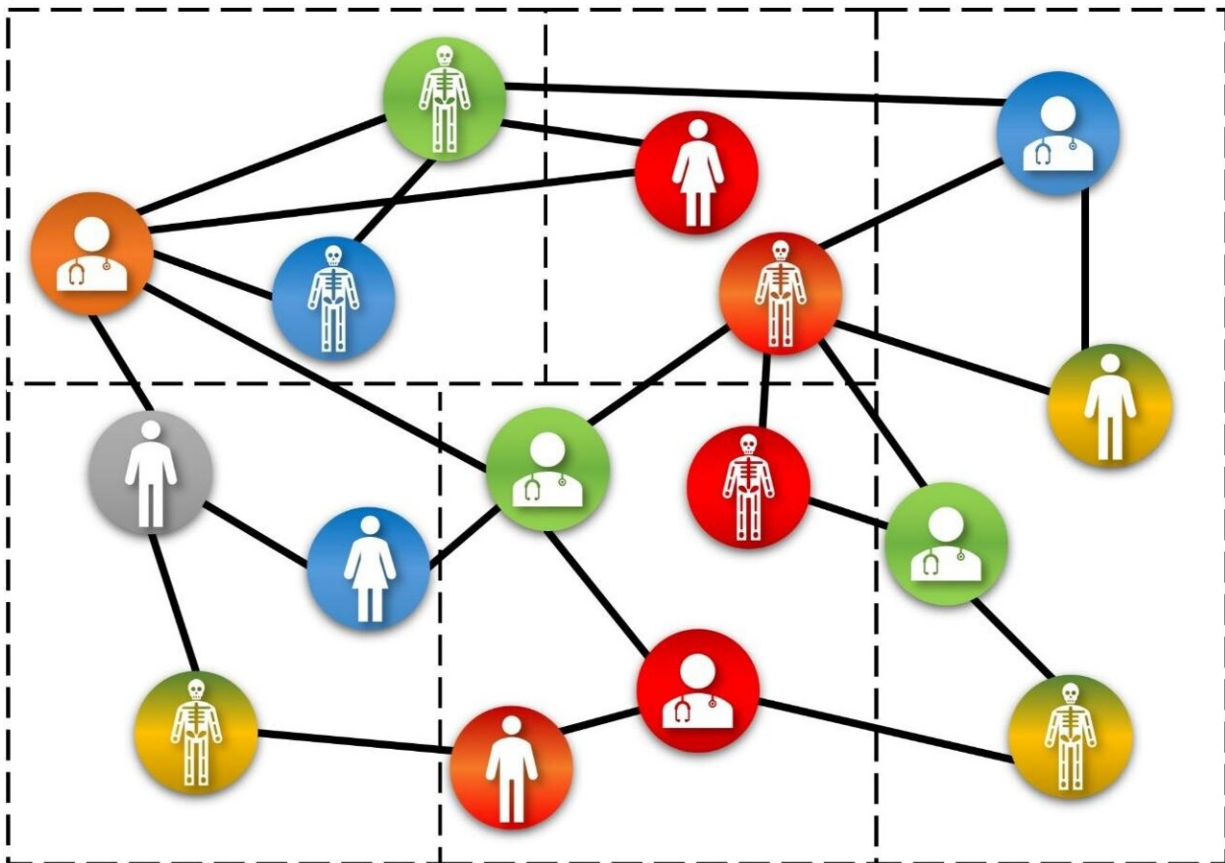


Graph neural networks: A new frontier in predicting hospital infections

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Researchers at the University of Geneva used Graph Neural Networks to model the complex patterns of multi-drug resistant Enterobacteriaceae transmission, aiming to advance how hospitals predict and manage infection risks. Credit: Racha Gouareb and Douglas Teodoro, University of Geneva.

Researchers at the University of Geneva have made a groundbreaking stride in health care technology, as detailed in their study published in *Health Data Science*.

The study focuses on the innovative use of Graph Neural Networks (GNNs) in health care settings, particularly in detecting antimicrobial resistance (AMR) and multidrug-resistant (MDR) Enterobacteriaceae colonization, with significant implications for [patient care](#) and hospital management.

Professor Douglas Teodoro, from the University of Geneva, explains the core problem addressed in the paper, "Our goal was to model the [complex interactions](#) within health care environments to predict the spread of health care-associated infections (HAIs). We incorporated network information about patients and [health care workers](#) into this prediction."

The study's most crucial message, as Teodoro emphasizes, is the potential of analyzing health care network interactions to enhance the prediction of HAIs. "This approach could be a vital step forward in infection control and prevention strategies in health care settings," he states.



Scientists developed new device using refined material. Credit: Racha Gouareb and Douglas Teodoro, University of Geneva

Looking ahead, the team envisions their models being used to augment Infection Prevention and Control (IPC) programs and reduce the burden of HAIs. "Given our method's data-driven approach, we anticipate its applicability to other pathogens with similar transmission dynamics and in various health care settings," Teodoro shares.

Accompanying the study is an image titled "Graph-Based Prediction of Hospital Infections," depicting the team's use of Graph Neural Networks in modeling the complex patterns of multi-drug resistant Enterobacteriaceae transmission. This work aims to revolutionize how hospitals predict and manage infection risks.

This research not only highlights the innovative use of GNNs in medical settings but also underscores the growing significance of technology in enhancing patient care and hospital management strategies.

More information: Racha Gouareb et al, Detection of Patients at Risk of Multidrug-Resistant Enterobacteriaceae Infection Using Graph Neural Networks: A Retrospective Study, *Health Data Science* (2023). [DOI: 10.34133/hds.0099](https://doi.org/10.34133/hds.0099)

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