

Impact of introducing respiratory metagenomic (RMg) sequencing with multiprofessional team interpretation and advice on antimicrobial stewardship (AMS) outcomes over adult and paediatric intensive care (ICU) areas

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INTRODUCTION

- RMg sequencing was introduced at University Hospital Southampton NHS Foundation Trust (UHS) in December 2024 as part of UK pilot implementation project¹
- RMg utilises rapid nanopore sequencing to identify a comprehensive respiratory pathogen profile within 6 to 7 hours².
- Multidisciplinary team (MDT) interpretation of RMg results to provide recommendations for clinical management accompanied the RMg program.

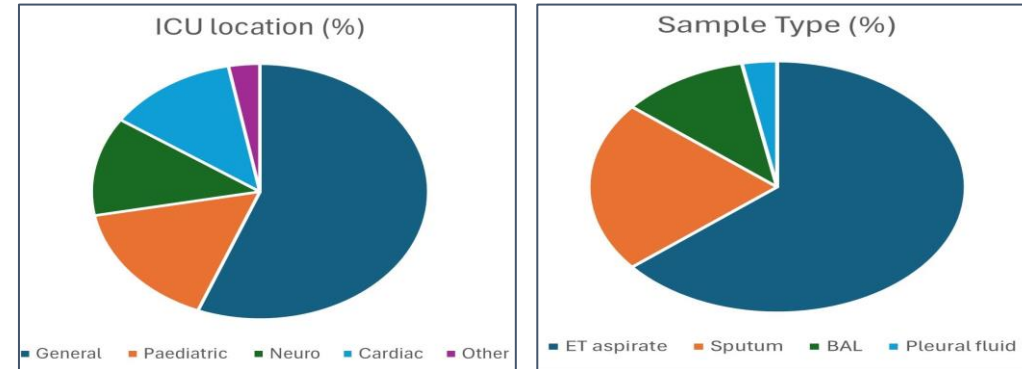
OBJECTIVES

To assess the outcome of RMg sequencing with MDT interpretation on AMS prescribing in adult and paediatric critical care.

METHODS

- MDT (healthcare scientist, microbiologist, pharmacist, virologist) review of RMg results twice a week in February and March 2025.
- Patients from all ICU areas at UHS were included.
- Patients were referred for RMg if:
 - There was high clinical suspicion of respiratory infection
 - New deterioration respiratory function
 - No organisms identified by conventional methods
 - Concern that organism had not been detected.
- MDT determined implications for patient care and findings were disseminated to clinical teams.
- AMS decisions were stratified into pre-agreed outcomes.

RESULTS



AMS related prescribing decision	No.	%
Continuation of current regime (results support current plan/reassurance)	35	55
AM prescription changed based on RMg (length/backup)	8	12
AM stopped (reduction in number or all AM)	4	6
AM regime changed resulting in broader spectrum therapy (escalation)	2	3
AM regime changed resulting in narrower spectrum therapy (de-escalation)	1	2
RMg result did not impact current treatment (inc. run failure)	14	22

- Sixty-four respiratory samples sequenced from 62 patients.
- In 78% (50/64) cases the MDT outcome impacted clinical care (See Table) including:
 - 55% (35/64) - assurance of current treatment
 - 12% (8/64) - change to antimicrobial prescription.
- In 23% (15/64) cases Antimicrobial (AM) therapy was optimised.
- Of these, in 11% (7/64) cases the RMg sequencing identified unexpected pathogens resulting in a significant change to treatment or investigation focus.

CONCLUSIONS

RMg sequencing accompanied by MDT discussion enhanced prescribing decisions in AMS for patients admitted to ICU. Unexpected findings were present in 1 in 10 patients. Interpretation of raw sequencing results by the MDT including scientist, microbiologist, pharmacist and virologist were key to providing confidence and implementation of RMg results.

ACKNOWLEDGEMENTS

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