

The Pediatric Endotracheal Aspirate Culture Survey (PETACS): Examining Practice Variation Across Pediatric Microbiology Laboratories in the United States

Andrea M Prinzi^{a,e}, Sarah K Parker^{b,c}, Donna J Curtis^{b,c}, Sonja I Ziniel^{b,d}

^aClinical Science, University of Colorado Anschutz Medical Campus, Aurora, Colorado, USA

^b Pediatric Infectious Diseases, Children's Hospital Colorado, Aurora, Colorado, USA

^c Department of Pediatrics, University of Colorado School of Medicine, Aurora, Colorado, USA

^d Pediatric Hospital Medicine, Children's Hospital Colorado, Aurora, Colorado, USA

^e Department of Pathology, Microbiology, Children's Hospital Colorado, Aurora, Colorado, USA

Introduction: In the absence of evidence-based laboratory guidelines, the workup and interpretation of tracheal aspirate (TA) cultures remains controversial and confusing within the fields of clinical microbiology, infectious diseases, and critical care.

Methods: Between January 22 and February 24, 2020, we conducted a national, web-based survey of microbiology laboratory personnel in free-standing pediatric hospitals and adult hospitals containing pediatric facilities regarding the laboratory practices used for TA specimens. We hypothesized that there would be substantial center-level variability in laboratory processes of TA cultures.

Results: The response rate for the survey was 48% (73/153). There was a high level of variability in the criteria used for all processes including specimen receipt, Gram staining and culture reporting. Most respondents (77%) reported that they do not reject TA specimens based on Gram stain criteria. Overall, non-academic hospital laboratories and pediatric-only laboratories are more likely to identify, report and perform susceptibility testing on organisms from TA cultures, regardless of organism quantity or predominance.

Conclusion: There is a substantial amount of process variability among pediatric microbiology laboratories that affects TA culture reporting, which guides treatment decisions. This variation within and among labs makes clinical outcome studies related to TA cultures difficult to interpret. This study serves as a pragmatic step in informing the development of robust clinical guidelines. Clinical outcome and implementation studies are necessary to determine the effectiveness of guidelines for TA cultures.

