

## Wessex Infection Network for Genomics (WING) Annual report

**Date: 30 September 2025**

It is almost exactly a year since we started our evaluation of respiratory metagenomics in critical care and the establishment of a Wessex Infection Network for Genomics (WING). As per our terms of reference we aim to provide leadership, coordination and delivery of the Serious Presentation of Infectious Disease Genomic Network of Excellence (SPID GNoE) work packages in the Wessex region.

WING has been a successful platform engaging with all the NHS Trusts in Wessex and the Universities of Portsmouth and Southampton to share findings and knowledge, apply for research grants and participate in innovation and educational events.

We would like to share some of these successes from over the last 12 months or so:

- 1) We're delighted to report that University Hospital Southampton is one of three national sites that was able to achieve the deployment of this innovative genomic technology over the Winter of 2024/2025, contributing to patient management through enhanced pathogen diagnostics and antibiotic stewardship in ICU clinical cases and input to UK public health biosecurity through UKHSA's mSCAPE programme.
- 2) Establishment of a multidisciplinary team meeting to deliver results to intensive care colleagues and provide guidance on how to act on these. This will be expanded to include our colleagues in the WING group in future months.
- 3) Our lead UHS antimicrobial stewardship pharmacist Jackie Swabe was successful in winning a pre-doctoral fellowship to study the antimicrobial stewardship impact of metagenomics in critical care and she will have the opportunity to present this in the European Society of Intensive Care Medicine (ESICM) annual meeting in October 2025 in Munich.

### **Wessex collaboration through WING and Grants:**

- 4) Dr Harjeet Virk (consultant in microbiology and IDs) in Portsmouth was successful in leading a WING project funded by a grant (£20K) from NIHR Wessex Experimental Medicine Network (NIHR WEMN) to look at clinical data to expand digital methodologies in pathology using artificial intelligence (AI) to better understand sepsis across Wessex.

- 5) Professor Sam Robson from University of Portsmouth and Dr Nick Norton (Microbiology/ID consultant from Southampton) lead the WING group and were also successful in getting a grant (£20K) from Wessex Health Partners. They are aiming to investigate host transcriptomics in prosthetic joint infections (PJI), focusing on pathogen detection and distinguishing between infections and contaminants.
- 6) Prof Dushianthan A (Dushi) was successful in getting a grant (£60K) from the Wessex Secure Data Environment (SDE) to study the burden of severe respiratory tract infections in ICUs together with management strategies and their clinical outcomes.
- 7) Dr Paul Schmidt from Portsmouth Hospital was the lead for another successful SDE grant (60K) for the GAP-S study: General ward application of a biomarker-based protocol for early recognition of Sepsis: mind the gap beyond NEWS2.

### **External Collaboration**

- 8) Our R&D team (UHS Microbiology/ICU and UoS) are collaborating with colleagues from Inland University of Norway looking at metagenomics for blood culture detection, aiming for quicker results compared to standard diagnostic cultures. This project is part of Hannah Selman's (Clinical Scientist trainee in microbiology) MSc project.

### **Publications or planned publications**

- 9) Specifically, around metagenomics in addition to the presentation in ESICM (above), the team in UHS were part of a collaborative investigation with GSST: "Optimisation of whole cell human depletion that provides increased sensitivity and microorganism coverage of metagenomic assays". Draft awaiting submission to Nature Communications for peer review.

### **Educational workshop**

- 10) On 18th of September 2025 WING organised a workshop on the application of respiratory metagenomics in real life clinical settings. The event was supported by REVVITY and included interactive case studies based on genuine clinical investigations from the metagenomics pilot testing phase over winter 2024/25. The feedback from participants were very positive and there are demands for more educational workshops with regards to the clinical application.
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