

Remote monitoring

Understanding
implementation and impact
of remote monitoring in
Integrated Care Systems



Remote monitoring enables the observation and reporting of people’s physiology and behaviour, and supports the diagnosis and treatment of health conditions at home. Remote monitoring can improve efficiency by freeing up hospital beds and clinician time, and reduce the COVID-19 backlog.



Project summary

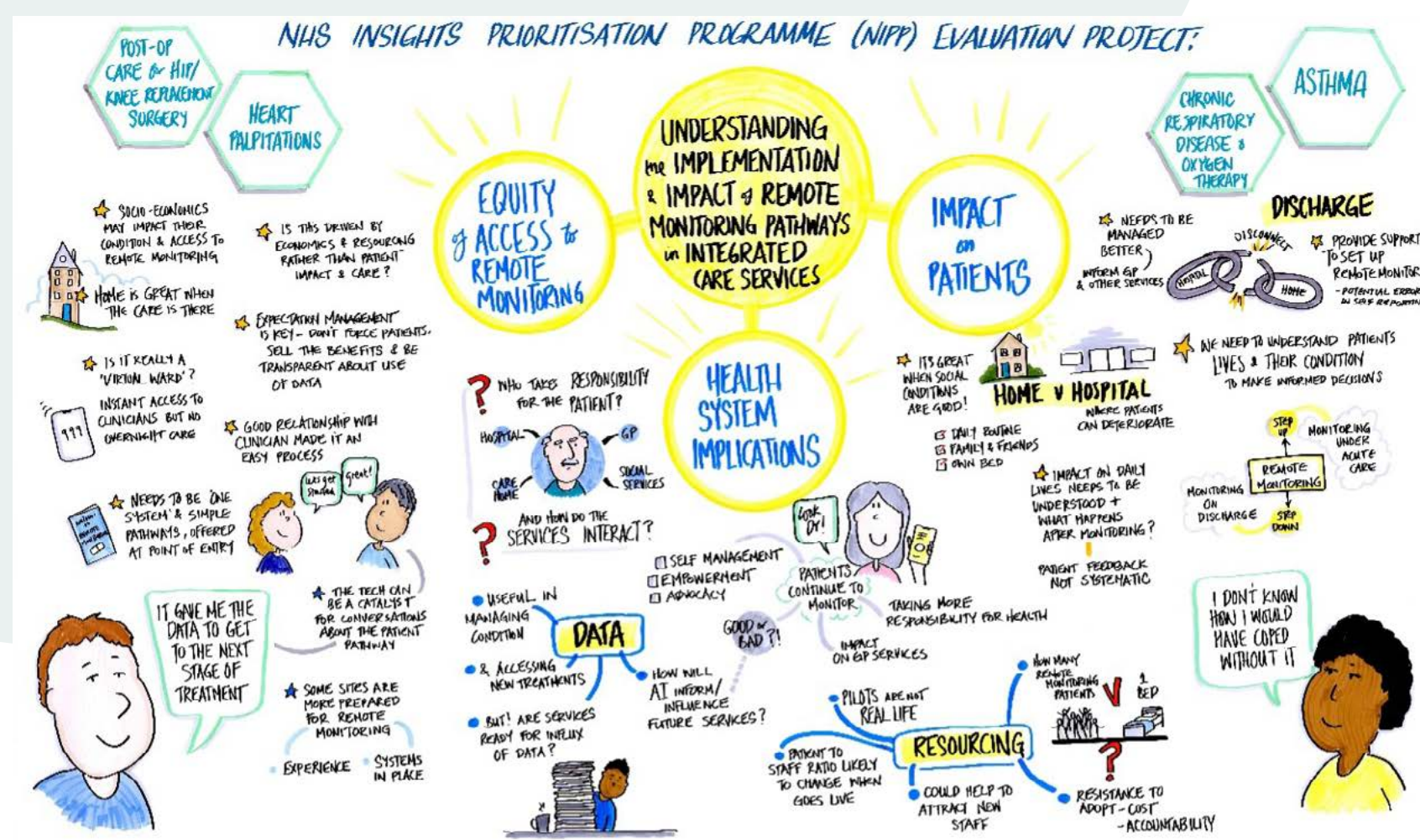
During the pandemic, remote monitoring solutions were rapidly mobilised to reduce the spread of infection, by reducing the need for face-to-face contact in community and hospital care settings. New infrastructure and processes were put in to deliver remote monitoring quickly, demonstrating that previous barriers to innovation could be overcome in an emergency.

as services are scaled up and extended. We worked with four sites in ICSs across the East of England to evaluate the implementation and impact of remote monitoring pathways for joint replacements, respiratory conditions (including asthma) and heart palpitations - all of which were at different stages of implementation; supported diverse patient populations and used different delivery models.

In the East of England, remote monitoring has been implemented across clinical pathways including heart failure, respiratory, post-operative surgery, palliative care, oncology and stroke medicine. Nevertheless, evidence is mixed on the clinical outcomes and impact on patients, as well as on the wider health sector. In June 2021, Health Innovation East of England conducted a rapid review of published evidence on remote monitoring in heart failure, chronic obstructive pulmonary disease (COPD), pneumonia, surgery and orthopaedics.

We analysed routinely collected quantitative data, interviewed clinicians about their experiences, and worked with our lived experience advisory panel (LEAP) to understand the experiences and views of patients and carers. Knowledge mobilisation workshops with the LEAP and participating sites helped to consolidate early findings and contributed to the development of implementation guidelines.

The project aimed to provide Integrated Care Systems (ICSs) with greater insight into the implementation and impact of remote monitoring pathways. This included understanding how well these pathways are helping care for patients outside of hospital, and to develop evidence for how to support patients to use remote monitoring



A summary of the focus for the NHS Insight Prioritisation Programme: output from a knowledge mobilisation workshop with the LEAP.

I Addressing health inequalities

The impact of remote monitoring solutions on health inequalities is inconclusive. Some innovations may reduce inequities by connecting patients to resources and information and improving health literacy, while others may inadvertently increase them by widening the 'digital divide'.

To add to the complexity, delivery models can impact different groups differently. We sought to understand how implementing sites were considering health inequalities in their remote monitoring services, including what they knew about their patient cohort and how they identified and assessed potentially eligible patients.

We requested patient demographic data from all sites (such as age, gender, ethnicity), including any available information about: distance from treatment centre; level of social support; index of multiple deprivation; and assessment information.

Our approach to patient and public involvement reflected our intention to focus on health inequalities in our project. We established the lived experience advisory panel to ensure views of patients were interwoven with the evaluation, filling knowledge gaps and giving us rounded insights into the impact of remote monitoring.

The involvement of our experts-by-experience led to discussions about the challenges some patients face participating in remote monitoring, such as language barriers, the impact of the cost-of-living crisis, or assumptions that people with certain characteristics (e.g. dementia) are not competent to use technology. These insights were incorporated into our evaluation, fed back to implementing sites, and discussed as part of our knowledge mobilisation workshops.

Our LEAP recruitment strategy aimed to target people with characteristics known to make them more likely to be digitally excluded, including people living in areas of deprivation, people without a fixed address, and minority groups (determined by protected characteristics, e.g. age, disability, ethnicity). However, we found it challenging within the project timelines to establish the suitable depth of relationships that would encourage individuals to commit to involvement in the LEAP.

We connected with patient leads and community patient support/advocacy groups, such as Stevenage Dementia Involvement Group and a respiratory support group in Luton, that reflected our digital exclusion focus to get further insight on this issue.



“Patients benefit so much more than we anticipated. It’s not just about monitoring, they get a huge amount of education and feedback and reassurance from it, and don’t re-present in acute settings anymore.”

Quote from interview with a clinician involved in delivering remote monitoring

Outcomes

Across four separate evaluations, we identified three overarching themes common to the remote monitoring implementation experience:

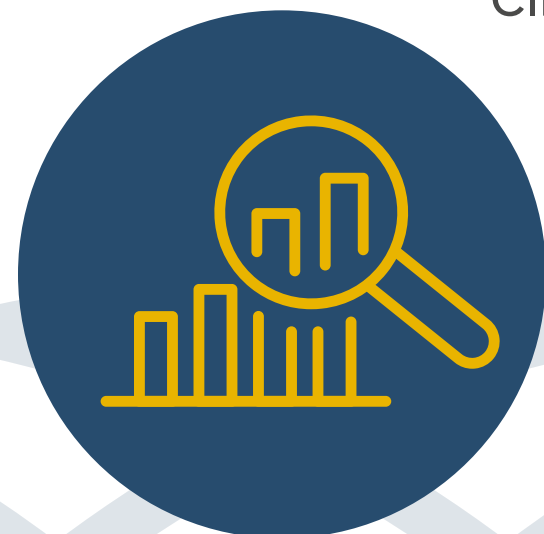
1. Potential for access inequities

Sites are committed to ensuring remote monitoring is inclusive, but the variability of patient demographic data collection and patient/carer involvement limits the robust monitoring of equity issues.

2. System-level challenges and enablers

Condition-specific pathways may be less sustainable long-term than a central hub approach. Opportunities to improve system integration should include consideration of community resources to improve patient experience.

Clinical champions, staff training and acknowledgement of resource implications are critical to early buy-in.



‘Remote monitoring represented an opportunity for me to work together with the specialist asthma nurse in a way that significantly enhanced the quality of my care.’

Patient

3. Data reporting, sharing and use

Enhancing support for data informatics (the collection, analysis and use of data to improve healthcare services) will improve knowledge of who is benefitting or excluded from remote monitoring and opportunities to share information for the benefit of patients and the health system.

Remote monitoring has the potential to work well for many patients and the staff involved. Our findings support the development of approaches that are inclusive, ensure patients are not disadvantaged by remote monitoring, and that they can fully engage with these services.

Implications for service improvement

Remote monitoring pathways were implemented rapidly during COVID-19 lockdowns and evidence for what worked well lags behind spread and scale-up activity. Nevertheless, remote monitoring is considered essential for NHS recovery post-pandemic. Our findings highlighted the need for improved data systems and evaluation capacity to ensure the full benefits of remote monitoring are realised. This aligns with national policy aims for ICSs to further develop electronic patient records and provide targeted support for more patients to use digital health tools at home. Patient and carer feedback shows scope for remote monitoring to be more inclusive, and to reflect their experiences in the design of such services.

Staff with a role in delivering or supporting remote monitoring are key to its success. Implementation must include clinical champions, training and ongoing support for staff, with an understanding that workload and resource use may vary as remote monitoring becomes established.

I Next steps

Remote monitoring is being implemented across clinical pathways. Our cross-cutting findings demonstrate that the key factors to consider are common to the various health conditions being addressed and specific technology in use. Those involved in the future development, scale-up and embedding of remote monitoring implementation may want to consider:

- Whether a central hub can support streamlined commissioning and delivery.
- Improved data systems to support better quality and variety of data collected, increased sharing of information and robust informatics.
- Building evaluation capacity into service design to inform decision-making.
- How remote monitoring links services across the ICS and requires knowledge about available resources from – and implications for – secondary, primary, community and social care, as well as the voluntary sector.
- How the experiences of patients and carers can be consistently included in remote monitoring service evaluation and development.
- Understand how they compare to alternatives.

Resources

- Four site-specific evaluation reports
- Cross-cutting implementation guide

We are also planning the following dissemination activities:

- Patient and Public Involvement impact report
- HIN/ARC hosted blog series
- Items in ARC/HIN newsletters

We are currently working on resources that will include:

- A user-friendly implementation guide/checklist
- A blog outlining [LEAP activity](#) and the patient perspective on remote monitoring
- A blog giving an [overview of the project](#) and the three cross-cutting themes

Key partners

- Hertfordshire Community NHS Trust and East & North Hertfordshire NHS Trust
- Cambridgeshire Community Services NHS Trust
- Northampton General Hospital NHS Trust
- Mid and South Essex Partners
- Healthwatch Hertfordshire
- East of England Citizens' Senate
- University of East Anglia
- University of Hertfordshire



More information

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Care settings

 STP/ICS  Acute trusts – in-patient  Community

Clinical areas

 Cardiovascular disease  Respiratory disorders  Surgery

Cross-cutting themes

 Digital transformation
 Health inequalities
 Patient and public involvement and co-design

Solution themes

 Diagnosis  Monitoring  Treatment  Management

Innovation types

 Device  Digital  Service

Innovation status

 Roll-out

This project was undertaken by Health Innovation East (the new name for Eastern Academic Health Science Network) and National Institute for Health and Care Research (NIHR) Applied Research Collaboration (ARC) East of England with funding from the Accelerated Access Collaborative at NHS England, and support from the NIHR.

The views expressed in this report are those of the authors and not necessarily those of NHS England, the National Institute for Health and Care Research, or the Department of Health and Social Care.