Connected Lateral Flow Testing (LFT) for Winter Viruses: An Effective Bed Management and IPC tool in ED and SDEC.

Nicky Hollowood, Dr Lauren Heath, Dr Richard Mayers, Dr Jen Lockwood, Victoria Mercer.

Introduction

As we approached Winter 2024, the Microbiology and Operational teams at Harrogate and District NHS Foundation Trust (HDFT) were aware that there was a significant risk of increased footfall through the hospital entry points (ED and SDEC) from patients presenting with generalised respiratory viral symptoms. Valid concerns were raised around whether the current clinical pathway would be able to manage this increased footfall effectively and keep our wards protected from onward transmission.

The four key viruses that were identified as likely to be widely circulating in Winter 2024 were FluA, FluB, Covid and RSV. It was an organisational priority to ensure that hospital beds were available for those most in need and that patients (and staff) were protected from infection risk as much as possible.

Issues

The original clinical pathway consisted of collecting a nasal swab from patients in ED presenting with respiratory viral symptoms and sending to Microbiology for PCR analysis on the Cepheid/Biofire. The turnaround time (TAT) was approximately 3-4 hours and cost per test approx. £50/£100 eliciting frustration among both clinical and pathology teams. The PCR test was the only test available at the time to assess infection status for patients in ED.

Decisions about infection management and patient placement were often made on clinical judgement as the results were not returned within the ED 4 hour window.

Proposal

The availability of the Sterilab Combi Antigen Lateral Flow Test (LFT), along with the development of an electronic smartphone reader by Testcard and associated software Clearscreen, presented an opportunity to improve our infection control and bed management provision in ED/SDEC.

Using the LFT with the reader, Dr Lauren Heath and Dr Richard Mayers jointly developed a new clinical decision pathway to enable rapid bed management decision making and minimise infection risk. The guidance was focussed on ensuring that ED and SDEC clinical staff could easily follow the pathway and select suitable patients for LFTs but still request PCR tests for those clinically indicated. The majority of patients do not require a sophisticated PCR test but it is often requested as there is no alternate test available.

The connected LFT service enables four test results (Flu A, Flu B, RSV and Covid) to be generated from one swab in 10 minutes. A photograph of the LFT cassette and the results are electronically captured by the Clearscreen software platform where they can be viewed by our IPC, POCT and Microbiology team. Email alerts for positive results are sent in real time to our IPC and bed management team who are able to view a photograph of the test, identify the patient and time and date of the test.

This led to rapid clinical decision making for infection prevention and bed management teams who worked collaboratively; freeing up side rooms for infectious patients, reducing the number of unnecessary deep cleans and ensuring ambulance bays were managed more efficiently.

The results are electronically sent to Aegispoc, LIMS (Winpath) and EPR (WebV); ensuring compliance with UKHSA and end to end connectivity. The electronic results can be viewed and accessed by all the patients care givers as they move through the hospital.

For patients requiring additional tests (or diagnostic results) samples were sent to microbiology for a PCR, but for the majority of patients a simple screening tool to assess the risk of infection in ED has been clinically and cost effective

Benefits

Our ED consultant, Dr Jen Lockwood described the overall benefits as:

“If we can get a swab done for a walk-in short of breath patient, and it’s positive, we can stream them home for self-care without further workup (if they are not requiring assessment for another reason). This saves time and resources.

Having almost immediate infectious status on our patients in an essentially open ward, allows the workforce to take precautions to prevent getting infected. This means less sick days .

Knowing the infective status of a patient means we can manage internal flow better i.e. not put them in fit-2-sit which prevents further spread and the onward need to knock out this space whilst it’s deep cleaned.

The staff sickness level in ED is well under the national target of 5.6% and consistently below 3%, there is evidence that the introduction of this pathway has safeguarded our staff from infection risk as well as other patients.”

HDFT were the first UK NHS trust to set this service up and establish full end to end connectivity ensuring compliance with UKHSA guidelines. The success of this project has led to the introduction of similar services in other NHS organisations across the UK. In 2025 the service was shortlisted as a finalist in the Medipex innovation awards and presented to the NHS Urgent and Emergency Care team.

Thanks to our Commercial partners Sterilab and Testcard.