ABSTRACT #17

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Title: Utility of follow up pediatric blood cultures
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**Background:** Adult literature has found repeat blood cultures in bacteremic patients offer little utility in most cases, unless specific organisms (e.g. *Staphylococcus aureus*) are present. However, there is little data in pediatrics and current pediatric practice at YNHCH is to obtain repeat blood cultures in many children to look for persistent bloodstream infection. Unnecessary blood cultures result in increased patient discomfort, increased contamination rates, and may lead to unnecessary antibiotic therapy, increased cost, and length of stay. Our objective was to identify which subset of pediatric patients are at risk for persistent blood stream infections to identify when follow up blood cultures have clinical utility.

**Methods:** We conducted a retrospective cohort study of all children < 18 years within the Yale New Haven Health system from August 1, 2016 through December 31, 2021 who had a positive blood culture. Initial collected data included the age of the patient, location of the blood draw, organism recovered, and whether subsequent blood cultures were positive suggesting persistent bacteremia, defined as positive blood cultures greater than 48 hours after index case of bloodstream infection. Univariate analysis was conducted with chi square testing.

**Results:** There were 817 positive blood cultures in children during the study period. Of these, 412 (50.4%) had a repeat blood culture drawn >48 hours after the initial culture and 71 (8.7%) had persistent infection. 417 (51.0%) of the initial cultures were from the inpatient setting, while 333 (40.8%) were drawn in the emergency department. Having *Candida sp.* (8/15, 53%), or *S. aureus* (32/128, 25%) blood stream infection was associated with persistent bacteremia compared with other organisms such as coagulase-negative *Staphylococcus* (4.9%, 9/182) (p < 0.001). The positivity rate for repeat blood cultures after Gram negative bacteremia was 17/230 (7.8%). Patients from birth to 12 weeks, 12 weeks to 24 months, and from 24 months to 18 years had a 24/263 (9.1%), 8/161 (5.0%), and 39/393 (8.7%) incidence of persistent bacteremia/candidemia, respectively (p = 0.163). The pediatric intensive care setting was associated with the highest incidence of persistent bloodstream infection at 15/84 (18.0%) while initial blood cultures drawn in the emergency department setting were less likely to be positive >48 hours later (16/333, 4.8%) (p < 0.0001). For anaerobic organisms (n=39) and all species of streptococcus (n=134) there were no repeat positive blood cultures.

**Conclusion:** Similar to what is reported in adults, repeat blood cultures have the most utility for children with candidemia and *S.aureus* bacteremia. There is no evidence to support repeat blood cultures after bacteremia with anaerobes, and any streptococcal species. Currently we are performing multivariate analyses and looking for additional clinical risk factors that may determine the need for repeat blood cultures in patients where rates are typically low such as those with Gram negative bacteremia to avoid unnecessary blood cultures in children.