

Children's Mercy Kansas City

SHARE @ Children's Mercy

Research Days

GME Research Days 2022

May 3rd, 11:30 AM - 1:30 PM

Repeat Tracheal Aspirates in Pediatric Intensive Care Patients: Understanding Clinical Application

Edward Lyon

Children's Mercy Hospital

Follow this and additional works at: <https://scholarlyexchange.childrensmercy.org/researchdays>



Part of the [Higher Education and Teaching Commons](#), [Infectious Disease Commons](#), [Medical Education Commons](#), [Pediatrics Commons](#), and the [Science and Mathematics Education Commons](#)

Lyon, Edward, "Repeat Tracheal Aspirates in Pediatric Intensive Care Patients: Understanding Clinical Application" (2022). *Research Days*. 6.

https://scholarlyexchange.childrensmercy.org/researchdays/GME_Research_Days_2022/ResearchDay2/6

This Poster Presentation is brought to you for free and open access by the Conferences and Events at SHARE @ Children's Mercy. It has been accepted for inclusion in Research Days by an authorized administrator of SHARE @ Children's Mercy. For more information, please contact hlsteel@cmh.edu.

INTRODUCTION

- Tracheal aspirates (TA) are obtained in the PICU on intubated or tracheostomy dependent patients who have clinical changes
- TAs can be challenging to interpret accurately. Is it colonization or a new infection?
- No current data about frequency of patients who have more than one TA collected during a hospitalization

Objectives:

- Determine frequency of repeat TAs
- Frequency of multi drug resistant organisms (MDRO)
- Develop a bacterial profile of pathogens
- Look at antibiotic use

METHODS

- Retrospective chart review
- Initial results with 15 patients admitted between 2018-2019 with ≥ 2 TA cultures
- Collected: microbiology, antibiotic susceptibilities, antibiotic exposure, patient condition when collection occurred
- Descriptive statistics were utilized to calculate frequency of repeat TA collection, time between collections, reason for collection and frequency an MDRO was cultured

Repeat Tracheal Aspirates in Pediatric Intensive Care Patients: Understanding Clinical Application

Edward Lyon DO, MA; Jennifer Goldman MD, MSCR; Brian Lee PhD, MPH;
Raj Selvarangan BVSc, PhD, D(ABMM), FIDSA, F(AAM); Elizabeth Monsees PhD, MBA, RN, CIC, FAPIC
Children's Mercy Kansas City

Table 1. Demographic Information (Total N=15)		
Admitting Service		
MICU	0.53	N=8
CICU	0.44	N=7
Sex		
Male	0.87	N=13
Female	0.13	N=2
Age		
≤ 5 years	0.94	N=14
> 5 years	0.07	N=1
Length of Stay		
Median (days)	117	[32.5, 209.5]
Race		
White	0.47	N=7
Black	0.33	N=5
Hispanic	0.20	N=3

133 Organisms were detected in total

- Pseudomonas aeruginosa* (N=32)
- Staphylococcus aureus* [MSSA] (N=16)
- Klebsiella oxytoca* (N=11)

73% of patients (N=11) had the same organism grown 2 or more times on repeat culture.

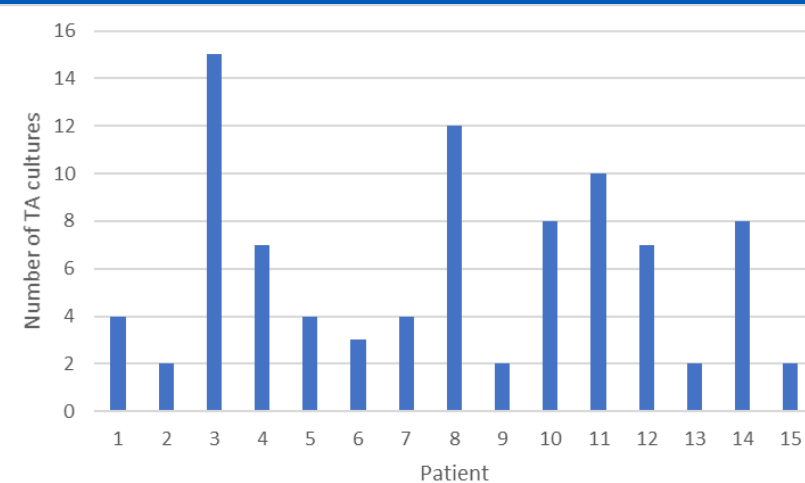


Figure 1. Number of Tracheal Aspirate cultures per patient

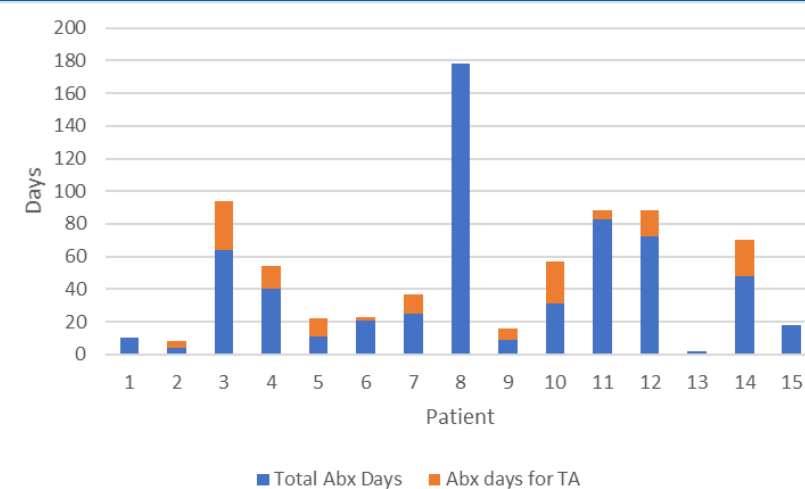


Figure 2. Antibiotic days per patient

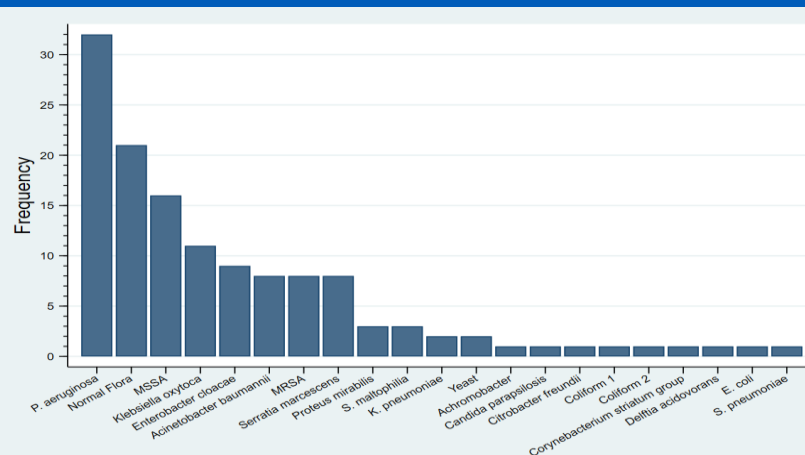


Figure 3. Frequency of cultured organisms

RESULTS

Clinical Reason for obtaining TA

- Fever 46%, VS changes 34%, Secretion burden 32%

Re-Culturing Same Organism

- 73% of patients had the same organism detected on 2 or more cultures

Antibiotic Exposure

- There were 616 antibiotic days prescribed for these patients
- 24% (149 days) of these antibiotic days were prescribed directly for the TA culture

MDROs

- 6 patients (40%) had a multi-drug resistant organism isolated after a median of 14.5 antibiotic days [11.75, 37.5 days]

DISCUSSION

- The same pathogen is cultured often with repeated tracheal aspirates
- Development of antibiotic resistance is common
- A minority of TAs are directly treated with antibiotics.

Next Steps:

- Finish review of all patients in 2018-2019
- Develop criteria for when to obtain TA culture to maximize clinical impact, decrease unnecessary antibiotic exposure and decrease development of resistant organisms