

Delivered in partnership with

*The***AHSN***Network*



Innovation Collaborative.

Using remote ECG device technology
in the **North East and Yorkshire.**

Part one: planning and implementation.

REGIONAL INNOVATION SERIES
SUPPORTING DIGITAL TRANSFORMATION



Overview

This case study focuses on a new digital monitoring project developed by Tees Esk and Wear Valley NHS Foundation Trust which is protecting mental health patients from the potentially life-threatening side effects of certain medications.

Part of a wider digital programme to transform cardiology outpatient services across the region, the project uses new mobile heart monitoring technology to track the impact of antipsychotic drugs on a patient's cardiac health in their own home.

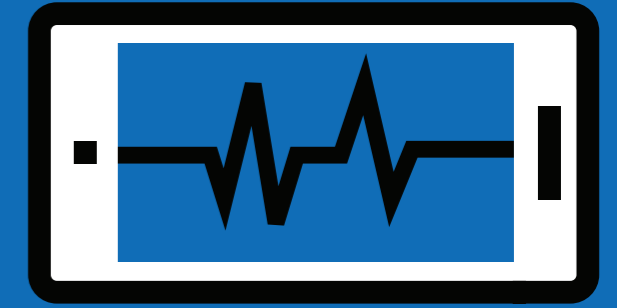
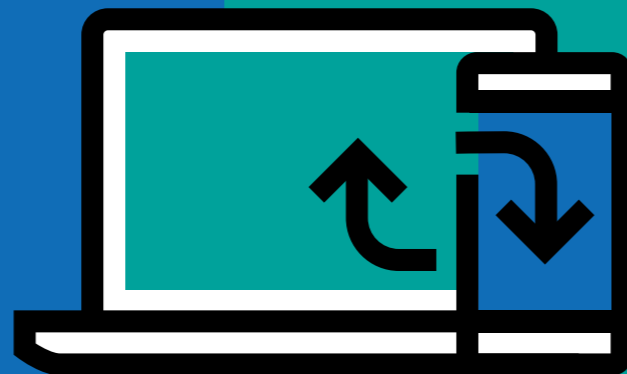
Using a portable ECG device that is no bigger than a credit card, community health professionals are able to take fast, accurate readings of a patient's heartbeat without requiring them to visit their GP surgery or local hospital. The process is also significantly quicker than a conventional ECG and can be done by a community health professional during a routine visit, making it more convenient for the patient while also saving clinical time.

Originally piloted to allow essential ECG monitoring to continue during the COVID-19 pandemic, the technology and the supporting care pathway are now being extended throughout the Trust, supported by NHSX funding. A business case for the device to be used for Health Checks is also being developed based on the project's success.

30 mobile devices
have been used
to monitor

300 patients in three
months within
the Trust

(October 2020 to December 2020)



The clinical case for change

The use of certain antipsychotic medications, particularly given at high doses, has long been associated with heartbeat irregularities (arrhythmias), which can cause convulsions, dizziness and fainting and, in rare cases, sudden cardiac death.

Guidance from the Royal College of Psychiatrists suggests that all patients at risk should be given an ECG prior to, and ongoing monitoring during, antipsychotic therapy – particularly when high dosages are being used in an elderly patient or a patient with a history of cardiovascular disease.

Source: Consensus Statement on High-dose Antipsychotic Medication, Royal College of Psychiatrists, 2014

ABOUT THIS SERIES

Health and care teams across England are increasingly using new technology to enable more care to be provided at home in response to the COVID-19 pandemic, supported by additional funding from NHSX. NHSX is also working with the AHSN Network to deliver the Innovation Collaborative to enable regional teams to accelerate deployment, and share learning and best practice.

The Regional Innovation Series takes an in-depth look at some of the exciting projects underway across the country. It explores the challenges and opportunities presented by new technologies and looks at their impact on people, processes, cultures and the practical tools available to patients, service users and frontline professionals.

Each study will be followed by a second report capturing the key insights and reflections once the project is fully established with the aim of helping others embarking on similar programmes.



Project aims and ambitions

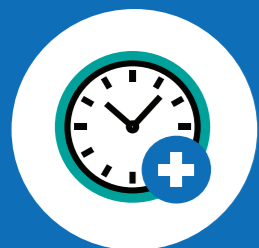
Initially developed to support the Trust's efforts to reduce patient flows in its hospitals during the COVID-19 pandemic, the project aims to:



Support continuity of care by ensuring new and existing patients can receive their ECG monitoring remotely during the COVID-19 pandemic.



Deliver a faster, more efficient way of performing essential monitoring, saving clinical time and making the process quicker for the patient.



Enhance the patient's experience by allowing monitoring to take place in the individual's own home and performed in a more discrete and dignified way.

“It's really important that people on antipsychotic medicines have regular ECGs but the COVID-19 pandemic made it difficult for us to send patients to GP surgeries. We also find that the process of having this done in a clinical environment, even their GP surgery, can be frightening or trigger anxiety for some patients. At-home monitoring is helping us to continuously monitor a patient's health in a much more comfortable and less intrusive way – and crucially gives us reliable data to keep people safe while they are taking these medications.”

Dr M Santhana Krishnan, Consultant in Old Age Psychiatry/Liaison Psychiatry, Tees, Esk and Wear Valley NHS Foundation Trust

Who is involved

Four Integrated Care Systems are working together across the North East and Yorkshire to develop, scale and evaluate remote monitoring technology to create virtual wards.

This project is part of this shared priority and features the following organisations:



What digital technologies are being used?

This project uses a portable ECG mobile device manufactured by AliveCor KardiaMobile. The light-weight device is easy to use and in most cases the ECG can be performed during a routine home visit by a community health professional.

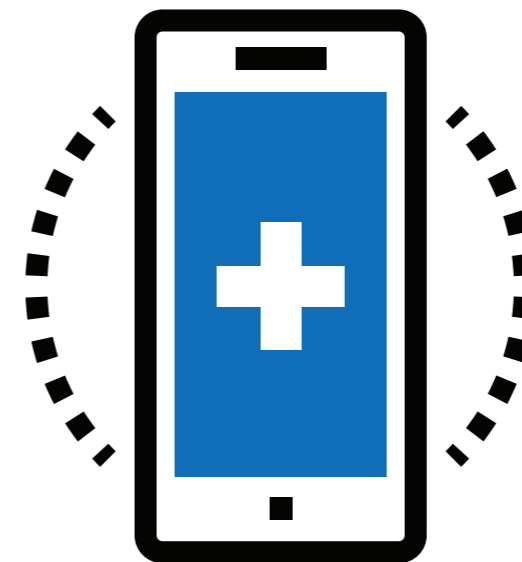
The small wireless device is placed on the patient's knee, on top of their clothing, and within 30 seconds remotely records the ECG via Bluetooth onto the professional's smartphone or tablet, rather than relying on a paper-based approach.

The accurate, real-time reading can then be emailed to the patient's clinical team as a PDF. The whole process takes no more than 10 minutes.

How does this compare to a conventional ECG?

A conventional ECG involves a large 12-lead machine. To obtain a reading, the patient must partially undress and a conductive gel is applied to their skin before 10 leads are attached to their chest, arms and legs. A trained professional is needed to use this machine.

The process is less comfortable for the patient and takes around 17.5 minutes longer than using the mobile device. Often the data output from the ECG is paper based, meaning that analysis and response to the findings take longer.



140

more devices have been commissioned for use, of which 40 are to be used by the neighbouring Trust – Cumbria, Northumberland and Tyne & Wear NHS Foundation Trust.

The impact on processes and working practices

As well as improving the patient's experience, the technology makes the ECG process faster and more efficient.

- 1** The community health professional performs the ECG at the patient's home (or care home) using the mobile equipment.
- 2** The ECG results are securely shared via an app on their smartphone to a cardiologist or other appropriate clinician.
- 3** Analysis from the ECG is then shared with the patient's clinical team, flagging up any abnormalities or red flags.
- 4** Based on these results, changes to the patient's treatment are discussed between their GP, psychiatry and cardiology teams.
- 5** The GP and psychiatry team then works together to put the new treatment plan into action and continues the heart monitoring process.

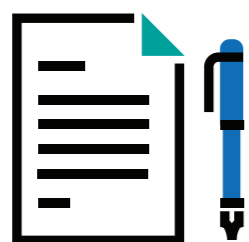
“The feedback we're getting from colleagues is overwhelmingly positive. The simplicity, effectiveness and accuracy of the device and how it aids social distancing speaks for itself, with teams from many disciplines across the Trust asking when the device will be rolled out to them. This is a great example of how it is often the simple innovations which lead to quick adoption – so much so that a business case for the mobile device to be used for Health Checks is now being developed, based on the initial success of this project.”

**Lauren Bennett, Innovations Coordinator,
Tees, Esk and Wear Valley NHS Foundation Trust**



Key tools and techniques for implementation

1



Planning

A planning group has been established to oversee the project, ensuring deadlines are observed and creating effective governance and operational frameworks that can be applied quickly and easily to future services.

2



Delivering at pace

Multiple workstreams were developed simultaneously, with market research, funding applications and the identification and recruitment of medics to support the proof of concept all happening at the same time to enable the project to move swiftly to implementation.

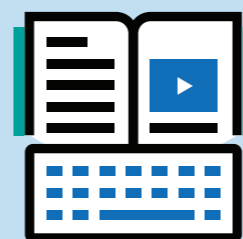
3



A 'virtual' training approach

The project has used digital channels to educate healthcare practitioners. Webinars and online demonstrations of how to use the device have enabled quick and successful adoption. The project also worked with team managers and consultant bodies to encourage awareness and uptake.

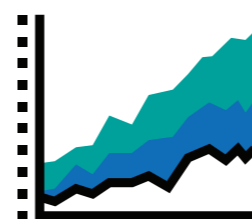
4



Tackling digital exclusion

Many patients are unfamiliar with, anxious about or lack confidence or access to digital technology. The project is working with digital inclusion specialists mHabitat to look at how the pathway can be shaped to ensure it meets all patients' individual needs and circumstances.

5



Evaluating impact

A variety of impact measures, including clinical outcomes, efficiency gains and cost savings are being formally evaluated as the project progresses. Shared learning networks and formal patient and clinical evaluations will enable the region to evaluate effectiveness together.

“During the COVID-19 pandemic we needed to quickly reduce footfall within the clinical setting to avoid the risk of COVID-19 transmission while still ensuring patients were regularly monitored.

By using the AliveCor device, our community teams could monitor patients in their own homes, thereby reducing potential exposure. This was especially beneficial for patients who were shielding or isolating.

The AHSN NENC were instrumental in the success of this project by supporting with the procurement of AliveCor devices and assisting with the regional roll out.

Charlotte Fox, Digital Transformation Lead, AHSN for North East and North Cumbria

Putting People First

The technology is unlocking significant benefits for both patients and clinical teams, with early feedback showing unanimous support for the new way of working.

Key benefits include:

A more convenient, COVID-19-safe solution



A conventional ECG is often performed in a GP surgery or local hospital, whereas the new technology now means that patients can have their ECG performed at home. This has proved particularly important during the COVID-19 pandemic, allowing patients who are clinically vulnerable to continue receiving essential ECG monitoring.

A better patient experience



ECGs normally require a patient to partially undress and have a sticky gel applied to their skin, both of which can be unsettling and unpleasant for some. The new technology simply requires the individual to put the device on their knee to take a reading. It delivers the same clinical-grade monitoring in a more dignified and less intrusive way.

A faster, more efficient process



By allowing the ECG to be taken more quickly as part of a routine community visit, the technology allows for the more efficient use of clinical time. It is expected to save around 255 days of clinical time a year across the 85 teams who will be using the devices. This should deliver annual efficiency savings valued in excess of £300,000.

“It is so easy! It’s much less intrusive. I don’t have to remove my clothing and I’m amazed how small the device is.”

Patient feedback

“It is amazing. It’s much less distressful and the ECG was obtained so quickly.”

Patient feedback

“The new equipment is brilliant and so easy to use ... if you take the device off me I will cry!”

Feedback from a community nurse involved in the initial phase of the project

100%

of patients surveyed said they preferred the **new technology** to the old approach.

255

days of clinical time is expected to be saved as a result of using **remote devices**





For more information about this project supported by NHSX:

Dr M Santhana Krishnan, Consultant in Old Age Psychiatry/Liaison Psychiatry
Tees, Esk and Wear Valley NHS Foundation Trust
E: mani.krishnan@nhs.net

Lauren Bennett, Innovations Coordinator
Tees, Esk and Wear Valley NHS Foundation Trust
E: lauren.bennett12@nhs.net

Charlotte Fox, Digital Transformation Lead
AHSN for North East and North Cumbria
E: charlotte.fox@ahsn-nenc.org.uk



To find out more about the Innovation Collaborative:

Existing members can access the Innovation Collaborative Digital Health workspace on the FutureNHS platform by visiting future.nhs.uk/innovationcollaborative.

Please e-mail InnovationCollaborative-manager@future.nhs.uk to request to join.