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Combating over-prescription of antibiotics in children: a digital health innovation with promising results

A large-scale study by the DYNAMIC project has produced promising results: the use of a new digital clinical decision-making tool has led to a two- to three-fold reduction in the prescription of antibiotics. These results, just published in the journal Nature Medicine, marks an important step towards curbing bacterial antimicrobial resistance.

The project focuses on improving care for sick children aged 0-14 presenting to care at primary care level health facilities in low- and middle-income countries. A team of Swiss and Tanzanian medical and IT experts from Unisanté, Swiss Tropical and Public Health Institute, Ifakara Health Institute and the National Institute of Medical Research, developed ePOCT+, a novel digital tool based on over 15 years of collaboration. This tool guides health care providers through the consultation process, prompting them on what symptoms and signs to assess, what tests to perform, to finally propose the diagnosis and appropriate treatment.

Promising results in the fight against the over-prescription of antibiotics

As part of a cluster randomized controlled trial in Tanzania involving 44,306 children, ePOCT+ was deployed in 20 health facilities, while 20 health facilities provided care as usual. The results speak for themselves: the use of ePOCT+ led to a considerable reduction in the reported prescription of antibiotics. From 70% of children receiving antibiotics to just 23% when health providers used ePOCT+. It is essential to note that this reduction in the prescription of antibiotics did not lead to an increase in clinical failures on day 7 compared to children managed in health facilities not using ePOCT+. In addition, no trend towards a deleterious impact was observed in terms of deaths and hospitalizations up to day 7.

The urgent need for action

Bacterial antimicrobial resistance was responsible for 1.3 million deaths in 2019, as much as malaria and HIV combined. Inappropriate use of antibiotics is a major factor in this problem. In Tanzania, the majority of sick children receive antibiotics during a consultation, even though 80-90% of these prescriptions are unnecessary and even harmful, due to their destructive effect on the intestinal flora. This study therefore represents a significant step forward in the fight against antimicrobial resistance, which is all the more urgent now that new antibacterial agents are becoming increasingly rare.

Promising prospects for expanded use

Although the results of this study are encouraging, the research team is continuing to work to ensure that these results hold true in less controlled conditions and to try to improve and extend the use of ePOCT+. The aim is to understand which algorithm branches are most useful in order to simplify it, and to understand why some healthcare providers are not yet using it, or are not using it correctly. The publication in Nature Medicine is an important milestone that could encourage wider adoption of this or a similar tool. Paving the way for safer, more effective care for patients in Tanzania and beyond.

Links

The Dynamic Project | Nature Medicine

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