



Time to Positivity in Blood Cultures at a Level IV NICU

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BACKGROUND

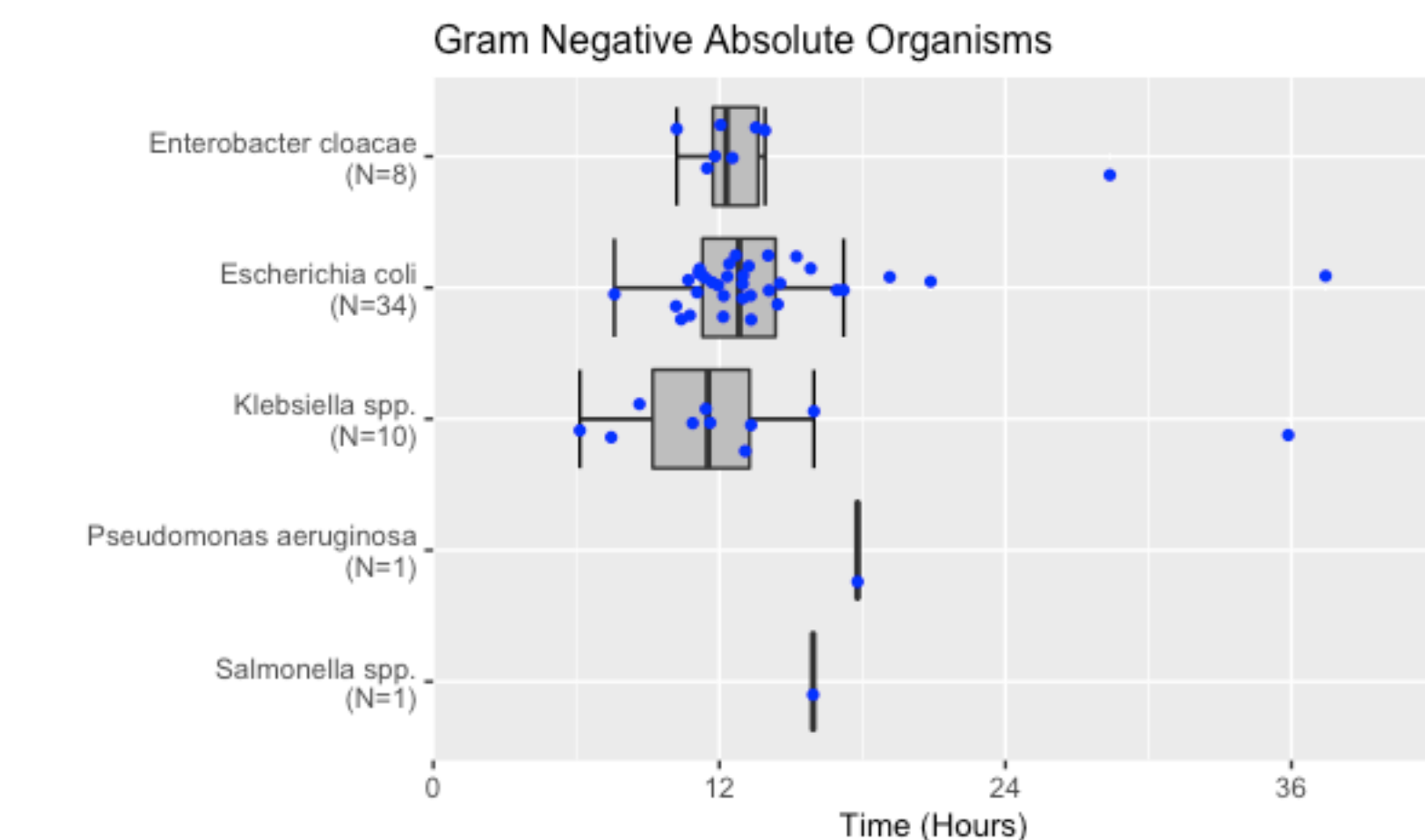
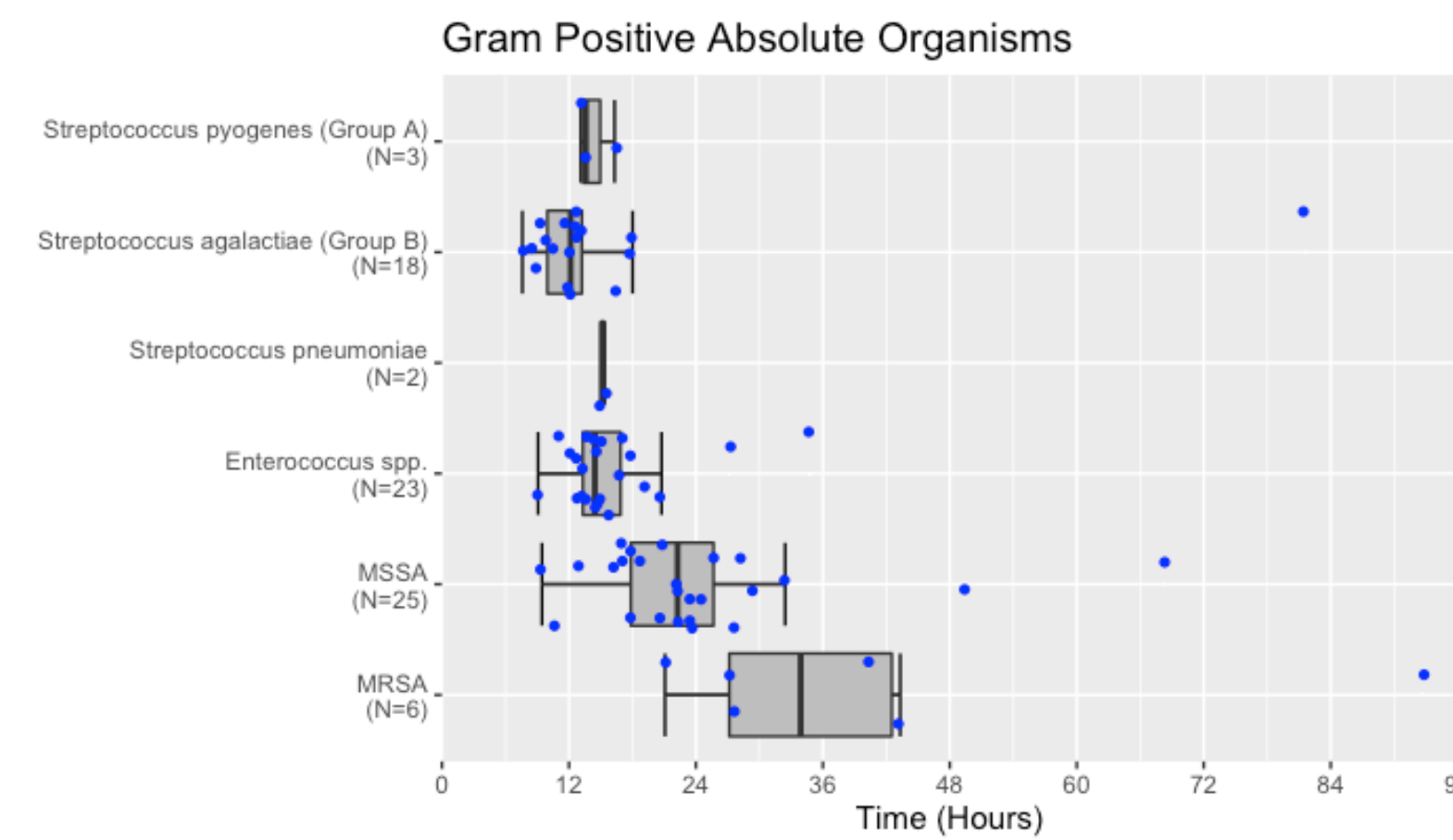
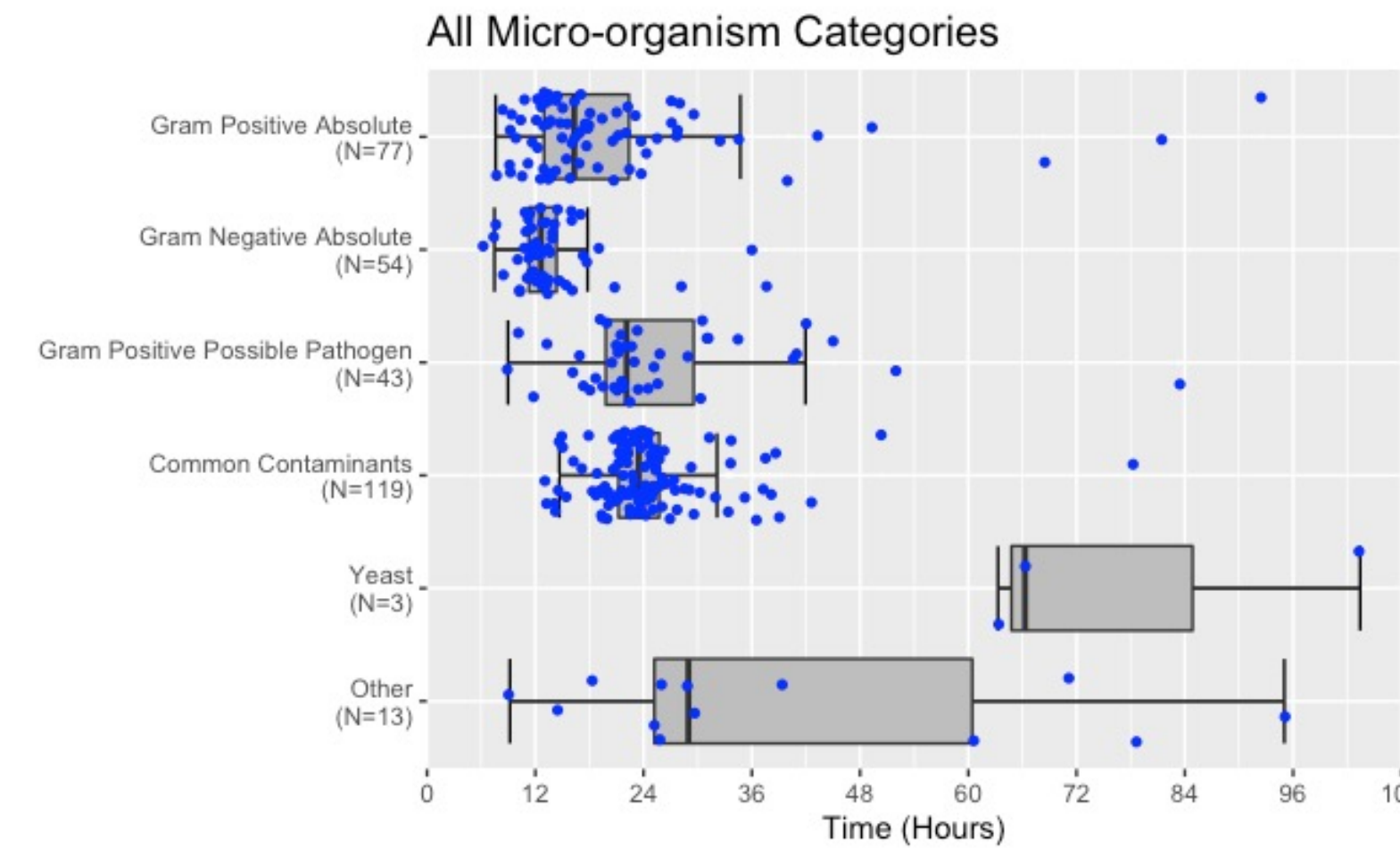
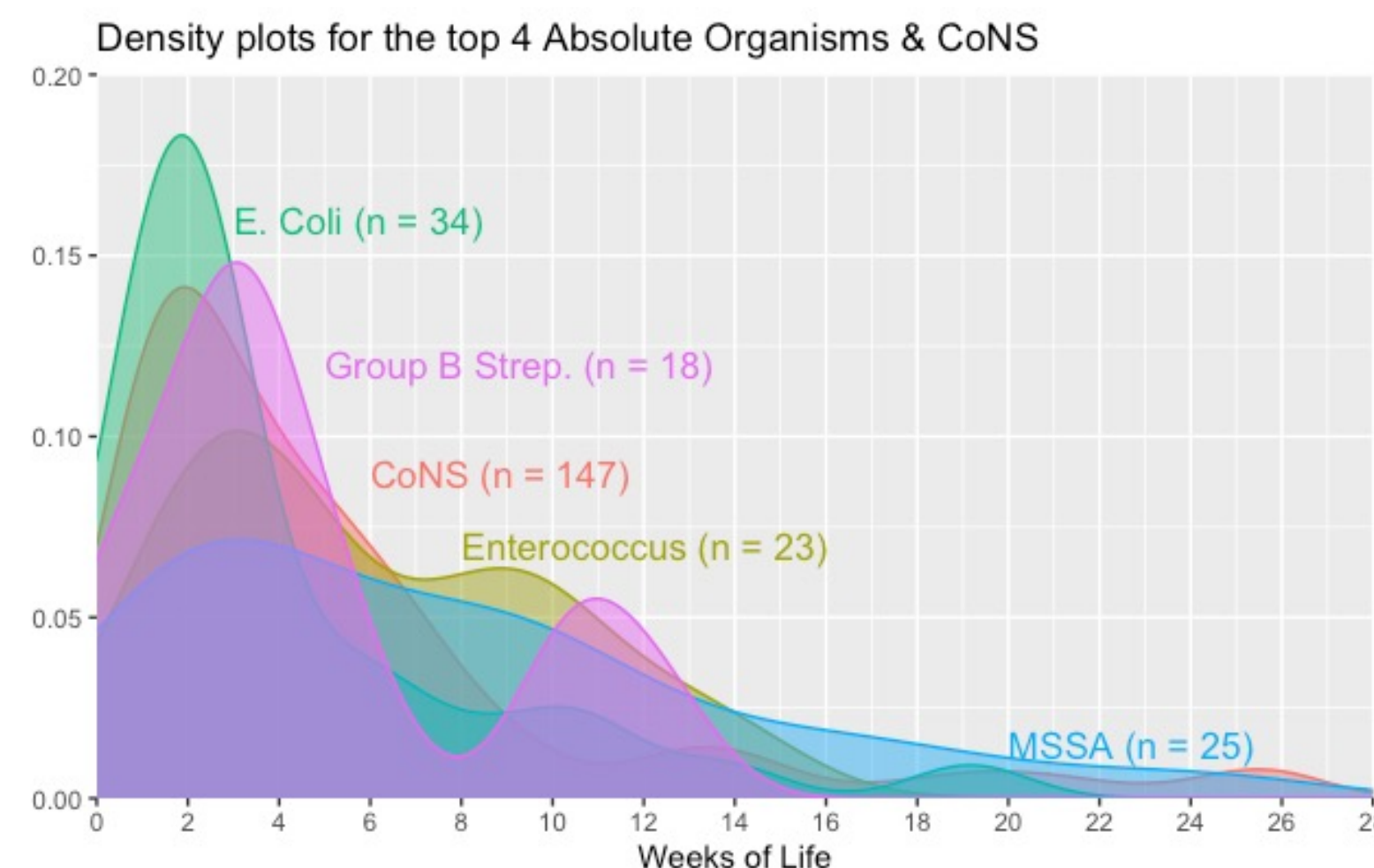
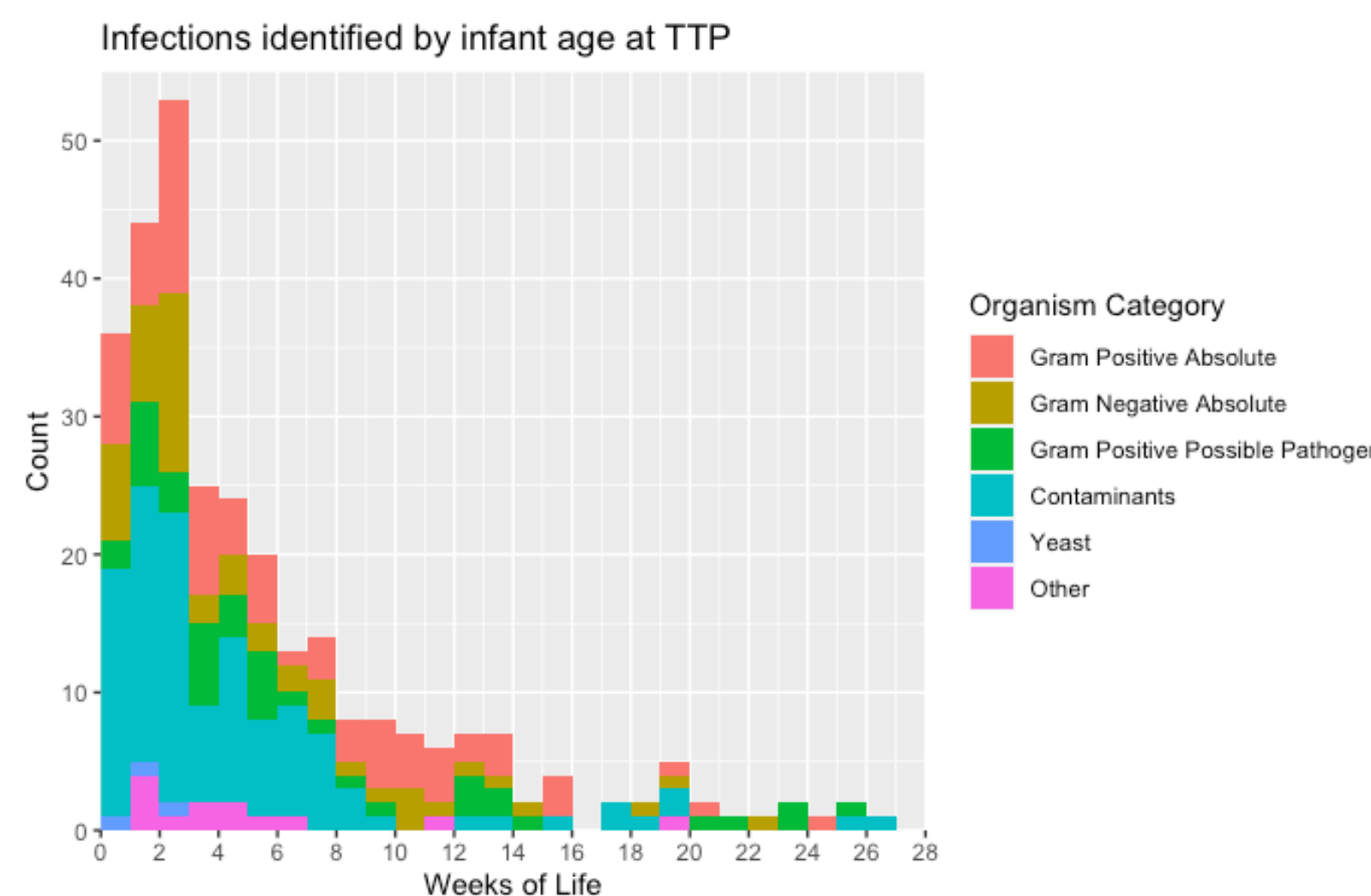
- In the Neonatal Intensive Care Unit (NICU) setting, subtle clinical deterioration of the infant, combined with the lack of specificity in clinical signs to identify true infection, often triggers an evaluation for sepsis. Blood cultures are obtained, and empiric antibiotics are initiated.
- Limiting the duration of antibiotic exposure has potential benefits in curtailing antimicrobial resistance and reducing unwanted adverse effects.
- There is paucity of published data on time to positivity (TTP) in a Level IV NICU population, a unique population of preterm, surgical, outborn infants and ED admissions.
- We aimed to determine the TTP of blood cultures in a free-standing level IV NICU over a 6-year period, with the goal to reassess our antimicrobial practice in the NICU.

METHODS

- Data were extracted from the Children's Hospital Colorado data warehouse for all patients admitted to the NICU, who had a positive blood culture between January 2013 to December 2018.
- These patient's charts were reviewed for both microbiologic and clinical data. TTP was calculated based on date and time culture was obtained, compared to the date and time growth was first reported.
- Micro-organisms were categorized into absolute pathogens, potential pathogens (e.g., CoNS, other strep), common contaminants, yeast and other less frequently identified organisms.

RESULTS: Overall TTP median and interquartile range was 21.13 (14.35, 25.35) hours [median (IQR)]

DEMOGRAPHICS		
GESTATION (n, %)		
- Term (>37 weeks)	140	52.2%
- Preterm (<36+6 weeks)	128	47.8%
BIRTHWEIGHT (mean ± SD)		
- Term (>37 weeks)	3190 g ± 523	
- Preterm (<36+6 weeks)	1460 g ± 783	
GENDER (n, %)		
- Male	157	58.6%



- Total of 309 positive blood cultures from 268 individuals
- Gram Positive Absolute:** Total 77 (24.9%)
 - TTP median 16.32 (IQR: 12.97, 22.38) hours
- Gram Negative Absolute:** Total 54 (17.5%)
 - TTP median 12.62 (IQR: 11.29, 14.36) hours
- 295 (95.5%) cases were initiated with antibiotics; 124 (40.1%) considered contaminant and antibiotics stopped.**

Percent positive:	At 24h	At 36h	At 48h
Gram Positive Absolute	79.2%	92.2%	94.8%
Gram Negative Absolute	94.4%	98.2%	100%
Possible Pathogen	62.8%	86.1%	95.4%
Common Contaminant	58.0%	92.4%	98.3%

CONCLUSIONS & IMPLICATIONS

- Majority of gram-positive and gram-negative absolute pathogens were identified within 36-48h of blood culture collection.
- Highest burden of burden in the first 3 weeks of life.
- A substantial number (40.1%) were categorized as contaminants, highlighting the importance of correct sterile technique when obtaining cultures.
- Incidental finding of a 9.2% mortality rate within 4 weeks of culture positivity warrants further study.

DISCLOSURES

None

