

Low Culture Requests and High Multi-Drug Resistance:

A study among children and pregnant women with suspected urinary tract infections in two tertiary hospitals in Freetown, Sierra Leone

Reference:

Campbell, J.S.O.; van Henten, S.; Koroma, Z.; et al. Culture Requests and Multi-Drug Resistance among Suspected Urinary Tract Infections in Two Tertiary Hospitals in Freetown, Sierra Leone (2017–21): A Cross-Sectional Study. [Int. J. Environ. Res. Public Health](#) **2022**, *19*, 4865

Email:
juliansocampbell@yahoo.com

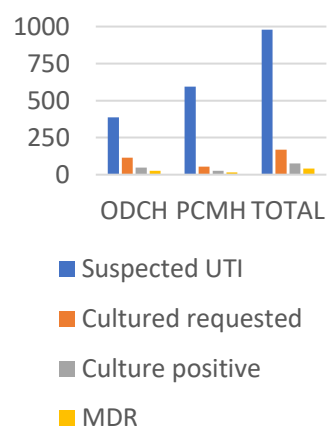
Key Messages

- In this first study from Sierra Leone in pregnant women and children with suspected urinary tract infections, we found:
 - ✓ high levels of resistance to commonly used antibiotics, indicating that empirical treatment without laboratory information may be ineffective and potentially dangerous
 - ✓ less than 20% of urine culture requests were made
 - ✓ there were no time metrics recording when specimens arrived in the laboratory and when results were communicated to clinicians.
- Efforts must be made to improve and align urine culture requests with realistic targets agreed between clinical and laboratory staff through the introduction of WHO Global AMR use surveillance system (GLASS)
- The report ledger in the laboratory must be modified to include time metrics to ensure that culture results are given as quickly as possible to clinicians to inform proper antibiotic selection.

What is the problem and why is it important?

- In Sierra Leone, there is no published data about how often urine cultures are performed in patients with suspected urine tract infections.
- There is limited information about antibiotic resistance patterns in bacteria isolated from these patients.
- Surveillance is vital to support antimicrobial stewardship programs in hospitals in the country, to ensure effective treatment and to limit further spread of antibiotic resistance.

We found high levels of MDR and resistance to commonly used antibiotics



This graph shows the numbers of patients with suspected urinary tract infections, culture requests, and those processed through to positive cultures showing almost 50% MDR positive

How did we measure it?

- This was a cross-sectional study involving record review in two tertiary hospitals (Princess Christian Maternity Hospital-PCMH and Ola During Children's Hospital-ODCH) in Freetown between 2017 and 2021.
- We included pregnant women and children with suspected urinary tract infections whose samples were received in the laboratory
- Bacterial isolates resistant to at least three different classes of antibiotics were classified as multidrug-resistant.

What did we find?

- Of 980 patients, 168 (17%) had culture requested and done. Of these, 75(45%) were culture positive.
- Culture request was significantly lower in pregnant women in PCMH compared with children in ODCH (9% vs. 30%, $p < 0.001$)
- 55% of the bacterial isolates exhibited multidrug resistance, with resistance noted particularly to trimethoprim-sulfamethoxazole (47%), nalidixic acid (44%), cefotaxime (36%) and nitrofurantoin (32%).

Implications and Recommendations

- The hospital needs to investigate mechanisms for better collaboration and use of the laboratory by clinicians with regular on-going monitoring and surveillance.
- Lack of information on turnaround times was a limitation.
- The report ledger in the laboratory must include time metrics to ensure that culture results are given as quickly as possible
- Introducing and using GLASS as part of a stewardship programme is urgently required to control and monitor trends of AMR.