sup>
- a. No need to hold
  - b. 4 to 6 hours
  - c. 8 to 12 hours
  - d. 24 hours**
14. Which of the following statements is correct regarding risk of bleeding and bronchoscopy?<sup>11</sup>
- a. The use of aspirin increases the risk of bleeding during bronchoscopy with transbronchial biopsies
  - b. Clopidogrel (Plavix) should be stopped 5-7 days prior to scheduled bronchoscopy with transbronchial biopsies
  - c. Clopidogrel increases the risk of significant bleeding during bronchoscopy with BAL
  - d. b and c are correct**

15. Which of the following statements is correct?
- Paralyzed vocal cords rest in adduction position**
  - The false vocal cords are located right below the true vocal cords
  - Innervation of the vocal cords come from branches of the vagus nerve
  - The vallecula is formed between the base of the tongue and the epiglottis
16. By the Jackson-Huber nomenclature of airways, the upper division of the left upper lobe includes the following segments:<sup>12</sup>
- Apical, anterior, posterior
  - Superior, inferior
  - Anterior, lateral, posterior
  - Apico-posterior, anterior**
  - Apico-anterior, posterior
17. Which of the following statements about the airway anatomy is correct?<sup>12</sup>
- The lingula has 2 segments: medial and lateral
  - The left lower lobe and the right lower lobe have the same amount of segments
  - During bronchoscopy, the first visualized segment of the right lower lobe is the superior segment**
  - The left airways have 3 lobar divisions
18. By the Jackson-Huber nomenclature of airways, the right middle lobe includes the following segments:<sup>12</sup>
- Inferior, superior
  - Medial, lateral**
  - Medial, superior
  - Lateral, superior
  - Medial, lateral, superior
19. A medicine resident is working with you on the pulmonary consult service. As you are setting up for a bronchoscopic procedure, the resident asks about the use of topical lidocaine for anesthesia. Which of the following statements are correct?<sup>13</sup>
- Lidocaine toxicity typically presents with numbness of the tongue, lightheadedness, visual disturbances and progresses to seizures, coma, respiratory arrest and cardiovascular depression.
  - Topical lidocaine inhibits cell depolarization and blocks nerve conduction
  - Lipid infusions may prevent cardiovascular depression from lidocaine toxicity
  - All of the above**
20. According to the American Society of Anesthesiologist guidelines, a patient who is moderately sedated meets the following criteria:<sup>14</sup>
- Airway intervention is not required
  - Spontaneous ventilation is adequate

- c. Cardiovascular function is usually maintained
- d. Patient has a purposeful response following repeated of painful stimulation
- e. All of the above**

21. You were called to see an elderly patient for bronchoscopic evaluation of tracheal abnormalities seen on laryngoscopy. On your evaluation, he is cyanotic, confused, tachycardic, and has an oxygen saturation of 90% measured on pulse-oximetry. You determine that topical lidocaine and cetacaine spray were used for topical anesthesia but you do not know how much. The most likely etiology for decompensation:

- a. Lidocaine Toxicity
- b. Methemoglobinemia from Cetacaine Spray**
- c. A and B
- d. None of the above

22. What is the maximum recommended dose of lidocaine for patients undergoing bronchoscopy?<sup>15</sup>

- a. < 8.2mg/kg**
- b. < 9.2 mg/kg
- c. < 7.2 mg/kg
- d. < 12.2 mg/kg

23. How many 2 mL aliquots of a 1% solution of lidocaine would equal a total dose of 400 mg:

- a. 10
- b. 5
- c. 8
- d. 20**

24. A 79 yo woman with poorly controlled hypertension and a right paratracheal mass presents for bronchoscopy. Her ASA Score is<sup>16</sup>

- a. ASA 1
- b. ASA 2
- c. ASA 3**
- d. ASA 4
- e. ASA 5

25. You call your patient the day before her elective FOB, which will require moderate sedation, to remind her of the pre-procedure instructions. Which of the following statements is incorrect?<sup>14</sup>

- a. She can take her medications with sip of water in the morning
- b. She may not have food for at least 8 hours
- c. She may not have non-clear liquids for at least 6 hours and no clear liquids for at least 2 hours
- d. All of the above**

26. Which of the following statements is correct regarding sedating and analgesic medications?

- a. Naloxone and Flumazenil should be used routinely at the end of the procedure

- b. Fentanyl is a short acting analgesic that also has an amnestic effect before and during procedure
  - c. **Fentanyl may cause bradycardia**
  - d. None of the above
27. What is the best answer regarding medications used in moderate sedation?
- a. After the initial dose of Fentanyl, a short-acting narcotic analgesic, additional doses should be given in 25 mcg increments, waiting 3 minutes between doses.
  - b. After the initial dose of Fentanyl, a long-acting narcotic analgesic, additional doses should be given in 50 mcg increments, waiting 7 minutes between doses.
  - c. After the initial dose of Midazolam, a short-acting benzodiazepine, additional doses should be given in 0.5 – 1mg increments, waiting 3 minutes between doses.
  - d. **A and C are correct**
  - e. All of the above
28. Which of the following is the best transport media for transbronchial biopsy samples submitted for microbiologic analysis?
- a. Saccomano
  - b. Normal saline
  - c. Formaldehyde
  - d. Ethanol
  - e. **Non-Bacteriostatic Saline**

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