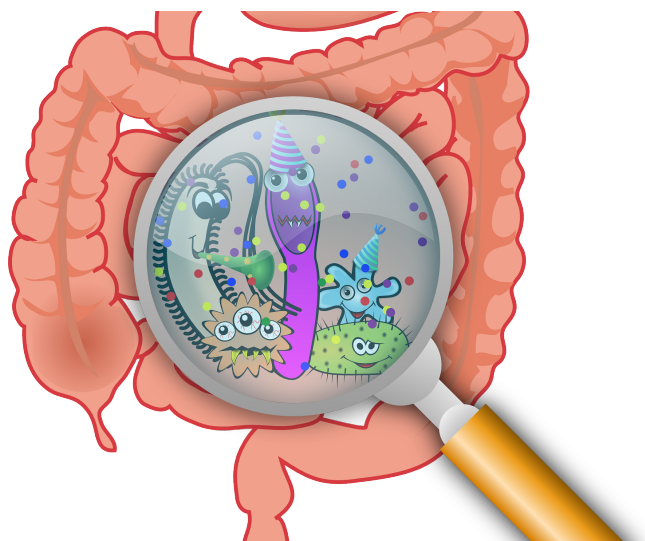


Decision-support tool could reduce unnecessary antibiotic prescriptions for child diarrhea

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A decision-support tool that could be accessed via mobile devices may help clinicians in lower-resource settings avoid unnecessary antibiotic prescriptions for children with diarrhea, a study published today in *eLife* shows.

The preliminary findings suggest that incorporating real-time environmental, epidemiologic, and [clinical data](#) into an easy-to-access, electronic tool could help clinicians appropriately treat children with diarrhea even when testing is not available. This could help avoid the overuse of antibiotics, which contributes to the emergence of drug-resistant bacteria.

"Diarrhea is a common condition among children in [low-resource settings](#)," explains lead author Benjamin Brintz, Research Associate at the Division of Epidemiology, University of Utah Health, Salt Lake City, US. "Antibiotics are often

prescribed for it, despite the fact these medications will not help patients who have diarrhea caused by viruses. Helping clinicians determine if a case of diarrhea is likely caused by a virus or bacteria could help reduce inappropriate antibiotic prescriptions."

In their study, Brintz and his colleagues developed a [statistical model](#) that integrated multiple sources of [real-time](#) data to help clinicians determine whether a child's diarrhea was caused by bacteria or a virus. This included information about prior patients, the seasons, and weather, which is useful because some viruses are seasonal in nature and certain bacterial infections may be spread by flooding or similar conditions.

To account for interruptions to electronic information sources, which can be frequent in some settings, the team built the model so it would still work if some of the information was missing. They also optimized it for use on [mobile devices](#). They then tested how well the model would work if it were applied to real cases of diarrhea in pediatric patients. Their results showed that it could reduce inappropriate antibiotic prescriptions by more than 50%.

The authors say the next step in their research will be to ensure the tool provides enough certainty that clinicians can trust it, and that it will not lead to patients who require antibiotics being undertreated. But if this decision aid can meet these [high standards](#), it could be a valuable resource for clinicians with limited diagnostic tools who often rely solely on their best professional judgment.

"The global burden of diarrhea is highest in low- and [middle-income countries](#), where there is limited access to laboratory testing," concludes senior author Daniel Leung, Associate Professor of Internal Medicine (Infectious Disease), and Adjunct

Associate Professor of Pathology (Microbiology and Immunology), at University of Utah Health. "The care of children in these regions could greatly benefit from an accurate and flexible decision-making tool."

More information: Ben J Brintz et al, A modular approach to integrating multiple data sources into real-time clinical prediction for pediatric diarrhea, *eLife* (2021). [DOI: 10.7554/eLife.63009](https://doi.org/10.7554/eLife.63009)

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