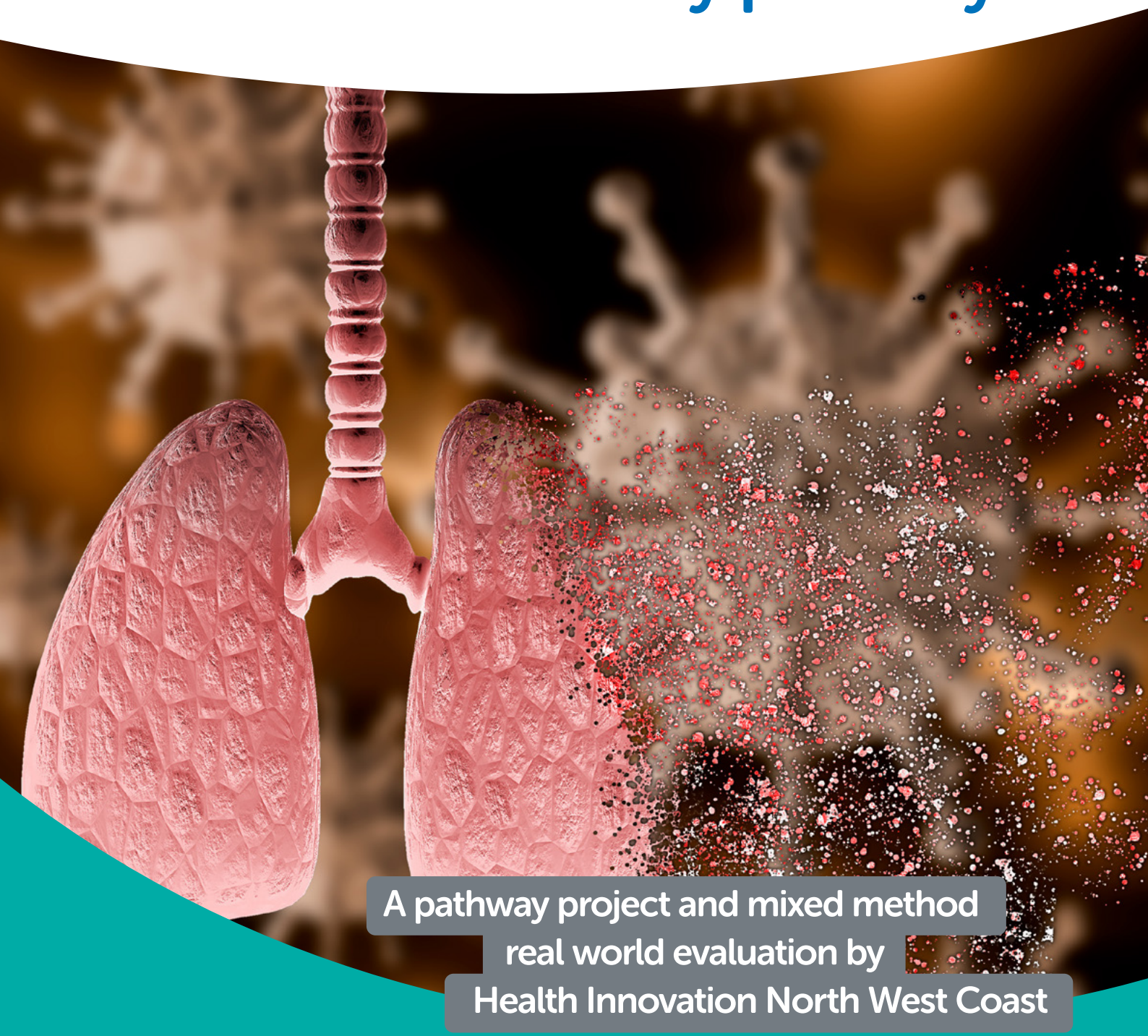
HEALTH INNOVATION
North West Coast

NHS
England

Acute respiratory infection: a test and treat community pathway



A pathway project and mixed method real world evaluation by Health Innovation North West Coast

Case study | August 2024

Summary

HINWC has worked with regional clinicians to co-design an innovative test and treat community pathway for acute respiratory infections. Eligible, high-risk patients could access testing at a local GP practice.

This was a collaborative project between Health Innovation North West Coast (HINWC), Moreton and Meols Primary Care Network (PCN), Wirral Teaching Hospital NHS Foundation Trust, Liverpool University Hospitals NHS Foundation Trust and Marine Lake Medical Practice. All partners co-designed the new pathway and the accompanying evaluation. The project was supported through a joint working agreement with Cepheid, a diagnostics company, and with technical input from NHS HealthCall and Unity Insights.

Introduction

Innovative community pathways can reduce winter pressures, boost antimicrobial stewardship and improve patient experience in primary care. Winter pressures faced by the NHS are often exacerbated by a surge in cases of acute respiratory diseases such as influenza, respiratory syncytial virus (RSV) and, more recently, coronavirus.

Although most people recover within a week without requiring medical attention, acute respiratory infections can lead to severe illness, hospitalisation and death. Older adults, infants, pregnant women, overweight individuals, and individuals with chronic medical conditions are particularly at risk, with England having among the highest mortality rates from respiratory disease in Europe.

These infections can also lead to a strain on healthcare services, including an increase in GP appointments and hospital admissions, with the average cost of a non-elective hospital spell currently at £5237. According to UK Health Security Agency data, during winter 2023/24 it is estimated there were 1,240 GP consultations a day for flu-like illnesses in England. 2023/24 was a relative mild year for flu-like illnesses in comparison to previous years which have peaked to over 2,500 GP consultations a day.
These figures show that flu-like illnesses are still a burden for GP surgeries in England.

With these factors in mind, HINWC brought together regional stakeholders in the summer of 2023, with the aim of designing a new pathway and building our understanding of how best to address these significant challenges.

Primary care-based point of care testing aims to improve diagnostic certainty, enabling GPs to provide the most appropriate advice and care, and to make well-informed decisions on the prescription of antibiotics and antivirals. Currently, antivirals must be prescribed within 48 hours from the onset of symptoms and as such have a time-limited window of opportunity to improve patient outcomes.

The pathway was designed to be test agnostic as there are several validated tests suitable for use in a community setting. The efficacy, specificity and sensitivity of the tests was not under review. Polymerase Chain Reaction (PCR) tests were selected as the best fit for the community test and treat pathway as they identify patients within the efficacy timeframe for antiviral medications.

This work built on previous pathway design and evaluation work in the region, such as the winter 2022/23 pilot to test and treat for flu. This project tested 250 clinically at-risk patients with flu-like symptoms at their local GP practice. 33 patients tested positive for flu and of those 23 were prescribed antivirals and 6 were prescribed antibiotics. Based on national averages for flu surveillance, an estimated 17 hospitalisations, 4 deaths and 1 ICU admission were avoided due to this approach. The cost saving of the 17 avoided hospitalisations was approximately £37, 000.

Whilst the flu test and treat pilot demonstrated successful testing to improve patient outcomes, further evidence was required to understand the barriers and facilitators to further spread of community testing pathways – both for other respiratory infections and for other settings, workflows, and testing devices.

Therefore, this project employed a mixed method evaluation methodology, with particular focus on implementation, clinician acceptability and patient experience.

In the absence of a digital platform to link up primary care test results with local pathology and point of care expertise we worked with HealthCall, an NHS owned digital company, to create a bespoke solution.

Evaluation Approach

Moreton and Meols PCN on the Wirral implemented testing from 29 January 2024 until 16 April 2024. Marine Lake Medical Practice, also on the Wirral, acted as a comparator site. While not offering testing, they followed up a matched cohort of patients to track outcomes, strengthening the data for analysis.

A **"mixed methods"** evaluation was undertaken:

- **A qualitative analysis was conducted in alignment with the Consolidation Framework for Implementation Research (CFIR) which was used to understand the complex factors influencing the implementation and sustainability of pathway change projects,**
- **clinical acceptability of acute respiratory testing in a primary care setting was established,**
- **patient experience of the new pathway was measured through a questionnaire.**

Quantitative data was collected on total test numbers, positive and negative test results, and antiviral and antibiotic prescribing. Patients were followed up at 7 and 28 days to track patient impact through A&E admissions, hospitalisations and deaths.

Findings

All 14 clinicians who responded to the acceptability evaluation agreed that community test and treat for acute respiratory infections was acceptable to them.

> **"The testing is located at one of the practices in the PCN. It's quite good because it doesn't take up much space. I don't think there is any cons to the set up. It is a quick testing process."**

Clinical staff acknowledge its potential to improve antimicrobial stewardship if test results are timely enough to influence prescribing decisions without significant delays.

> **"Looking at the bigger picture for primary care and the whole human race, the biggest benefit of this new pathway is reduction in unnecessarily prescribing antibiotics."**

Most of these same clinicians agreed that testing was fair to all patients and could:

- improve patient outcomes
- improve clinical work behaviours and
- improve antimicrobial stewardship

However, not all clinicians were confident about delivering community testing and concerns remained about workflow, workload, conflicting priorities, and time to receive test results.

> **"It should be a quick test that gives an accurate result or that a patient can use themselves. I want a test whereby someone walks in, I swab them and get the result immediately and I am ready to do consultation"**

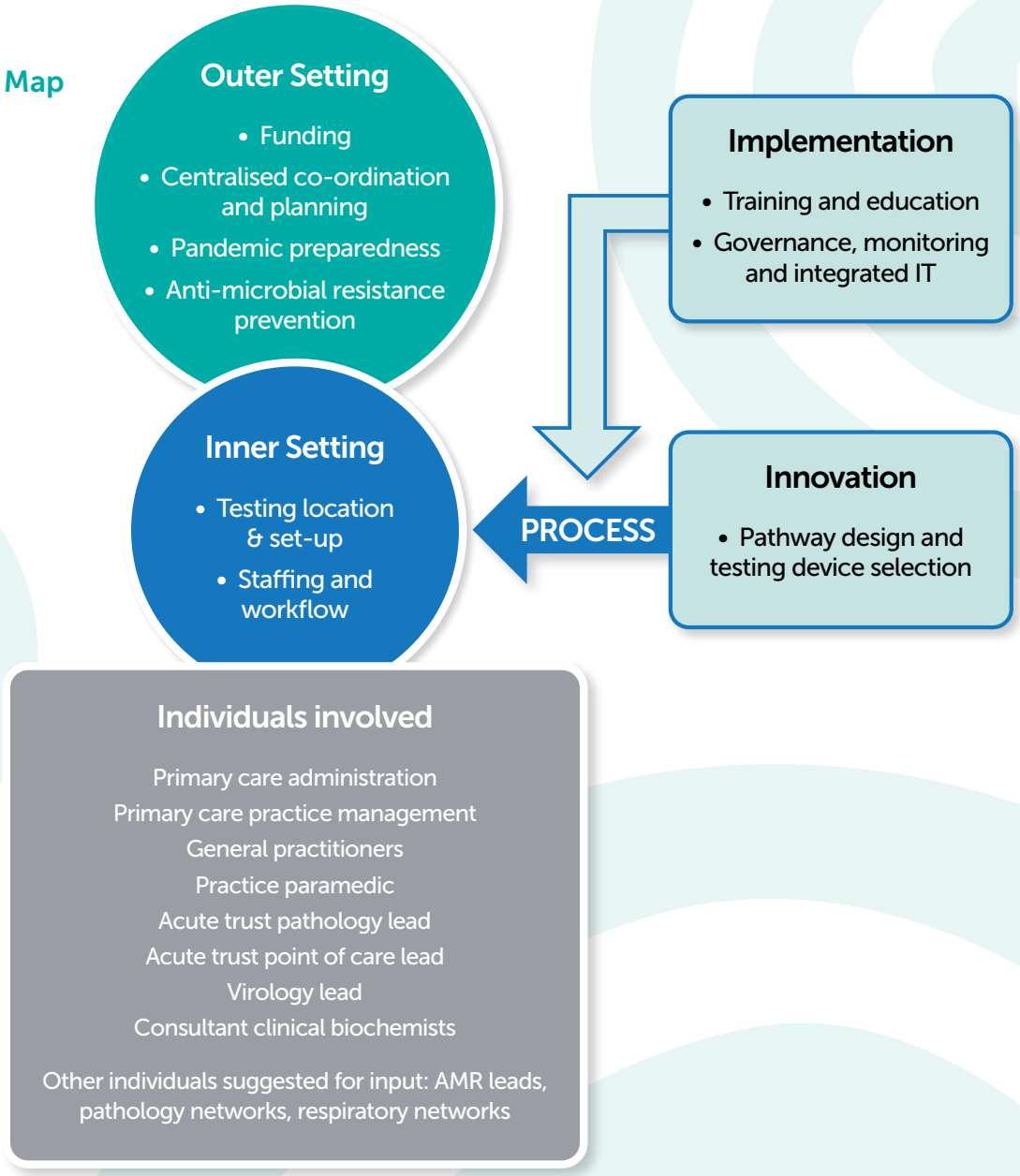
The qualitative evaluation included ten in-depth, semi-structured interviews with frontline and operational staff to understand **implementation barriers and facilitators**.

These interviews surfaced considerations across nine themes; funding, centralised co-ordination, pandemic preparedness, antimicrobial resistance, training and education, governance and IT integration, testing location and setup, staffing and workflow, pathway design and test selection.

The themes relate to five key domains of the CFIR framework listed below, and as shown on the thematic map *(figure 1)*:

- **Characteristics of the intervention**
- **Individuals involved**
- **Inner setting (e.g. at the practice or PCN level)**
- **Outer setting (wider system and national stakeholders)**
- **Implementation process**

Figure 1. Thematic Map



The application of the consolidated framework for implementation research has highlighted the importance of outer setting, or system wide, action as the key facilitator of the successful implementation of primary care-based testing and treatment of acute respiratory infections. Central co-ordination, planning and communication is highly recommended. A co-ordinated approach will reduce duplication of effort, offer efficiencies, allow for optimal integrated IT systems and strengthen pandemic preparedness. There is a requirement for resourcing for primary care delivery and education, and for pathology governance, support, co-ordination, and digital reporting.

Patient Experience

Patients were surveyed about their experience following testing. All patient responders agreed that community test and treat for acute respiratory infections was a positive way to deliver care and would recommend the pathway. Patients felt that rapid point of care testing led to the correct treatment for their symptoms, and it made them feel reassured about their care.

The regional point of care testing leads agreed with the patient focus of a community testing model, with one stating:

"It is patient focused. The patient doesn't care about a GPs title. The patient has come in sick, and we as a system must help the patient get better. It doesn't matter how we get on. The patient sees a system, and we've got to behave as a system rather than individuals or individual buildings or structures. We are the NHS system. So absolutely, we need to do more. There's a moral or ethical issue if we don't do anything"

Testing numbers

Moreton and Meols PCN tested 26 patients for influenza A/B, RSV and coronavirus. There were five positive tests in these patients: two for influenza A, none for RSV and three for coronavirus. Testing rates were lower than anticipated due to a short flu season, with infection rates in the region remaining low overall in line with national data (as reported by the UK Health Security Agency).

One patient with coronavirus was prescribed an antiviral, and 14 others were prescribed antibiotics. In the absence of testing for bacterial infections, antibiotics were prescribed when the GP suspected bacterial infection to be present, with or without the confirmed presence of an additional viral infection.

Follow up revealed one patient was admitted to hospital and another unfortunately passed away. Neither had tested positive for influenza A/B, RSV or coronavirus.

At Marine Lake Medical Practice, 44 eligible patients presented with acute respiratory infection symptoms. Of those, none were prescribed antivirals and 38 were prescribed antibiotics. By the seven-day follow up, two patients had visited A&E and were admitted. By the 28-day follow up, two additional patients had visited A&E but there were no further hospitalisations.

Key Considerations

Antimicrobial stewardship (AMS) is a growing priority that can't be ignored. The recently published antimicrobial resistance (AMR) action plan for 2024-2029 outlines the key requirements to combat and deliver AMS. Improved diagnostic certainty through testing is one of the ways antibiotic use can be optimised, and testing in a primary care setting has more potential impact than in secondary care.

Pathology involvement has been invaluable. Pathology expertise can help primary care select the most appropriate tests and devices for their budget and workflow. They also have strong purchasing power that can lead to more cost-effective service delivery. Pathology networks can support learning and communities of practice, aiding primary care to avoid the pitfalls and challenges of testing outside laboratory settings.

Challenges

Timely set-up of testing pathways well in advance of winter flu season is essential to maximise testing opportunities and patient benefit. This year's flu season was shorter than previous years, limiting opportunities for testing.

There was a delay in the practices being made aware that antivirals were available to prescribe which may have led to lower levels of prescribing than would otherwise have been observed. Earlier provision of antivirals should reduce the proportion of people who deteriorate and require subsequent hospitalisation.

The challenge for system leaders is how to invest in test and treat in the community when the financial benefit is felt in the impact on hospital admissions. The identified facilitators of central coordination, pathology governance and support, integrated IT and quality training and education needs investment.

Next Steps

Further work is required to optimise the pathway and the accompanying workflow to maximise the impact of point of care testing on prescribing behaviour and patient outcomes.

Testing and evaluation on a broader scale is recommended next flu season. To date, community testing has focused on high-risk patients to aid rapid patient management and any testing of a wider population needs further analysis to isolate any benefits.

Further evaluation should also include more testing locations, matched with comparator sites, and use a wider variety of laboratory approved diagnostic technologies.

"Not all point of care machines are equal. And they will all require different skills; they will all have different setups. They will have different sensitivities and specificities."

To build on current knowledge and implement an improved pathway next winter, joined up financial planning across the integrated care system is recommended to address investment challenges and test reimbursement systems.

> **"It is great asking the GP to do this and the GP practice is definitely the right place to do it. But it needs to be funded correctly."**

Disclaimer

This report presents the findings of an independent evaluation of the acute respiratory infection test and treat community pathway. The findings of this independent evaluation are those of the authors and do not necessarily represent the views of the participating local teams.

Declaration of interest statement

Health Innovation North West Coast (HINWC) supports innovators to bring their innovations to the NHS as well as provide evaluation services. This evaluation was funded by a joint working agreement between Cepheid and HINWC. The methodology and recommendations are independent of Cepheid
and represent the views of HINWC.

Acknowledgements

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