RADIX: Real-time Antimicrobial Digital Intervention Exchange

Addressing the critical issue of antimicrobial resistance (AMR) in London, with a focus on vulnerable populations

London Driver Project 2025-2026

ONE LONDON | LONDON SECURE DATA ENVIRONMENT

Part of the NHS Research Secure Data Environment Network

Project Leads

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Partners

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Introduction

Antimicrobial resistance (AMR) is a growing global health crisis, responsible for 1.3 million deaths in 2019 and projected to cause 10 million deaths annually by 2050. A major contributor to this issue is the difficulty of targeted prescribing, often due to the fragmentation of patient records and information. In 2016/17, nearly 4 million UK patients received care across multiple hospital trusts, resulting in 11 million attendances and inconsistent data across different electronic health records. This challenge is often compounded by microbiology test delays, and vulnerable groups (e.g., cancer patients and care home residents) face heightened risks, making integrated and timely care essential to combat AMR.

Timeline and Impact

The project is structured into four phases over 12 months:

- **Phase 1**: assembling core data assets, initiate governance processes, and engaging with patients and the public
- **Phase 2**: focusing on integrating new data flows and developing analytical tools
- **Phase 3**: machine learning models and digital fragmentation metrics will be validated through agile development sprints
- **Phase 4**: outputs will be deployed across operational environments, while a cross-sectional pandemic preparedness assessment is conducted

Clinically, RADIX will enable safer and more personalised prescribing by providing complete antimicrobial histories. At the system level, it will offer evidence to guide digital investment and integration across London. For research, the project will establish open, reproducible pipelines and explore the use of high-performance computing for future innovations.

Project Summary and Outputs

RADIX will be a comprehensive patient-level data asset that augments existing London SDE data (including primary and acute care antibiotic prescribing, antimicrobial testing and cancer status) with new pathology flows (e.g., microbiology) and care home status insights. Data will be ingested via the London SDE's London Data Service (LDS) for unified analysis while high-performance computing tasks, such as model training, will be supported by UCL ARC's Trusted Research Environment. The project will deliver four key outputs:

Integrated Patient-Prescribing Dashboard

Provides real-time, unified patient-level data for safer prescribing, and is securely hosted in the London SDE

Quantitative Digital Fragmentation Analysis

Measures how provider and EHR system diversity affects data visibility at prescribing, identifying critical gaps

Bug-Drug Mismatch Prediction Models

Layered machine learning models that can predict antimicrobial resistance risk at the point of care

Pandemic Preparedness Demonstrator

A cross-sectional analysis of viral illness presentations across all London ICBs on 31 January 2026

RADIX aims to deliver real-time, actionable insights that improve clinical decision-making and patient outcomes. By improving antibiotic prescribing for Londoners, immediate harm can be reduced from bugdrug mismatches (BDM), as well as future harm from growing AMR. RADIX could also be used to support other infections as part of pandemic preparedness.

Patient and Public Involvement and Engagement (PPIE)

Co-production and Lived Experience

A patient steering group will be established to help shape project priorities, advise on research design, and provide feedback on outputs

Qualitative Research

Conducting interviews with patients who have survived neutropaenic sepsis, as their perspectives will inform technical and ethical aspects of the project

Learning from Best Practice

Working with the Vivaldi Social Care study and its PPIE model to centre care home residents' and families' voices in research and policy

Supporting Governance and Transparency

Findings from PPIE activities will directly support Confidentiality Advisory Group (CAG) amendments