Protocol 19-3068

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PETACS

The Pediatric Endotracheal Aspirate Culture Survey

Important definitions:

Endotracheal aspirate culture: Collection of material obtained through endotracheal tube or tracheostomy tube. This is not the same as a sputum specimen.

Surveillance cultures: Cultures collected routinely regardless of symptoms. These may be daily, weekly, bi-weekly or monthly.

Non-fermenting gram negative rods: These are the non-Pseudomonas Gram-negative rods that do not ferment glucose. Examples include *Burkholderia cepacia, Stenotrophomonas maltophilia*, and *Acinetobacter* species.

Coliform: A lactose-fermenting Gram-negative rod belonging to the Enterobacteriaceae family.

Susceptibility testing: Obtaining minimum inhibitory concentrations (MICs) through either an automated instrument method, broth dilution, disk diffusion, antimicrobial gradient diffusion, or agar dilution.

Biochemical Methods: Non-automated identification methods including rapid kits, Analytical Profile Index (API) systems, media tubes and plates.

Pure culture: Growth of an organism alone in culture (it is the only organism growing).

Predominant: The predominant organism will be the organism that is growing more than any other organism. For example, on a plate with semi-quantitative streaking, organism A would be predominant if it grew into the fourth quadrant while all other organisms only grew into the second quadrant. On a plate with quantitative streaking, the predominant organism would be the one with more colonies than any other organism.

Please list the name of the institution you represent:

Please provide your role at your institution:

a. Laboratory manager (of one or more laboratories that includes microbiology)
b. Laboratory director (of one or more laboratories that includes microbiology)
c. Lead microbiologist
d. Technical lead scientist
e. Laboratory supervisor (of one or more laboratories that includes microbiology)
f. Microbiology manager
g. Microbiology supervisor
h. Microbiology director
i. Other, please specify: _____

General Information

1. Is your institution a free-standing pediatric facility?
    a. YES → Skip to Question 3
    b. NO → Go to Question 2
2. Does your facility have a pediatric and/or neonatal unit?
    a. YES, our facility has both a pediatric and a neonatal unit → Go to Question 3
    b. YES, but our facility has only a pediatric unit → Go to Question 3
    c. YES, but our facility has only a neonatal unit → Skip to Question 4
    d. NO → END OF SURVEY
3. Which of the following most closely resembles the size of your hospital or institution's pediatric unit*? If you are a free-standing pediatric facility, please select the value that most closely resembles the bed count for your entire facility*.
    a. Less than 50 beds
    b. 50-100 beds
    c. 100-400 beds
    d. Greater than 400 beds
4. Is your hospital an academic medical center? *Academic medical centers are often defined as hospitals that serve medical schools or universities. They may also be called teaching hospitals*.
    a. YES
    b. NO
    c. Unknown
5. Which option best describes your microbiology laboratory?
    a. We are a pediatric microbiology lab only
    b. We have a unit/hospital that cares for children, but all specimens (adult and pediatric) are handled in one laboratory

c. We send most of our microbiology specimens, specifically endotracheal aspirates, to an off-site laboratory/reference laboratory
    i. If this is selected, free text the name of the laboratory: _____

Specimen Collection

6. When you receive an endotracheal aspirate specimen, are you aware if the specimen has been diluted with saline during collection? (Is this documented on the requisition or specimen container?)
    a. YES
    b. NO
7. Do you have rejection criteria for time of delivery to the laboratory? For example: the sample will be rejected if not received in the laboratory within two hours of collection.
    a. YES → Go to Question 8
    b. NO → Skip to Question 9
8. Please provide the rejection criteria for time of delivery: _____
9. Does your laboratory have rejection criteria for the container type?
    a. YES → Go to Question 10
    b. NO → Skip to Question 11
10. Please provide the rejection criteria for the container type: _____
11. Does your institution perform endotracheal aspirate surveillance cultures? For the purpose of this survey, surveillance cultures are defined as cultures collected regularly from a patient regardless of any symptoms of ventilator-associated pneumonia.
    a. YES
    b. NO
    c. Unsure
12. Does your laboratory process endotracheal aspirate specimens? This does NOT include sputum or BAL specimens. For the purpose of this survey, processing is defined as any manipulation performed to the specimen to prepare it for plating such as dilution, centrifugation and/or making a Gram stain, but does NOT include plating or streaking.
    a. YES → Go to Question 13
    b. NO → Go to Question 42
    c. Unsure

The Gram Stain

13. When a Gram stain of an endotracheal aspirate is made, which most closely resembles the process in your laboratory?
    a. The most purulent area of the specimen is selected using a sterile stick, swab, or loop and spread across a glass slide
    b. A portion of the sample is diluted using sterile saline. Some amount of this diluted specimen is put on a cytoslide using centrifugation
    c. Other (please describe) _____
14. Do you have rejection criteria for endotracheal aspirates based on the Gram stain results?
    a. YES → Go to Question 15

b. NO → Skip to Question 16

15. Please describe the factor(s) that determine specimen rejection. For example: number of polymorphonuclear cells (PMNS), number of epithelial cells, number and different types of microorganisms seen.

_____
_____
_____
_____

16. What objective on the microscope do you use to quantify PMNS and epithelial cells for endotracheal aspirates?
    a. 10X
    b. 40X
    c. 100X
    d. Other (please specify) _____
17. What objective on the microscope do you used to quantify organisms in endotracheal aspirates? Organisms include any bacterial and fungal cells and NOT human cells like PMNs or epithelial cells.
    a. 10X
    b. 40X
    c. 100X
    d. Other (please specify) _____
18. Do you have a minimum number of fields on the slide that must be examined by the technologist before the results are reported?
    a. YES → Go to Question 19
    b. NO → Skip to Question 20
    c. Unknown → Skip to Question 20
19. Please provide an approximation of how many fields must be observed

_____

20. Do you have a minimum amount of time a technologist should spend examining a slide before the results are reported?
    a. YES → Go to Question 21
    b. NO → Skip to Question 22
    c. Unknown → Skip to Question 22
21. Approximately how much time should be spent reviewing an endotracheal aspirate Gram stain slide? _____
22. How are endotracheal aspirate Gram stain results quantified and reported?
    a. Semi-quantitatively (for example: rare, few, moderate, heavy)
    b. Quantitatively (for example: X number of colonies per HPF)
    c. Other (please describe) _____
23. Does your laboratory culture endotracheal aspirate specimens? This does NOT include sputum or BAL specimens. For the purpose of this survey, culture is defined as plating the specimen to any nutritious media and incubating for 18-24 hours in order to identify microorganism growth.
    a. YES → Go to Question 24
    b. NO → Go to question 42

Culture and Identification

24. When plating endotracheal aspirates for culture, which process most closely resembles the one used in your laboratory?
    a. Quantitative culture: the colonies are counted and multiplied by a dilution factor
    b. Semi-quantitative: four quadrants are streaked on the plate and growth is reported as either a version of rare, few, moderate, heavy; or 1+, 2+, 3+, 4+
    c. Other (please describe) _____
25. Does your laboratory use a Q-scoring system for the identification and workup of organisms in tracheal aspirates?
    a. Yes
    b. No
    c. Unknown

Gram-Positive Organisms

Staphylococcus aureus

26. Please select the option that most closely resembles the way you manage the **IDENTIFICATION** of *S. aureus* in endotracheal aspirate cultures
    a. Regardless of quantity, *S. aureus* is always identified and reported
    b. The process depends/will differ depending on if the organism is MRSA or MSSA. MRSA is always ruled out and reported if present in any quantity. MSSA is only reported if it is in pure culture or if it is the predominant organism.
    c. All *S. aureus* is identified and reported if equal to or greater than the normal respiratory flora
    d. Other (Please describe) _____
27. Please select the option that most closely resembles how your lab handles **SUSCEPTIBILITY** testing of *S. aureus* in endotracheal aspirate cultures
    a. All *S. aureus* (MRSA and MSSA) isolates get susceptibility testing regardless of quantity of growth on plate or on Gram stain
    b. Methods such as PBP2' latex agglutination testing or cefoxitin resistance screening are used to rule out MRSA. If an isolate is identified/detected as MRSA, susceptibility testing is performed regardless of quantity of growth or Gram stain results. MSSA only gets susceptibility testing if it is the predominant organism or it is growing in pure culture.
    c. Even if MRSA is identified, neither MRSA nor MSSA get susceptibility testing unless they are predominant in culture, growing in pure culture, or organisms resembling MRSA/MSSA are seen in the Gram stain in significant quantities
    d. Other (please describe) _____

Streptococcus pyogenes (Group A Strep)

28. Please select the option that most closely resembles the way you manage the **IDENTIFICATION** of Group A Strep in endotracheal aspirate cultures
    a. Group A Strep is always identified and reported, regardless of quantity seen in culture

b. Group A Strep is identified and reported if it is predominant in culture, in pure culture or seen in the Gram stain
c. Other (please describe) _____

29. Please select the option that most closely resembles how your lab handles **SUSCEPTIBILITY** testing of Group A Strep in endotracheal aspirate cultures
    a. Group A strep automatically gets susceptibility testing, regardless of quantity of growth in culture
    b. Group A strep susceptibility testing is only available upon provider request, regardless of quantity of growth in culture
    c. Other (please describe) _____

Streptococcus pneumoniae

30. Please select the option that most closely resembles the way you manage the **IDENTIFICATION** of *S. pneumoniae* in endotracheal aspirate cultures
    a. *S. pneumoniae* is identified and reported, regardless of the quantity of growth seen in culture
    b. *S. pneumoniae* is only identified and reported when it is predominant in culture, in pure culture, or seen in the Gram stain
    c. Other (please describe) _____
31. Please select the option that most closely resemble how your lab handles **SUSCEPTIBILITY** testing of *S. pneumoniae* in endotracheal aspirate cultures
    a. *S. pneumoniae* gets susceptibility testing, regardless of the quantity of growth in culture
    b. *S. pneumoniae* gets susceptibility testing if it is predominant in culture, in pure culture, or seen in the Gram stain
    c. Other (please describe) _____

Gram-Negative Organisms

Pseudomonas aeruginosa

32. Please select the option that most closely resembles how your lab handles the **IDENTIFICATION** of *P. aeruginosa* in endotracheal aspirate cultures
    a. *P. aeruginosa* is always identified and reported, regardless of quantity of growth in culture
    b. *P. aeruginosa* is fully identified and reported if it is predominant, in pure culture, or seen in the Gram stain
    c. *P. aeruginosa* is presumptively identified using an oxidase test, regardless of quantity. “Oxidase-positive non-lactose fermenter” is reported and additional identification is performed upon provider request
    d. Other (please describe) _____
33. Please select the option that most closely resembles how your lab handles **SUSCEPTIBILITY** testing of *P. aeruginosa* in endotracheal aspirate cultures
    a. Susceptibility testing is always performed on *P. aeruginosa* isolates, regardless of quantity
    b. Susceptibility testing is performed on *P. aeruginosa* isolates if the organism is predominant, in pure culture, or seen in the Gram stain

c. Susceptibility testing on *P. aeruginosa* isolates is only performed per provider request, regardless of quantity
d. Other (please describe) _____

Enteric Gram-Negative Rods

34. Please select the option that most closely resembles how your lab handles the **IDENTIFICATION** of enteric Gram-negative rods in endotracheal aspirate cultures. (Enteric Gram-negative rods include members of *Enterobacteriaceae* such as *Enterobacter, Klebsiella, Escherichia, Proteus, Serratia,* etc.)
    a. Enteric Gram-negative rods are always identified and reported, regardless of quantity
    b. Enteric Gram-negative rods are fully identified and reported when they are predominant, in pure culture, or seen in the Gram stain
    c. Enteric Gram-negative rods are only fully identified on request, regardless of quantity. A presumptive identification is given such as "Oxidase-negative non-lactose fermenter" or "Coliform." Full identification is available upon request
    d. Other (please describe) _____
35. Please select the option that most closely resembles how your lab handles **SUSCEPTIBILITY** testing of enteric Gram-negative rods in endotracheal aspirate cultures
    a. Susceptibility testing is always performed on enteric Gram-negative rods, regardless of quantity
    b. Susceptibility testing is performed on enteric Gram-negative rods when they are predominant, in pure culture, or seen in the Gram stain
    c. Susceptibility testing for enteric Gram-negative rods is only performed upon provider request
    d. Other (please describe) _____

Other non-fermenting Gram-negative rods

36. Please select the option that most closely resembles how your lab handles the **IDENTIFICATION** of other non-fermenting Gram-negative rods in endotracheal aspirate cultures
    a. Non-fermenting Gram-negative rods are always identified and reported, regardless of quantity
    b. Non-fermenting Gram-negative rods are fully identified and reported when they are predominant, in pure culture, or seen in the Gram stain
    c. Non-fermenting Gram-negative rods are only fully identified on request, regardless of quantity. A presumptive identification is given using an oxidase test
    d. Other (please describe) _____
37. Please select the option that most closely resembles how your lab handles **SUSCEPTIBILITY** testing of non-fermenting Gram-negative rods in endotracheal aspirate cultures
    a. Susceptibility testing is always performed on non-fermenting Gram-negative rods, regardless of quantity
    b. Susceptibility testing is performed on non-fermenting Gram-negative rods when they are predominant, in pure culture, or seen in the Gram stain

c. Susceptibility testing for non-fermenting Gram-negative rods is only performed upon provider request
d. Other (please describe) _____

Haemophilus influenzae

38. Please select the option that most closely resembles how your lab handles the **IDENTIFICATION** of *H. influenzae* in endotracheal aspirate cultures
    a. *H. influenzae* is always identified and reported, regardless of quantity
    b. *H. influenzae* is fully identified and reported when predominant, in pure culture, or seen in the Gram stain
    c. *H. influenzae* is only fully identified on request, regardless of quantity
    d. Other (please describe) _____
39. Please select the option that most closely resembles how your lab handles **SUSCEPTIBILITY** testing *H. influenzae* in endotracheal aspirate cultures
    a. Susceptibility testing is always performed on *H. influenzae*, regardless of quantity
    b. Susceptibility testing is performed on *H. inflluenzae* when it is predominant, in pure culture, or seen in the Gram stain
    c. A beta-lactamase test is performed, and susceptibility testing is offered only on further request
    d. Other (please describe) _____

Fungi

40. Please select the option that most closely resembles how your lab handles the **IDENTIFICATION** of fungi, NOT including yeast, in endotracheal aspirate cultures
    a. Fungi are always fully identified, regardless of quantity
    b. Fungi are reported as "fungus" and full identification is provided only on request
    c. Other (please describe) _____
41. Please select the option that most closely resembles how your lab handles the **IDENTIFICATION** of *yeast* in endotracheal aspirate cultures
    a. Yeast are always fully identified, regardless of quantity
    b. Yeast are reported as "fungus" and full identification is provided only on request
    c. Other (please describe) _____

Miscellaneous

42. Does your institution have an antimicrobial stewardship team?
    a. Yes
    b. No
    c. Unknown
43. Does your laboratory provide unit-specific antibiograms? For example, a separate antibiogram for the ICU?
    a. Yes
    b. No
    c. Unknown

44. Does your laboratory use a Matrix-Assisted Laser Desorption/Ionization-Time of Flight Mass Spectrometer (MALDI-TOF MS) for the identification of microorganisms?
    a. YES → Skip to Question 46
    b. NO → Go to Question 45
45. What other methods are you using for identification?
    a. Automated systems such as Microscan, Vitek, etc.
    b. Biochemical methods
    c. Other (please specify) _____
46. You have completed the primary questions of this survey. Would you be willing to share your tracheal aspirate culture procedure (SOP) with our research group? No identifiable organization information will be shared, only general procedural elements.
    a. YES → Go to Question 47
    b. NO → Skip to END
47. If you are willing to share your SOP, please upload a copy of it to the e-mail you send when you return this survey to andrea.prinzi@cuanschutz.edu

Thank you so much for your time!