EPIDEMIOLOGY OF NEONATAL INFECTIONS AT PHILIPPINE GENERAL HOSPITAL, MANILA

Insights from a Clinically Oriented Antimicrobial Resistance Surveillance Study

Abstract: #306

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Background:

Neonatal infections cause significant mortality globally, which will be exacerbated by rising multidrug-resistance.[1] Data describing early- and late-onset neonatal infections guide empirical therapy and are predominantly from high-income countries, where pathogen profiles are thought to differ from those identified in resource-constrained settings,[2,3] impacting the efficacy of prescribed treatment.

Methodology:

We implemented A Clinically Oriented antimicrobial Resistance Surveillance protocol (ACORN2)[4] to undertake systematic infection surveillance in a 70-bed neonatal intensive care unit (NICU) at Philippine General Hospital (PGH). We enrolled all **infants admitted to the NICU who were administered intravenous (IV) antibiotics with a presumed infection** between November 14 2023-April 30 2025. Analysis was undertaken on all enrolled neonates (< 28 days corrected age).

Aims: We aimed to evaluate the epidemiology of neonatal infections at Philippine General Hospital , Manila.

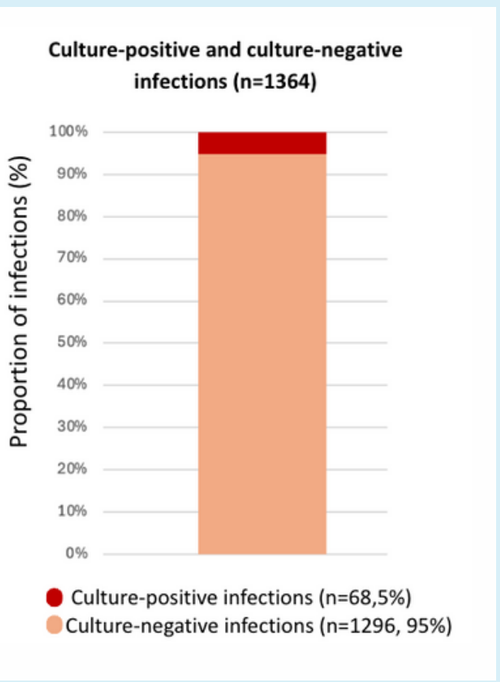

Figure 1. Culture-positive and culture-negative infection episodes

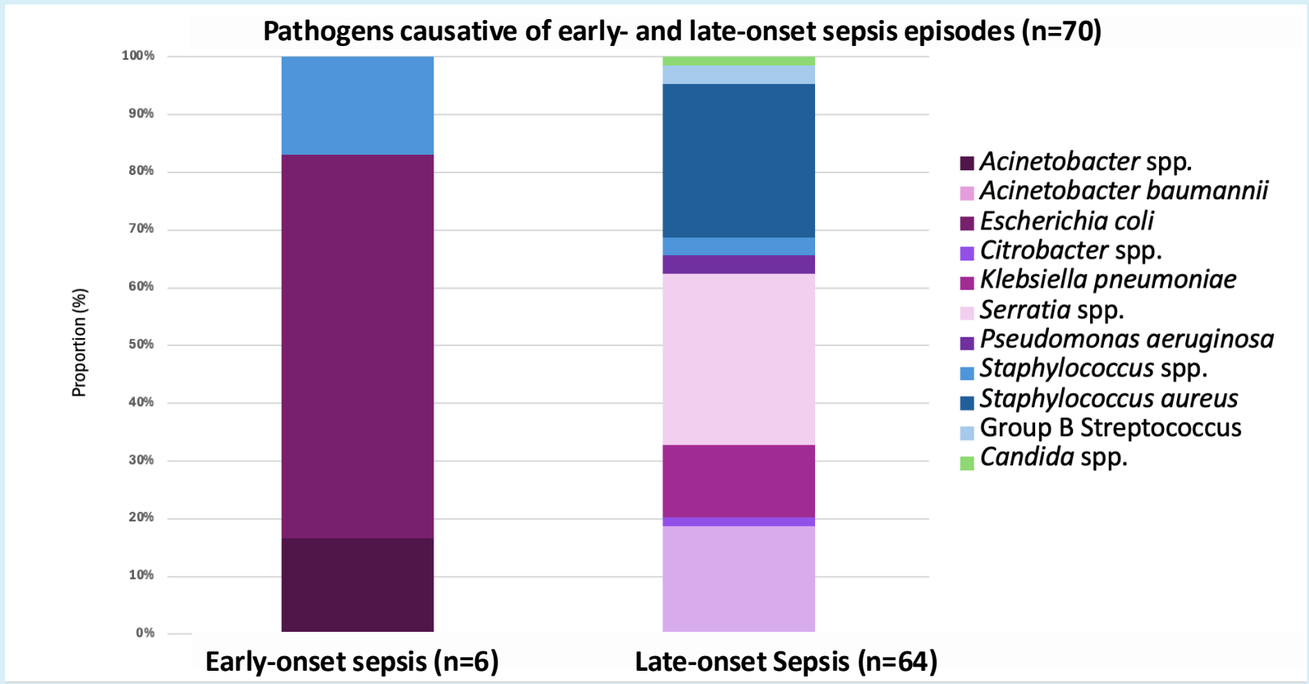

Figure 2. Pathogens causative of early- and late-onset sepsis episodes

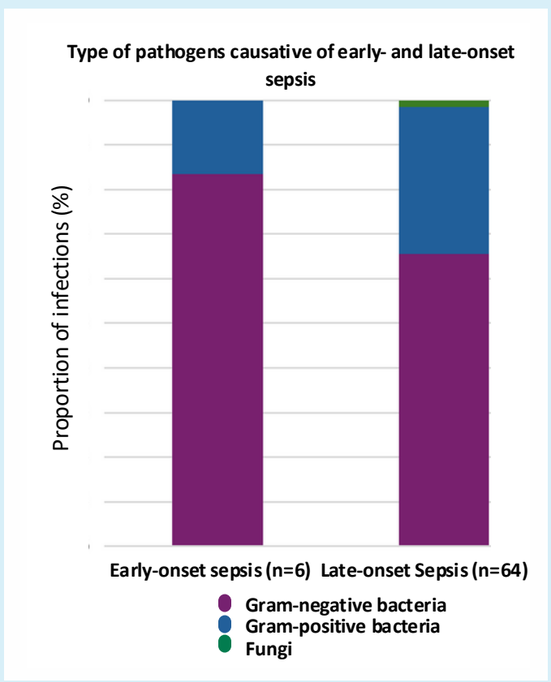

Figure 3. Pathogen types causative of early- and late-onset sepsis

Results:

Demographics:

- Enrolled **1046 neonates**
- Median gestational age: 34 weeks (Interquartile range (IQR): 31-36 weeks)
- Median birthweight: 1942g (IQR: 1456-2515g)
- Median length of NICU stay: 18 days (IQR: 10-34 days)
- 6% (60/1046) of neonates had an episode of culture-positive sepsis

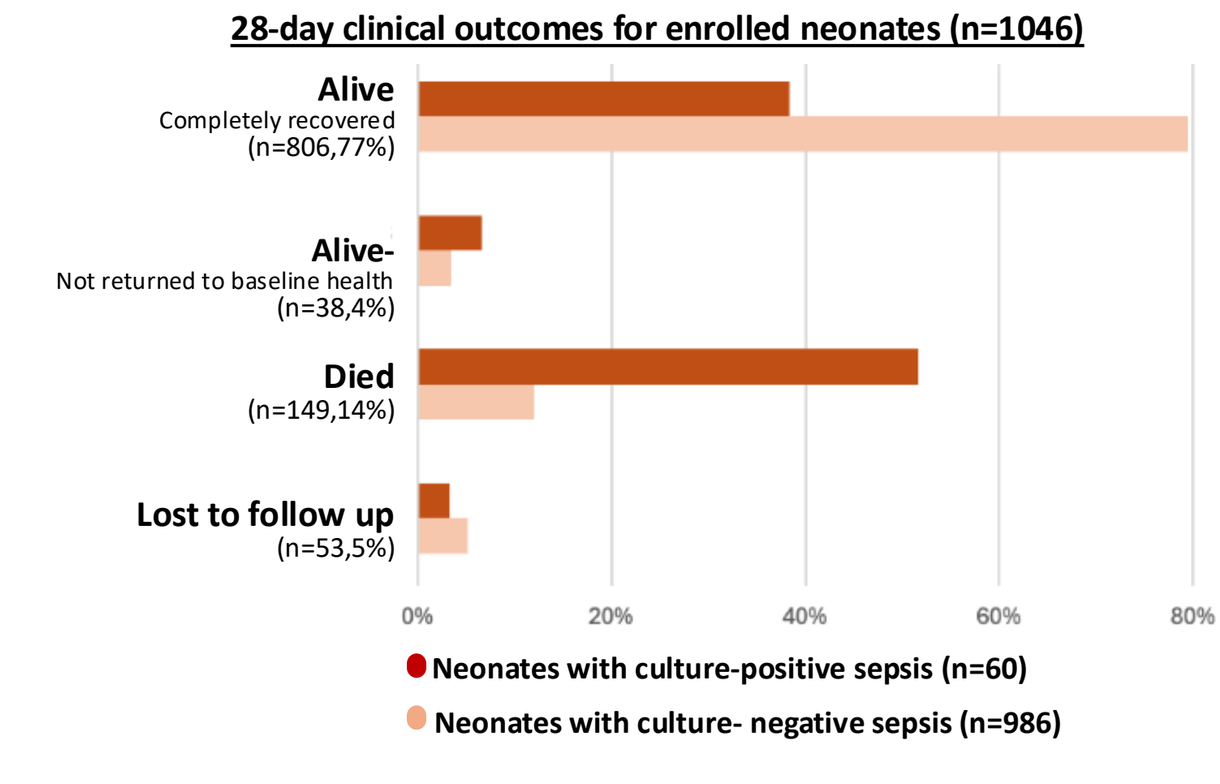

Figure 4. 28-day clinical outcomes for enrolled infants

Infection episodes:

- **1364 episodes of infection recorded**
- 997 (73%) early-onset community-acquired infections (infections acquired within the first 48 hours of life)
- 367 (27%) late-onset hospital-acquired infections (onset of clinical signs >48 hours after birth)
- 5% (68/1364) of infection episodes were culture-positive for a significant pathogen *(Fig. 1).*
- The most commonly-isolated gram-negative pathogens overall were ***Serratia* spp. (n=19/70, 27=%) *A. baumannii* (n=12/70, 17%)** and ***K. pneumoniae* (n=8/70, 11%)** *(Fig 2.)*
- The majority of isolated pathogens in both early- and late-onset sepsis were gram-negative (Fig. 3).
- **40% (18/45) of tested gram-negative bacteria were resistant to carbapenems.**

Clinical outcomes at 28 days:

- Mortality rate overall of 14% (149/1046)
- 4% (38/1046) were alive but not back to baseline health
- 5% (53/1046) of enrolled were lost to follow-up and included in analysis as 'Alive'
- 12% (118/986) of neonates with culture-negative sepsis and 52% (31/60) of neonates with culture-positive sepsis died *(Fig. 4).*

Conclusion: There is a high burden of infection leading to high mortality rates in neonates at PGH. Gram-negative pathogens predominate and are associated with a high degree of resistance to empiric regimens for early- and late-onset sepsis. Culture-negative infections prevail, emphasising the need for empirical antibiotic guidelines that reflect geographic variability to ensure babies receive efficacious therapy.

References

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