

Covid remote monitoring and management at home

- This webinar will start at 8.30pm IST / 4pm UK.
- You can watch the recording on the [AHSN Network](#) and SAHF YouTube channels afterwards.
- Please use the chat to submit your questions.

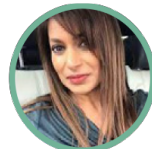
Panellists



- **Dr Harpreet Sood**, GP and SAHF Trustee



- **Dr Matt Inada-Kim**, National Clinical Director, Deterioration and Sepsis, and Covid Oximetry @home lead, NHS England/Improvement



- **Dr Bushra Alam**, Acute Medicine Consultant, Salford Royal, COVID Oximetry@home /COVID virtual ward clinical lead



- **Dr Kathy Smith**, GP and Clinical COVID Assessment Service Auditor



- **Dr Sonali Kinra**, Clinical Associate, Primary Care, NHS England and GP



- **Dr Tara Sood**, Consultant Royal Free Hospital and National Clinical Lead – Same Day Urgent Care



- **Dr Atul K Patel**, Director, Department of Infectious Diseases, Sterling Hospital. Ahmedabad



SOUTH ASIAN HEALTH FOUNDATION



The **AHSN** Network



Welcome

The webinar is about to begin.

Dr Harpreet Sood
GP and SAHF Trustee

Overview of webinar

- Lessons learned from the UK's National Health Service – COVID Oximetry @home and COVID virtual ward models
- A COVID early warning system
- Tips for treating silent hypoxia
- Resources available
- Question and answer session

Covid-19 remote monitoring and management at home

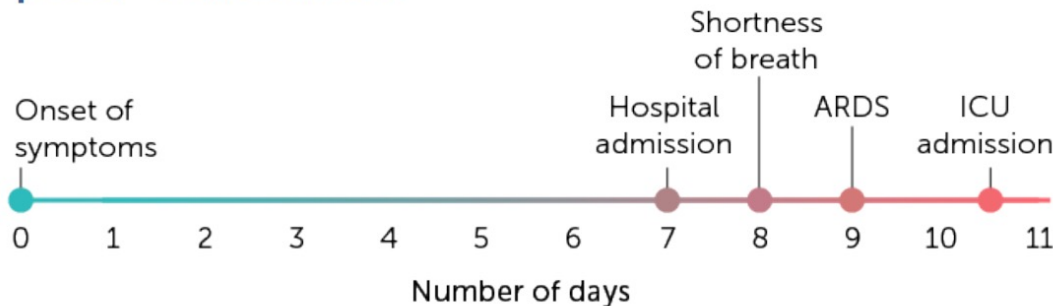
Dr Atul Patel

Director, Department of Infectious Diseases,
Sterling Hospital, Ahmedabad

Why home isolation and management?

Clinical Presentation (continued)

- Most patients (~80%) have experienced mild illness
- Potential for severe symptoms occurs during second week of illness
- Of all hospitalized patients, 20-30% (4-6% overall) required intensive care
- Patients who are of older age and those with comorbidities are at higher risk of poor outcomes

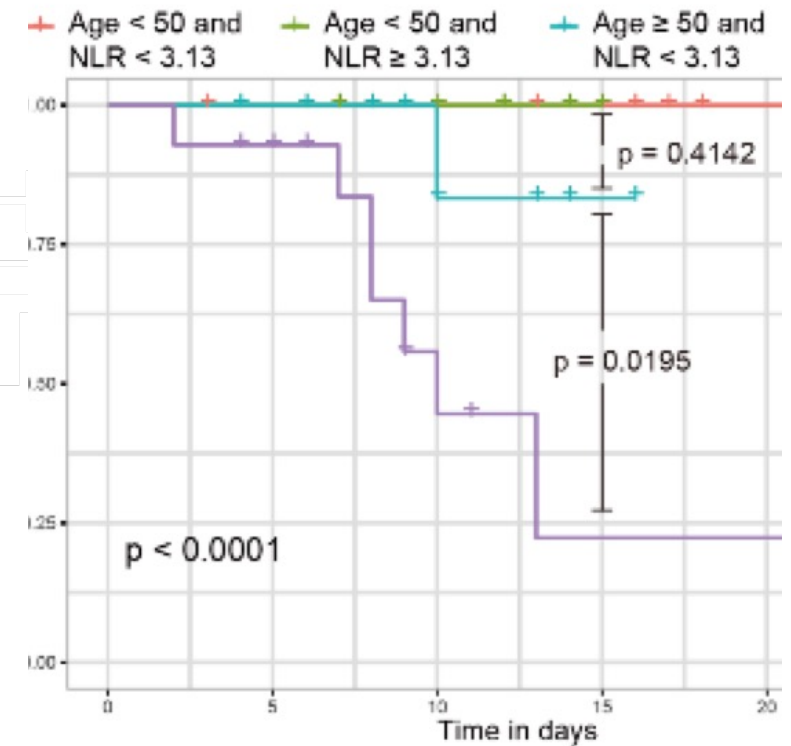
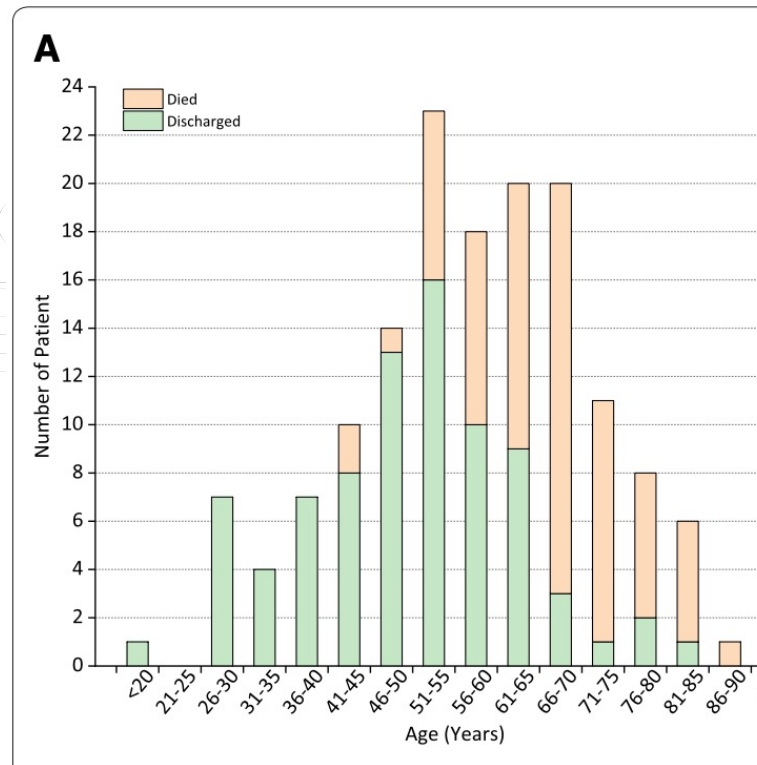
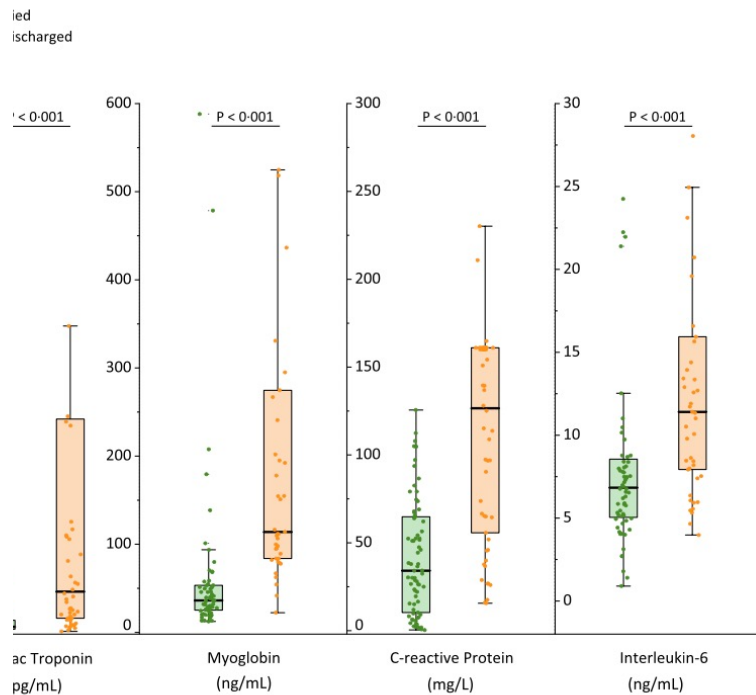


Ground reality

1. We have significant hospitalization of mild symptomatic/asymptomatic
2. Patient demand for Remdesivir, CT scan
3. **Fear** in patients and doctors

Baseline prognostic markers

Helpful to identify patients at a risk of disease progression



- Ruan, Q. *et al. Intensive Care Med* **46**, 846–848 (2020). <https://doi.org/10.1007/s00134-020-05991-x>
- Jingyuan Liu *et al.* doi.org/10.1101/2020.02.10.20021584.

General instructions

- Hydration: neglected component
- Awake prone positioning
- **Avoid steroids** and other unnecessary pharmacological interventions
- Pulse oximetry include that it is non-invasive, simple
- Inhalation Budesonide
- Control of Diabetes
- Warning symptoms:
 - Persistent high fever spikes,
 - feeling breathlessness,
 - SpO₂ < 94%

Table 4. Pulse Oximetry: What Do the Numbers Mean?'

SpO ₂ , %	PaO ₂ , mm Hg	Oxygenation Status
95-100	80-100	Normal
91-94	60-80	Mild hypoxia
86-90	50-60	Moderate hypoxia
Less than 85	Less than 50	Severe hypoxia

Difficulties in India

Massive spread of mis-information:
Watsup University,
Information from friends, relative
High claims from quacks

Non-availability of proper
isolation room at home

Fear leading to over
treatment/ hospitalization
(In patients and Doctors)

Dr Matt Inada-Kim

National Clinical Director, Deterioration and Sepsis,
and Covid Oximetry @home lead, NHS England/Improvement

WHY?

~~Late~~ Early presentations

Silent hypoxia

- 56 year old, usually well man with a PMH of hypertension/asthma
- 14.4 first symptoms -> isolation, partner worked in care home
- 21.4 1st NHS call -Not breathless
- 23.4 2nd NHS call Terrible cough, joint pains- Not breathless
- 24.4 3rd NHS call asked if he was breathless – Not breathless
- 24.4 partner was admitted with hypoxia via ambulance
- 28.4 Damian died

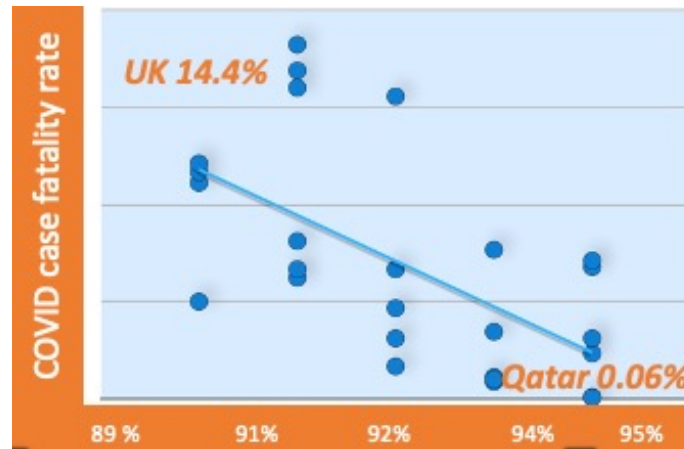


Robert Peston

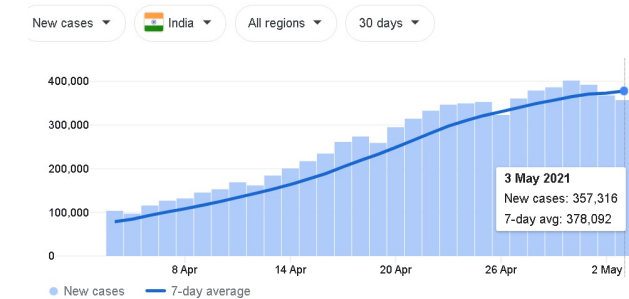
The tragic case of Damian Holland

“a characteristic of this virus that causes oxygen saturation levels of some sufferers to fall to dangerously low levels without them suffering conspicuous difficulties when breathing.”

The battle for lives will be won in the community



“It is community interventions that will shift the balance & save most lives.
It will be **clear, sound triage systems & clear clinical guidelines** that will determine mortality more than the total number of ventilators available”



Protecting patients & the Health system with Pulse oximetry @home monitoring

Matt Inada-Kim & the Regional Clinical Leads for COVID oximetry & NHS England

Acute Physician, National Clinical Director Infection & Deterioration, Chair COVID pathways, National Clinical Lead COVID Oximetry

Overview – Virtual care in COVID

SAFE COVID CARE @home

Training COVID-19 patients to self monitor & self escalate

- To protect patients- Early identification of deterioration
- To protect the health system- Preserving capacity and resources
 - REDUCED ATTENDANCE/ADMISSIONS of low-risk patients to hospital
 - Improved EARLY DISCHARGE of recovering patients

Patient partnership

Resources to train patients to self monitor Oxygen saturations & symptoms*
Clear public messaging for patients on what normal COVID recovery looks like, and when/how they should call for help*
Reassurance that patients/relatives will be rapidly assessed should deterioration occur*

COVID ADMISSION AVOIDANCE

Improving the earlier recognition of those seriously unwell
Reduced attendance of low-risk patients, with normal oxygen saturations
Preservation of the capacity of health systems

Early Safe Discharge of recovering COVID patients (*)



Reduce flow IN

?Admit low acuity patients to non-hospital centres

Improve flow OUT

WHY?- the evidence

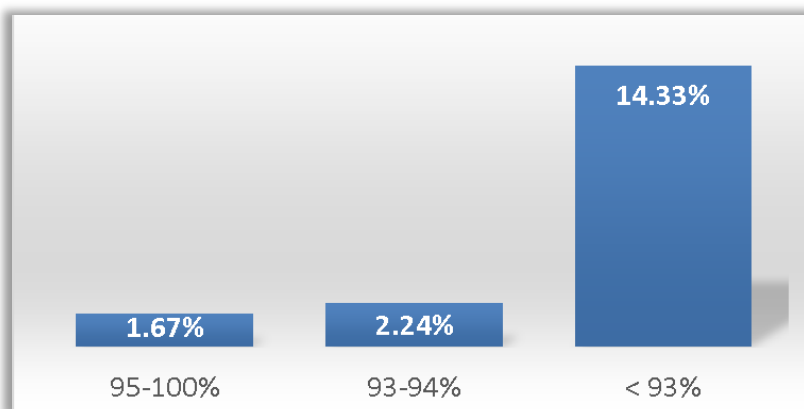
Rapid research to ascertain predictors of outcomes for patients at home

- Linked data from patients recording oxygen levels, age and outcomes.
- Monitoring the trends of symptoms & oxygen saturations predicts who of these are likely to do badly

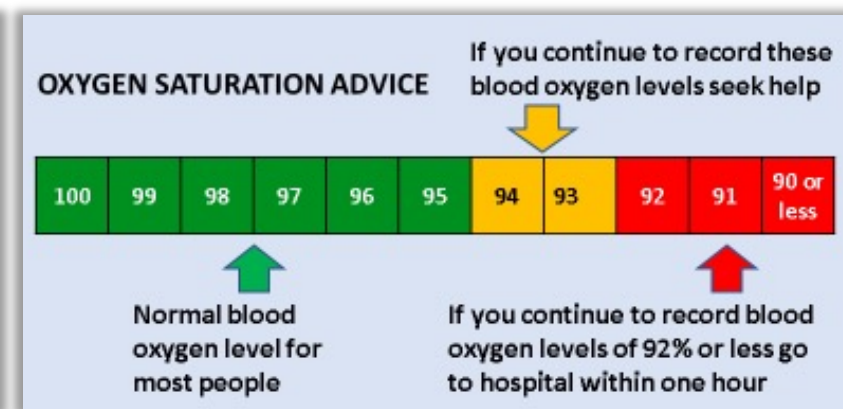
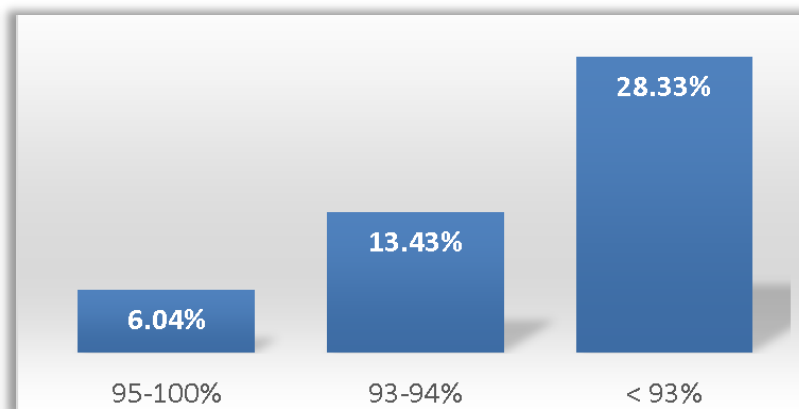
In England, community oxygen saturations of 92% or less is the cut off for when death or intensive care becomes much more likely (at all ages)

617/1080 COVID admissions had Sats 95-100%

5 day mortality (N= 1,212)



30 day mortality (N= 1,212)



[Validation of home oxygen saturations as a marker of clinical deterioration in patients with suspected COVID-19](#)

[NHS England COVID Safety netting guidance](#)

WHAT ?

Patient partnership



COVID virtual strategy

- Share Safety netting advice on COVID widely
 - Patients to only seek help if/when the criteria are triggered
- Identify high risk, symptomatic COVID patients
- Share a support package
 - Oximeters
 - Diaries
 - (If resources allow, monitoring calls/texts/apps)

Inclusion Criteria

1. Diagnosis of COVID-19: either clinically or positive test result **AND**
2. Symptomatic **AND Clinical Concern OR**
3. Aged 65 years or older **OR** for patients *under* 65 years at risk of a poor outcome

<https://digital.nhs.uk/coronavirus/shielded-patient-list/risk-criteria>



COVID OXIMETRY monitoring

COVID oximetry Diary

Patient Self-Monitoring +/- Clinical supervision
diarising of Symptoms & Trend of O₂ saturations
Patients Self-escalate if worsening of symptoms/saturations

Flexible model based on available resource



परिशिष्ट 2: दूरवर्ती निबंधन COVID-19 डायरी
 नवम्बर 2020, आवृत्ति 1.1

This is suggested content for a COVID-19 diary that patients could use under clinical supervision to support remote monitoring of patients with confirmed or possible COVID-19.

हृदयनाम घुबकारानो दर अने रक्तमां प्राज्ञवायुनां स्तर माटे पल्स ऑक्सिमिटर

तमारा डायरी तमने, आभवा तमारी डायरी राबनासने. आ डायरी अने पल्स ऑक्सिमिटर आभवे के साथ के तमने COVID-19 नां चहायो के अने तमारा रक्तमां प्राज्ञवायु स्तर तमने के नां निरीक्षण करवामां मदद अने के रक्तमां प्राज्ञवायु स्तर तमने COVID-19 केतुं नां चहु के तमने पर नजर राबना माटे-नी सवायन रीते के. रक्तमां प्राज्ञवायु माडर स्तर 90% अने 99% चहये के. हृदयनां घुबकारानो आडरॉ 60 प्रति मिनिट 50 अने 80 घुबकारानो के (bpm).

पल्स ऑक्सिमिटर नां उपयोऽ केवी रीते करवो

आं घुब-नोटुं अनुसरणे करी केवो सधेते रीते पल्स ऑक्सिमिटरनु चोळस वंचाव भवे (जमनी बाणुनां आडरॉ केनीस भाणुंवा-नां चोण-भाणुंवा):

- जो कोठे नां पोषीये होय आभवा थनवटी नांयो होय तो ते करावो अने तमारी साथ करी होय तो ते नखर करी.
- जो आसटी करी के तमने माय बेल घुबवा तने थोड्यां थोडा चंय मिनिट माटे आसत करी होय.
- तमारा लक्षण तमारा हृदयनां घुबकारानो आडरॉ पर मुळी अने तने लिख राबो.

Suspected coronavirus (COVID-19): Important information to keep you safe while isolating at home

This leaflet is for patients with suspected coronavirus who have not been admitted to hospital and will be isolating at home.

अगर आप को COVID-19 (संदिग्ध कोरोना वायरस) का संकेत है तो आपको घर पर अलग रहने की सलाह दी जाती है। यह पत्रिका उन लोगों के लिए है जो COVID-19 का संकेत है लेकिन उन्हें अस्पताल में भर्ती नहीं किया गया है और वे घर पर अलग रहेंगे।

Safety netting

Resources for patients

अगर आप को COVID-19 का संकेत है तो आपको घर पर अलग रहने की सलाह दी जाती है। यह पत्रिका उन लोगों के लिए है जो COVID-19 का संकेत है लेकिन उन्हें अस्पताल में भर्ती नहीं किया गया है और वे घर पर अलग रहेंगे।

How to use your pulse oximeter at home

[instruction on pulse oximetry & what to do with results](#)

Oximeter animation

Basic guide on using an oximeter

[Oximeter animation](#)

[Basic guide on using an oximeter](#)

HOW ? Implementation support

Sharing of Resources for clinicians (& patients). *One size will not fit all.*

Webinars to describe the why, what and how widespread COVID virtual care was achieved in England.

Train the trainer (?role for UK based clinicians with expertise of virtual wards)

Supporting international network to continue sharing learning & evidence

Engagement of social, political, religious & medical leadership

Develop strategy, funding, regional webinars, learning events, ensure adequate oximeter supply & virtual care resources

Establish local delivery groups of clinicians, managers, community leaders

Acquire, develop and Adapt pathways locally

Share Learning, Collect Data / Evidence

E-learning

TRAINING VIDEO: HEALTHCARE PRACTITIONERS
1: Empowering patients to watch out for silent hypoxia
20 OCT 2020

TRAINING VIDEO
2: Community must lead the battle to save lives
20 OCT 2020

TRAINING VIDEO
3: Higher oxygen levels predict better recovery
21 OCT 2020

TRAINING VIDEO
4: Patients now separated into 'hot' and 'cold'
21 OCT 2020

TRAINING VIDEO
5: Virtual wards will protect patients in the 2nd peak
21 OCT 2020

TRAINING VIDEO
6. Following up patients in the covid virtual ward
21 OCT 2020

TRAINING VIDEO
7. Monitoring patients in virtual ward with pulse oximetry
04 NOV 2020

TRAINING VIDEO
8. We can treat hypoxia once it is identified
21 OCT 2020

TRAINING VIDEO
9. Warning signs and symptoms in the virtual ward
21 OCT 2020

TRAINING VIDEO
10. Care home assistants play important role in detecting deterioration
04 NOV 2020

TRAINING VIDEO
11: 'Soft' signs, a crucial first step in spotting deterioration
21 OCT 2020

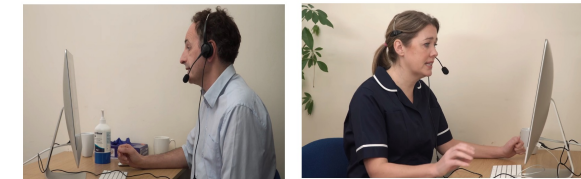
TRAINING VIDEO
12: Virtual ward resources: covid diary and advice for patients
21 OCT 2020

[COVID virtual ward E-Learning- HSJ](#)

Simulation training

COVID Oximetry @home: Ongoing contact with a patient

COVID Virtual Wards: First contact with a patient after discharge from hospital



[UCL Simulation training e-learning](#)

Breathless	Heart rate	SpO2	temp	feeling
Not	66	94	37.5	
More, can speak	55	98	36.9	
More, cannot speak	95	98	37.5	
More, can speak	60	91	38.0	Same
Not	99	99	36.5	
Same, can speak	135	94	35.0	

Virtual ward dashboards



National COVID Oximetry Implementation

Feb 2021

Training COVID-19 patients to self monitor/escalate

- Early identification of deterioration
- Admission avoidance
- Early safe discharge

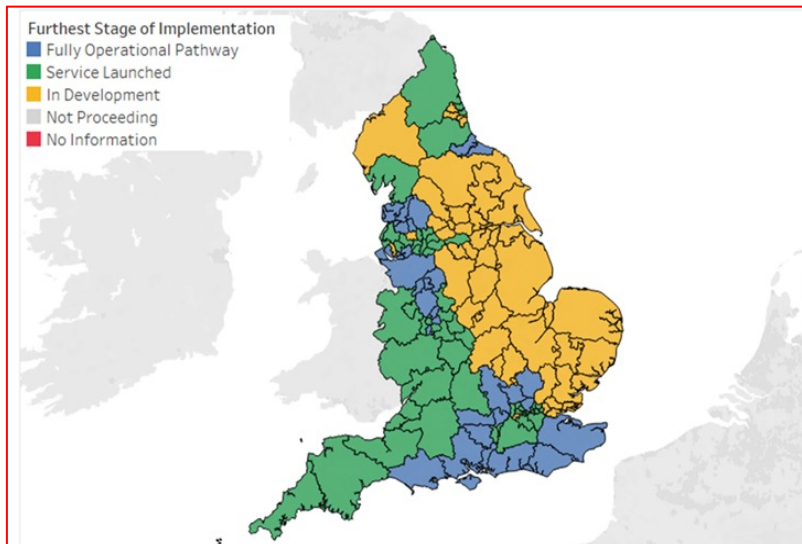
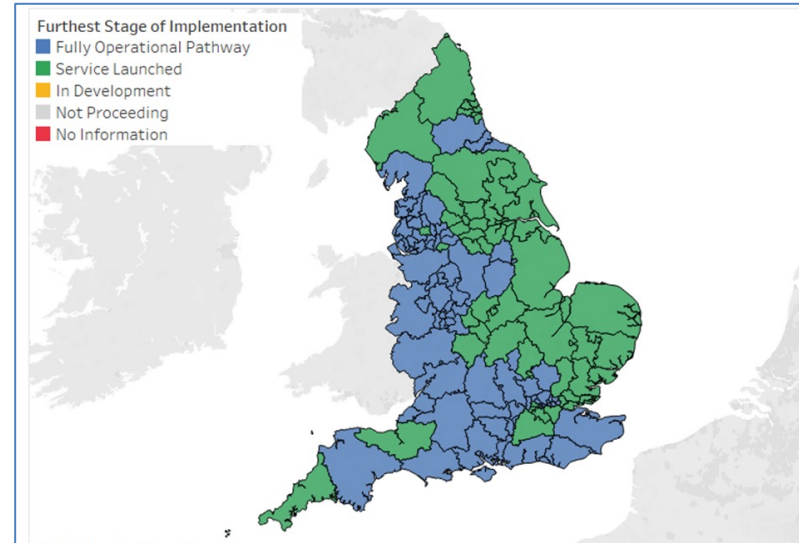
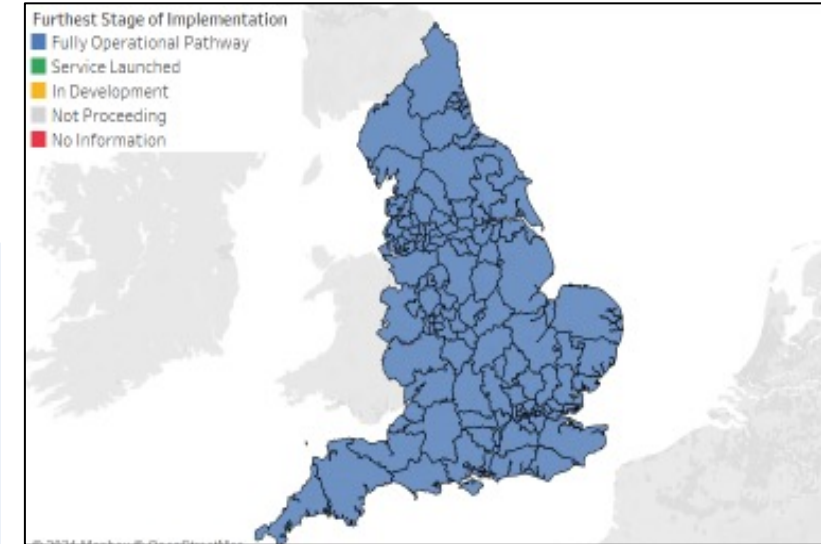
100%

Jan 2021

60%

Dec 2020

35%



Fortnightly COVID Virtual ward learning network

4. NHS@Home Pulse Oximetry Learning Network

Agendas, notes and links shared at the bi-weekly NHS@Home Pulse Oximetry Learning Network webinars. These webinars are open to anyone interested in currently setting up a Covid Virtual Ward service. Please email leonide.yahyaoui1@nhs.net to be added to the invite list. Webinars every other Tuesdays 3.30-4.30pm and recordings in this folder.

Sort by Name

- 1st meeting 04.08.2020
Updates from National, North Hants CCG, Slough, Hillingdon, Tees Valley
- 2nd meeting 18.08.2020
Updates from Leicester, Manchester & Tees Valley Discussion topics: -Messaging for the public about 'virtual wards' - working with patients and the public -Digital tools: -what are people finding useful? -Resource requirements: - how are you staffing your service? -Temperature devices -Fundi models
- 3rd meeting 01.09.2020
Implementing pulse oximetry and Restore mini in an LD setting. Michael Hammond Page Implementing pulse oximetry NHS Hampstead CCG, Dr Tara Sood Out of Hours GP/Patient Covid-19 Experience, John Caldwell

National deterioration & COVID Forum

NHS England and NHS Improvement

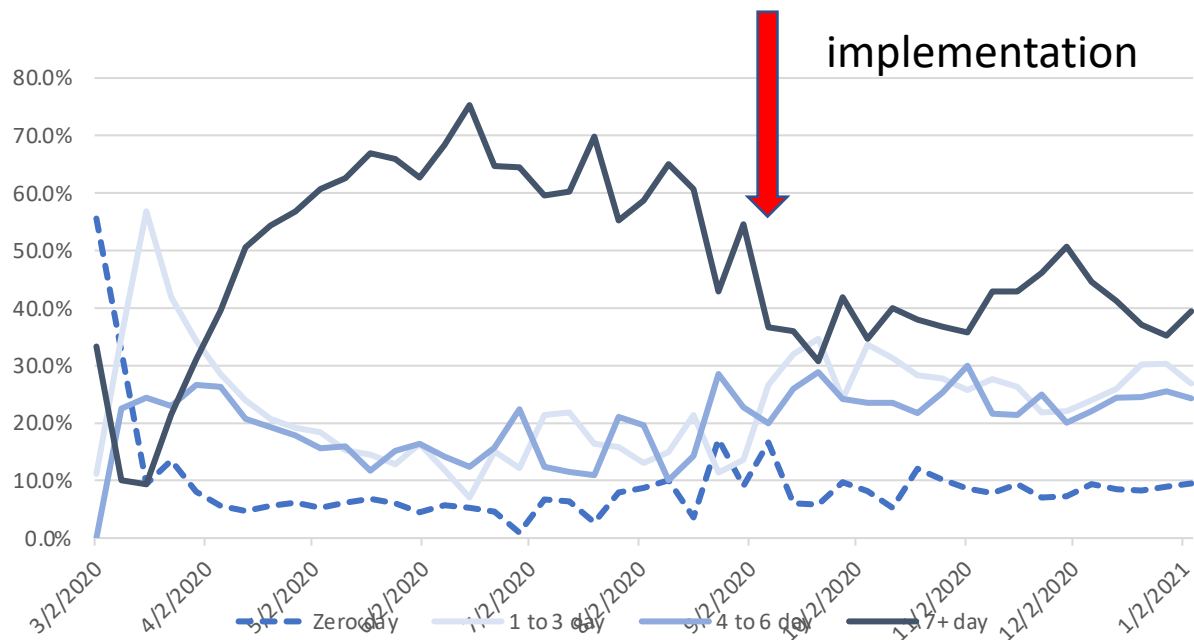
1000 members, 25 new posts/day, 250 views/day

IMPACT

- A. Reduced length of stay in admissions
- B. Reduced overall mortality rates
- C. Safe model of care for virtual patients
- D. Reduced admissions, Increased virtual care

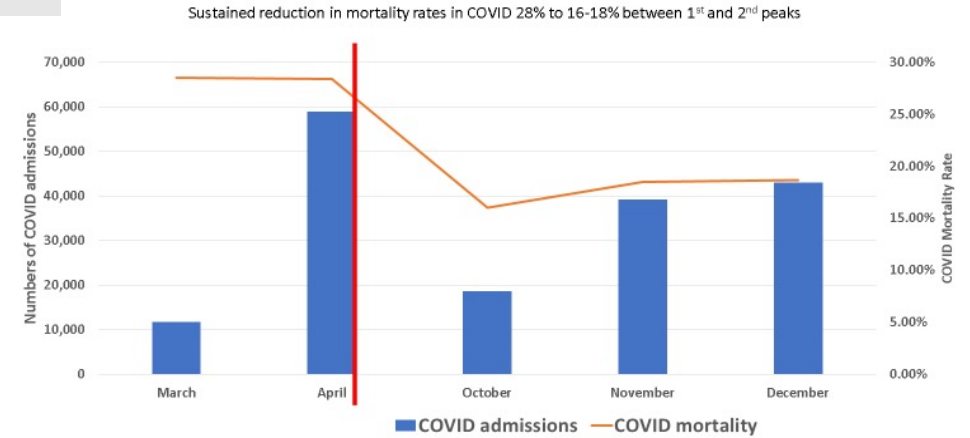
A

Percentage of South East regional weekly COVID patient discharges by LoS category (16,000 virtual ward patients)



B

The mortality rates of COVID admissions 1st v 2nd peak



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

Throughput and outcome

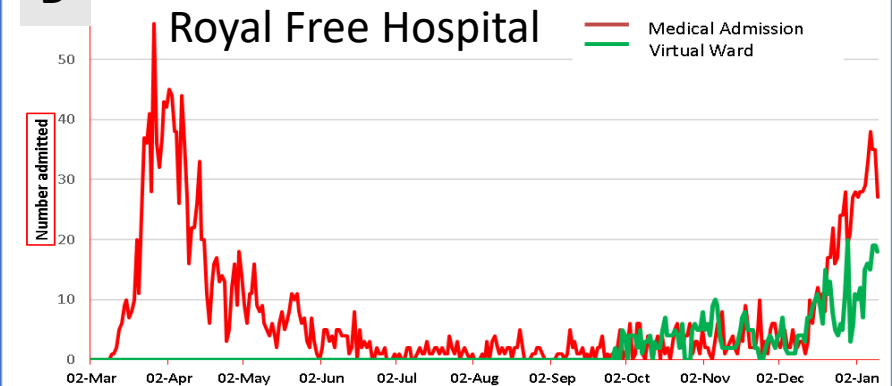
C

	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

COVID POSITIVE ADMISSIONS

Royal Free Hospital



Patient Pathway



Patient reassurance & partnership is key

Clear guidance regarding normal course of illness, what worrying symptoms of deterioration and when to seek advice/help and with what urgency. [COVID patient instructions](#)

Develop local experts through web-based training who can monitor for signs of deterioration

Use of diaries to record saturations & symptoms - paper-based or apps

Consider use of a telephone service to provide safety net and reassurance to reduce hospital attendance & support patients out of hospital.



Patient at home

Deterioration

Hospital 

For Clinical pathway see Slide 9



Blood Oxygen Level	What to do / When to seek help
95-100%	Stay at home and continue to check your blood oxygen level regularly
93-94%	Check your blood oxygen level again and within an hour 1. If it's still 93 or 94 % seek help 2. If concerning symptoms seek help <ul style="list-style-type: none"> • Shortness of breath • Chills/high fever • Severe aches/tiredness • Collapse/Confusion
92% or below	Check your blood oxygen level again straight away If its still 92% or below go to hospital immediately

Discharge

ADMISSION 

Early supported Discharge

Home Patient Self monitoring with/without clinical supervision

DAYS	DATE	PR bpm	%SpO2	Temp °C	Are you Feeling:	Is your breathing:
Days since first symptoms	Date	86	95		Better Same Worse	Better Same Worse

VIRTUAL WARD
 Home self monitoring with Telephone service +/- app
 Supporting early discharge to maintain hospital capacity



CLINICAL PATHWAY

Patient at home



Hospital Clinical Assessment / Discharge guidance

93-94%	2. If concerning symptoms seek help <ul style="list-style-type: none"> Shortness of breath Chills/high fever Severe aches/tiredness Collapse/Confusion
92% or below	Check your blood oxygen level again straight away If its still 92% or below go to hospital immediately

MILD
Sats $\geq 95\%$ and $< 3\%$ desaturation on exertion*

MODERATE
Sats 93-94% with $< 3\%$ desaturation on exertion*
OR $\geq 95\%$ with $\geq 3\%$ desaturation on exertion*

SEVERE
Sats 92% or less
OR 93-94% with $\geq 3\%$ desaturation on exertion*

*40 step exertion test, Attach Sats probe, Walk 40 steps whilst monitoring



NEWS2, CXR, bloods
Additional risk factors, clinical concern** or NEWS2 ≥ 3
NO

Concerning symptoms**

- SHORTNESS OF BREATH
- Chills/rigors
- Severe myalgia/fatigue
- Collapse/Confusion

Yes

ADMISSION

Consider discharge if Clinically stable Within 24-48 hours

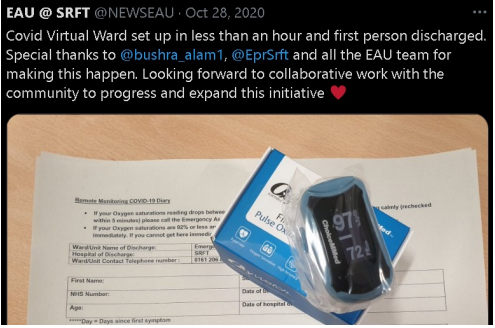
CONSIDER DISCHARGE

Lower acuity
Lower clinical concern

Home Patient Self monitoring

Higher acuity
Higher clinical concern

Clinician supervised VIRTUAL WARD
Telephone service +/- app
Supporting early discharge to maintain hospital capacity
If resources allow



COVID-19 Clinical management

Living guidance
25 January 2021



Conditional recommendation for

For symptomatic patients with COVID-19 and risk factors for progression to severe disease who are not hospitalized, we suggest the use of pulse oximetry monitoring at home as part of a package of care, including patient and provider education and appropriate follow-up (conditional)

[WHO living guidance](#)



Blood Oxygen Level	What to do / When to seek help
95-100%	Stay at home and continue to check your blood oxygen level regularly
93-94%	Check your blood oxygen level again and within an hour 1. If it's still 93 or 94 % seek help 2. If concerning symptoms seek help <ul style="list-style-type: none">• Shortness of breath• Chills/high fever• Severe aches/tiredness• Collapse/Confusion
92% or below	Check your blood oxygen level again straight away If its still 92% or below go to hospital immediately

Establish trust & Develop a system with the principles:

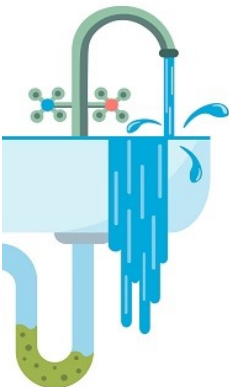
To protect patients- Early identification of deterioration

To protect the health system- Preserving capacity and resources

REDUCED ATTENDANCE/ADMISSIONS of low-risk patients to hospital

Improved **EARLY DISCHARGE** of recovering patients

Please let us know if we can help @mattinadakim @TaraSood5



Remote COVID assessment – sharing the CCAS experience

Dr Kathy Smith

GP and Auditor, Covid-19 Clinical Assessment Service

The Covid-19 Clinical Assessment Service

- National Covid-19 Pandemic Response - 24 hrs/day
- GPs and allied health professionals
- Anyone with a telephone

- **Anyone with confirmed or suspected COVID-19 symptoms**

Confirmed or suspected COVID-19 symptoms

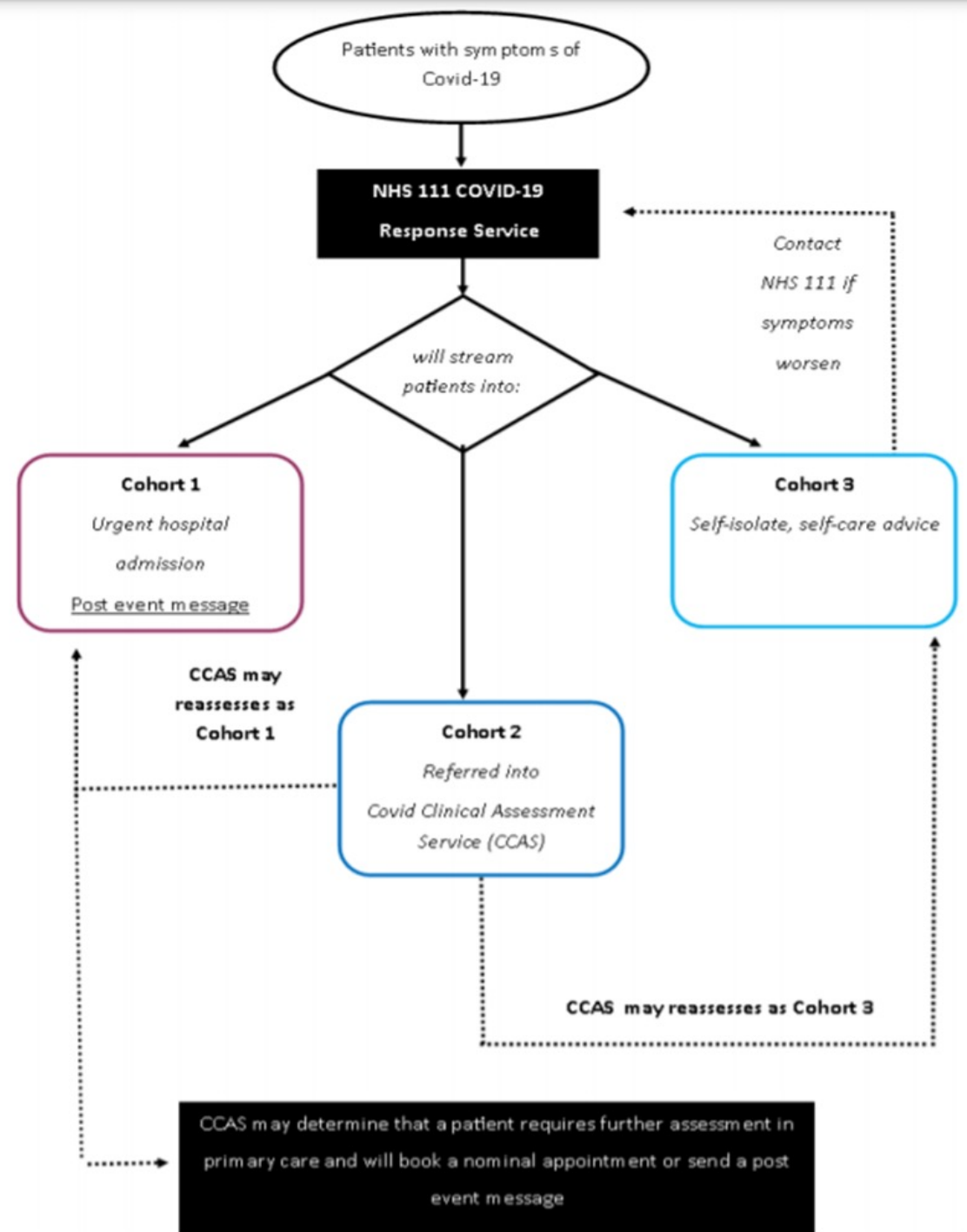
- Fever symptoms (not a temperature threshold)
- Cough
- Breathlessness
- Change in their sense of smell or taste

Where does CCAS fit in to the patient journey?



SOUTH
FOUR

First check it is not an emergency



Risk factors for poorer outcomes

Clinically Extremely Vulnerable patients

- Immunosuppressed
- Adults with Down's Syndrome
- Adults on dialysis
- Pregnant women with significant heart disease

High-risk

- Chronic respiratory, cardiac, liver or kidney disease
- Chronic neurological disease
- Diabetes
- Obesity
- Pregnant women
- Weakened immune system

The remote COVID assessment

- History, History, History
- Focused history
- Red flags
- Collateral history

Assessment

Video

Home
monitoring
equipment

Breathlessness

Targeted
information
gathering

Management

- Non-Covid and/or Covid pathology
- Differentials
- Prescribe?

Management

- Do they need to be seen?
- Are they safe to stay at home?
- Do they want to stay at home?
- Safety netting, worsening advice, fail-safe advice

Top tips and Take-home messages

Top tips for the remote COVID assessment

- Speak to the patient first
- Play to your strengths
- Your wellbeing
- Public health messaging

Top tips for the remote COVID assessment

- Keep up to date
- Align with local policy and guidance
- Other differentials
- Safety netting

Take pride

Thank you

COVID Oximetry @home / virtual wards improvement methodology

Dr Bushra Alam

Acute Physician at Salford Royal NHS Foundation Trust

Oximetry @home models

Basic models – safety netting, diary and pulse oximetry with 24 hour telephone number to ring for advice



The Best – alignment and operational community and secondary care oximetry @ home pathways

Better – ring the patient at days 2, 5, 7, 10 and 12 of onset to check that they are able to use the pulse oximeters and know how and when to access help. Check the saturations and well being



Better still- use technology to enable patients to upload their own readings into an app and monitor this within hours to ensure that low readings are acted on. Ensure Out of hours safety netting advice given.



AHSN Network support

Dr Cheryl Crocker

AHSN Network Patient Safety Director

Building on existing work



COVID Oximetry @home National Learning Network:

Meets regularly (over 80 attendees).

Purpose: to share learning, knowledge exchange, sharing of resources, ideas and innovations.

Opportunity to make contacts, ask questions and offer support.

NHS @home FutureNHS platform:

Main site but with links to Managing Deterioration COVID Oximetry@home site where you will find;

A repository for information with a very active community of contributors.

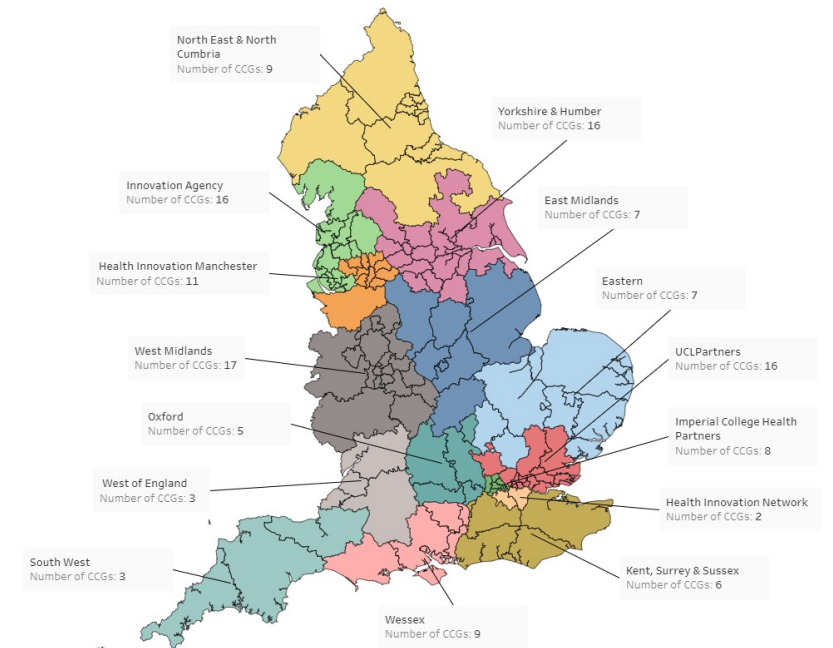
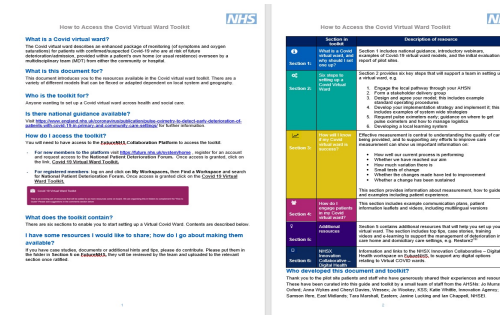
Key areas of information being signposted in a 'how to guide' structure.

www.ahsnnetwork.com

PSC local Patient Safety Networks (deterioration and care homes)

Each AHSN footprint will have a number of established networks where system leaders are invited to participate.

Opportunity to work at a system level, bring partners together, understand the different sectors contributions and co-produce improvement programmes / pathway design / identify innovations.



Q&A session

Led by Dr Alison Tavaré, West of England Regional Clinical Lead for COVID Oximetry @home

Please ask any questions using the chat function.

SAHF/AHSN UK-India COVID-19 webinar series



HOSPITAL AND ICU MANAGEMENT OF COVID-19

Friday 7 May, 8.30-9.30pm (India Standard Time) / 4-5pm (UK BST)

This is the second in a series of UK-India COVID-19 webinars from the South Asian Health Foundation, Academic Health Science Network (AHSN Network) and Learn with Nurses, sharing NHS experiences of COVID-19 specifically regarding hospital and ICU management with health and care professionals in other countries.

- Hospital therapies for COVID-19
- Glycaemic management
- ICU management
- Anticoagulation therapy
- Question and answer session



TheAHSNNetwork



REGISTERED CHARITY NO: 1073178

REGISTER

Further information:

Panellists will include:



- **Dr Sanjay Bhagani**, Consultant Physician/Associate Professor, Royal Free Hospital



- **Professor Ramani Moonesinghe**, National Clinical Director for Critical and Perioperative Care, NHSE England/NHS Improvement. Honorary Consultant in Anaesthesia and Perioperative Medicine, University College Hospital



- **Professor Kamlesh Khunti**, Professor of Primary Care Diabetes & Vascular Medicine, GP and SAHF Trustee



- **Professor Wasim Hanif**, Professor of Diabetes & Endocrinology, Consultant Physician, & Head of Service and SAHF Trustee



- **Dr Pratima Chowdary**, Consultant Haematologist, Royal Free Hospital



- **Dr Tara Sood**, Consultant, Royal Free Hospital and National Clinical Lead – Same Day Urgent Care



- **Dr Nikhil Tandon**, Consultant Endocrinologist and Head of Department of Endocrinology, Metabolism and Diabetes at All India Institute of Medical Sciences (AIIMS).

Register:

TO REGISTER FOR THIS SEMINAR CLICK HERE OR GO TO:

https://zoom.us/webinar/register/WN_Wsg4G5k7Tg02ob6AL5UZjw

If the Zoom webinar has reached capacity, you can also watch a livestream of the webinar on YouTube at: <https://www.youtube.com/c/AHSNNetwork/live>



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Appendices

To Keep safety and flow of the Emergency integrated COVID pathways

1. Early supported Discharge
2. Admission avoidance
3. Alternative assessment areas for COVID and usage of 'Nightingales'

<https://academic.oup.com/qjmed/article/113/12/854/5899741>

Dear Editor,

I totally agree with the author. Together with five doctors who have treated a total of several thousand Covid patients in China's first epicentre - Hubei, I have speculated that high COVID mortality in the UK is at least partially caused by under-detected "silent hypoxia" at homes or care homes, and, seemingly paradoxically but actually consequently, low admission rate to Nightingale hospitals [<https://doi.org/10.1093/qjmed/hcaa262>].

Our commentary also discussed the considerable differences between UK and Hubei [similar in population size and epidemic extent] in detecting silent community/care-home patients, and in admitting those patients to Nightingales [treating just over 154 patients then] or 13,000-bedded Fangcang Hospitals [China's Nightingales, almost fully used with 12,000 (95%) admissions]. The latter significantly reduced mortality, with only 4,512 deaths directly from Covid, mainly with simple and non-expensive approaches – finger oximeters and oxygen supply to those with SaO₂ < 93%.

We therefore suggested that the UK authorities consider a strategical change in configuring and using Nightingales may save thousands of lives in the current resurgence.

Early supported discharge guidance for adults with confirmed or suspected COVID

1. Nurse led identification of patients potentially suitable for early supported ward DISCHARGE



- Improving clinical trajectory (symptoms, function, oxygen saturations)
- No fever for 48h consecutively without medication to reduce fever
- If NEWS Score stable (0-4) :
 - Oxygen saturations (sats) 93% or higher

2. Clinician review to authorize discharge

- As above + Blood tests improving, consider follow up in the COVID virtual ward on discharge*
- Discharge may be considered in stable patients when Oxygen sats <93% if baseline / expected baseline sats are below this range or NEWS 0-4 but stable > 48 hr
- Discharge can be considered in stable patients with mild exercise desaturation who have been fully investigated
- Any patient being considered for oxygen therapy on discharge must be discussed with the home oxygen team

3. Ward discharge check list



Check:

- Patient contact details
- Patient given advice to [isolate at home](#) until recovered i.e. at least 14 days from their first positive SARS-CoV-2 PCR test

Patient given:

- Follow up information
- Patient information leaflet
- Advice to contact their COVID Virtual ward monitoring service (8am- 8 pm) or NHS 111/999 if they deteriorate

Ensure discharge summary contains:

- Date of symptom onset
- Current SARS-CoV-2 PCR test status
- Whether patient desaturates on exertion
- RR, HR and oxygen saturations at rest
- Remote monitoring plan
monitoring frequency, readmission criteria
- Remote treatment plan
e.g. Oxygen, dexamethasone, anticoagulation
- CXR follow-up plans
- AHP, social care & rehabilitation plans
- Treatment escalation/ readmission plan



4. *Consider COVID virtual ward if:

- Clinical Concern
- 65 years of age or older
- 65 years of age with moderate to severe comorbidity
- Lives alone
- Oxygen saturations not back to baseline 93-95%
- Immunosuppression
- Severe Long term condition
- Very overweight
- BAME
- Learning disabilities
- Diabetes

Alternative assessment areas for COVID and usage of 'Nightingales'

COVID 'Nightingale' assessment

COVID 'hospital' assessment

Sats 90% or higher



Assessment incl. exercise test (if no bloods/CXR)

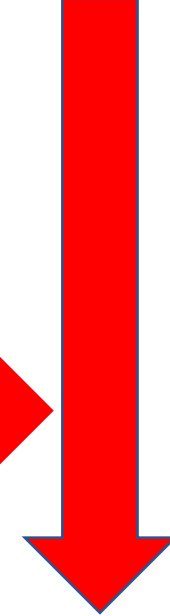
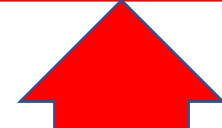


Sats 95-100%
and exercise
desaturation < 3%

Sats 93-94%
or exercise
desaturation ≥ 3%

Sats 91-92%
or exercise
desaturation ≥ 3%

Sats < 90%



discharge home
Safety netting
Self monitoring

OBSERVE

COVID admission centre
O2 concentrators
+/-Dexamethasone
LMWH



Hospital with ICU
facilities



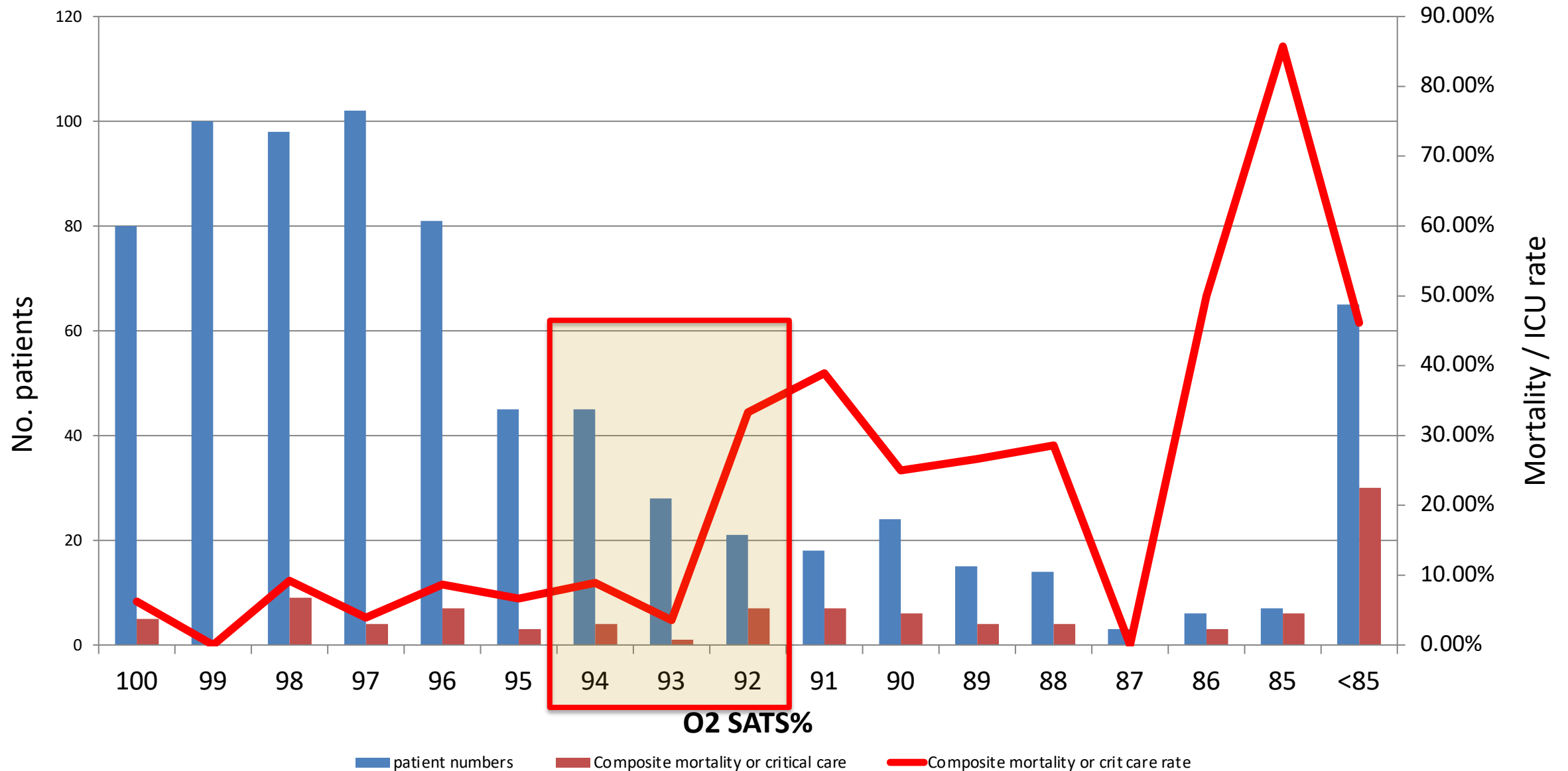
<https://academic.oup.com/qjmed/article/113/12/854/5899741>

Pulse oximeters for people with darker skin

- We are aware of some evidence that pulse oximeters may underestimate blood oxygen levels in individuals with darker skin. However further research is required to understand the causes and implications of this.
- There have been **no reported incidents** regarding inaccuracies of oximeters in darker skin (500,000 oximeters distributed)
- Pending further research and any national guidance that may follow, we suggest that clinicians take this into account when assessing patients participating in COVID Oximetry @home programmes.
- Wherever possible it is **recommended that patients record a baseline oxygen saturation** at onboarding, and subsequent changes in saturation readings are then compared to this established baseline.
- Clinicians should **remain vigilant for other signs of deterioration** in all patients with COVID, use their **clinical judgement and monitor trends** of both oxygen saturation readings and symptoms:

Home oxygen saturation levels predict outcomes

Composite mortality and crit care chart for O2 SATS age group: (Multiple Items)



RESOURCES

[NHS England Pulse oximetry guidance](#)
[NHS England COVID virtual ward guidance](#)
[NHS England Diary for virtual ward translated versions](#) (Urdu, Arabic, Punjabi, Gujarati)
[NHS England Diary for pulse oximetry for virtual wards \(English\)](#)
[NHS England COVID virtual care Standard operating procedure](#)
[NHS England How to apply for pulse oximeters](#)
[NHS England Covid Isolating at Home Safety Netting leaflet](#)

[Adult pulse oximetry monitoring diary animation HEE](#)
[Pulse oximetry videos multiple languages](#)
[North Hampshire Covid Virtual Ward SOP](#)
[Call handler SOP for clinicians](#)
[Remote monitoring quick start guide - Winchester PCN](#)
[Virtual ward Clinical competency resources](#)
[Using volunteers to support Covid virtual ward models](#)
[Oximeter decontamination protocol Winchester](#)
[Covid Virtual Ward Models rapid evaluation UCL](#)
[Remote monitoring using pulse oximeters in care homes](#)
[Covid Oximetry at Home FAQs Wessex AHSN](#)
[Glycaemic management with dexamethasone treatment at home](#)
[HSJ CO@h training resources](#)
[COVID Virtual ward evaluation slideset](#)
[World Health Organisation recommendation for Home pulse oximetry](#)
[Blog Oximetry virtual wards](#)

PUBLICATIONS

[Remote management of covid-19 using home pulse oximetry and virtual ward support](#)
[Remote home monitoring \(virtual wards\) during the COVID-19 pandemic: a systematic review](#)
[Validation of home oxygen saturations as a marker of clinical deterioration in patients with suspected COVID-19](#)
[Triage Into the Community for COVID-19](#)
[Predictors of clinical deterioration in patients with suspected COVID-19 managed in a 'virtual hospital' setting: a cohort study](#)
[Direct and indirect evidence of efficacy and safety of rapid exercise tests for exertional desaturation in Covid-19: a rapid systematic review](#)

WEBINARS

[TED COVID virtual wards](#)
[Innovation in COVID patient pathways- Oxford](#)
[COVID oximetry at home- West of England](#)
[Setting Up a COVID Oximetry at Home Virtual Ward- North East North Coast](#)
[Virtual ward with pulse oximetry- Wessex](#)
[Remote monitoring using pulse oximetry in care homes webinar Q&A](#)