Summary brief **19th October, 2022**

High empirical antimicrobial use despite widespread AMR in suspected neonatal sepsis in a Teaching Hospital in Ghana[1]

[1]Reference: Omenako, K.A.; Enimil, A.; Marfo, A.F.A.; Timire, C.; Chinnakali, P.; Fenny, A.P.; Jeyashree, K.; Buabeng, K.O. Pattern of Antimicrobial Susceptibility and Antimicrobial Treatment of Neonates Admitted with Suspected Sepsis in a Teaching Hospital in Ghana, 2021. *Int. J. Environ. Res. Public Health* **2022**, *19*,12968. https://doi.org/10.3390/ijerph191912968

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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.

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

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.