National Patient Safety
Improvement Programmes

National
Programmes

COVID-19 patient safety response

@NatPatSIP / @MatNeoSIP

www.england.nhs.uk

Delivered by:
*The**AHSN**Network*

Led by:
NHS England
NHS Improvement

Introduction

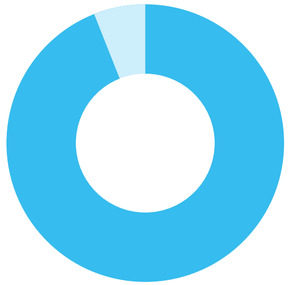
This report summarises the work, commissioned by the national patient safety team at NHS England and NHS Improvement, that Patient Safety Collaboratives (PSCs) carried out in 2020 and early 2021 to support the national response to the COVID-19 pandemic.

Working in partnership with NHS England and NHS Improvement, NHS Digital, NHSX and others, they helped roll out two patient self-monitoring pathways, COVID Oximetry @home and COVID virtual wards, designed to allow vulnerable people's care to be managed safely at home.

This followed the successful spread of a tracheostomy care bundle, designed to support staff, in expectation of a rising number of Covid patients requiring ventilation.

This report focuses on the learning from the implementation and the partnership approach which allowed these programmes to be run successfully and at pace.

As we continue to face the uncertainty created by coronavirus, we hope these learning points will help with the rapid response to future waves, and to provide an insight into how powerful it is when systems can come together and focus on a shared goal.



94% of all eligible trusts
implemented the three key safety interventions of the tracheostomy care bundle

100% of CCGs in England
established a COVID Oximetry @home pathway service

120 out of 125 acute trusts
implemented COVID virtual wards in the space of just three months.

About The National Patient Safety Improvement Programmes

The National Patient Safety Improvement Programmes (NatPatSIP) are a key part of the NHS Patient Safety Strategy, and collectively form the largest safety initiative in the history of the NHS.

The safety improvement programmes aim to create continuous and sustainable improvement in settings such as maternity units, emergency departments, mental health trusts, GP practices and care homes on positive safety culture, quality improvement capability, and system-level change.

The five programmes cover maternal and neonatal services, managing deterioration, medicines safety, mental health, and the adoption and spread of effective, evidence-based practice.

To find out more, visit www.england.nhs.uk/patient-safety/patient-safety-improvement-programmes

About Patient Safety Collaboratives

England's 15 Patient Safety Collaboratives (PSCs) play an essential role in identifying and spreading safer care initiatives throughout the health and care system, embedding new pathways of care.

PSCs are funded and nationally co-ordinated by NHS England and NHS Improvement, and hosted locally by Academic Health Science Networks (AHSNs). They are uniquely placed to work at system-level and with individual organisations, connecting national priorities with local needs.

In March 2020, PSCs' work was rapidly redirected to focus on the following priorities in the pandemic:

- Identifying and managing people at risk of deterioration as a result of coronavirus and use of early warning and communication tools.
- Implementing a safer tracheostomy care programme to help hospital staff care for patients with a tracheostomy.

To find out more, visit: www.ahsnnetwork.com/patient-safety

Tracheostomy safety

Summary

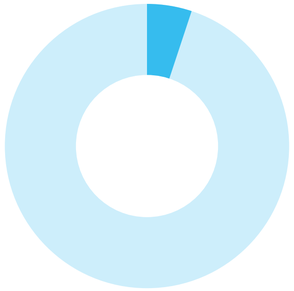
- As part of its COVID-19 Programme, in March 2020 the National Safety Improvement Programme identified the likelihood of an increase in the number of patients requiring a tracheostomy and the potential that such patients could be cared for by healthcare staff who were relatively unfamiliar with tracheostomy management.
- Partnership working to identify the areas where the greatest impact could be made, a collaborative approach was taken with the National Tracheostomy Safety Project (NTSP) and the country's 15 Patient Safety Collaboratives (PSCs) to co-create and develop a programme that would help frontline staff to provide high quality and consistent safe daily care.
- 94% of trusts implemented all three key safety interventions of the tracheostomy programme.

Why we did it

Many COVID-19 patients have required relatively prolonged ventilatory support in ICUs, and in some cases needed a tracheostomy procedure, which are used to help wean some patients from respiratory support.

PSCs launched a safer tracheostomy care programme to support staff to care for patients who have a tracheostomy.

Approx. 15,000
tracheostomies are performed in England every year.



5% airway-related
safety incidents reported are related to tracheostomy.

www.ncepod.org.uk/2014report1/downloads/OnTheRightTrach_Summary.pdf

The National Tracheostomy Safety Project (NTSP) was well known but not used consistently across the health and care system.

We published, in collaboration with the National Tracheostomy Safety Project, and the national patient safety team, a toolkit for healthcare staff to support them to safely care for patients with tracheostomies.

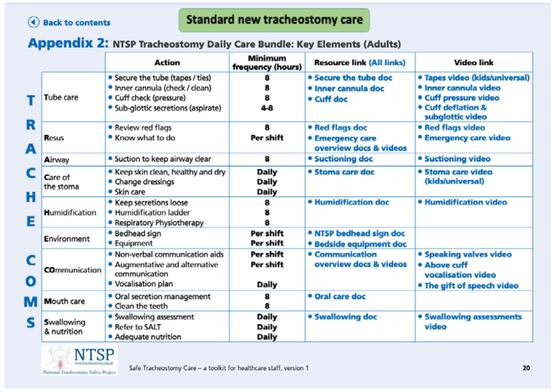
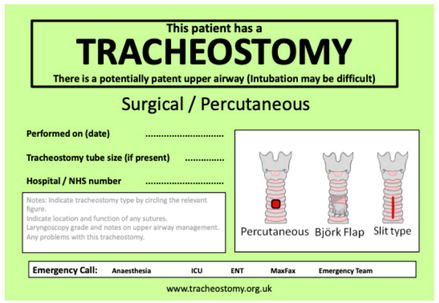
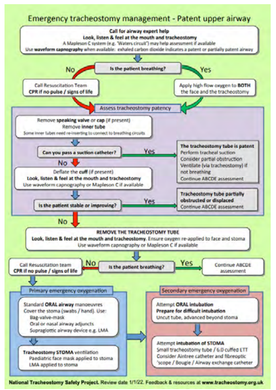
The toolkit draws on a two-year study of 18 safety interventions, led by intensive care consultant Dr Brendan McGrath, national clinical advisor for the National Patient Safety Improvement Programmes' COVID-19 safe tracheostomy care response.

The study of 2,400 patients with tracheostomies in 20 trusts, found a 55% reduction in serious incident severity and a 20% reduction in length of stay, where key tracheostomy safety interventions were followed.

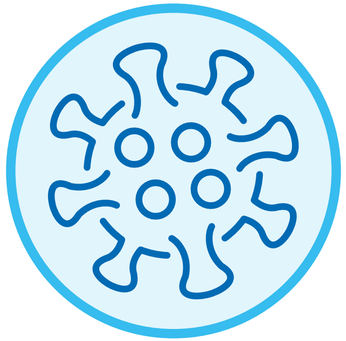
www.ahsnnetwork.com/safe-tracheostomy-care-toolkit

What we did

These are the three tracheostomy interventions in detail:

Safety Intervention	**Standardised tracheostomy daily care bundle** – locally agreed at individual organisation level, including local/regional Critical Care Network	**Bedhead signs** for patients, which include patient-specific key details of the tracheostomy along with the **emergency care algorithm**	**Standardised 'bedside' tracheostomy emergency equipment**
Rationale	Care bundles are evidence-based practices that are grouped together to encourage the consistent delivery of safe care. The NTSP reviewed critical incidents that have occurred involving tracheostomy or laryngectomy care. Recurrent themes and potential solutions were refined by national multidisciplinary consensus into nine key elements to ensure high quality, safe care.	Bedhead signs detail key information about the indication, type and date of a tracheostomy, along with details of how to manage the upper airway in an emergency, and who and how to call for help. They communicate essential information about the patient to staff who are caring for them.	There have been many incidents recorded in hospital lifts, corridors and remote departments where a blocked or displaced tube could not be managed due to a lack of immediately available equipment. Any clinical area caring for patients with a tracheostomy must have emergency equipment immediately available at all times and it must accompany the patient wherever they go during their hospital stay.
Resource		 	

How we did it - programme development phases



Identified as COVID-19 focus work

- North West Coast Innovation Agency and Health Innovation Manchester asked to co-develop national programme of work with clinical lead

20 March 2020

Initial background scoping and resource

- Engagement with: clinical lead, PSC co-leads & Critical Care Networks
- Kent Surrey and Sussex AHSN asked to support metrics

Programme draft submitted and agreed

- Work on resource pack commenced with NTSP

26 March

Resource pack

- Toolkit development
- Web links for training
- Templates of three core care components

4 April

Implementation

- First meeting of all 15 PSC leads
- Launch of new programme
- Scoping of three elements commenced

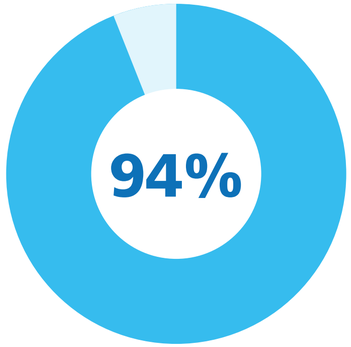
8 April

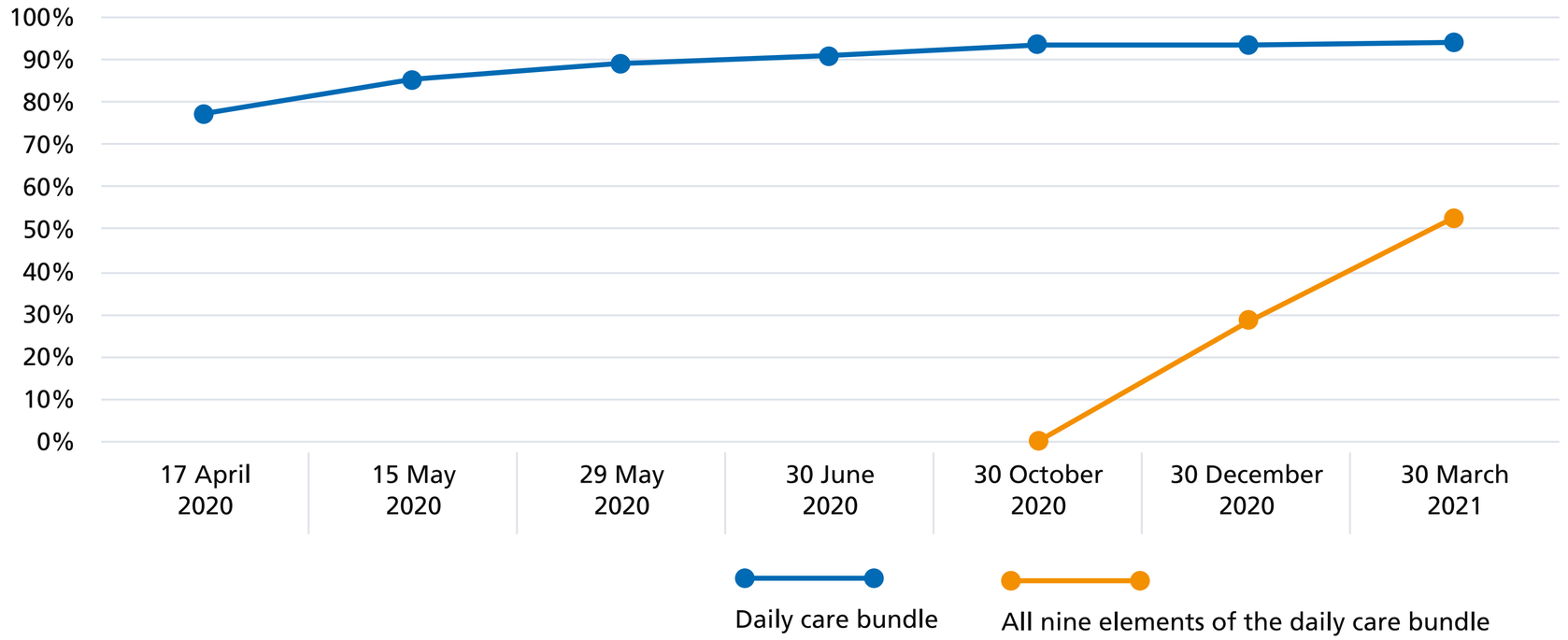
Outcome

To support an increase in the proportion of eligible sites (i.e. acute hospitals in England that care for patients with tracheostomies) adopting three evidence-based tracheostomy safety interventions (bedhead signs, availability of emergency equipment, daily care bundle) to 90% by March 2021.

PSC progress and contribution to NatPatSIP

Tracheostomy: Ambition achieved





Case study - tracheostomy passport

Working with partners across North West London, Imperial College Health Partners (ICHP) created a series of resources to standardise approaches to safe tracheostomy care and surge response across teams, including:

- Tracheostomy passport
- Discharge summary
- Covid/Surge Tracheostomy e-training

You can find out more and download the resources from their website.

There are four key enablers that were fundamental to successful and timely delivery of this remarkable portfolio of work:

Ownership and prioritisation – The program secured prioritisation from trust medical directors and North West London Critical Care Network, which helped to secure interest from multidisciplinary teams to recognise the added value of this program.

Hearts and minds – Through active engagement, ICHP helped to bring together an enthusiastic and expert group of over 40 clinicians who took on leading roles and committed to delivery across the three workstreams, despite tight timescales and clinical commitments.

Centrally coordinated, locally led model – Improvement initiatives require building in time, clarity and systems to facilitate successful implementation. ICHP played a key stewardship role which helped to bring about a structured, engaging, uncomplicated and achievable approach to improvement.

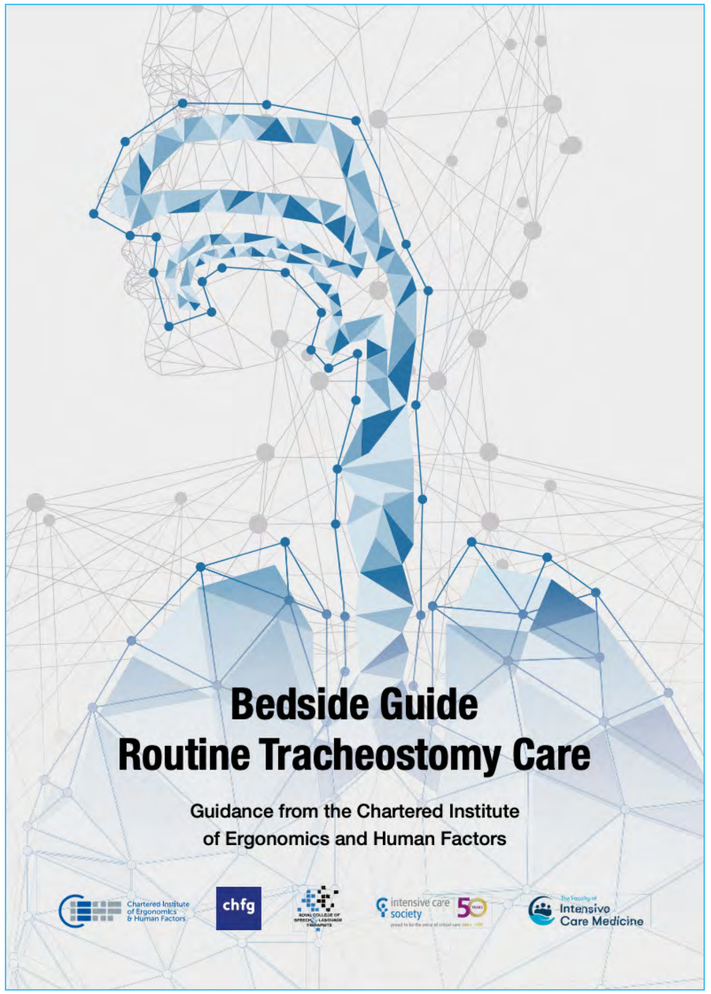
Build in sustainability from the start – Embedding good practice into 'business as usual' is a key success marker of an improvement program. Sustainability was built in early through trust ownership of the program, appointing a clinical chair to lead meetings, and multidisciplinary teams taking the lead on all three priorities.

Case study - human factors bedside guide

We worked with the Chartered Institute of Ergonomics and Human Factors group to published a fast response guide intended for use by healthcare staff who have been assigned to care for patients with tracheostomies.

This document contains a series of care action cards devised to aid good clinical practice. The easy-to-use action cards, with a series of questions, checklists and key points on one side and advised task steps on the other, are designed to be printed, laminated and kept at the bedside.

You can download the bedside guide here.



Learning points

These were some of the common factors identified through the programme, which could be applied by any health or care team.

Rapid cycle learning: The patient safety model for improvement is based on rapid cycles of test and change, with measurement in place from the start to check whether an improvement has been made. It provides a framework that means teams should never be afraid to try something out. During the COVID-19 pandemic, these cycles became faster and on a much larger scale.

Insights and solutions: The ability to gather and share knowledge became more important as the wealth of research and publications available grew exponentially. Curating the right information was of enormous value to hard-pressed frontline workers.

Toolkits and resources: Always 'keep it simple' – aim for high-quality, consistent, easy-to-follow guidance. The tracheostomy care toolkit was supported by a fast-response bedside guide, with easy-to-use action cards created by the Chartered Institute of Ergonomics and Human Factors.

Connectivity and relevance: Rapid learning, developing insights and quickly producing and cascading toolkits and resources to the right people when most needed was made possible by the PSCs' local, regional and national connected networks. The ability to leverage this knowledge of systems and quickly connect underpinned the transformational impact of their COVID-19 response. The impact can be much greater the wider organisations seek to influence change.

Freedom to act: The pandemic gave people 'permission' to take action quickly that encouraged innovation. We must not lose the momentum of the freedom to act, as this will be a powerful asset during reset, coupled with the right quality improvement framework to capture and share learning.

‘If we get this right, in hospital and the roll-out to communities, it will have a big impact for patients, for staff and for the wider NHS, saving money and getting people out of hospital faster.’

Dr Brendan McGrath, national clinical advisor for the National Patient Safety Improvement Programmes’ COVID-19 safe tracheostomy care response and intensive care consultant at Manchester University NHS Foundation Trust.

- NHS England and NHS Improvement is planning an evaluation to understand the impact on patient outcomes and efficiency savings to the NHS.
- The study of 18 safety interventions that this programme was based on showed that of 2,405 patients:
    - Patient centred outcomes were improved, along with quality and safety in care.
    - A significant reduction in ICU days, ventilator days, tracheostomy days and hospital length of stay.
    - Approximately £33k savings per patient with projected annual savings of ~£275m across the UK.

COVID Oximetry @home and COVID virtual wards

Summary

- In the first wave of the pandemic, it became clear that pulse oximetry to detect early deterioration of patients with COVID-19 was a safe and effective way of protecting both patients and the healthcare service, by supporting people to identify silent hypoxia.
- The National Patient Safety Team's Managing Deterioration Safety Improvement Programme worked with England's 15 Patient Safety Collaboratives to undertake the rapid roll-out of patient self monitoring pathways. This was an example of a whole system approach, led by clinical experts, with a national community of practice, patients and managers, working collaboratively to successfully deliver ground-breaking services at scale.
- 100% of CCGs in England had established a COVID Oximetry @home pathway service by the end of December 2020 and were fully operational by early February 2021. By the end of March 2021, 120 out of 125 acute trusts had implemented COVID virtual wards in the space of just three months.

Why we did it

In early March 2020, clinicians noted extremely ill patients arriving at hospital with low oxygen levels, but an absence of breathlessness - so-called silent hypoxia. They often arrived too late to be saved.

They suggested the monitoring and early detection of low oxygen levels at home could lead to earlier presentations and better patient outcomes, an approach which subsequently became recommended by the World Health Organisation.

Patients at risk of poorer outcomes could potentially be monitored using a simple and cheap pulse oximeter. The challenge was how this could be made available to as many people as possible in the quickest timeframe, with a consistent, national approach involving hospitals, primary care and care homes.

What we did

After supporting eight pilot sites, NHS England and NHS Improvement worked with Patient Safety Collaboratives (PSCs, hosted by the 15 Academic Health Science Networks) to make two pathways available through the Managing Deterioration Safety Improvement Programme.

The first pathway to be developed was **COVID Oximetry @home**, patient self-monitoring and escalation for patients with confirmed or suspected COVID-19, who were at risk of future deterioration.

COVID Oximetry @home uses pulse oximeters for patients to safely monitor their condition at home, providing an opportunity to detect a decline in their condition that might require hospital review and admission. Early experience of implementing this approach has been linked to reduced mortality, hospital length of stay, and the number of patients requiring intensive care admission and ventilation.

This was followed by the development of **COVID virtual wards**, supporting earlier and safe discharge from hospital for patients recovering from COVID-19. Virtual wards support patients to get the care, monitoring and support they need, using equipment or digital technology such as pulse oximeters and apps to provide regular readings to healthcare professionals. It was shown to reduce bed occupancy and length of stay, mitigating pressure on beds and enabling acute services to focus on sicker patients.

	COVID Oximetry @home October – December 2020	COVID virtual ward January – March 2021
WHERE	Primary care supervised	Hospital supervised
WHO	Lower acuity / complexity	Higher acuity / complexity
WHEN	Community diagnosed patients	Emergency hospital patients
AIMS	**Safe admission avoidance**	**Early supported hospital discharge** **Safe admission avoidance**
HOW	Patient self-monitoring / escalation **Earlier deterioration presentation**	More intensive monitoring Reliable deterioration recognition
WHAT	Supportive treatments	+/- Dexamethasone, LMWH, O2

A table showing the differences between COVID Oximetry @home and COVID virtual wards (credit: Matt Inada-Kim)

How we did it - national leadership

National partners included the NHS @home programme which coordinated the response, and supplied pulse oximeters to primary care services via clinical commissioning groups; the National Patient Safety Team which mobilised its resources to support the roll-out; NHSX which was responsible for funding the tech-enabled support; and NHS Digital which managed the data collection and supported an evaluation.

The COVID ‘cell’ structure, national programme board and regional leaders’ network allowed for rapid dissemination of information, escalation and decision-making, while local leaders had the freedom to adapt the pathways under an umbrella of clear policy and guidance.

How we did it - local implementation

PSCs supported this rapid spread by working closely with CCGs in their region to offer quality improvement expertise, access to training and resources, data collection and evaluation, and facilitating a national learning network. They were ideally placed to support this work because they already had strong local networks and had developed relevant training.

Local system support

- Regional/local webinars
- Bespoke quality improvement support
- National Learning Network
- Regional clinical leadership
- Resources and advice
- AHSN Network web page: www.ahsnnetwork.com/covid-oximetry

Outcome

From a starting point of 20% of Clinical Commissioning Groups in November 2020, 100% of CCGs in England had established a COVID Oximetry @home pathway service by the end of December 2020 and were fully operational by early February 2021.

By the end of March 2021, 120 out of 125 acute trusts had implemented COVID virtual wards in the space of just three months. The remaining trusts had alternative systems in place.

Access to pre-procured, low-cost and easy-to-order pulse oximeters was key. 700,000 pulse oximeters were purchased and around half a million were distributed via CCGs and trusts.

In total, more than 40,000 patients are estimated to have been onboarded to these pathways to the end of March 2021.

A study from Hampshire, looking at 800 COVID admissions, showed a reduction in hospital length-of-stay by nearly half, compared with patients who were not monitored.

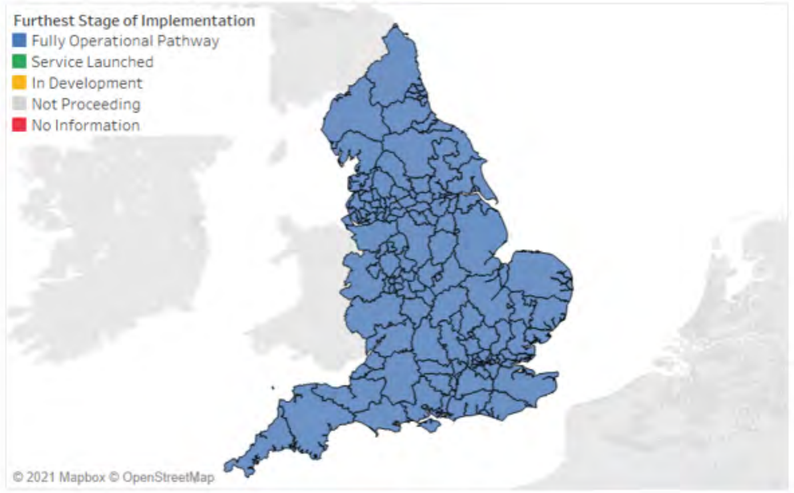
30-day mortality reduced from 20.5% to 5.8%, and of the 137 patients in the study monitored remotely, none were readmitted within 30 days of discharge, compared with 8.7% for patients who were not monitoring.

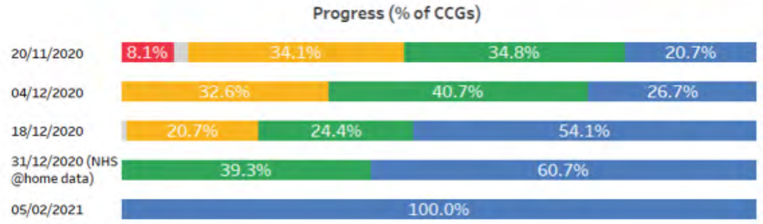
(www.medrxiv.org/content/medrxiv/early/2021/06/02/2021.05.29.21257899.full.pdf)

Outcome - spread

COVID Oximetry @home

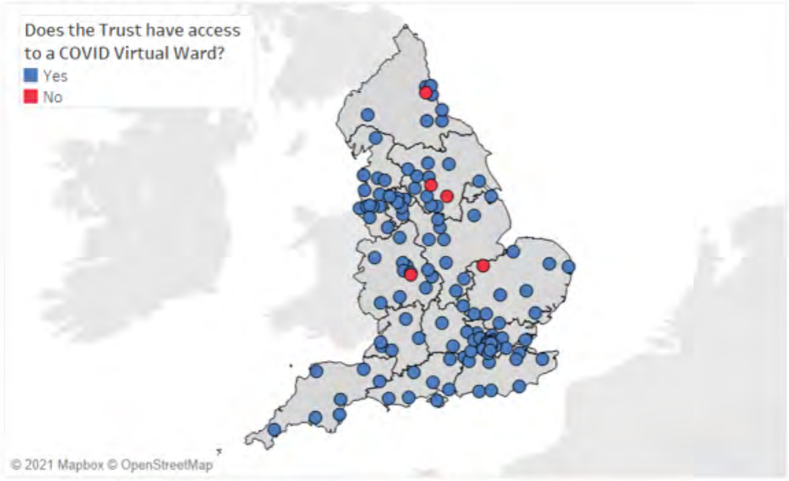
Data up to **05/02/2021**

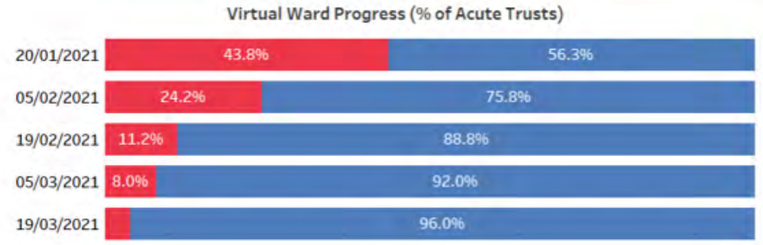




COVID Virtual Wards

Data up to **19/03/2021**





Outcome - local examples

These are some examples of the impact of the programme, which were replicated across the country:

In the South East region, three AHSNs supported roll-out of COVID Oximetry @home at pace from October 2020. The goal was to set up at least one CO@h service in each CCG in six weeks. This was achieved. COVID virtual wards were implemented in 21 sites by end of January; all were digitally enabled.

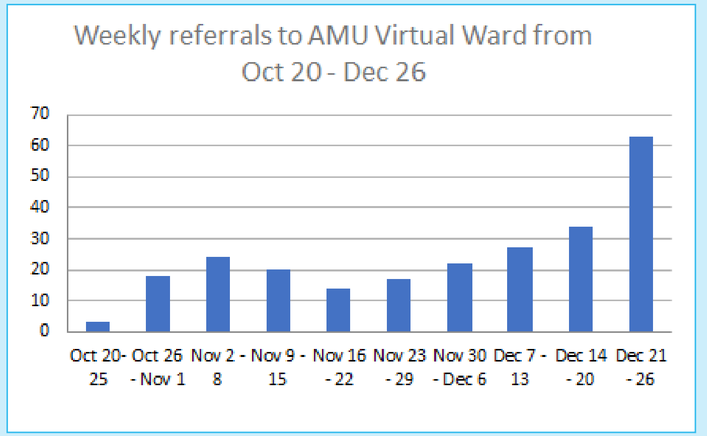
The Tees Valley Oximetry CO@h programme had 1,173 patients referred into the service. 956 of these went on to be admitted, having benefited from the service by receiving assessment early in their COVID infection.

Manchester Royal Infirmary reported at times they were monitoring "three wards' worth" of patients safely at home.

Salford Royal NHS Foundation Trust's virtual ward reported their average inpatient length of stay for COVID-19 patients was sustained at an average of 10 days following the introduction of the virtual ward. This compared to an average of 17 days in the eight weeks prior to the service starting.

'61 patients in the RBH AMU Virtual Ward today. That's 3 wards worth of patients being safely managed with remote monitoring and daily phone reviews but in their own homes. We're busier than during the height of the first peak of the pandemic!'

www.twitter.com/ticc_19/status/1345682076863967233

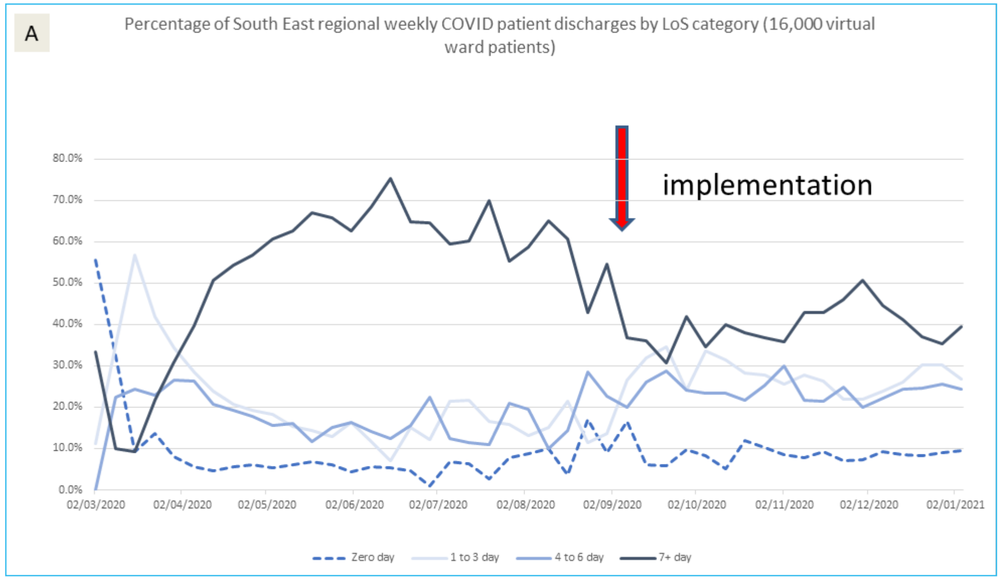


Outcome - impact on health and care

IMPACT

A. Reduced length of stay in admissions
B. Reduced overall mortality rates
C. Safe model of care
D. Reduced future Hospital attendance/admission

A



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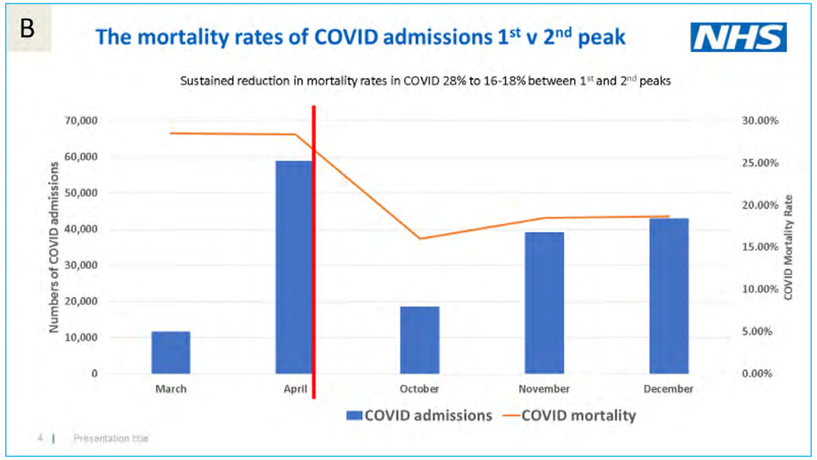


C

Throughput and outcome	Pre-hospital Model		Early discharge from the hospital Model	
	No. of patients	% of monitored patients	No. of patients	% of monitored patients
Patients triaged	1861	107.1	354	102.1
Patients remotely monitored	1737	100.0	347	100.0
Patients deteriorated and escalated	174	10.0	42	12.2
Deaths	20	1.1	3	0.9
Discharged alive from remote monitoring service	1639	94.4	320	92.2

D

May 6, 2021

COVID-19 Home Monitoring After Diagnosis and Health Care Utilization in an Integrated Health System

Anita D. Misra-Hebert, MD, MPH[1]; Xinge Ji, MS[2]; Lara Jehi, MD, MHCDS[3]; et al

Author Affiliations | Article Information

JAMA Health Forum. 2021;2(5):e210333. doi:10.1001/jamahealthforum.2021.0333

Hospital attendance	30 day Odds Ratio	0.85
	90 day Odds Ratio	0.94
Hospital admission	30 day Odds Ratio	**0.62**
	90 day Odds Ratio	0.70

https://www.medrxiv.org/content/10.1101/2020.10.07.20208587v2

https://jamanetwork.com/journals/jama-health-forum/fullarticle/2779695

Case study - Dorset QI huddles

QI approach to implementing COVID Oximetry @home within Dorset

Daily QI huddles before, during and after launch of CO@h model to plan, study, reframe and act on changes. The QI huddles have provided:

- Strong clinical leadership and accountability, and supportive champions
- Removal of organisational barriers, a can-do attitude fostering close working relationships and inclusivity with each individual's views listened to and considered
- Supportive and trusted environment, evident no-blame culture ensured that all participants in the daily huddle felt valued and able to come to the sessions with new ideas and approaches for consideration
- Rapid clinical review of cases to identify key changes required
- Proactive in responding to learning, reviewing and updating operational processes in an organic, but structured way, aligned to updating standard operating processes
- A positive approach to sharing best practice, sharing knowledge and experiences with other organisations

Case study - Wessex digital platform

Hampshire and the Isle of Wight region became one of the early areas in the country to develop a fully digitally-enabled COVID Oximetry at Home (CO@H) service at the beginning of 2021.

Digital platforms help to answer the challenge of how to share vital oximetry data more easily across different parts of the health and care system, making it easier and quicker for health care teams and services to work together.

The Inhealthcare CO@H remote monitoring digital platform was procured and built as a partnership between Wessex AHSN and Hampshire and the Isle of Wight ICS. The platform asks patients a series of questions and requests vital signs readings, which can be submitted via text, app, online or an automated call service, generating a real-time information for each patient.

These data enable healthcare professionals to track patients over time so that changes in their health can be quickly identified – while the system integrates with EMIS and TPP SystmOne GP systems so that the patient's records are automatically updated with their progress.

3300+

patients have used the Hampshire and Isle of Wight CO@H service to date

(1 November 2020 to 26 March 2021)

1200+

of which have benefited from the digital-enabled service funded by NHSX

(1 January 2021 to 26 March 2021)

Patient feedback

South London's Health Innovation Network wanted to understand patients' experience of the new remote monitoring services, following rapid implementation across South London.

They:

- Worked with partners to understand insights from existing patient feedback.
- Interviewed a small group of people who had received the service to understand their experience in more detail.
- Tried to understand why some people choose to or were unable to take up the offer of Covid Oximetry.
- Shared this learning to help shape future practice on how remote monitoring services are delivered and how patient experience can be used on an ongoing basis.

Summary of key findings

Overall, people reported a very positive experience of oximetry services, in particular the personal support they received and had access to if their situation deteriorated.

Oximetry teams appreciated that people with Covid, many of whom had pre-existing long-term conditions and were suffering from fear and anxiety, and have delivered services aimed at supporting people in this vulnerable state.

It was clear from this small sample that it was the mix of easy to use oximetry equipment, regular reporting and phone/text/WhatsApp support that people valued most.

The incentive to prevent hospital admission was strongly felt by patients.

Learning points

- **Strong networks were in place early** to support the spread and rapid implementation of CVW and CO@h pathways.
- **Strong collaborative working with NHSE/I, NHSD, NHSx, AHSN/PSCs** meant the programme was accelerated and successful.
- **Strong regional relationships** with **AHSNs**.
- **Bespoke support** tailored to local requirements.
- Heat maps clearly identified **need at local level and spread at regional/national level**.
- Governance arrangements meant **rapid cascade of issues and messages**.
- **Flexible and dynamic systems** with wraparound support (deterioration tools and e-learning videos).
- **Effective communication channels** to cascade information.
- **Data systems** (for extraction and transfer of data) need to be **in place at the start** with clear guidance on PID/IG issues.
- **Automated data extraction in place early** to reduce data burden on systems.
- **Data feedback loops** to local systems.

Read a personal experience of setting up a virtual ward from Rebecca Winterborn, consultant vascular surgeon and clinical lead for West of England AHSN:

www.weahsn.net/2021/03/sharing-lessons-from-setting-up-a-covid-virtual-ward/

'The AHSNs/PSCs have been absolutely fantastic to work with. They have not just supported rapid scale and spread in record time, they have created invaluable learning networks that have enabled us to continuously improve and update guidance and best practice.

'We aim to continue to build on this agile approach with AHSNs next year and expand out into other @home pathways which is really exciting.'

Tim Straughan, Director, NHS @home

'The implementation of Covid Oximetry @home, across all six system footprints that make up the SE region, would not have been possible without the support of the three regional AHSNs.

'From the outset, they have collaborated as one: drawing on their combined skills and expertise, working hand-in-glove with the regional digital team - and other partners - to deliver a comprehensive service, from scratch, to achieve impressive population of this innovative model of care to promptly identify patients who need hospital admission, and to monitor those who can be safely managed at home.'

Vaughan Lewis, South East Regional Medical Director, NHS England & NHS Improvement

Learning points

Summary

These are the ten tips we have identified through the COVID Oximetry @home programme, many of which are echoed or build on the experiences we gained in the spread of the tracheostomy safety programme:

1. Identify a specific patient safety need
2. Share widely
3. Build a community
4. Support the workforce
5. Promote consistency, but allow flexibility
6. Benchmark and collect data
7. Embrace digital
8. Involve patients
9. Tailor the information
10. Build strong communications

1. Learning points - identify a specific patient safety need

Early findings demonstrated that COVID Oximetry @home might have significant potential:

- This was a safe model of care
- Reduced length of stay in admissions
- Reduced overall mortality rates
- Reduced future hospital attendance and admission

While it was important to act quickly on these findings, a priority for this work was to ensure that the service was delivered in a safe manner.

The National Patient Safety Team worked with the NHS@home team and the Patient Safety Collaboratives to manage the flow of communication and to develop safety principles for services as they were implementing this work.

Placing this within the existing PSC 'Managing Deterioration' workstream meant that Patient Safety teams built on their networks of people and their knowledge of the system-level approaches and pathways for managing physical deterioration.

PSCs had lots of experience supporting the spread of NEWS2 as a tool in acute and ambulance trusts and were developing work in care homes, primary care and other non-acute hospital settings to use a combination of NEWS2 and soft signs.

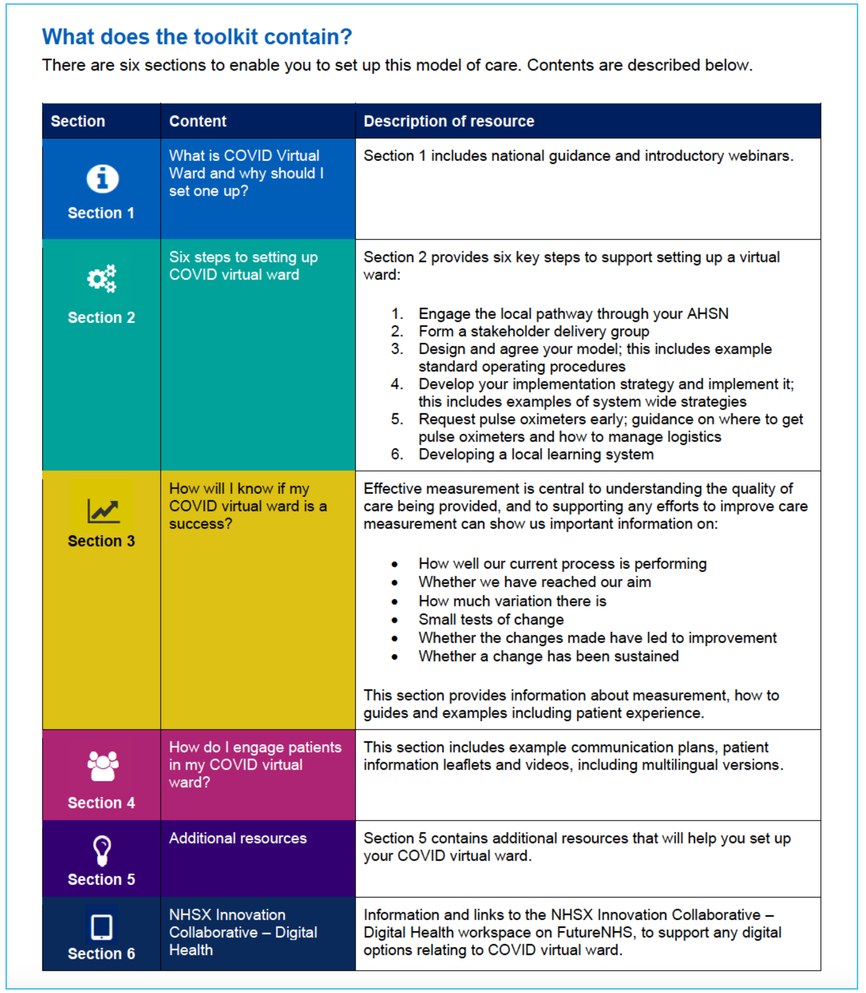
2. Learning points - share widely

The pilots were generous in sharing insights, and their experience informed how-to guides. These have been viewed or downloaded more than 8,000 times.

By the time the Covid Oximetry @home service was being endorsed through NIRB, there had already been a great deal of learning and sharing through a community of practice.

Learning was fed nationally into a central community of practice, hosted on the FutureNHS platform. This included templates, operating models, and patient information.

We had the workstream leads and the NHS Futures platform in place. There was talk of the need to set up a 'learning network' to learn and share with one another about how to implement this.



What does the toolkit contain?

There are six sections to enable you to set up this model of care. Contents are described below.

Section	Content	Description of resource
Section 1	What is COVID Virtual Ward and why should I set one up?	Section 1 includes national guidance and introductory webinars.
Section 2	Six steps to setting up COVID virtual ward	Section 2 provides six key steps to support setting up a virtual ward: 1. Engage the local pathway through your AHSN 2. Form a stakeholder delivery group 3. Design and agree your model; this includes example standard operating procedures 4. Develop your implementation strategy and implement it; this includes examples of system wide strategies 5. Request pulse oximeters early; guidance on where to get pulse oximeters and how to manage logistics 6. Developing a local learning system
Section 3	How will I know if my COVID virtual ward is a success?	Effective measurement is central to understanding the quality of care being provided, and to supporting any efforts to improve care measurement can show us important information on: • How well our current process is performing • Whether we have reached our aim • How much variation there is • Small tests of change • Whether the changes made have led to improvement • Whether a change has been sustained This section provides information about measurement, how to guides and examples including patient experience.
Section 4	How do I engage patients in my COVID virtual ward?	This section includes example communication plans, patient information leaflets and videos, including multilingual versions.
Section 5	Additional resources	Section 5 contains additional resources that will help you set up your COVID virtual ward.
Section 6	NHSX Innovation Collaborative – Digital Health	Information and links to the NHSX Innovation Collaborative – Digital Health workspace on FutureNHS, to support any digital options relating to COVID virtual ward.

3. Learning points - build a community

A Learning Network was set up to share good practice and updates through fortnightly meetings. About 80 people attended, and found a successful format: practical example, national developments, specific challenge.

A series of national webinars was held throughout the programme, which brought together front-line clinicians, experts and policy leads to share ideas, resources and make connections, including a webinar held jointly with the AHSN Network and Royal College of General Practitioners.

PSCs also hosted local webinars to support clinicians and managers on the ground, and mobilised regional clinical leads to provide clinical oversight and expertise, develop pathways and identify vulnerable groups, ensuring there was an equitable system in place.

- Learning Network meetings every fortnight
- Knowledge exchange
- Q&A session
- Sharing of contacts, presentations and ideas

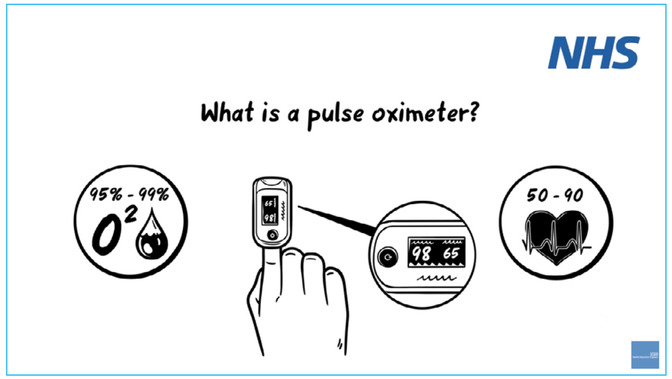
- Learning captured
- Access to webinars
- Joint webinar with RCGP (over 3,600 views to date)

future.nhs.uk/NEWS2CN/grouphome

4. Learning points - support the workforce

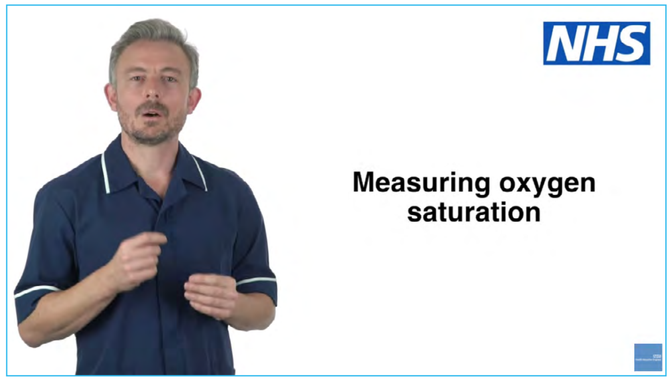
A wide range of resources was published. An existing set of AHSN-produced training videos aimed at care staff, on taking observations to monitor deterioration, were already available and became widely used. The film on pulse oximetry alone has been viewed over 150,000 times (collectively the 14 films in the series have been viewed over 350,000 times).

A patient-facing animation has been watched over 300,000 times, and a live version was translated into multiple languages.

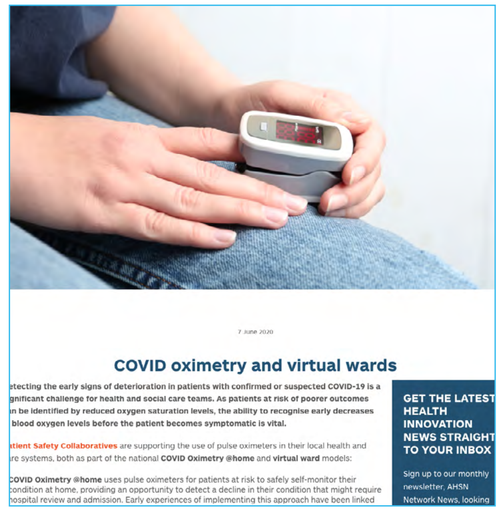


Patient-facing animation: www.youtube.com/watch?v=ifnYjD4IKus

Live version: www.youtube.com/watch?v=tWlv2V-MJU8



Training videos: www.youtube.com/watch?v=QabKghrtXps&list=PLrVQaAxyJE3cJ1fB9K2poc9pXn7b9WcQg&index=6



AHSN Network website: www.ahsnnetwork.com/covid-oximetry

5. Learning points - promote consistency, but allow flexibility

Staff fed back that they felt positive. Whilst this was a new way of working for many, they embraced it and understood this was benefiting patients and keeping them safe. This was supported by the NHS @home governance structure, which included a workforce workstream.

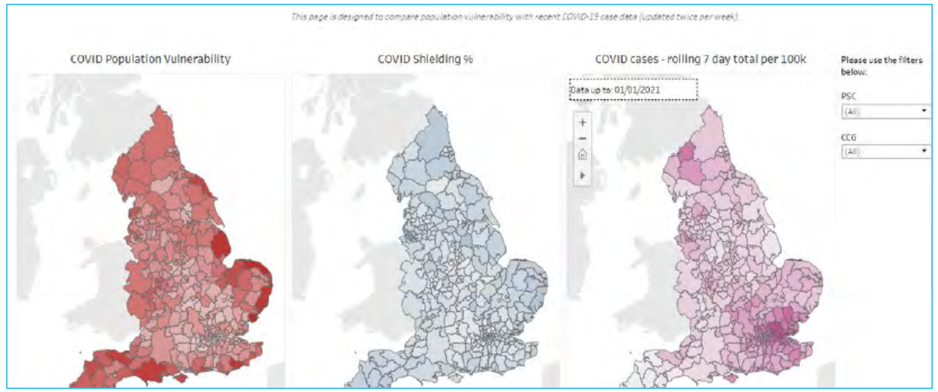
They had a consistent model to follow, which promoted high-quality care and meant people were cared for equitably, according to need. It also promoted the importance of monitoring patients for deterioration, including in non-acute settings such as residential care homes.

Shared learning was enabled by remote working, bringing local clinical and management leaders together with regional and national experts. Changes to services and national policy could be made rapidly.

Flexibility in the models has allowed local adoption and adaptation to suit the availability of services at the time.

6. Learning points - benchmark and collect data

The AHSN Network Insights Team set up a system of data collection which showed, at a glance, the spread of implementation across the country and the population served week by week. They also developed heat maps to demonstrate vulnerable groups by geography, overlaid with infection rates, which allowed local teams to decide where to focus their efforts first.



The BMJ reported that for Manchester University NHS Foundation Trust's virtual ward, analysis of the first 200 patients showed that 173 were fully discharged, 27 presented to the emergency department, and 20 of these were readmitted.

And West Hertfordshire Hospitals NHS Trust's virtual ward has been so successful - managing around 1,200 patients at home - they want to continue the system after COVID-19. In the first phase alone, of nearly 400 patients, they saved nearly 300 bed-days over a three week period at the height of the outbreak.

Similar findings, published in *Acute Medicine* on the virtual ward at Royal Berkshire Hospital, noted that 99.5% of patients were likely or extremely likely to recommend the service to their family and friends, and claimed a cost avoidance of £107,600 per month.

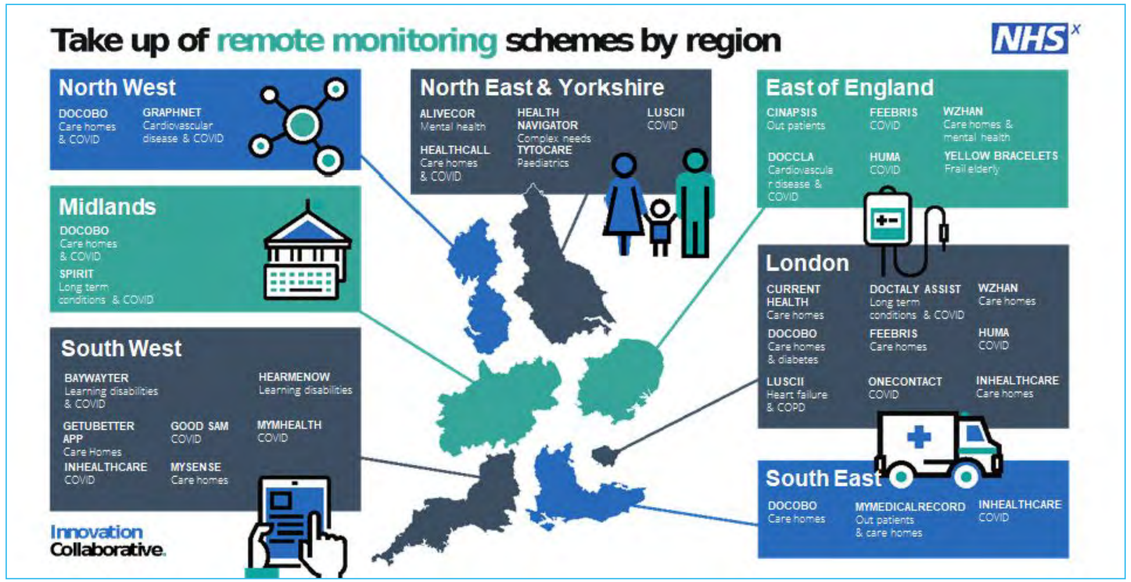
In the South East, the use of patient self-monitoring was linked with a 10% reduction in ambulance conveyances of patients with normal oxygen saturation levels, from 70% to 60%.

7. Learning points - embrace digital

The use of digital tech, which was supported through the Innovation Collaborative run by NHSX and the AHSN Network in partnership, also proved to be a game-changer.

In Manchester University FT's second phase, the trust began using a patient monitoring app called Medopad, into which patients enter data on their symptoms, temperature, heart rate, respiratory rate, and their oxygen level. This allowed the number of patients monitored at home to more than double.

In Hampshire and the Isle of Wight's CO@h service, they saw over 3,500 patients between November 2020 and June 2021, with almost 1,400 of them benefiting since January from the Innovation Collaborative's funding to digitally enable the service.



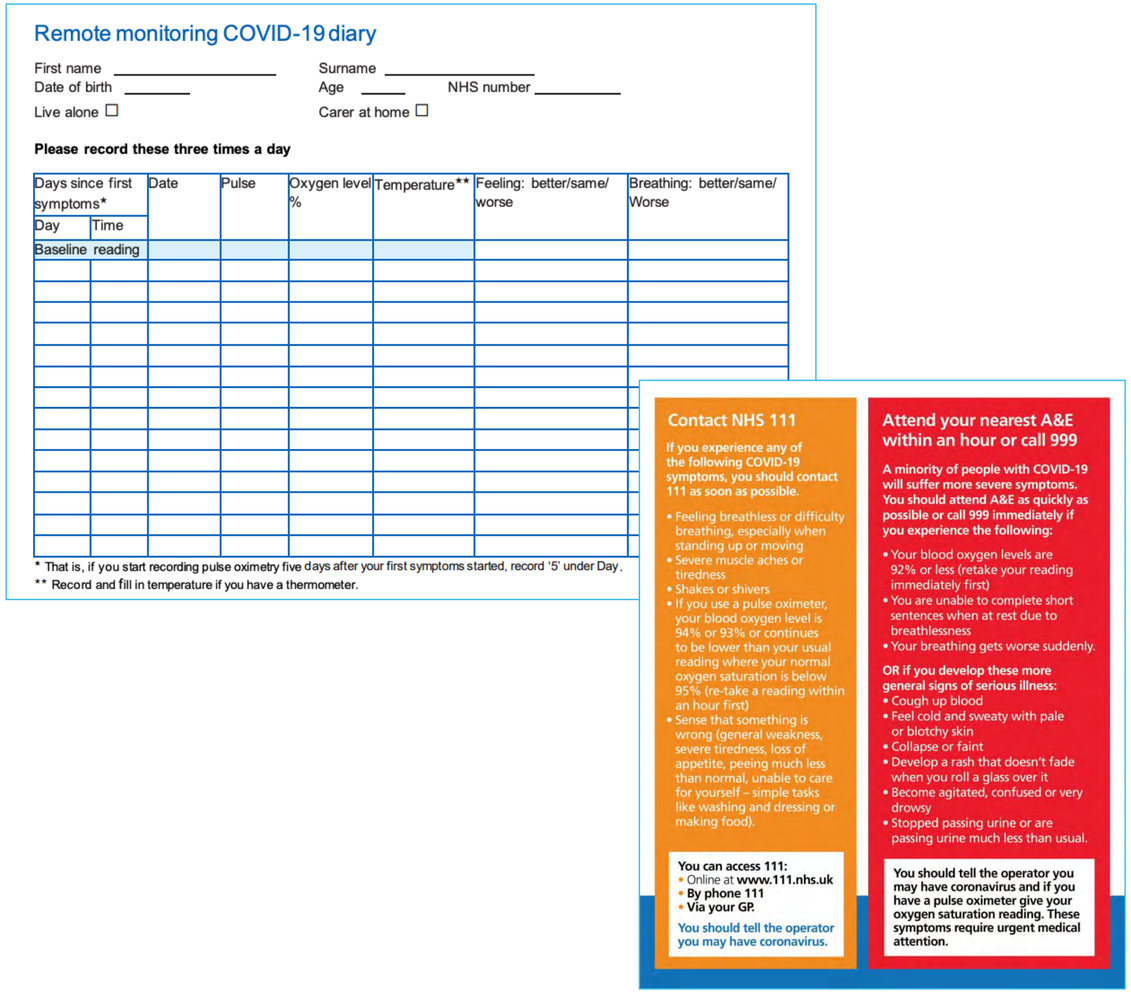
8. Learning points - involve patients

Pilots tested remote monitoring with patients and their feedback influenced the national guidance for patients, published at www.england.nhs.uk/nhs-at-home/covid-oximetry-at-home.

These included safety netting leaflets (translated into nine languages, plus Easy Read versions for readers with a learning disability), with vital information about how to use their pulse oximeter and either a diary to record their results, or an app if they had access to tech-enabled devices. This was supported by a number of e-learning modules, free to access, for patients, carers and staff.

Patient surveys and case studies have been a strong part of the learning from the outset, recognising that both digital and paper-based services would be required, as well as phone calls for reassurance and advice above and beyond the scope of the pulse oximetry work, such as signposting to additional support services.

Tees Valley changed its materials for patients, following feedback from patients who tested positive but didn't take up the service initially. This problem reduced when the information was adjusted to make it clearer how the service worked.



Remote monitoring COVID-19 diary

First name _____ Surname _____
Date of birth _____ Age _____ NHS number _____
Live alone ☐ Carer at home ☐

Please record these three times a day

Days since first symptoms*		Date	Pulse	Oxygen level %	Temperature**	Feeling: better/same/ worse	Breathing: better/same/ Worse
Day	Time						
Baseline reading							

* That is, if you start recording pulse oximetry five days after your first symptoms started, record '5' under Day.
** Record and fill in temperature if you have a thermometer.

Contact NHS 111

If you experience any of the following COVID-19 symptoms, you should contact 111 as soon as possible.

- Feeling breathless or difficulty breathing, especially when standing up or moving
- Severe muscle aches or tiredness
- Shakes or shivers
- If you use a pulse oximeter, your blood oxygen level is 94% or 93% or continues to be lower than your usual reading where your normal oxygen saturation is below 95% (re-take a reading within an hour first)
- Sense that something is wrong (general weakness, severe tiredness, loss of appetite, peeing much less than normal, unable to care for yourself – simple tasks like washing and dressing or making food).

You can access 111:
- Online at **www.111.nhs.uk**
- **By phone 111**
- **Via your GP.**

You should tell the operator you may have coronavirus.

Attend your nearest A&E within an hour or call 999

A minority of people with COVID-19 will suffer more severe symptoms. You should attend A&E as quickly as possible or call 999 immediately if you experience the following:

- Your blood oxygen levels are 92% or less (retake your reading immediately first)
- You are unable to complete short sentences when at rest due to breathlessness
- Your breathing gets worse suddenly.

OR if you develop these more general signs of serious illness:
- Cough up blood
- Feel cold and sweaty with pale or blotchy skin
- Collapse or faint
- Develop a rash that doesn't fade when you roll a glass over it
- Become agitated, confused or very drowsy
- Stopped passing urine or are passing urine much less than usual.

You should tell the operator you may have coronavirus and if you have a pulse oximeter give your oxygen saturation reading. These symptoms require urgent medical attention.

9. Learning points - tailor the information

Learning disabilities

People with a learning disability are estimated to be more than six times more likely to die from COVID (PHE Nov 2020). This led to:

- Sharing Easy Read information on COVID-19.
- Recommendations CO@h should be 'offered' to people with Down's Syndrome and considered for others with a learning disability.
- Reasonable adjustments being made, like more frequent calls, not using apps, or speaking with a clinician.
- Training for families and carers.

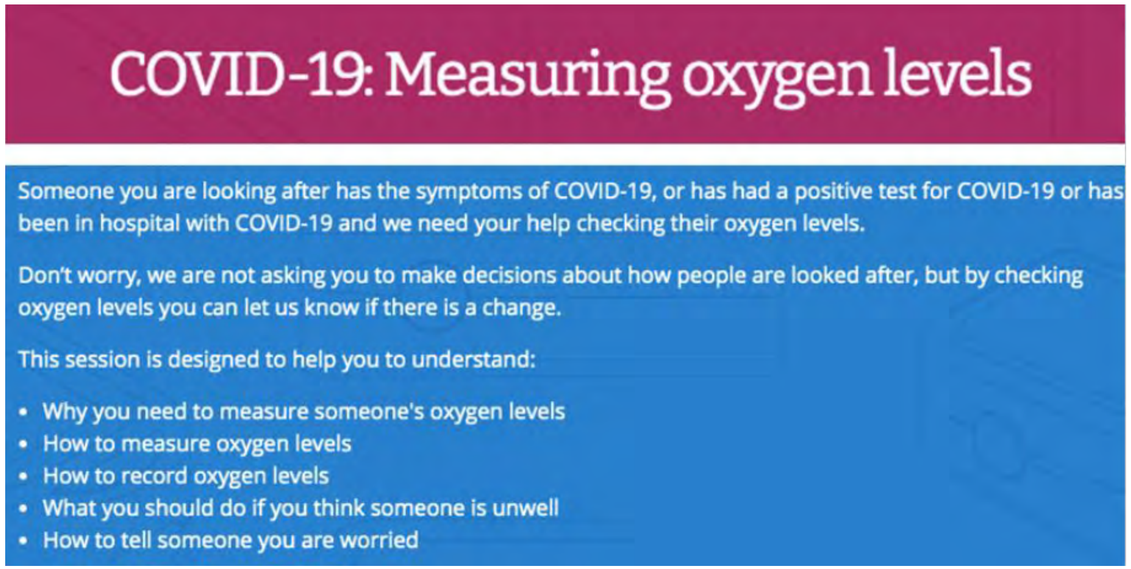
www.events.england.nhs.uk/identifying-early-signs-of-worsening-health-in-a-person-with-a-learning-disability

Care home staff

RESTORE2 and videos to improve communication: www.youtube.com/playlist?list=PLrVQaAxyJE3cJ1fB9K2poc9pXn7b9WcQg

What matters conversations: www.whatmattersconversations.org/videos

End of life and treatment escalation planning: www.resus.org.uk/respect



portal.e-lfh.org.uk/LearningContent/LaunchForGuestAccess/684697

10. Learning points - build strong communications

The communications leads for the partners involved in the programme met fortnightly to ensure communications were consistent and to maximise their reach. This is a summary of some of the key communications produced to support the programme:

- **Audio translations (x11) of a patient video** were published on Health and Care Video library - promoted through our and partner channels, including in India.
- **HEE animated film** on how to use a pulse oximeter now received over **400,000 views** on YouTube (published 24 November 2020).
- Information published on **pulse oximetry for dark skin** on the NHS UK webpage.
- **HEE/ e-LfH NHS @home e-learning** homepage published
- **Events and webinars include:**
    - UK-India webinar series run by AHSN Network and South Asian Health Foundation included sessions on remote monitoring using oximetry – **1,000 attendees**.
    - National and regional webinars held throughout.
    - Promotion at external events, such as Kings Fund, Health Plus Care, NHS Confed online.
    - Proactive care frameworks: transforming the management of long-term conditions.

Next steps

We are **sharing** the learning from these programmes into **other NHS @home programmes such as** the roll-out of ‘Blood Pressure @home’.

- Home blood pressure monitoring has been identified as a priority for the management of cardiovascular disease (CVD) during the pandemic, to ensure that patients can manage their hypertension remotely, without the need to attend GP appointments.
- It is also key to the recovery of services, with estimates that regular blood pressure monitoring at home, across a population of 50,000, could prevent up to 300 heart attacks and 477 strokes over three years.
- Evidence suggests it is more cost-effective, saving GPs time by shifting care to other members of the multi-disciplinary team, and reduces incidence of clinical events such as death, heart attack or stroke, over five years.

The programme is run in partnership NHS @home, the Clinical Policy Unit, and NHSX.