



## Sepsis among neonates in a Ghanaian tertiary military hospital: Culture results and turnaround times

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### Key Messages

- In a tertiary Military Hospital in Accra, one in two bacterial isolates among neonates with confirmed sepsis was multidrug resistant.
- Although the turnaround time from sample collection to culture report was satisfactory, half of the neonates were discharged before the receipt of culture reports.
- These high levels of multidrug resistance call for local antimicrobial resistance surveillance and stewardship.
- Clinicians need to be cautious in discharging neonates without knowing the culture results.

### What is the problem and why is it important?

- Neonatal sepsis remains the most common cause of neonatal morbidity and mortality.
- In Ghana, where a neonate dies approximately every 15 minutes, neonatal mortality is an enormous problem (the neonatal mortality ratio is 25 deaths per 1000 live births in the Greater Accra region).
- Findings of significant antibiotic resistance, including multidrug resistance, have been previously reported in two studies from Ghana, with  $\approx 20\%$  culture positivity rate for suspected neonatal sepsis.
- However, neither of these two studies measured the turnaround time, which is important in choosing the most effective antibiotics to reduce morbidity, mortality and risk of antimicrobial resistance.

### How did we measure it?

- We described the bacterial profile and antibiotic resistance pattern as well as the contribution of turnaround time from receipt of specimens to reporting of culture results in neonates with suspected sepsis in 37 Military Hospital, Accra, Ghana (2017-20).
- This was a hospital-based cross-sectional study using secondary data from the electronic medical records.
- Where bacterial growth was detected within five days, initial Gram stains were performed and preliminary results were shared with the attending clinicians to guide their choice of treatment.
- Multidrug resistance is referred to as resistance to at least one antibiotic from three or more antimicrobial classes.

471 neonates with  
suspected sepsis

139 culture -  
confirmed  
(29%)

71 MDR  
(51%)

Culture positivity and multidrug resistance among neonates with suspected sepsis who underwent culture and antibiotic sensitivity testing at the 37 Military Hospital, Accra, Ghana (2017–2020).

## What did we find?

- Of 471 neonates with suspected sepsis,  $\approx 30\%$  were culture-confirmed.
- Coagulase negative *Staphylococcus* (55%) and *Staphylococcus aureus* (36%) were the most common pathogens, of which one in two were multidrug resistant.
- Despite satisfactory turnaround times (median three days for neonates that were culture-positive and five days for neonates that were culture-negative), 51% neonates were discharged before receiving culture reports; of these, 17% were culture positive.

## Implication

- Poor outcomes including neonatal mortality.

## Recommendations

- Introducing and using WHO global antimicrobial resistance surveillance systems (GLASS) as part of the stewardship program is urgently required to control and monitor the trends of multidrug resistance.
- Although the turnaround time was satisfactory, it could be reduced to preferably 50 hours with more advanced techniques.
- The 37 Military Hospital should conduct in depth qualitative exploration to ascertain why every second neonate was discharged before receiving a culture report.
- Additionally, the hospital should have a monitoring system to oversee and ensure that every neonate scheduled for discharge has received his/her culture report.