Summary brief

High empirical antimicrobial use despite widespread AMR in suspected neonatal sepsis in a Teaching Hospital in Ghana

Key Messages

• In this study of neonates treated for sepsis at a teaching hospital in Ghana, we found:
  ✓ High empirical antimicrobial use, which was compliant with institutional treatment guidelines.
  ✓ Less than half of neonates had culture and sensitivity tests performed.
  ✓ High resistance to penicillins and most cephalosporins and moderate resistance to quinolones and aminoglycosides.

• We recommend continuous surveillance of antimicrobial resistance to inform standard treatment guidelines at institutional and national levels.

What is the problem and why is it important?

• Underutilisation of diagnostic microbiology services, in many developing countries, including Ghana, has resulted in the excessive empirical prescription of broad-spectrum antibiotics in infections such as neonatal sepsis.

• Although the understanding of sepsis epidemiology has improved globally, there are still major knowledge gaps in antimicrobial prescription and susceptibility patterns in developing countries such as Ghana.

• In this paper, we describe antimicrobial prescription patterns, compliance with institutional and national standard treatment guidelines, blood culture testing, antimicrobial resistance (AMR) patterns and treatment outcomes.


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How did we measure it?

- The study reviewed electronic health records of 549 neonates (<28 days of age) admitted and treated for sepsis at the Child Health Directorate of Komfo Anokye Teaching Hospital (KATH) in 2021.
- We assessed whether antimicrobial prescriptions complied with institutional and national standard treatment guidelines.
- Compliance was defined as the prescription of an appropriate regimen and dosage (dose, frequency, duration) of antimicrobials as recommended for the management of sepsis.
- Study limitation: incomplete data records.

What did we find?

- Of 549 neonates with suspected sepsis, 529 (96%) were treated empirically with antibiotics in line with institutional treatment guidelines but not with national standard treatment guidelines.
- The majority of neonates with suspected sepsis (90.5%) were discharged satisfactorily after successful completion of treatment. However, 50 (9%) neonates died.
- Less than half of neonates, 257 (47%), had blood culture and sensitivity tests performed, of whom bacterial infection was confirmed in 70 (27%). This indicates that a high proportion of neonates were prescribed antibiotics where no infection was confirmed.
- Culture and sensitivity test results revealed high resistance to recommended penicillins and most cephalosporins and moderate resistance to gentamicin.

Implications & Recommendations

- The practice of following institutional treatment guidelines was associated with good outcomes. Therefore, we recommend regular review and update of institutional and national treatment guidelines.
- There was low bacterial infection confirmation through use of blood culture tests. We recommend that blood cultures are included under the benefit package of the national health insurance scheme (NHIS).
- High resistance to some recommended antimicrobials may render treatment ineffective. We thus recommend continuous surveillance of AMR to inform standard treatment guidelines at institutional and national levels.
- Electronic health records are a great resource to research and healthcare practice, and thus should be consistently maintained.

There is need to keep treatment guidelines up to date with AMR patterns in the country.