SORT IT
Improving health systems through research

Summary brief

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First national assessment of antibiotic consumption in Sierra Leone: how do we address zero consumption of *last resort* antibiotics? [1]

[1]Kanu JS, *et al*. National Antibiotic Consumption for Human Use in Sierra Leone (2017–2019): A Cross-Sectional Study. Tropical Medicine and Infectious Disease 2021; Jun;6(2):77. https://doi.org/10.3390/tropicalmed6020077

Dr Joseph Sam Kanu
E-mail: samjokanu@yahoo.com

Key Messages

- There has been no previous assessment of national antibiotic consumption in Sierra Leone, and this was the first study. Key findings were that commonly used antibiotics were consumed in line with WHO country-level targets, there was overuse of metronidazole and ciprofloxacin, but zero consumption of "Reserve" or *last resort* antibiotics. This practice may increase the threat of antimicrobial resistance (AMR) in the country.
- The Pharmacy Board Sierra Leone (PBSL) and AMR Technical Working Group need to build on these findings to monitor and report annually on national antibiotic consumption and ensure that data are accurate and complete.
- Further work is required that includes understanding reasons for zero consumption of *last resort* antibiotics. This should be used to revise the National Standard Treatment Guidelines and the Essential Medicines List and establish functional antibiotic stewardship programmes.

What is the problem and why is it important?

Accurate data are essential to monitor antibiotic consumption at a national level, which will help to understand if antibiotics are being used rationally. Information on antibiotics consumed by route of administration and by their potential to induce and propagate resistance can inform strategies to prevent AMR.

However, to date, no information on national consumption of antibiotics in Sierra Leone is available. Furthermore, no functioning monitoring system has yet been established. Without such information, decision makers cannot be advised on efforts to improve effective antibiotic stewardship nor appropriately regulate antibiotic importations and use.

Defined Daily Dose per 1,000 inhabitants can be roughly interpreted as the number of individuals on antibiotic treatment per day.

WHO AWaRe categories of antibiotics

'Access': antibiotics which are used against a wide range of commonly encountered infections, with less risk of developing resistance. They are recommended as essential first or second choice empiric treatment options.

'Watch': antibiotics used only for specific, limited indications, as they are more prone to resistance. This group is high priority in stewardship programmes.

'Reserve': *last resort* treatment options, when all alternatives have failed.

SORT-IT is a structured operational research training initiative.

How did we measure it?

Using registration and import data for 2017-2019 from the PBSL database of drug import permits, we conducted a cross-sectional study on antibiotics for systemic use. We collected information on antibiotic name, route of administration, strength, and quantities imported.

We determined consumption levels using a standardized WHO methodology based on the assumed average antibiotic dose per day (defined daily dose) adjusted for country population levels. We also categorised antibiotics by route of administration (oral and injectable) and by their potential to induce and propagate resistance (AWaRe categories).

What did we find?

- Data completeness and accuracy were weak in the PBSL database.
- Nevertheless, national antibiotic consumption in Sierra Leone between 2017 and 2019 was 19 defined daily doses per 1,000 inhabitants, comparable to that of several other African countries.
- Consumption of 'Access' (65%) and 'Watch' (31%) antibiotics was in line with WHO country-level targets, but there was no consumption of 'Reserve' antibiotics.
- Oral antibiotics were those mostly consumed (98%), of which metronidazole and ciprofloxacin comprised over 50%. Amongst the injectable antibiotics, procaine benzylpenicillin and ceftriaxone were the ones most commonly consumed (also over 50%).

Implications and Recommendations

- National antibiotic consumption in Sierra Leone was estimated for the first time. PBSL and the AMR Technical Working Group need to build on these baseline findings to monitor and report annually on national antibiotic consumption and to strengthen the PBSL information systems for accuracy and completeness of data.
- No consumption of *last resort* antibiotics indicates that patients for whom other treatment options have failed may not have access to effective treatment options. Similarly, low consumption of injectable antibiotics may reflect limited options for inpatient treatment. The AMR Technical Working Group, SORT-IT AMR alumni, and research institutions need to undertake further research to understand the reasons for these findings.
- The Ministry of Health and Sanitation should use the results of this and future research to review and possibly revise the National Standard Treatment Guidelines and the Essential Medicines List.
- The high consumption of only a few antibiotics in Sierra Leone increases the threat of AMR. The AMR Technical Working Group needs to address these issues by establishing functional antibiotic stewardship programmes, including strengthened laboratory capacity for AMR, in Sierra Leone.