United Nations Sustainable Development Goals (SDGs): Fighting Antimicrobial Resistance (AMR) By Innovative Antibiotic Dashboard

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Introduction:

- The United Nations Sustainable Development Goals (SDGs), particularly SDG 3 on good health and wellbeing, face a significant threat from antimicrobial resistance (AMR), which endangers global health security and development progress [1]. Strengthening antimicrobial stewardship (AMS), using frameworks, such as "Start Smart, Then Focus", is essential [2].
- The COVID-19 pandemic has intensified the AMR crisis, highlighting the urgent need for innovative tools like an antibiotic dashboard [3,4].

Objectives:

- To explore antimicrobial stewardship implementation in acute care settings and propose an innovative antibiotic dashboard.

Method:

This research consisted of three sequential studies. **Study one** conducted a systematic literature review on AMS implementation in acute care settings prior to and during the COVID-19 pandemic. **Study two** was a retrospective cross-sectional review of 640 medical records, evaluating antibiotic prescribing in hospitalised adults with respiratory infections. **Study three** involved a prospective survey of 240 healthcare professionals, exploring their knowledge, attitudes, and perceptions towards antibiotic prescribing and AMS. Ethical approval was secured, and public and patient involvement through the Citizens Senate was integral, with registration in ISRCTN.

Results

- Study One identified key antimicrobial stewardship implementation strategies in acute care settings, with prospective audits (85%) and quality metrics (77%) being the most prevalent. Study Two demonstrated effective AMS interventions, achieving antibiotic stop in 47% of cases and de-escalation to narrow-spectrum antibiotics in 37%. Study Three highlighted the COVID-19 pandemic's disruptive impact, with interruptions in antibiotic reviews (81%), AMS audits (70%), and intravenous-to-oral switches (67%).
- Based on these findings, an **Antimicrobial Stewardship Dashboard** was developed to visualise trends in antibiotic prescribing, bacterial infections, AMS interventions, and hospital outcomes, supporting data-driven improvements in AMS practices (Figure 1).

Figure 1. Antimicrobial Stewardship (AMS) Dashboard: Trends in Antibiotic Use, Resistance, and Stewardship Interventions

Conclusion

- This research highlights the urgent need to strengthen AMS to combat the escalating threat of antimicrobial resistance, supporting the objectives of the United Nations SDGs. The innovative Antibiotic Dashboard introduced in this study provides essential AMS metrics that enhance antibiotic management and improve patient outcomes.
- By featuring dynamic sections for both initial empirical therapy and pathogen-directed therapy, the dashboard facilitates real-time clinical decision-making, which is especially critical during health emergencies such as the COVID-19 pandemic. Implementing such a digital innovation is vital to sustaining effective AMS practices, expanding research opportunities, and advancing global health standards to address future AMR challenges.

References

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