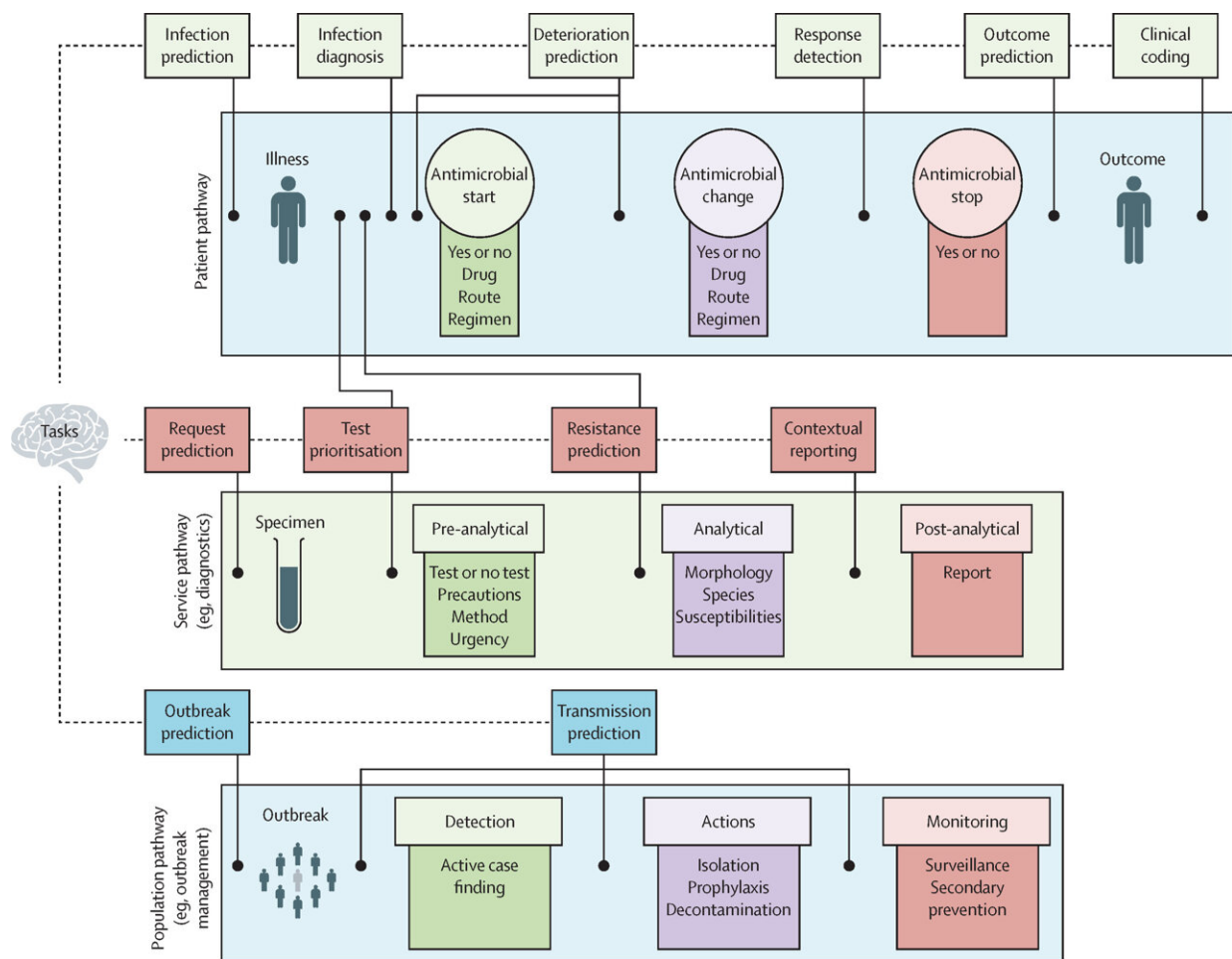# Researchers outline AI blueprint to help tackle antimicrobial resistance on a global scale

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Credit: *The Lancet Digital Health* (2023). DOI: 10.1016/S2589-7500(23)00221-2

Researchers from the University of Liverpool have outlined a framework for artificial intelligence (AI) to improve antimicrobial use and infection care, helping to address the global challenge of antimicrobial resistance (AMR).

Their blueprint is published in *The Lancet Digital Health* journal.

Lead author Dr. Alex Howard said, "Different forms of AI bring many opportunities to improve health care. AIs can harness complex evolving data, inform and augment human actions, and learn from outcomes. The global public health challenge of AMR needs large-scale optimization of antimicrobial use and wider infection care, which can be enabled by carefully constructed AIs."

The researchers noted that while AIs become increasingly useful and robust, health care systems remain challenging places for their deployment—and an implementation gap exists between the promise of AIs and their use in patient and population care.

With this in mind, the group has outlined an adaptive implementation and maintenance framework for AIs to improve antimicrobial use and infection care as a learning system. This considers AMR problem identification, law/regulation, organizational support and data processing in relation to AMR-targeted AI development, assessment, maintenance, and scalability.

"Bridging the implementation gap between AI innovation and tackling AMR presents technical, regulatory, organizational, and human challenges. Learning systems built on integrated dataflows, governance, and technologies have the potential to close this gap. Translational expertise between AMR and AI fields will be essential to appropriately design, maintain, normalize, and globalize AMR-AIs in infection care and realize the potential for AIs to support clinician-driven AMR

minimization strategies," Dr. Howard said.

The work articulates a vision of how data science can be leveraged to tackle antimicrobial resistance as part of the Centres for Antimicrobial Optimization Network program, a global collaborative bringing together world-leading multidisciplinary expertise in infection and health informatics.

  More information: Alex Howard et al, Antimicrobial learning systems: an implementation blueprint for artificial intelligence to tackle antimicrobial resistance, *The Lancet Digital Health* (2023). DOI: 10.1016/S2589-7500(23)00221-2

Provided by University of Liverpool

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