



WELCOME TO

The NHS Virtual Wards Conference 2023



Check Out Our
Agenda Here...



Thursday 2nd March 2023 - 10:50am – 15:00pm – Hatfields Conference Centre, London
Conference hosted by Convenzis Group Limited

A background image showing several hands of different skin tones cupping dark soil and small green seedlings, symbolizing environmental care and growth.

Our Commitment to the Planet

For Each Delegate Attending Our In-Person Event Today, we will be planting 1 tree with our Key Sustainability Partner



PLAY IT GREEN



Slido

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Event Day Overview



Morning Sessions: 9am – 10:40am

Morning Break: 10:40am – 11:40am

Midday Sessions: 11:45am – 13:20pm

Networking Session: 13:20pm – 14:10pm

Afternoon Sessions: 14:10pm – 15:00pm

Drinks Reception: 15:00pm –

Slido is being used to collect feedback, run polls and gather questions across the day, the next slide will have joining instructions..

The event is CDP accredited and your points will be sent within around 6 weeks of the event date.



The NHS Virtual Wards Conference South 2023



Event Chair – Opening Address



James Davis

Founder, CEO
Inicio Health



The NHS Virtual Wards Conference South 2023



Q&A PANEL



**Stephanie
Sommerville**

Director,
Community Health
Services
Transformation &
Virtual Wards - NHS
England



**Dr Gurnak
Singh Dosanjh**

GP & ICB Clinical
Lead for Home First
Leicester,
Leicestershire and
Rutland ICB



**Laura
Harper**

Directorate Manager Adult
Community & Primary Care
Services (Operational Lead
for Virtual Wards) - The
Royal Wolverhampton NHS
Trust



**Emily
Jarvis**

Senior Sister
The Royal
Wolverhampton
NHS Trust



**Grant
Oliver**

Remote Monitoring
Programme
Manager -
Northampton
General Hospital
NHS Trust



**Denisse
Gatmayton**

Diabetes Specialist
Nurse - Virtual Lead
Northwick Park
Hospital - London
North West University
Healthcare NHS Trust



The NHS Virtual Wards Conference South 2023



UP NEXT





2023

The NHS Virtual Wards Conference South 2023



SPEAKING NOW



Alan Payne

Group Product and Engineering Doctor
Access HSC

I will be discussing...

“Virtual Wards Supporting
Integrated Care”



Virtual Wards Proposition

NHS Virtual Wards Conference
2nd March 2023

The Challenge:

There is no specific defined guidance on **how to deliver** a Virtual Ward

As a result, the current funding model is creating a multitude of tactical initiatives all under the banner of a Virtual Ward

- If this continues it could create **duplication, complexity and confusion**
- Resulting in **lack of adoption** and **inefficiency**
- Leading to **throw-away investments** and **wasted time**

Strategic Response

A structured approach which delivers near-term priorities and provides a robust, scalable and frictionless experience to support the evolving needs of the health and care ecosystem, delivering better outcomes for all



Access Group Overview



7,300+
people



80,000+
Customers



SaaS
technology
focus



**High employee
engagement &
customer NPS
scores**



**Over £75M
p.a. in R&D**



**Multiple software
capabilities as
blended solutions**



Giving organisations the freedom to do more



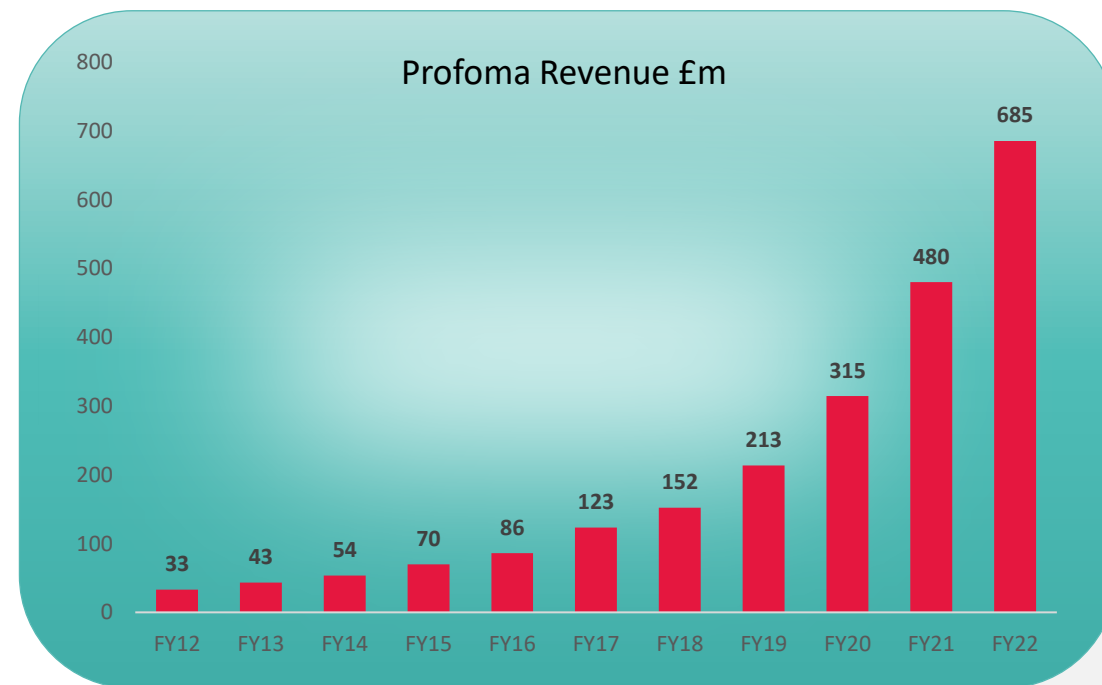
One of the largest
**International software
companies with a UK HQ**

15

years of
**uninterrupted
profitable growth**

£9.36bn

Market Cap – driving continuous
investment in digital transformation
services



Access in the Health and Care sector: We are unique in offering digital transformation solutions across the Care Continuum – and are already serving Virtual Wards

Care Providers

353,000+

care workers rostered
with Access HSC
Software per year

190m+ hours of
home care managed per year

25% of Social Care
Hours in the UK managed

200m+

hours of residential
care managed per
annum

Local Authorities

180+

Local Authorities
using Access care
solutions

15,000+

Workers use
Elemental's social
prescribing platform

10,500+

registered care
branches and
community services

NHS Trusts

45+

NHS Trusts and
Organisations using
healthcare solutions

687,000+

visits carried out using
our Social Prescribing
solution

70%

of our NHS customers
rated 'Good' or
'Outstanding' in CQC

Virtual Wards

14 NHS

trusts using Access 'Rio'
Software to deliver
virtual services

11,629

virtual stays enabled
using Access technology
(in 2022)

Defining **'VIRTUAL WARDS'**

Definition

A Virtual Ward is a safe and efficient alternative to NHS hospital care that is enabled by technology.

Virtual Wards support patients who would otherwise be in hospital to receive the same acute care, monitoring and treatment, but remote from the hospital ward.

The purpose of a Virtual Ward is to deliver hospital standard care in remote locations

- Improve patient outcomes
- Create greater ward capacity
- Enable effective use of limited resources
- Reducing the cost to treat an individual

Achieved through the use of technology to create 'hospital wards at home'

The Access View:

Frictionless quality care, anywhere

Virtual Wards is all about an integrated digitised extension of what happens in a hospital ward.

We believe the fundamental premise of a Virtual Ward strategy is to enable high quality seamless care irrespective of location and should: -

- Maintain clinician best practice irrespective of patient location
- Utilise existing physical ward systems and processes
- Extend systems and processes in a remote context, supported by digital : -
 - Communications channels
 - Monitoring, and recording
 - Patient/carer educational materials
 - Commissioning of remote 'equipment packs'
- Integrate remotely captured data into your existing EPR ensuring one patient view
- Deliver both consistency and flexibility in equal measure

Delivering a Blend of Consistency and flexibility

Systems need to **commission, operate, manage** and **provision** services effectively.

Virtual Wards need to operate consistently with the processes and procedures of physical wards – yet be - **Flexible by design** to:

- Handle different care pathways
- Work with current technology in the physical ward
- Allow care providers to adopt tactical components that build towards a scalable strategic delivery model

Deliver the platform and tools that enable physical capabilities in a virtual environment at scale



The Access View...

“Foundation principles”
to deliver a frictionless
Virtual Ward solution

1. Common core components to enable a consistent user experience
2. Flexibility to adapt to various clinical pathways
3. Re-use of existing capabilities to enable clinician adoption and efficiency
4. Integration of health and social care systems
5. Common standards, integrations and data model

We believe that four elements are required for the successful delivery of Clinically led Virtual Care

1 Provisioning Tool

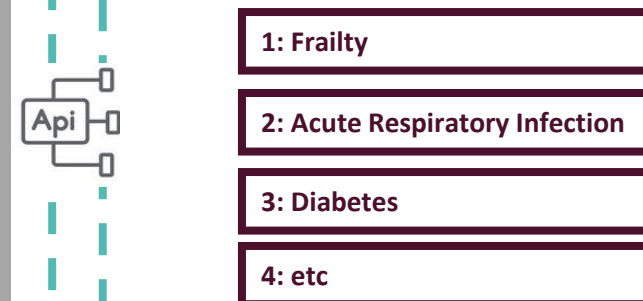


2 Virtual Care Co-ordination (VCC)



3 Pathway-Specific Apps

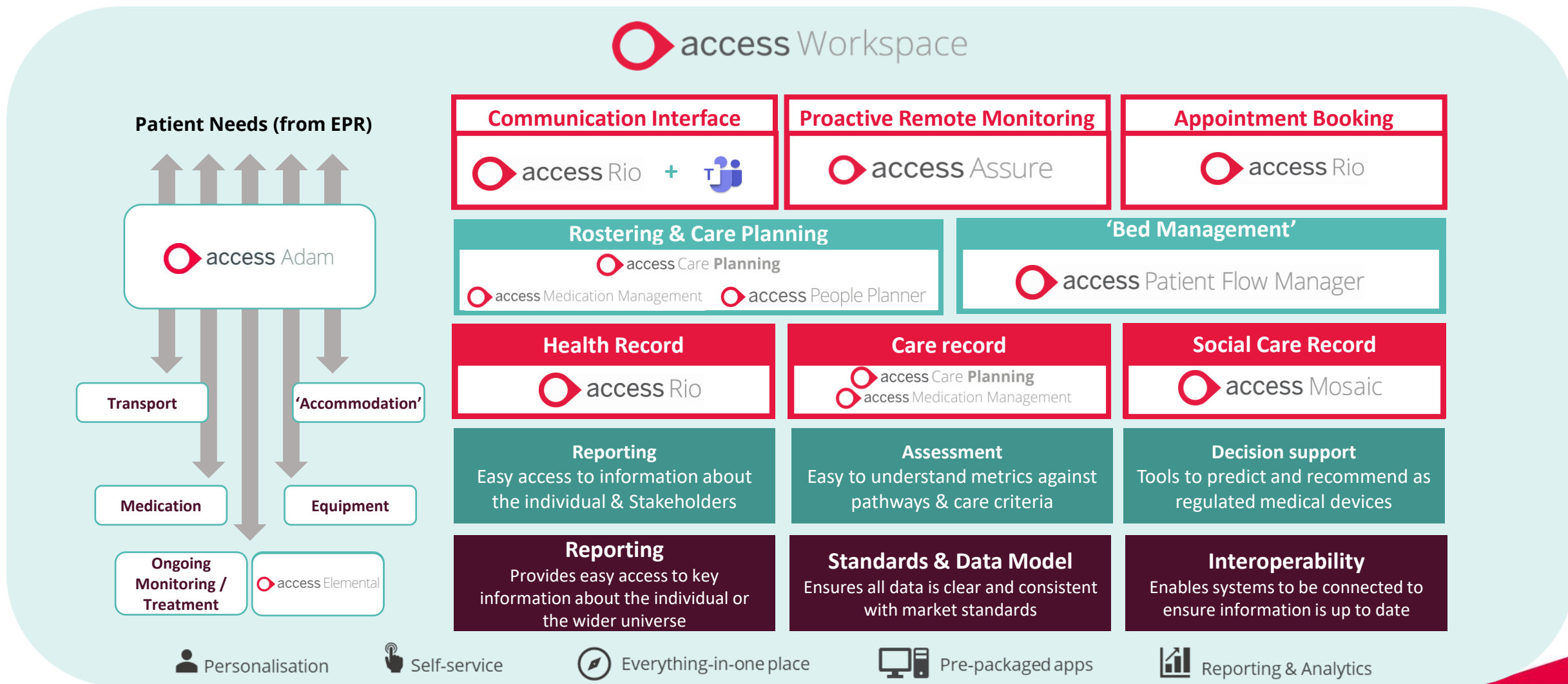
Virtual & physical tools to enable (self or assisted) measurement & assessment of specific health indicators



4 Interoperability



The Access Virtual Care Solution makes frictionless virtual care a reality: efficient, reliable, intuitive, and flexible



‘One Ward’ enabled with Access

The huge opportunity of Virtual Wards is matched by the challenge to make it a reality.

The combination of multiple departments, differing approaches to care, existing technology systems and patient pathways demands that you seek a partner with experience and capability.

- **Expertise** – We remove the complexity, with frictionless, scalable implementation
- **Experience** – Our advice and solutions are trusted. We have a track record in care
- **Partnership** – We’ll help you develop a business case and define your roadmap
- **Practicality** – Flexibility that meets your technology stack, different pathways and targets





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2023

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Q&A PANEL



Alan Payne

Group Product and Engineering Doctor
Access HSC



Stephanie Sommerville

Director, Community Health Service Transformation
& Virtual Wards - NHS England



The NHS Virtual Wards Conference South 2023



MORNING BREAK



The NHS Virtual Wards Conference South 2023



Event Chair – Chair Morning Reflection



James Davis

Founder, CEO
Inicio Health



The NHS Virtual Wards Conference South 2023



UP NEXT





The NHS Virtual Wards Conference South 2023



SPEAKING NOW



Dr. Debashish Das
CEO
Ortus Solutions Limited

I will be discussing...

“Virtual Wards
& Remote Monitoring
Managing Risks on Waiting
Lists and Enabling Early
Discharge”



Virtual Wards & Remote Monitoring

Managing Risks on Waiting Lists and Enabling Early Discharge

Convenzis NHS Virtual Ward Conference South
2nd March 2023

Presented by:

Dr Debashish Das

CEO Ortus Solutions Limited

Dr Arun Kirupananthavel

Registrar St. Barts Heart Centre



- **Introductions**
- **Pan-London Overview**
- **Atlas Case Study**
- **Heart Failure @ Home**
- **Learnings and Insights**
- **Summary**
- **Questions and Answers**

From Acquisition to Live

Procurement: November 2021-March 2022

Deployment: April 2022 - March 2022

Pathways: Perioperative Surgical Pathways

Technology: Clinician, Patient Portal and Apps

Transformation:

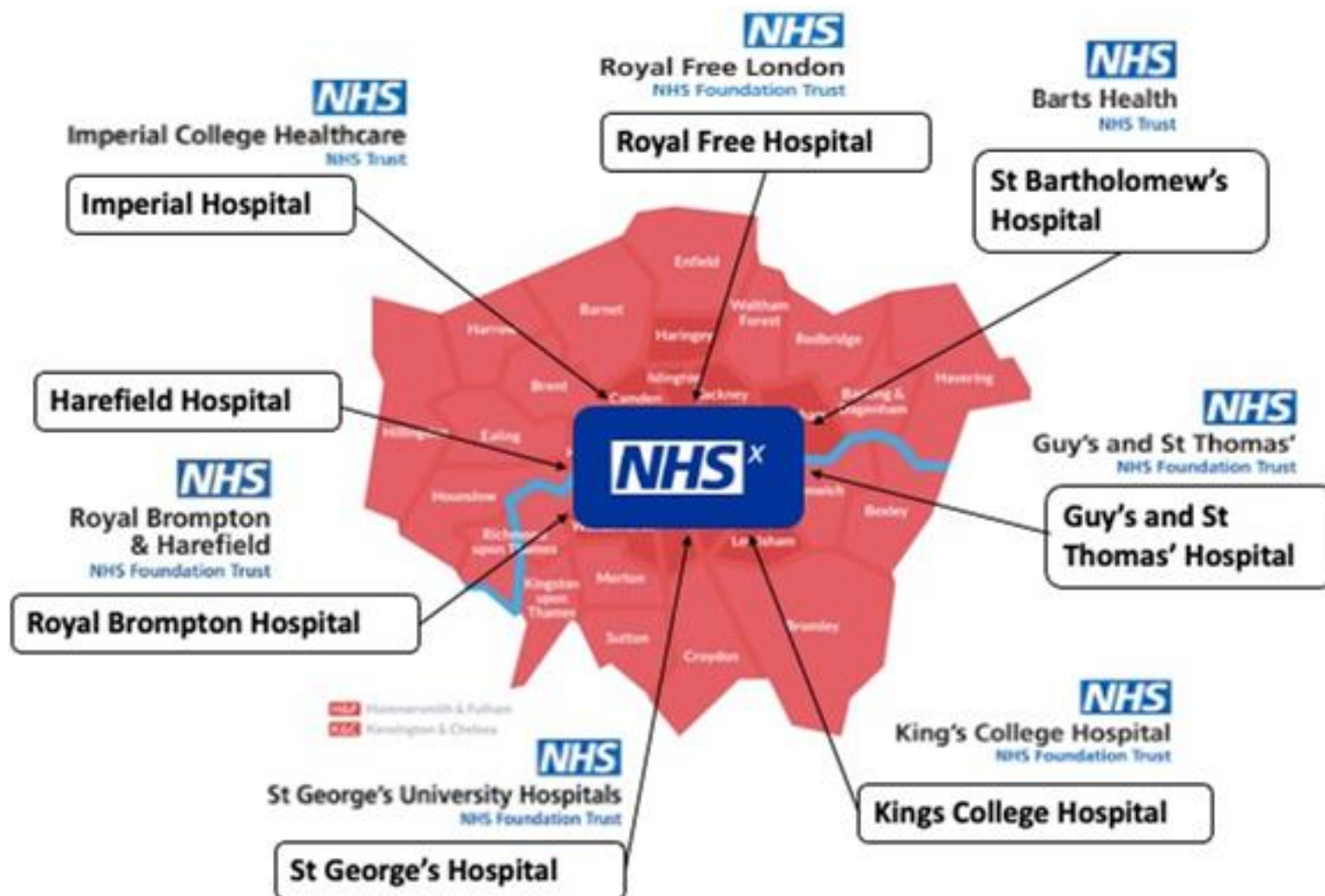
Standardisation of local and regional Pathways, SOPs, Libraries, Consent, Reporting and workforce practices

Observations Support:

BP, HR, Oximeter, Respiratory, Temp, Weight, Blood Sugar

Integration:

OneLondon, Cerner, EMIS & SystemOne



Virtual Ward & Remote Patient Monitoring



- Virtual Wards

- Flexible and scalable
- Configurable dashboards

- Keeping Patients Safe

- Patient prioritisation
- Risk mitigation

- Automated Care Plans

- Pre-assessment questionnaires
- eConsent
- PROMs collection

- Facilitating Early Discharge

- Remote patient monitoring
- Integrated telehealth
- Patient education and content
- Cardiac Rehab



Up-titration of Medication



Royal Brompton and Harefield hospitals



Pan-London Deployment – Onboarding and Activation



	Deployment Site	Go-Live Date	Total Patients Onboarded	Total Patients activated	Total Patients Activated %	Total Questionnaires completed	Total Patients Escalated and Treatments Brought Forward	
Phase 1	St Bartholomew's Hospital	16-Sep-22	543	475	77%	2009	64	Phase 2
	Harefield Hospital	07-Sep-22	629	535	78%	2241	48	
	Royal Brompton Hospital	22-Sep-22	378	304	79%	1737	66	
	St Thomas' Hospital	07-Oct-22	167	126	64%	303	3	
Phase 3	King's College Hospital	23-Nov-22	138	111	77%	261	0	
	Imperial College Hospital	28-Dec-22	72	67	84%	150	3	
	Royal Free Hospital	01-Feb-23	4	4	100%	3	n/a	
	St George's Hospital	Mar-23	TBC	TBC	TBC	TBC	TBC	
	Totals		1927	1622	80%	6704	184	



Royal Brompton and Harefield hospitals



336 Bed Days Saved-£135K in 4 Months
£400,000 Projected Savings in A Year

ATLAS Pathway

The Atlas Pathway Criteria



Presentation

- Medical management and outpatient angiography for low-risk NSTEMI patients
- In patients presenting with non-ST-elevation acute coronary syndromes (NSTEMI)
- Digital virtual ward monitored

Guidelines

- Current guidelines recommend routine invasive coronary angiography for high-risk patients.
- However, in lower-risk patients the benefit-to-risk ratio of early invasive procedures is less clear and has been re-adjusted.
- Opportunity to risk assess NSTEMIs
 - providing early/expedited procedures in the high and very high risk
 - Early discharge with OP angiography in the low risk

Inclusion Criteria

- Grace score (<140)
- Pain-free >48 hours
- Minimal or no ST segment change
- Moderate biomarker rise
- Haemodynamically stable with no ventricular arrhythmias
- No evidence of new heart failure
- Discharged on optimal medical therapy
- Angiogram date set (within 1 week)



ATLAS: Patient Pathway



Patient has NSTEMI
And awaiting
angiogram



Patient meets
early discharge
Criteria



Patient on Virtual Ward
Until Angiogram



PATIENT MONITORED ON VIRTUAL WARD



Fills out daily
Cardiac Symptoms
Checker



Daily Reviews by ANP



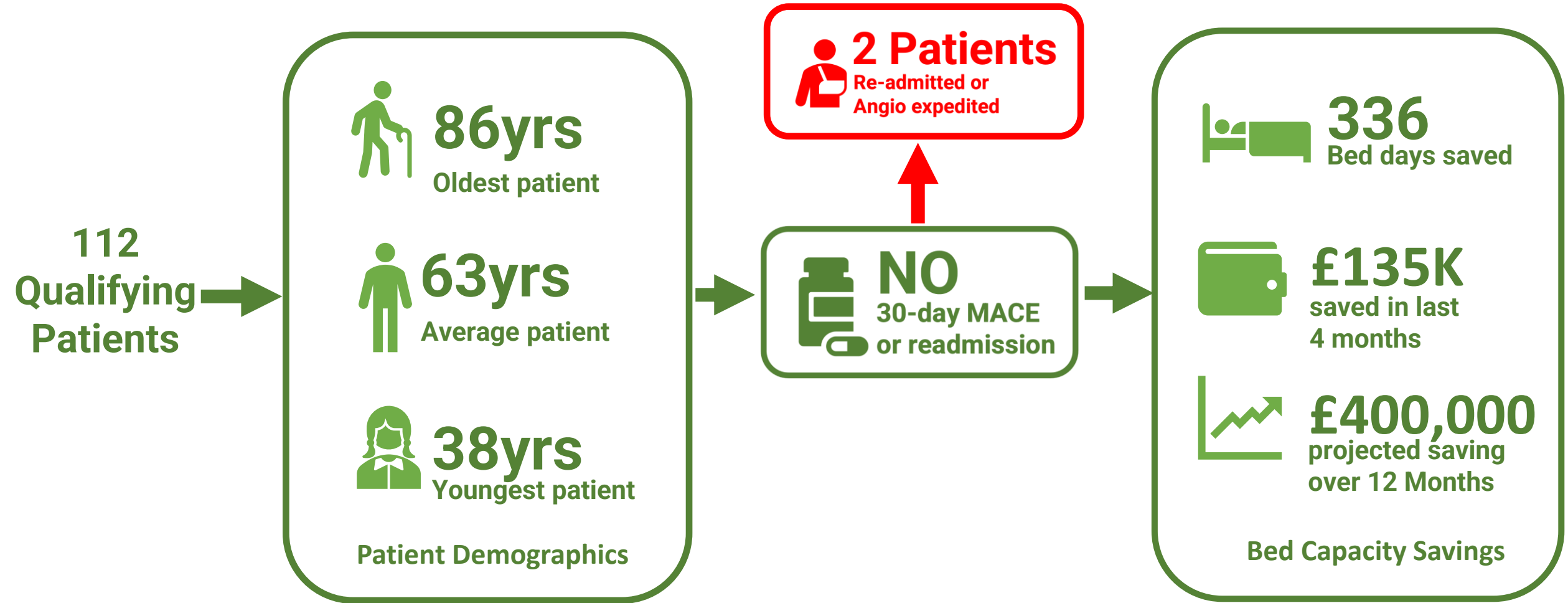
Alerts are Actioned And Escalated



Angiogram



ATLAS: Key Outcomes



Heart Failure @ Home



Acute Heart Failure admission



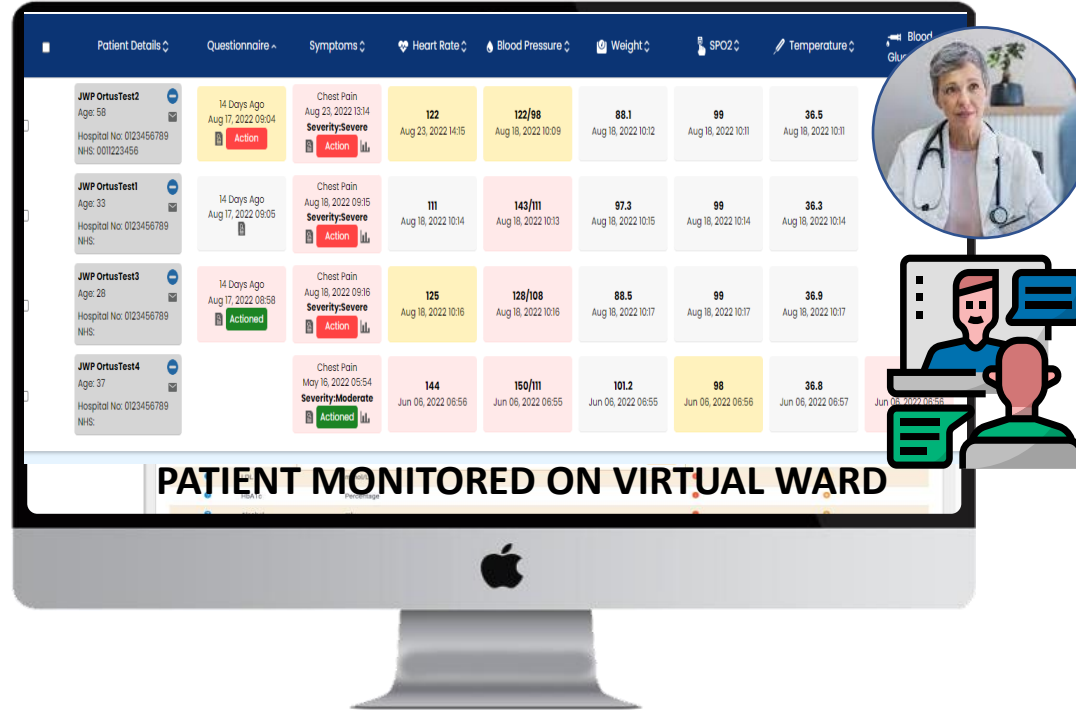
Patient is assessed and becomes in-patient



Patient offloaded (IV Diuretics) Medicine optimisation begins.



Patient moved to oral Diuretics.



- **Early discharge**
 - Up titration at home
- **Chronic disease/medication management**
- **Remote monitoring** for patient-inputted vitals, symptoms, observations
- **Reviews** according to NICE guidelines
- **Asynchronous messaging** /appointments

Patient discharged to Virtual Ward and sent home with BP Cuff and scales

2 Weeks

1 Month

4 Months

12 Months



Implementation

Repeated IG/DP processes

Key SOPs across network

Introduction of new workforce models and resourcing

Early identification of Task and Finish Groups

Onboarding

Key patient information pre-onboarding (prehab and rehab)

Clear avenues for support (technical vs. clinical)

SOPs for patient follow-up for non-engaging patients

Continuous and automated collection of patient and staff feedback

Impact

Early identification of deteriorating patients

Scalability of project across specialties, models of care

Reduction in unplanned admissions and bed days

Enhanced patient to care provider connection and communication

Removal of cross-site variation with SOPs

Summary

- Supporting hospitals at Home and care at home agendas
- Establishing local and regional pathway standardisation and SOPs enabling workforce flexibility and scalability
- Achieving high levels of engagement with both patients and clinical teams
- Enhancing patient care and focusing on deteriorating and high-acuity patients
- Identifying patients at risk, hidden in the list
- Increasing the availability of beds through admission avoidance and early discharge

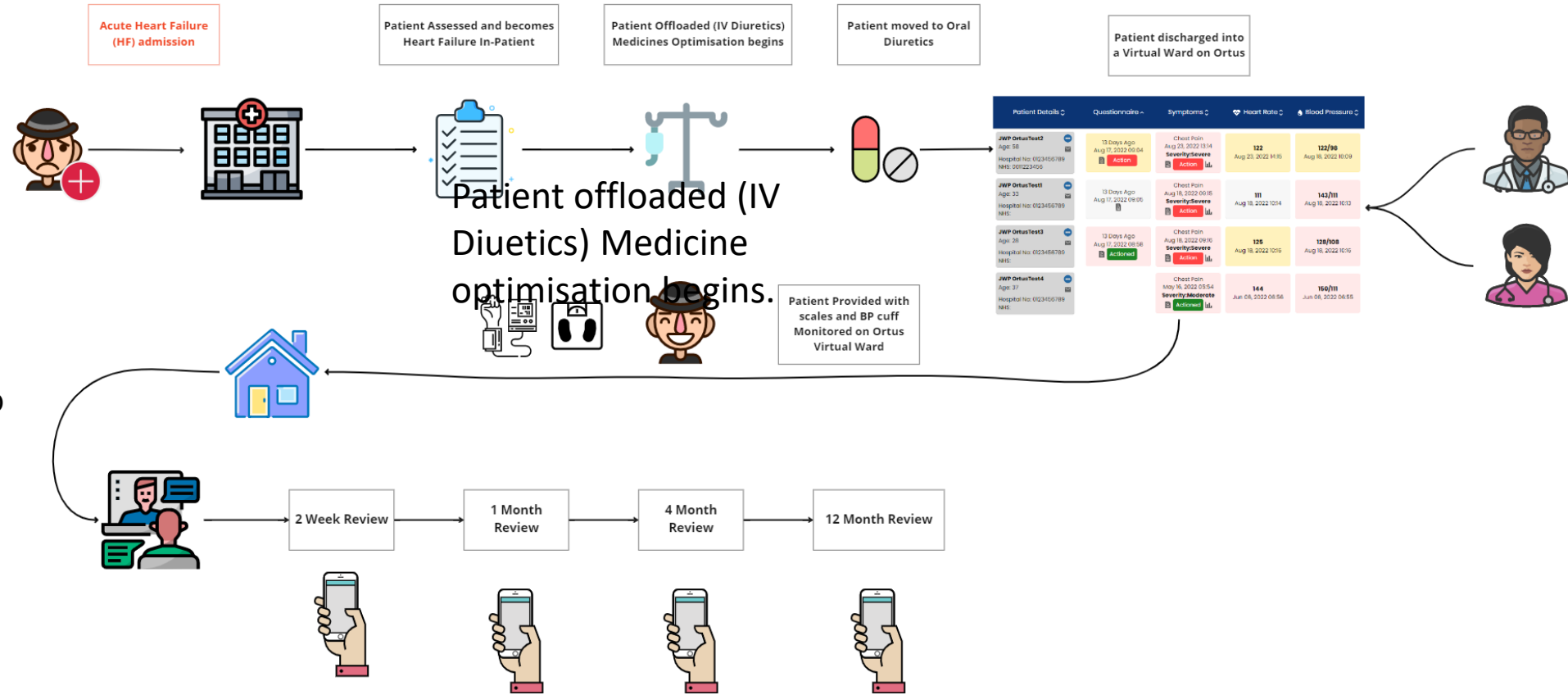




Questions

Heart Failure @ Home

- Early discharge
 - Uptitration at home
- Chronic disease/medication management
- Remote monitoring for patient inputted vitals, symptoms, observations
 - Reviews according to NICE guidelines
- Asynchronous messaging/appointments
- Live in 1 London site, with 2 more this month



Key Outcomes



 **86yrs**
Oldest patient

 **4 days**
Average Time For
Angio Post Discharge

 **336**
Bed days saved

**TOTAL
PATIENTS:
112**

 **63yrs**
Average patient

 **2 Patients**
Re-admitted or
Angio expedited

 **£135K**
saved in last 4 months

 **38yrs**
Youngest patient

 **NO**
30-day MACE
or readmission

 **£400,000**
projected saving in a year





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SPEAKING NOW



Karen Pudge

Senior Programme Manager Blended Learning
Health Education England

I will be discussing...

“Innovation in Healthcare
Education: Developing the
Future Workforce through
Blended Learning”

Innovation in Health Education and Training: Blended Learning



Karen Pudge

Senior Programme Manager & Registered Nurse
Florence Nightingale Leadership Scholar

Context – policy & mandate

LTP (2019) - 4.16

Establish a new online nursing degree for the NHS, linked to guaranteed placements at NHS trusts and primary care, with the aim of widening participation

HEE Mandate 2019-2020 – 2.8

Promote alternative routes into the nursing profession by:
“developing a blended learning nursing degree programme that maximises the opportunities to provide a fully interactive and innovative programme through a digital approach”

People Plan (2020) – p38

HEE will also pursue this blended learning model for entry to other professions

HEE Mandate 2022/23

‘continue to develop its proposals for reform of professional education, in partnership with DHSC and NHSE. HEE should also explore the use of blended learning approaches to promote full utilisation of innovative and immersive technologies and support flexibility and widening access in education provision’

Blended Learning Programme

The blended learning programme is promoting innovation in health professionals' education and training for **all**.

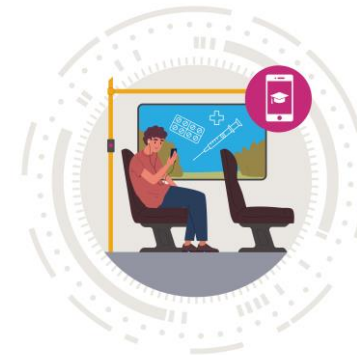
By enabling delivery of quality, cost-effective education and outcomes for the NHS and the people it serves through:

- **Commissioning** of courses with improved flexibility and rapid adoption of effective technologies
- **Evidence Reviews**- building on insights from data, cutting-edge research and expert discussions to inform the way that education and training is developed and delivered.
- **Strategic system leadership**- influencing innovation in health education provision

What is blended learning?

Definition: *“a method of teaching that integrates technology and digital media with traditional instructor-led classroom activities, giving students more flexibility to customise their learning experiences”* (Panopto, 2019)

Not Distance learning, mandatory 10-30% taught theory delivered face-to-face (in-person)

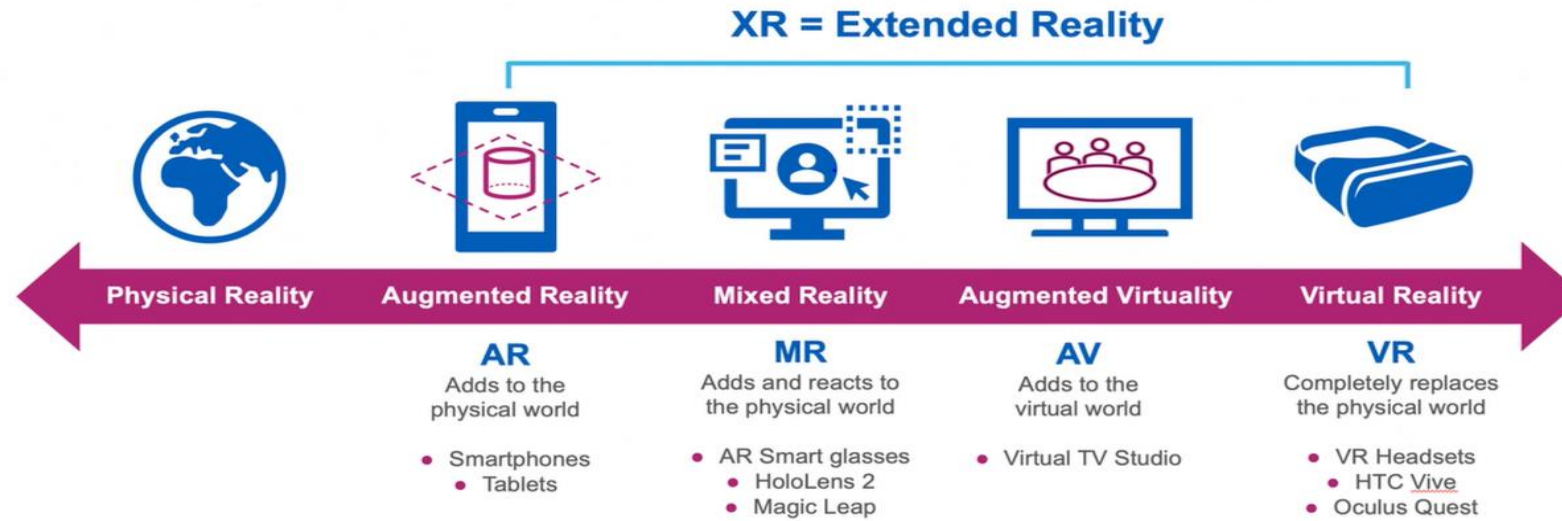


Blended Learning Degree – what's different?

- Full exploitation of **digital technologies** for theory and practice development - simulation, immersive technology, gamification etc.
- Fully **interactive and integrated** programme
- Provision that supports **online communities of practice** leading to development of engaged, self-directed learners with strong digital capabilities
- **Same education, different delivery**

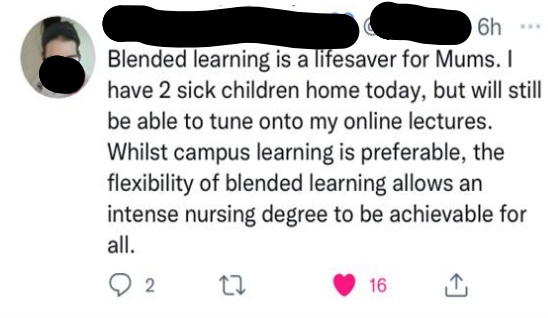
Development of graduates who are flexible, adaptable, resilient, curious, collaborative learners and registered professionals

Simulation and Immersive Technology



Why this, why now?

- Workforce shortages
- Undergraduate/pre-registration training
- Access & flexibility
- Increase diversity – widening participation
- Digitally ready workforce
- Covid-19



”

"The evidence shows that blended learning has benefits that include better student experience and satisfaction, skills development and confidence."

Patrick Mitchell, Director of Innovation, Digital and Transformation

Health Education England



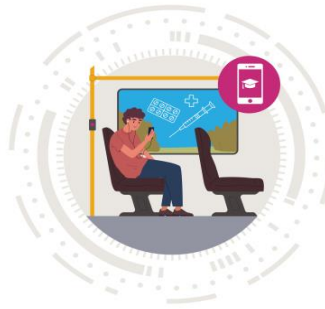
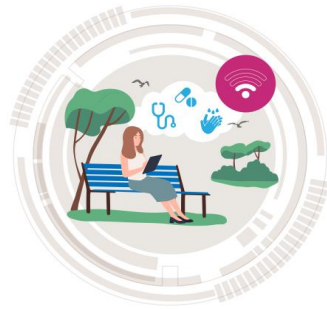
<https://youtu.be/oOhqBDbGa30>

Commissioned programmes

Programme	Achievements
Adult Nursing	Changes to historic entry criteria Evidence of widening access and participation First cohort completed
Midwifery	UG & PG Shortened programme- respond to capacity and clinical need Development of Digital Literacy Opportunities for global health learning Pathway for Maternity Support Workers
Medical Degree	Focusing on graduate entry programme Apprenticeship route in the future
Anaesthesia Associates	National provision Innovation in training
Nursing (Adult / Mental Health) First Destination in Primary, community and social care	First cohorts to begin in 2023

Commissioned programmes

Programme	Achievements
Critical Care Nursing – Steps 1, 2 & 3	Consistency in cost-savings Wider access to flexible training Supporting a big national ambition
Global Health	Diverse student population
Patient Safety Level 3	Starting 2023





**First Destination employment in
Community, Social & Primary Care**

**Blended Learning Adult Nursing
Degree**

Background

- Nursing workforce shortage
- Applications to Nursing degree decreasing
- Biggest drop from mature students
- 50,000 Nurses – where do we need the workforce?
- NHS Long Term Plan puts community at the heart of its ambition
- Patients receiving care closer to home
- Skills required for nursing in community, primary & social care are different to Acute settings
- Still a commonly held myth that NQN need significant acute experience first
- Need to consider new approaches to education & training

Purpose

Commission HEIs to:

- Pre-registration Nursing Degree for first destination employment in Community, Primary & Social Care service
- Create an innovative, accessible programme to attract a diverse student population
- Provide flexibility in training with increased use of appropriate digital and other learning technologies
- Create a significantly different offer in nurse education that will support the growth of a qualitatively different, expert and professional workforce suited to the demands of 21st century care
- Facilitate the growth of digitally capable learners
- All commissioned bended learning programme will be part of an independent evaluation
- Funding for HEIs for infrastructure & development costs

Other Activities

- **Medical Roundtables- Australia and New Zealand**
 - Digital and AI literacy
 - Levers for change
 - Digital Health in remote and rural areas
- **Midwifery Roundtable- Australia, New Zealand and Indonesia**
 - Use of simulation and innovative technology in midwifery education
- **International collaboration site**
 - Troubleshooting
 - Evidence sharing
 - Study tours
- **Ministerial Roundtables-**
 - Innovation
 - Regulatory flexibility
 - System Capacity

What's on our Horizon?

- **Commissioning**

- Return to Practice Nursing and Midwifery
- GP training
- Dental hygienist and dental therapist
- ACCEND
- More in the pipeline!

- **Evidence review**

- State of the Nation report

Strategic System Leadership

- Organising a study tour for a group from Australia on workforce and innovative training solutions – March 2023

Other Achievements

- Blended learning being included in “in attendance” courses to attract student support funding
- Changes to Travel and Dual Accommodation Expenses rules for Blended Learning student
- Potential research collaboration with international partners- midwifery
- Self run University Communities of Practice

What more can we do?

- Promotion of blended learning to Trusts, placement providers and prospective students
- Work with HEIs to develop further placement opportunities for students, including virtual wards and ePlacement opportunities
- Stronger engagement with individual professional bodies to reflect already established partnership with all regulators and membership councils
- Develop a complementary delivery strategy for innovative and flexible education and training alongside HEE framework 15 and workforce strategy
- Influencing regulators and professional bodies to consistently introduce no restrictions in their respective standards for the use of technology
- Generate evidence – independent evaluation, publications
- Future pipelines

Further information

Blended Learning Guidance Report

HEE Blended Learning Website:

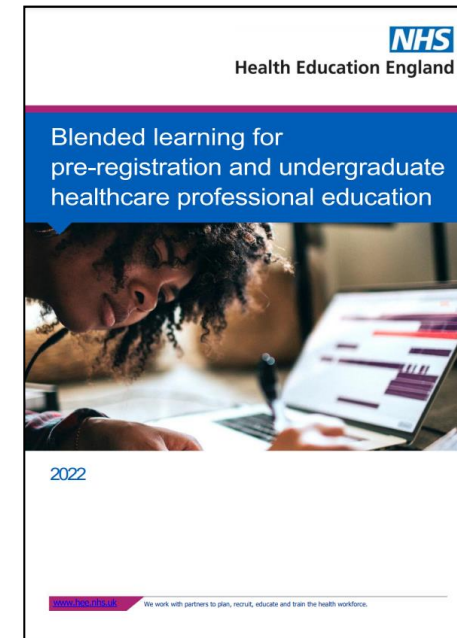
<https://www.hee.nhs.uk/our-work/blended-learning>

”

"The report sets out the potential role of blended learning for those students in England currently unable to access healthcare pre-registration qualifications easily. ... It also highlights the potential of blended learning programmes to allow (healthcare) students to access learning opportunities flexibly to further their career aspirations, alongside their work, family and personal commitments."

Edward Aggar MP, Minister of State for Health

Department of Health and Social Care





Thank you

Email: blended.learning@hee.nhs.uk



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UP NEXT





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SPEAKING NOW



Myles Murray

Founder
PMD Solutions

I will be discussing...

“Partnership-based
approach for Virtual Wards
in severe COPD cohorts”



Revolutionising Respiratory **Outcomes**

Partnership-based approach for Virtual Wards in severe COPD cohorts

realising

The removal of the technology burden and optimising early identification of deterioration

Presented by:

Myles Murray

(CEO of PMD and Fellow of the NHS Innovation Accelerator)

March 2nd 2023, The NHS Virtual Ward Conference South.



Our Shared Purpose

PMD Solutions are #MakingEveryBreathCount

by

Transforming how respiratory rate is monitored

to

Ensure the right care is given to the right patient at the right time with RespiraSense


The Challenge Question: To design a solution to improve respiratory care in the community

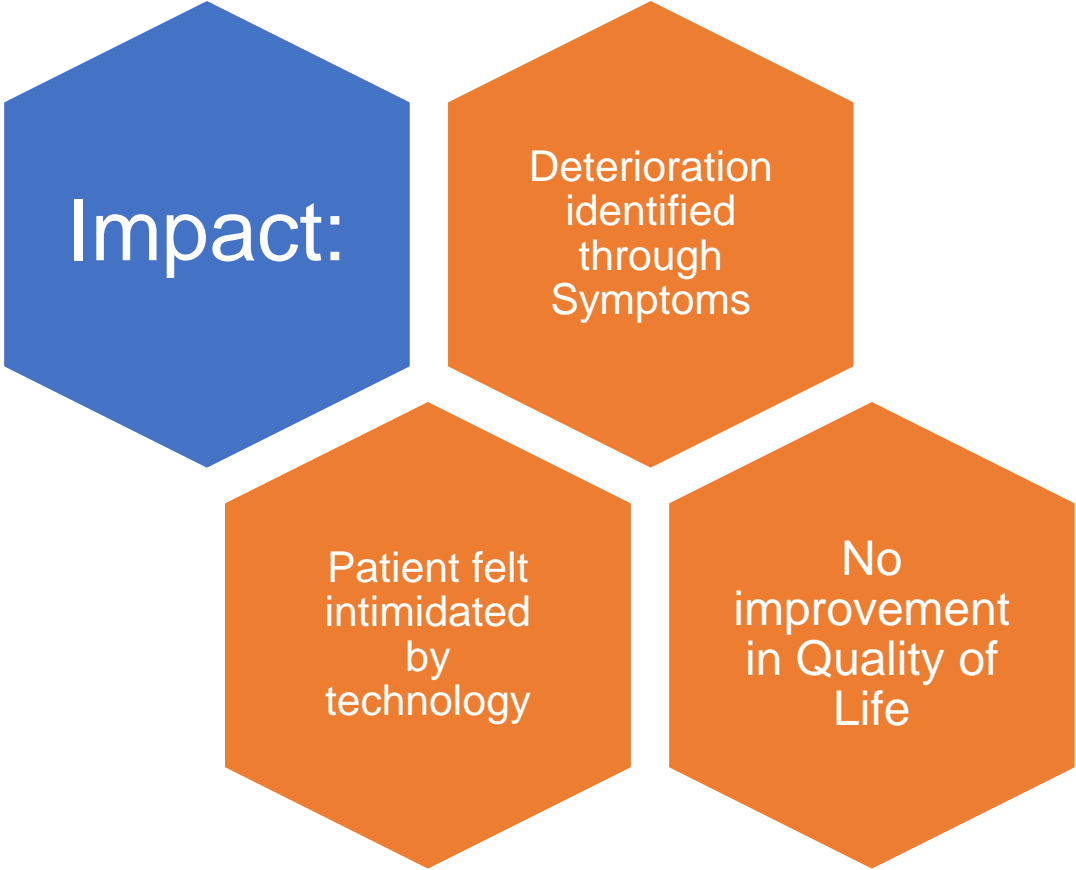
Letterkenny University Hospital 2022:

"How can we empower people with advanced COPD to become a partner in the management of their health care and ensure they receive the right care at the right time as close to home as possible?"



“Wellness in COPD” tool table/grid

KEY						
 Very poor	 Not good enough, if this criterion is important	 Good enough	 Recommended	 Highly recommended		
Tool/ Criteria	Validity/ Reliability	Responsive	Primary Care Population	Practical/ Easy to Administer	Tested In Practice	Other Languages
AQ20						
BPQ-5						
CARS						
CAT						
CCQ						
CRQ						
MRC-D						
RIQ-MON10						
SGRQ						



There is no 'one answer' in delivering better outcomes

But Digitally Transforming pathways can enable improved outcomes and empower patients.

The Lost Vital Sign – Respiratory Rate

The next advance – Continuous Respiratory Rate (cRR)



"Wellness in COPD" tool table/grid

KEY						
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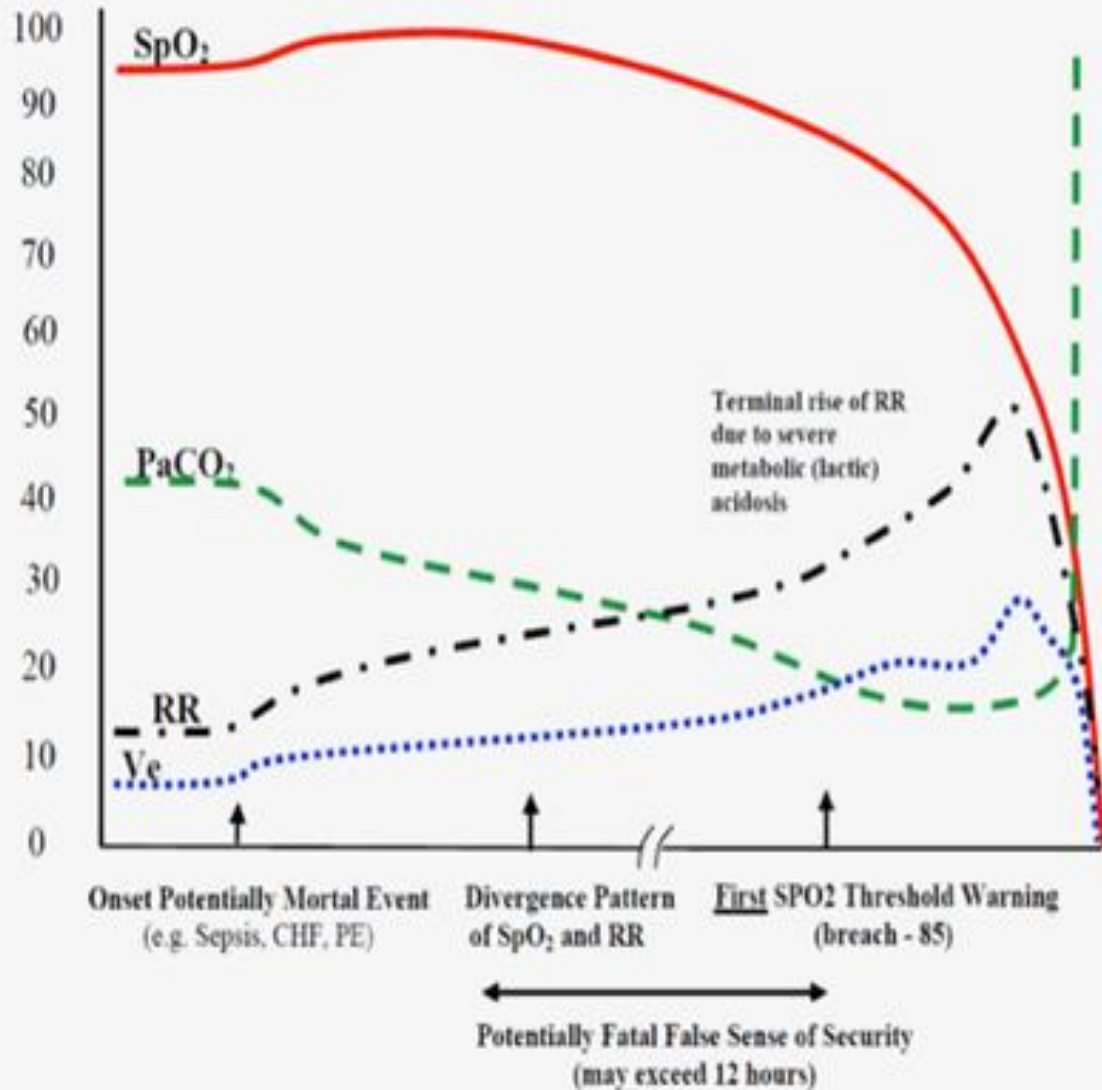


Impact:

Deterioration
preceded
Symptoms

Patient felt
intimidated
by
technology

No
improvement
in Quality of
Life



- Curry 2018 - Changes in respiratory rate indicate potential Respiratory Alkalosis or Metabolic Acidosis
- SpO₂ can be a lagging indicator of same with delayed interventions happening if accurate measurement of elevated RR is not achieved
- Trends as appose to spot checks for RR give greater sensitivity in correlating abnormal RR with underlined deterioration
- A simple Arterial Blood Gas (ABG) analysis can confirm this in day to day clinical practice.
- Confirmation of Alkalosis or acidosis can give healthcare providers the direction for the appropriate course of treatment.

RespiraSense – Continuous and motion tolerant eRR monitoring

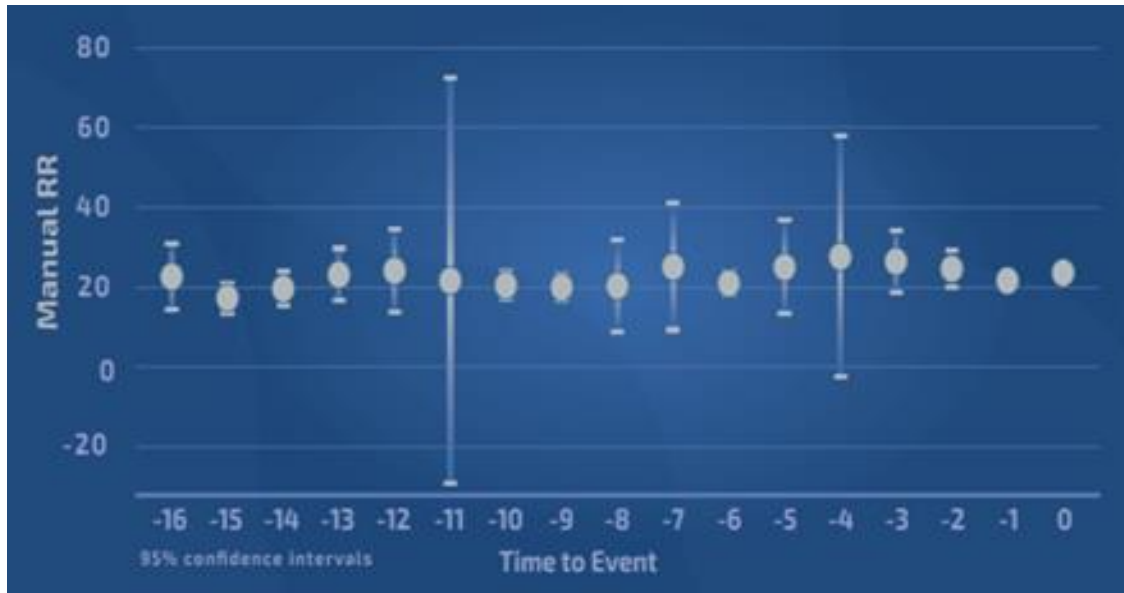


Single Patient Single Use
RespiraSense Sensor

Reusable/Rechargeable Lobe
(measures, processes,
communicates)

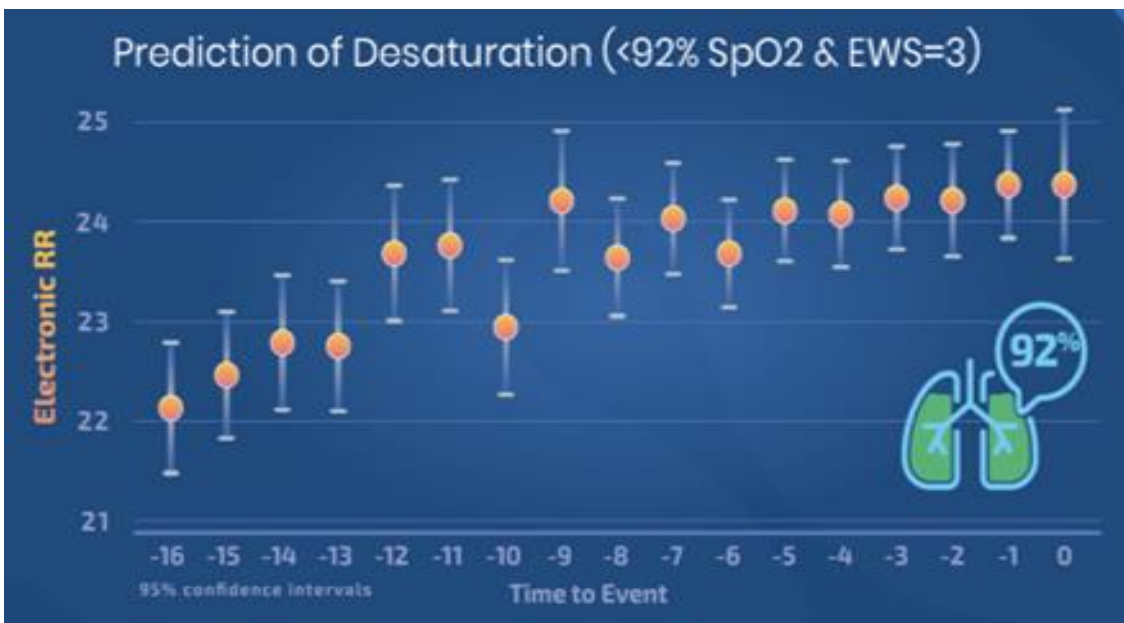


Optional: Bluetooth SpO2/PR
monitor - Nonin



McCartan2020 demonstrated that eRR >24 breaths per minute gave 12hrs early warning of impending hypoxia event with over 90% sensitivity.

Manual RR measurements gave no significant predictive power for pending hypoxia



Electronic monitoring of patients Respiratory Rate can help allocate the Right Resources to the Right Patient at the Right Time.

cRR also predicted pyrexia events of temp>38°C

Acute monitoring of Respiratory Compromised Patients using cRR



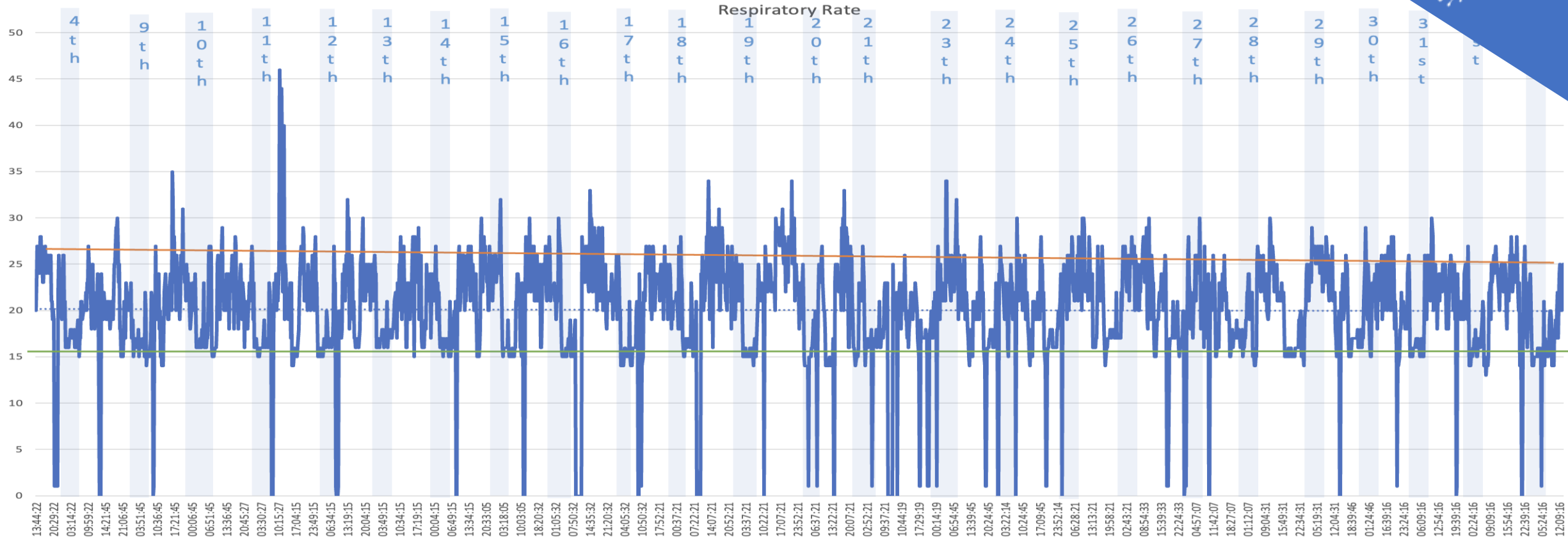
cRR is in 23 Acute Hospitals and 47 Respiratory Wards across Ireland

NHSx funded roll-out in Nottingham University Hospital across 3 Wards

40,000+ Patients monitored every year

Intended for patients on 4lt Supplementary O², NIV, or HFOT

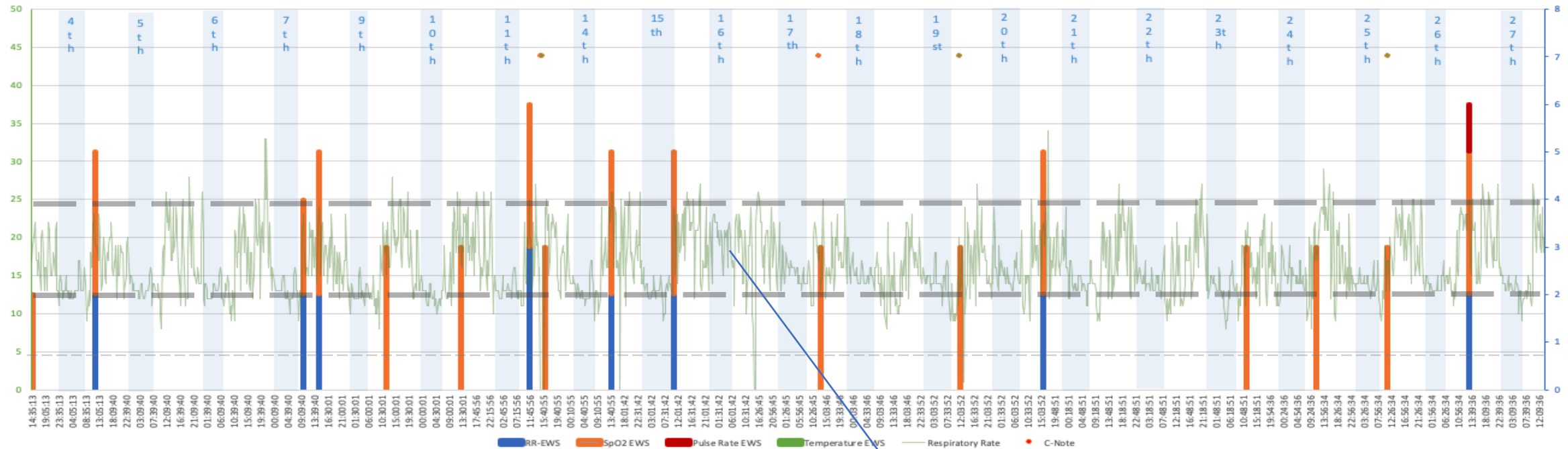
What is a Continuous RR Profile – Patient #1



- Repeating patterns of variation
- Reduction in RR during sleep
- Range of RR is consistent
- Lower and Upper RR averages are consistent

Step 1 – Identify the personalise baseline of ‘Normal’ for the patient

Example 1: Disturbed cRR profile and Higher Nocturnal mean cRR than Daytime cRR



Grey Dashed lines show that from history what the normal stable RR profile is.

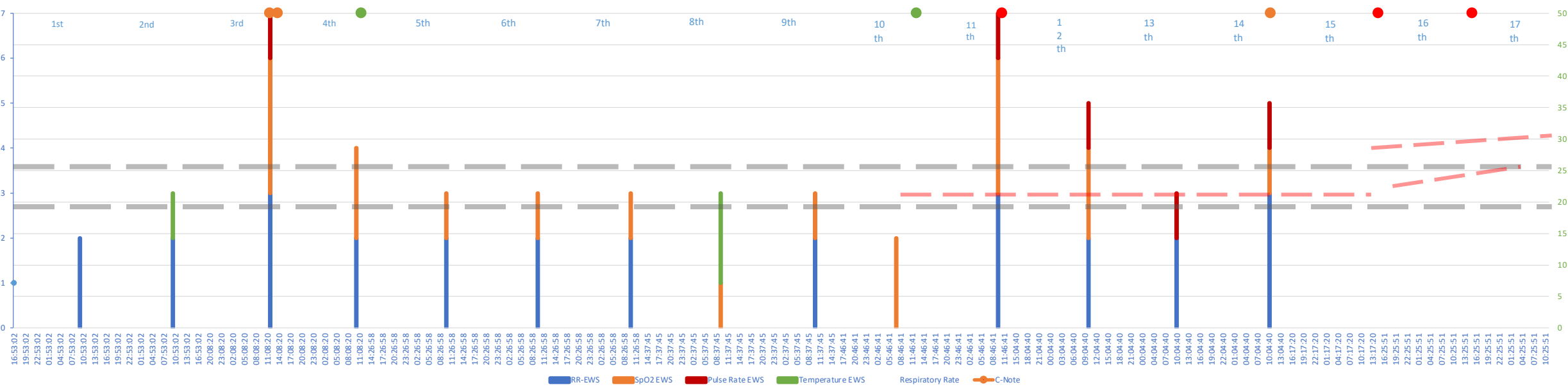
Red Dashed lines show how the range changed as events worsened.

COVID+ Confirmed:
No obvious increase in RR Profile....
But very disturbed night sleep –
Ref: Observation 5 on next slide



Step 2 – Identify deviations in range, trend, or averages from the norm

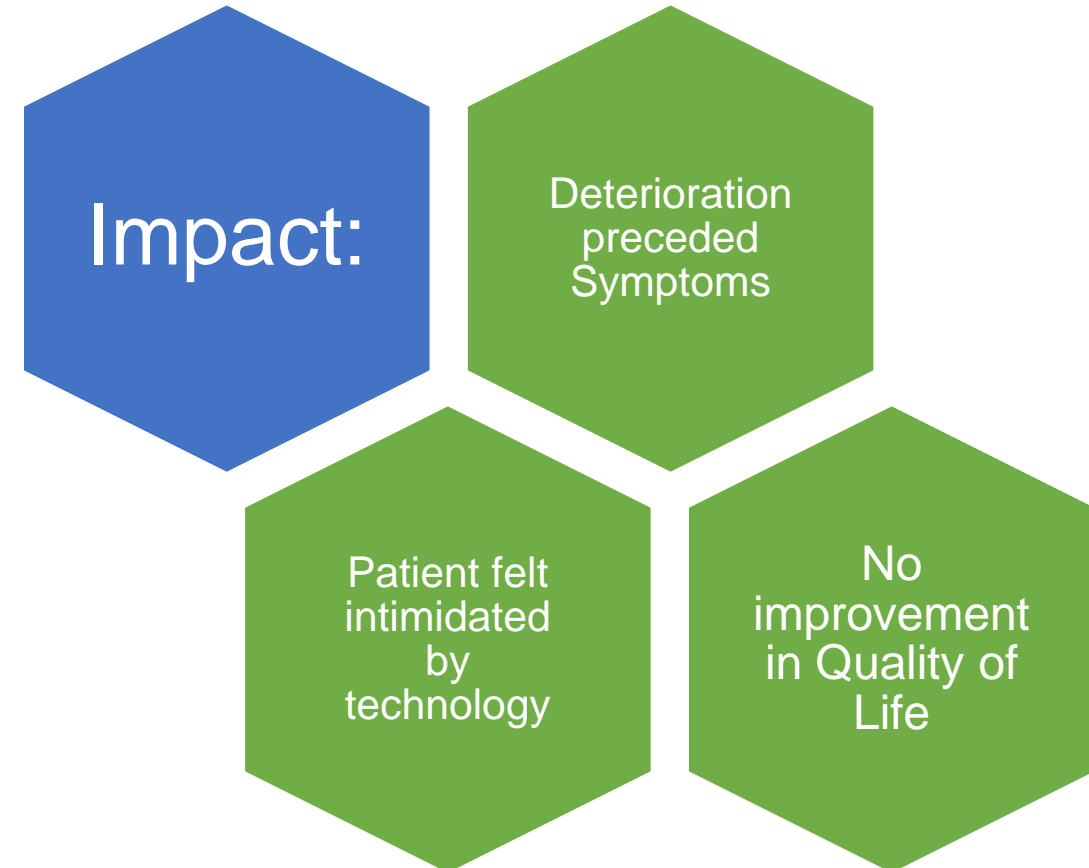
Example 2: Variation in Lower RR range and trending increase in RR range: coupled with disturbed nocturnal cRR



Grey Dashed lines show that from history what the normal stable RR profile is.

Red Dashed lines show how the range changed as events worsened.

The right focus – Patient centric approach



Doherty2022 et al.

International Journal of Nursing and Health Care Research OPEN ACCESS
Doherty A, et al. Int J Nurs Health Care Res 5: 1364
www.doi.org/10.29011/2688-9501.101364
www.gavinpublishers.com

Research Article

GAVIN PUBLISHERS

Community Virtual Ward (CVW+cRR) Proof-of-Concept Examining the Feasibility and Functionality of Partnership-Based Alternate Care Pathway for COPD Patients- Empowering Patients to Become Partners in their Disease Management

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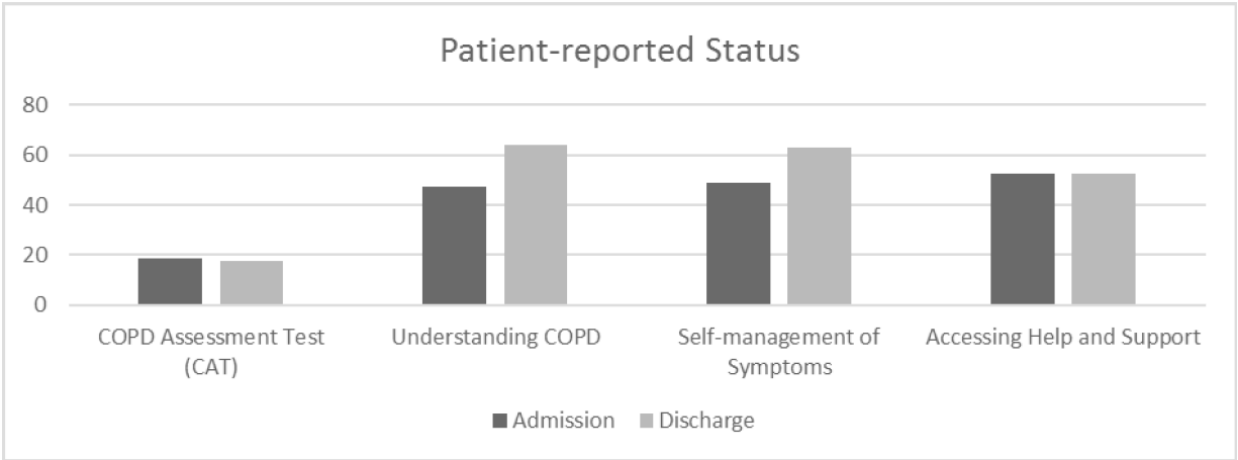
Citation: Doherty A, Keatings V, Valentelyte G, Murray M, O’Toole D, et al. (2022) Community Virtual Ward (CVW+cRR) Proof-of-Concept Examining the Feasibility and Functionality of Partnership-Based Alternate Care Pathway for COPD Patients- Empowering Patients to Become Partners in their Disease Management. Int J Nurs Health Care Res 5: 1364. DOI: 10.29011/2688-9501.101364

Received Date: 09 November, 2022; Accepted Date: 19 November, 2022; Published Date: 23 November, 2022

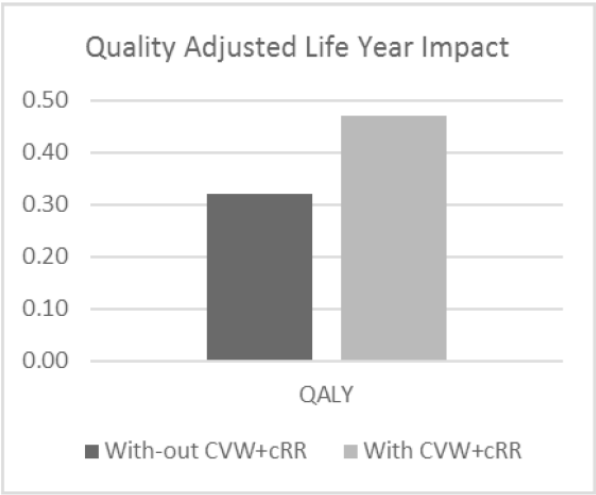
Abstract

Background: Individuals with exacerbating Chronic Obstructive Pulmonary Disease (COPD) display a pattern of exacerbations and illness culminating in repeated hospital admission. In an effort to empower people living with COPD to self-manage their illness and to avoid hospital admission a Community Virtual Ward + continuous Respiratory Rate (CVW+cRR) with a bespoke platform that incorporated respiratory rate (RR) trends was designed and implemented in Co Donegal. The proof of concept took place from May to August 2022 with 15 eligible individuals living with COPD. **Pathway:** Patients with moderate-severe COPD (Gold Scale D) were admitted to the CVW+cRR for remote monitoring, with optimisation of existing care plans and provision of rescue prescriptions for the patient’s use. The objective and subjective patient data was reviewed daily by a Registered Advanced Nurse Practitioner (RANP). **Results:** Data from 10 patients was eligible for inclusion. Hospital avoidance was achieved in 100% of the eighteen (18) identified exacerbations in patients admitted to the CVW+cRR with cRR. The average cost per patient reduced from average €19,384.00 to €3,376.44, with a 96.7% probability of being both cost saving and cost effective at a €45,000 willingness to pay threshold. Several patient-reported measures also indicated improvement between admission and discharge, including Self-Management (increase of 29.1%), Understanding of COPD (increase of 35.3%), and Quality Adjusted Life Years (QALY) (increase by 0.15 of a QALY). **Conclusion:** The COPD CVW+cRR offered individuals an alternate care pathway and facilitated early intervention and management of infective exacerbation. The CVW+cRR provided the option to remain at home while receiving care, resulting in avoided hospital admissions with the use of both personalised objective trigger thresholds and patient feedback as to their wellbeing.

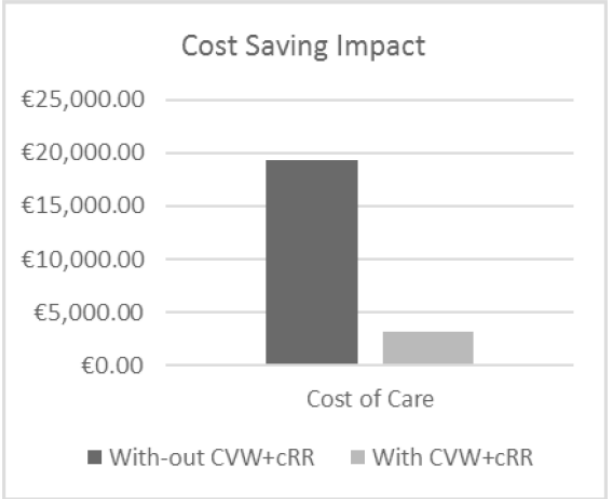
Patient Empowerment



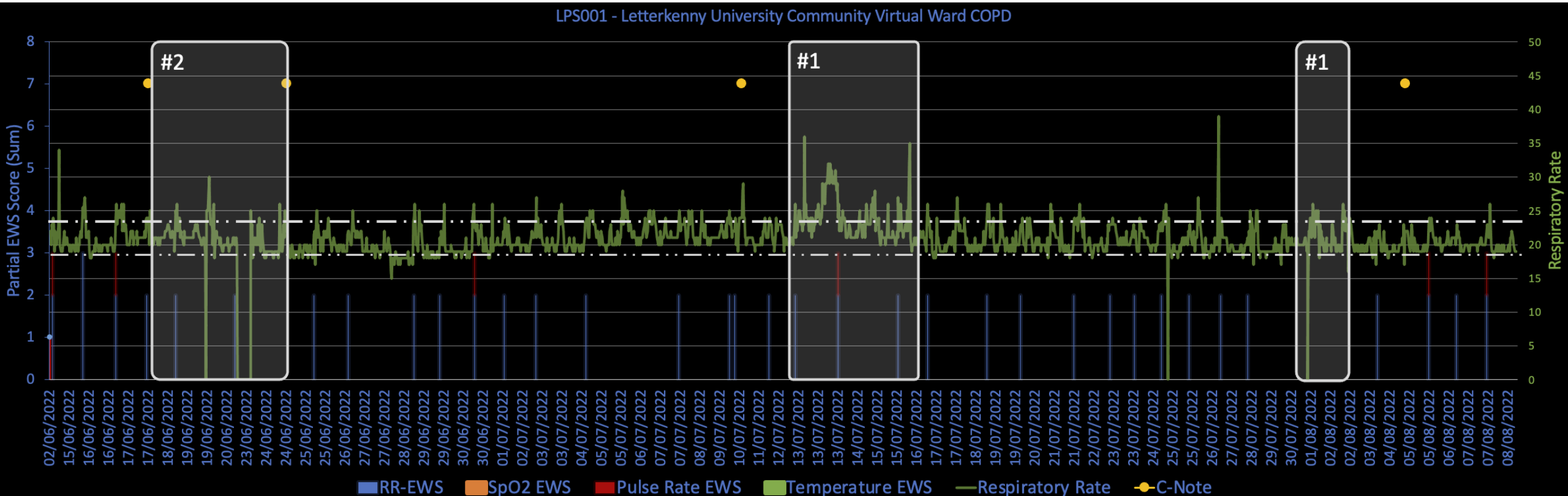
QoL Improvement



Cost Saving Improvement



Example 2: Variation in Lower RR range and trending increase in RR range: coupled with disturbed nocturnal cRR



Notes:

- 4 exacerbations supported in the community
- Average Daily SpO2 = 96% +/-1%
- Average daily/nightly cRR = 21 bpm +/- 3

Events:

- #1 Increased nocturnal cRR 12-hour pre intervention.
- #2 Elevated RR range +10bpm but prior intervention supported recovery

#1 Patient is flagged with abnormal cRR

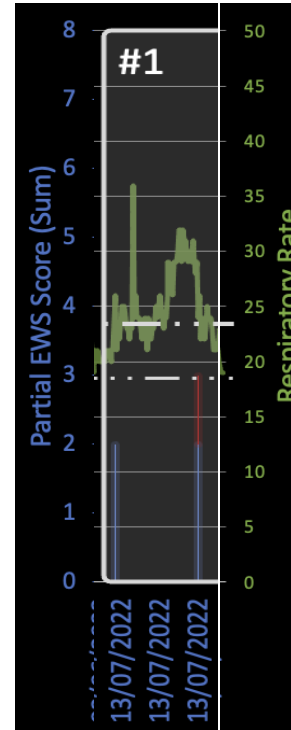


#2 cRR trendline is review for last 24 hours



#3 Clinical decision to Phone, Visit, or admit can be made

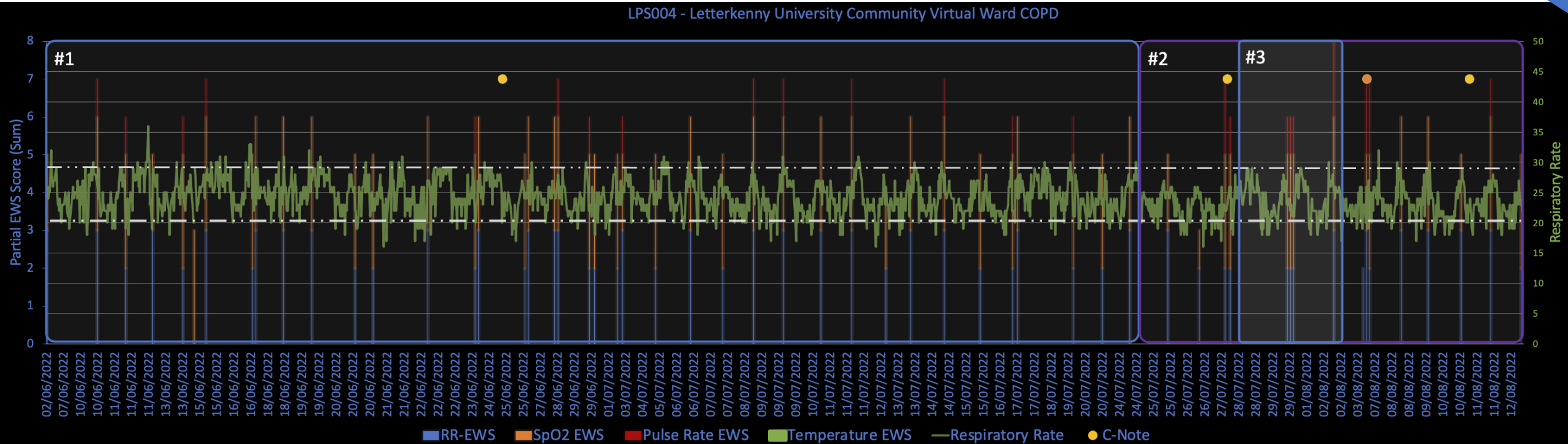
Example 2: Variation in Lower RR range and trending increase in RR range: coupled with disturbed nocturnal cRR



Events:

#1 Increased nocturnal cRR 12-hour pre intervention.

Example 2: Variance in comparing daytime cRR to night-time cRR



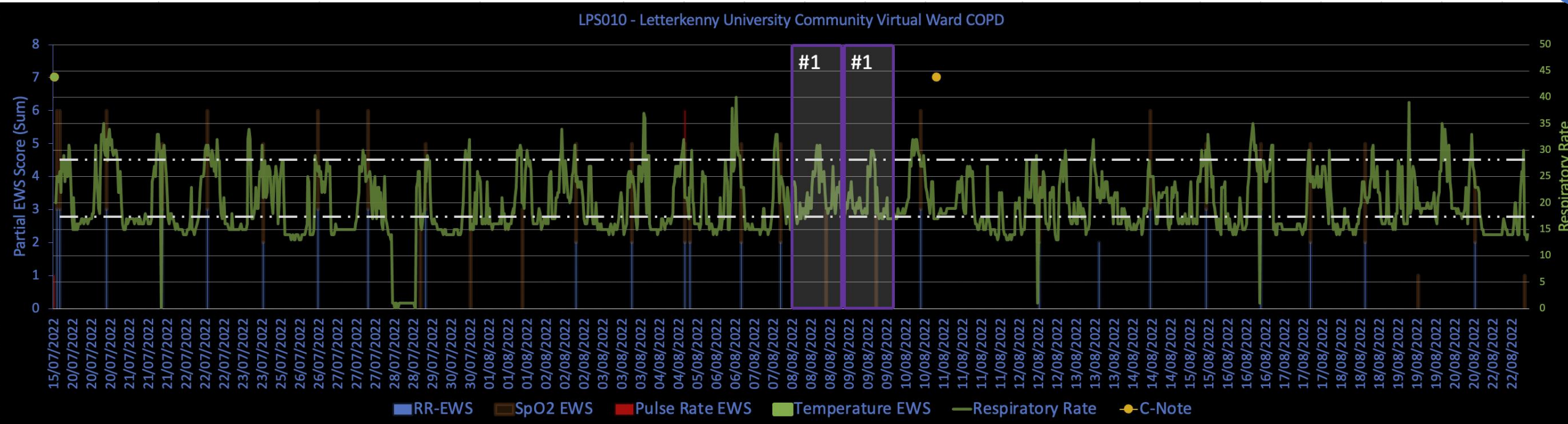
Notes:

- 4 exacerbations supported in the community
- Average Daily SpO2 = 88% +/-5%
- Average daily/nightly cRR = 25 bpm +/- 3
- Consistently High 5+ iNEWS scores

Events:

- #1 Increased nocturnal cRR 12-hour pre intervention.
- #2 Elevated and disturbed nocturnal cRR coupled with spikes in pulse rate at morning check-in's

Example 2: Variation in Lower RR range coupled with disturbed nocturnal cRR



Notes:

- 2 exacerbations supported in the community
- Average Daily SpO2 = 87% +/-9%
- Average daily/nightly cRR = 18 bpm +/- 6
- Consistently High 4-6 iNEWS scores

Events:

- #1 Increased lower cRR range with disturbed night-time cRR 48 and 24 hrs pre intervention



- Using 5G So no interim pairing with an 'App' is required for data sharing
- Healthcare professionals will always have objective data at all times: not just when the patient engages with the App
- The App will help educate and share qualitative information with the healthcare professional to help inform clinical decision making
- 14 day+ battery life ensures the technology looks after the patient.... And not the patient looking after the technology

A hypothesis of how automated alarms from cRR can help improve workflow efficiencies and patient outcomes

Observation #1 – Due to the nature of respiratory disease, abnormal SpO2 readings are normalised and clinical deterioration is discreetly and instantaneously represented if measuring this value alone i.e. significantly abnormal SpO2 happen when an intervention is immediately required.

Observation #2 – Assessing changes in EWS based on RR with SpO2 together gives a better transition image of decline both pre and post event i.e. a model to better triage a group of patients in advance of pending events and evaluation of recovery.

Observation #3 – Normal ranges of RR and SpO2 are personalised based on the stage of the patient's disease. Knowing this enables the personalised assessment of changes with respect to a patient's own 'Norm'.

Observation #4 – Changes in the Upper and Lower RR range indicate decline or recovery

Observation #5 – If the mean RR during the night is not lower than daytime RR OR the RR trend increases during the night, it is a sign of instability.

Recap

Design Thinking and Partnership-based

Is a framework that can be used to **solve problems**. Its structured approach provides a methodology for developing solutions that **meets the needs** of those we are designing for. Inherent to the function and purpose of overall design thinking is to **create a better** tomorrow

Challenge Question

How can we empower people with advanced COPD to become a a partner in the management of their health care and and ensure they the “right care ant the right time” as close to home as possible?

Outcome

Continuous monitoring of respiratory rate in patients at home completes the assessment of the patients condition and enables earlier appropriate intervention in the community setting.



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2023

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SPEAKING NOW



Laura Harper

Directorate Manager Adult
Community & Primary Care
Services (Operational Lead for
Virtual Wards)
The Royal Wolverhampton NHS
Trust



Emily Jarvis

Senior Sister
The Royal Wolverhampton
NHS Trust

We will discuss...

“Virtual Ward and
Hospital @ Home”

Virtual Ward & Hospital @ Home

Laura Harper

Directorate Manager Adult Community
& Primary Care Services (Operational
Lead – Virtual Wards)

Emily Jarvis

Senior Sister in Charge – Adult
Virtual Wards & Hospital @
Home Team

Model



Service Model

- Nurse led service seven days a week from 08:00 – 22:00
- Consultant oversight /medical governance – weekly MDTs
- 25 - 30 patients: 1 RN
- Prescribing Pharmacist and Pharmacy ATO role in acute to expedite discharges
- Monitoring frequency according to clinical need
- Condition specific pathways
- Knowing patients' 'normal'

Onboarding Process

- Referral or proactive onboarding (depending on pathway)
- F2F to supply kit / education
- Virtual monitoring and F2F if required



Clinicians
and Nursing



Digital
Platforms



System
Working



Collaborative
Working

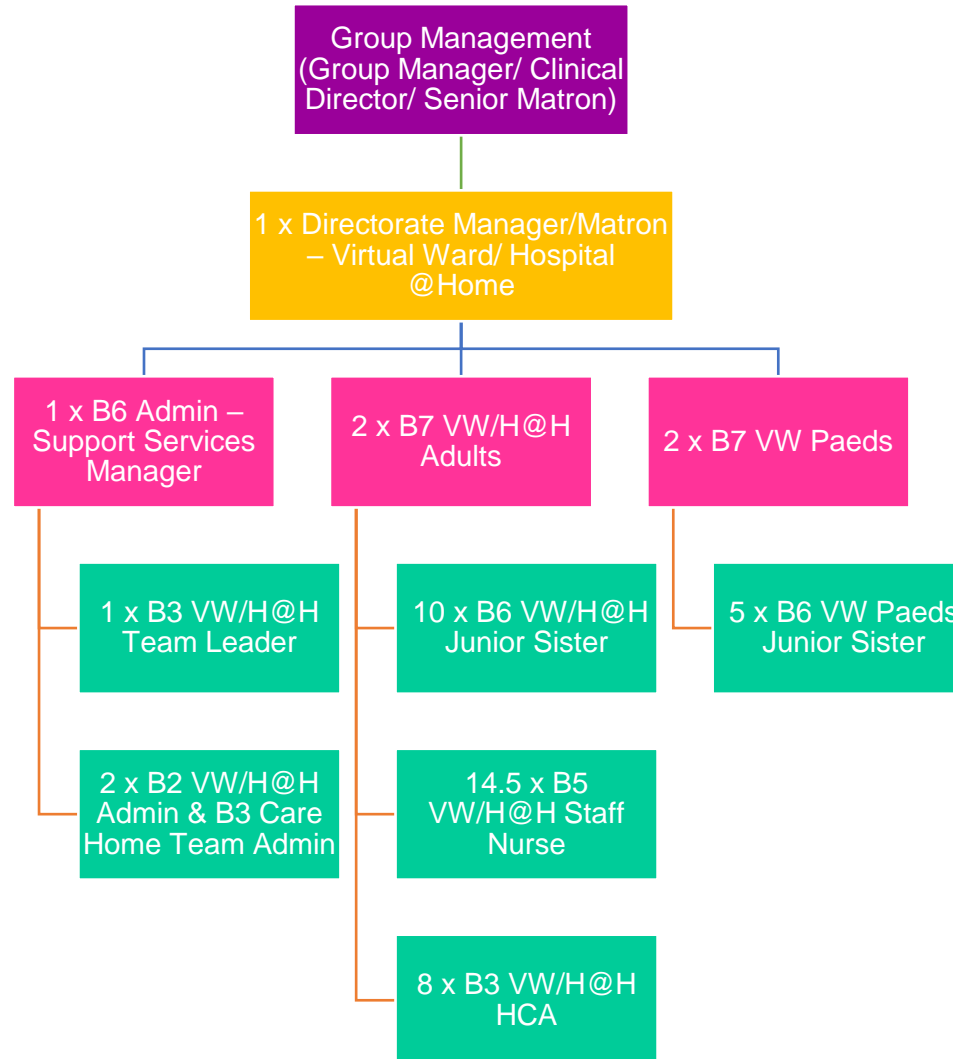


MDT/
Consultant
Led



Escalation
Pathways
24/7

Workforce



Requirements

- Integrated H@H/ VW model
- Integrated adult/ paedrs team – economies of scale
- Staff possess the appropriate skillset and competence
- Hybrid clinical/ remote roles
- Cohesive working across sectors
- Offer dual roles for staff to sit across teams in acute and community

Pathways



WHO

WHEN

HOW

OUTCOME

Virtual Ward Pathways

COVID / COPD

Higher acuity / complexity patients

Emergency hospital patients and early intervention

Asthma

Higher acuity / complexity patients

Proactive monitoring to prevent or reduce episodes of illness

Supportive / Palliative Care

Gold Standards Framework – Green Patients

Monitoring for hospital avoidance, early discharge & detect deterioration

Paediatrics

Home leave patients, on IV Antibiotics, or medically fit awaiting scan/diagnostics

Supervised remote monitoring and/or treatments

Remote Monitoring in Care Homes

All patients in Care Homes across Wolverhampton

Early detection of deterioration, support and virtual ward rounds

O2 Weaning

Higher acuity / complexity patients and/or with comorbidities

To safely monitor O2 management and levelling off O2

Diagnostics / Awaiting Discharge to Scan

Patients fit for discharge awaiting diagnostics/scan

Monitor patients at home while they await a scan to avoid occupying a bed

ARI / Pneumonia

CURB65 Score 2 or lower

Managing low / mild symptoms out of hospital

Frailty

Frailty SDEC, Step Down Beds, ED Reattendances

Proactive CGA, management of care to prevent or reduce episodes of illness

Virtual Delivery of Care

Remote Monitoring

Hospital @ Home

Integrated Services

Collaborative / Supervised Treatment

MDT Approach

Early Supported Discharge

Safe Admission Avoidance

Patient Centric Care at Home

Improved Patient Experience / Journey

Ensuring Patients Receive the Right Care at the Right Time by the Right Service

Early Detection of Deterioration

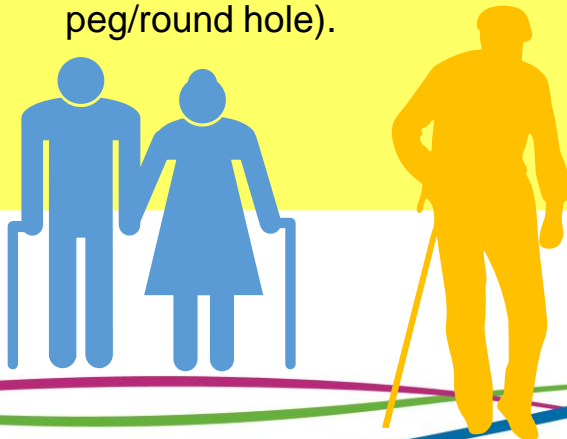
Data so far...

- Total number of referrals received to in the last 12 month is 2582.
- 27% of the total number of patients have had to be escalated back to acute whilst on caseload.
- 73% of the total number of patients had not been re-admitted to hospital whilst on the caseload therefore enabling hospital avoidance.
- Virtual Ward team have enabled early facilitated discharge in the following referring specialties – top seven:
 - Paediatrics (41%)
 - A&E (23%)
 - Respiratory Medicine (11%)
 - General Medicine (8%)
 - Diabetic Medicine (4%)
 - Renal (3%)
 - Older Adults (3%)
- Referrals have significantly increased month on month, as from Jan 21 was around 50 in month, to December 22 with a 174 in month
- Currently around 75% utilisation against SDF funding



Barriers

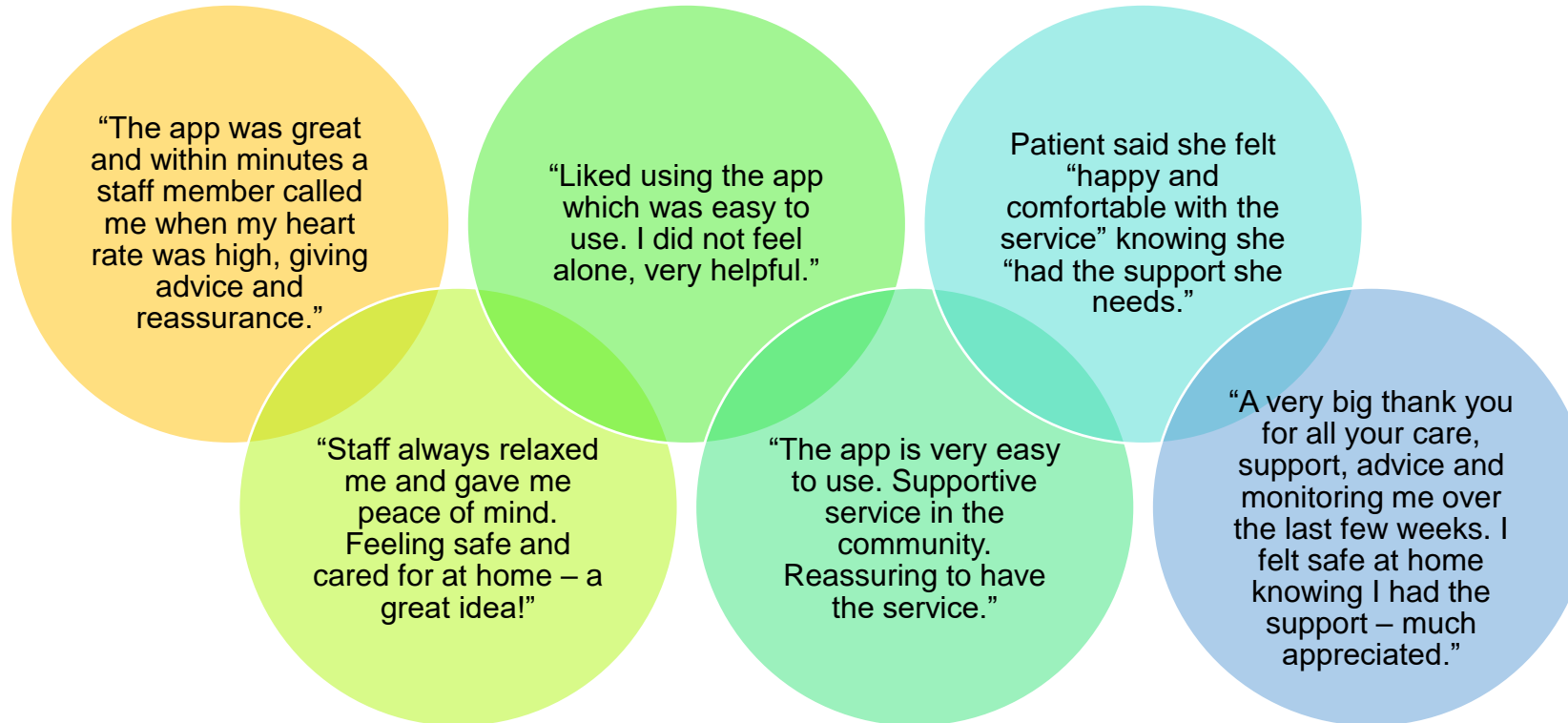
- × Some cohorts of patients have been found to be digitally unaware or not trust the app / platform – communication & language.
- × Digital exclusion for patients due to personal circumstances.
- × Restrictions down to the technology on certain providers, there is the need for a proxy (family / carer) to submit readings into the app – the proxy may not always be available.
- × Clinical engagement – being able to engage the acute clinical teams to enable seamless pathways.
- × Data reporting – the ask on data reporting and conforming to an acute way of reporting (square peg/round hole).



Mitigations

- ✓ Working on a communication plan for internal and external comms, using familiar language with patients.
- ✓ Having access to additional equipment via voluntary organisation to help minimize exclusion/ use of volunteers.
- ✓ Scoping options of third-party providers and costs associated.
- ✓ Pitching to the right audience, working with departments who want to work with us to start.
- ✓ Working with informatics to ensure reporting fits the need of the service and liaising with commissioners.

Patient feedback



Remote monitoring success

Successes

- Remote monitoring has proven to reach more people proactively whilst **supporting continuity of care** in an alternative way.
- If observations are submitted regularly, the data provides an **individualised snapshot of the patient's health** over a course of time, any peaks or abnormalities triggers / alerts staff to make contact with the patient. This has enabled for **early detection of deterioration**.
- Patients have felt reassured to have **direct access to the same team** / contact via remote monitoring as opposed to going through a secretary or Switchboard.
- Remote monitoring has **improved the patient journey** as travel time, waiting time and clinic time is reduced dramatically.
- Feedback has shown patients feel empowered by **taking control** of their healthcare monitoring.

Some of the team...



The Royal Wolverhampton
NHS Trust





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Q&A PANEL



**Karen
Pudge**

Senior Programme
Manager Blended
Learning
Health Education
England



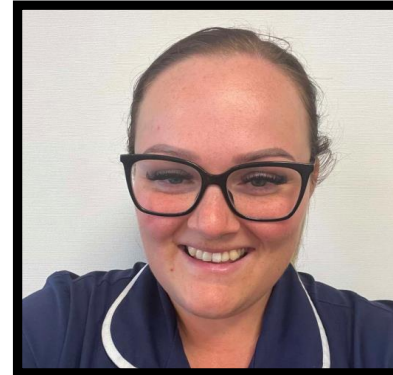
**Dr Debashish
Das**

CEO
Ortus Solutions
Limited



**Laura
Harper**

Directorate Manager Adult
Community & Primary Care
Services (Operational Lead
for Virtual Wards) - The
Royal Wolverhampton NHS
Trust



**Emily
Jarvis**

Senior Sister
The Royal
Wolverhampton
NHS Trust



**Myles
Murray**

Founder
PMD Solutions



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NETWORKING



The NHS Virtual Wards Conference South 2023



Event Chair – Chair Afternoon Address



James Davis

Founder, CEO
Inicio Health



The NHS Virtual Wards Conference South 2023



SPEAKING NOW



**Dr Baribefe
Olufemi**

Doctor
East Suffolk North Essex
Foundation Trust (ESNEFT) -
Ipswich Hospital



Hannah Chapman

Ward Manager & Lead Nurse
for Virtual Wards
East Suffolk North Essex
Foundation Trust (ESNEFT) -
Ipswich Hospital

We will discuss...

**“Virtual Wards for
General Surgery”**



**East Suffolk and
North Essex**
NHS Foundation Trust

ESNEFT - Virtual Wards for General Surgery

Dr Baribefe O. Vite, Virtual ward doctor

Hannah Chapman, Lead nurse and Ward manager for Virtual Wards

Introduction

- **Drivers for use of virtual ward:**
 - Emergency demand up
 - Ambulance delays – 8 hours plus, sometimes over 12 hours
 - Bed waits 18/20 hours
- **Opportunities that virtual ward provides:**
 - Manage lower risk patients with 24/7 monitoring in the usual place of residence
 - Improve emergency flow for patients
 - Improve patient experience
 - Patients are treated as inpatients – daily review to update plans
 - Access to monitoring team for advice and support
 - Return back to hospital bed if necessary

Aim

Provide acute clinical care at home for a short duration (up to 14 days) as an alternative to care in hospital

Goals:

- Proactively identify signs of health deterioration
- Enhance patient experience and patient choice
- Enable early discharge
- Avoid admissions
- ESNEFT has partnered with:
 - **Huma**, a 'hospital at home' technology provider,
 - **Bionical**, a provider of virtual nursing teams,to deliver virtual wards across the Trust.



1 Doctor agrees patient can go on Virtual Ward

2 Patient given equipment to monitor vital signs if required



3 Patient monitoring app downloaded onto their mobile



4 Patient goes home and starts inputting their vital signs

5 Patient's vital signs monitored at a central location 24/7



1. Doctor agrees patient can go onto virtual ward

Eligible if:

- Assessed by senior clinician as appropriate for virtual ward care
- Able to consent to remote monitoring
- Have access to a smartphone (can be via a family member or carer)
- Able to understand follow up requirements and ability to escalate concerns as agreed

Which patients are suitable?

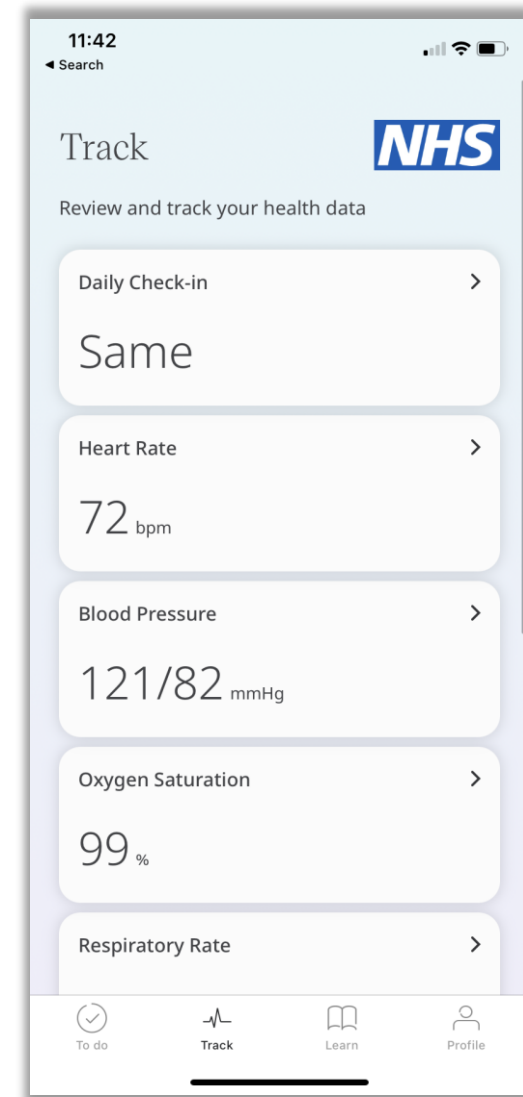
- Acute patients awaiting diagnostics
- Early supportive discharge
- Post op – elective

- Huma app is downloaded onto the patient's phone
- Equipment and training are provided:
 - BP monitor
 - Thermometer
 - Pulse oximeter
- Contact numbers and escalation advice provided
- Handover is made to the Bionical nurses who will be monitoring the patient

2. Patient given equipment to monitor

3. Patient monitoring app downloaded onto their mobile

- Huma app allows us to monitor:
 - Blood pressure
 - Heart rate
 - Respiratory rate
 - Temperature
 - Symptoms



4. Patient goes home and starts inputting their vital signs

Benefits to the patient:

Being in a **familiar** environment – patients recovering in their own home with **familiar** surroundings and home comforts

No general ward noise from machinery/day to day tasks and other patients will enable **recovery and rest** for the patient on the Virtual Ward

Patients able to have **easy communication** with Virtual Ward team with regular contact for the patient's **reassurance**

24/7 monitoring of patient parameters – observations being monitored centrally by dedicated team, focusing on monitoring the patient, communication and raising concerns

5. Patient vital signs monitored at a central location

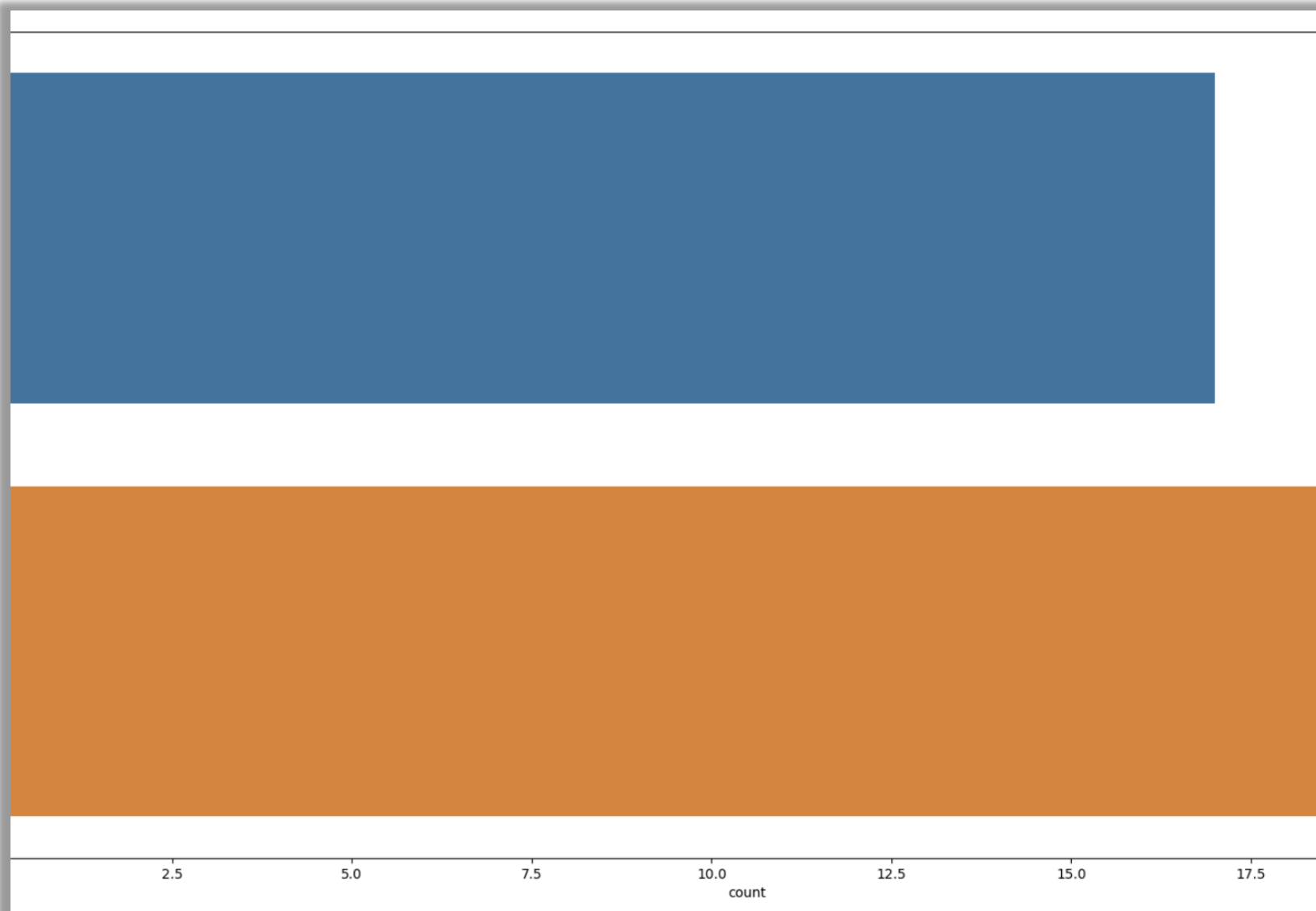
- Daily review by nurses and doctors
- Review enables us to:
 - Review investigations and liaise with the surgical team re further management
 - Symptom management
 - Reassurance and advice

How has it gone?

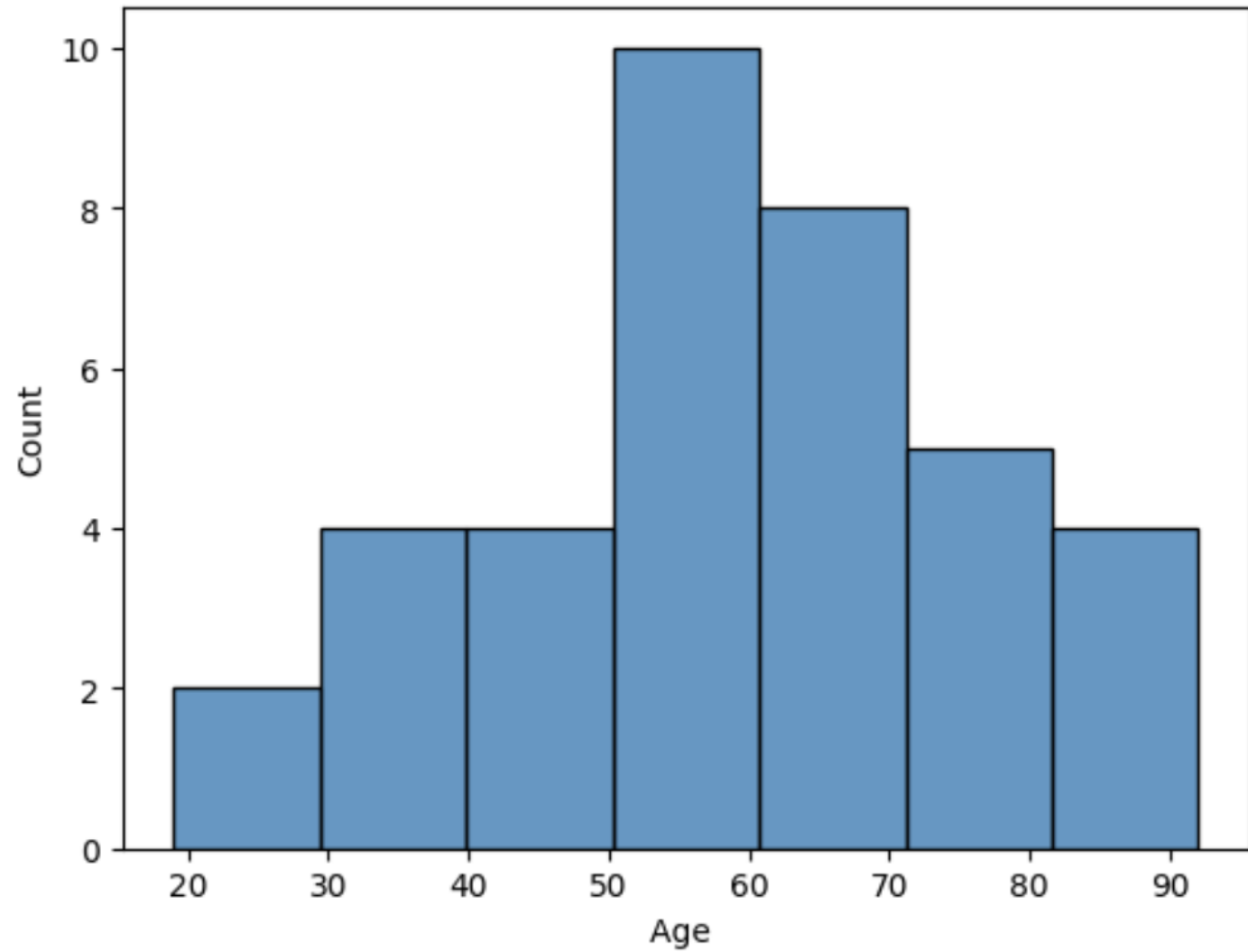
Sex distribution

37 patients

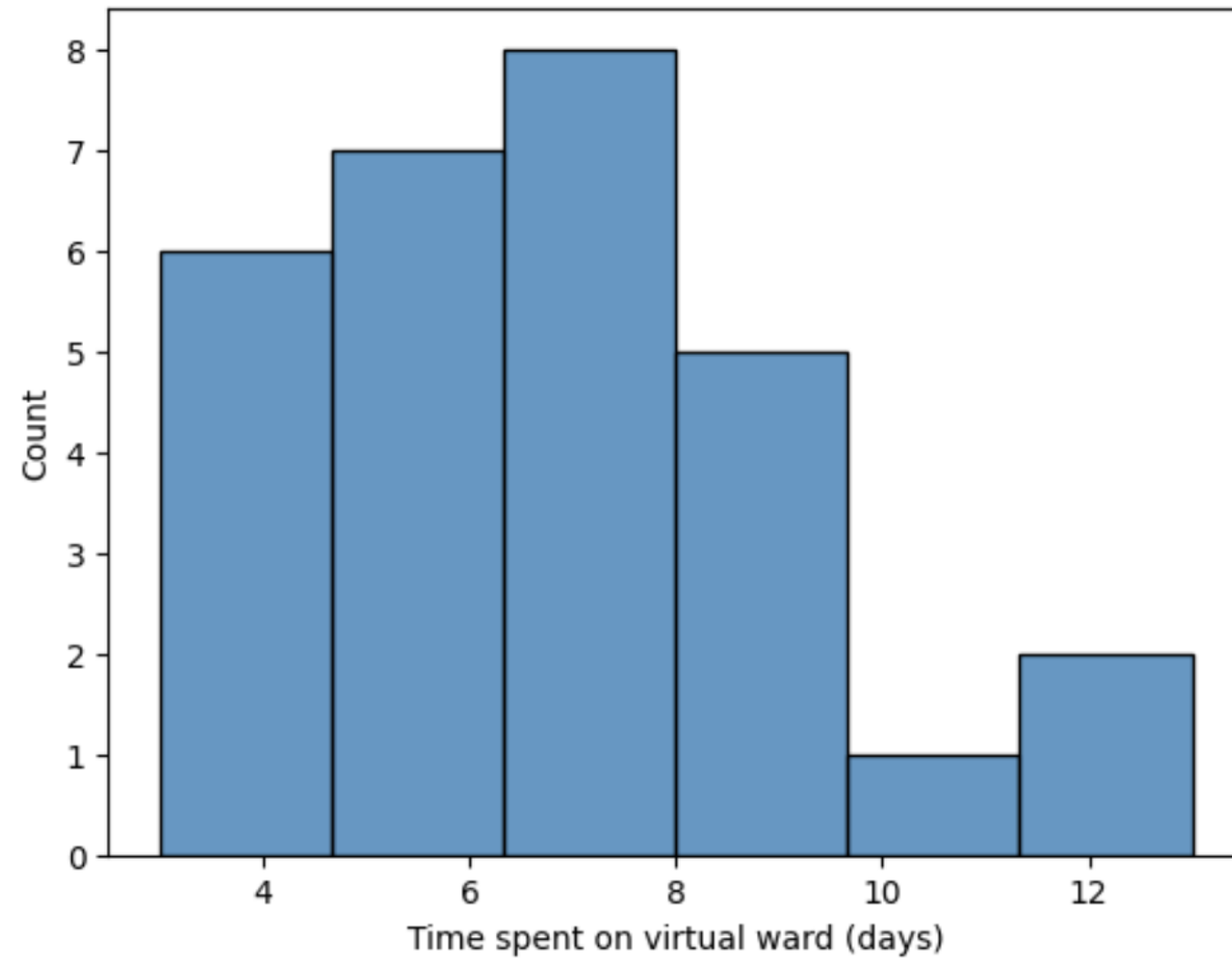
- 17 males
- 20 females



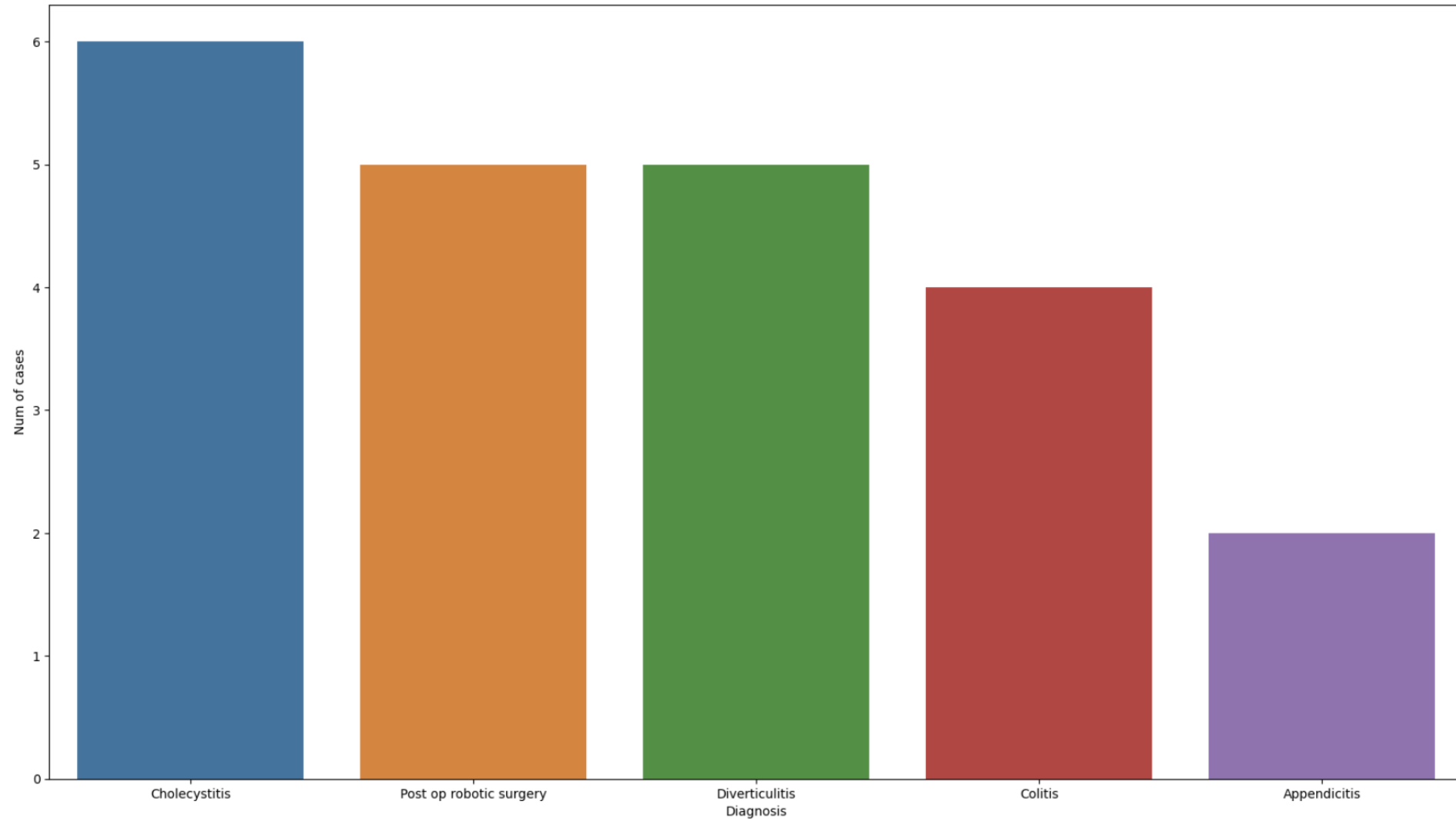
Age distribution



Time spent on virtual ward



Most frequent diagnoses on virtual ward



Early feedback shows that 80% of patients said the Huma App is 'easy to use' and helped them to 'better understand and care for their health':

"The care and attention to allow me to recover at home with this service was amazing. The messages after reporting daily obs gave assurance and confidence if my health deteriorated 24/7 and a Daily Doctor call allowed any questions worry and advice to be discussed"

"Good communication. All the kit worked well. Felt looked after. Regular contact with a doctor."

"The care and support from the Virtual ward was excellent and quite comforting to know somebody was checking on you."

Patient
feedback
Jan/Feb 2023:

Patient feedback

Service

Virtual Ward

Star Rating



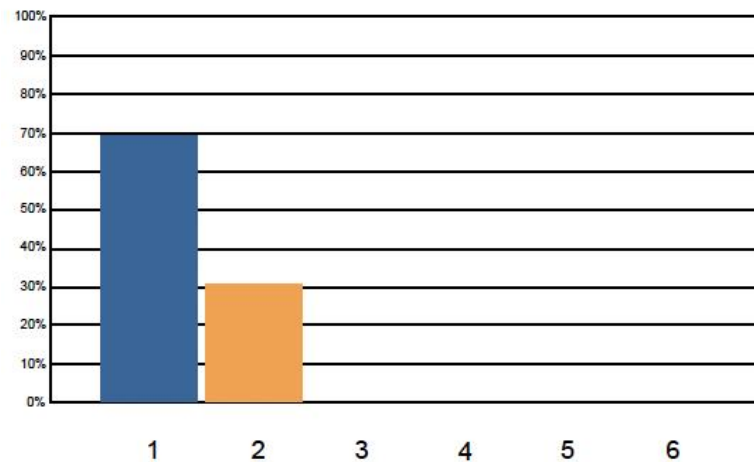
Positive

100.00%

Negative

0.00%

Overall Scores



Response Option	Responses	Percentage
1 - Very good	9	69.23%
2 - Good	4	30.77%
3 - Neither good nor poor	0	0.00%
4 - Poor	0	0.00%
5 - Very poor	0	0.00%
6 - Don't know	0	0.00%

Patient feedback

(Q1) The politeness and professionalism of your Nurse.	(Q2) The presentation of your Nurse (this means how they spoke to the patient/care over the phone).	(Q3) The privacy and dignity maintained by your Nurse (this means how they treated the patient/care with dignity over the phone).	(Q4) The clarity of explanation of the service which you have received from your Nurse	(Q5) How you felt 'listened to' by your Nurse.	(Q6) Your confidence in the skills of the Nurse	(Q7) Your overall experience of your Nurse.	(Q8) How easy it is to use the Huma app	(Q9) Your experience of the Huma app helping you to better understand and care for your health
4.7 / 5	4.7 / 5	4.7 / 5	4.5 / 5	4.8 / 5	4.8 / 5	4.6 / 5	4.3 / 5	4.3 / 5

On a scale of 1 to 5, where 1 is poor and 5 is excellent

Case 1

- 65-Year-old man
- *PMHx: Asthma, Myelofibrosis, Gout, Gallstones, Anaemia*
- History:
 - Presented to hospital with RUQ pain + vomiting
 - USS showed acute cholecystitis and gallstones with CBD dilatation
 - Underwent a laparoscopic cholecystectomy + intraoperative cholangiogram on 22/12/2022
 - He had a drain inserted from the surgery and also developed an AKI.
- Virtual ward intervention:
 - Discharged to virtual ward and we were able to monitor his drain and urinary output. He returned to SAU after several days to have his bloods rechecked and his AKI had resolved, and the drain was removed.
- 3 days on virtual ward

Case 2

19 year old woman

PMHx: PCOS

History:

Admitted with sudden onset Right abdominal pain

Underwent an appendectomy

Virtual ward intervention:

Discharged day 1 post-surgery. Monitored observations. She was also noted to have some inflamed tonsils and so swabs were taken and started on antibiotics. Due to daily review on virtual ward we were able to chase swab results, look for evidence of post op infection, assess fluid status via BP and fluid input/output.

5 days spent on virtual ward

Case 3

58 year old woman

PMHx: Fibromyalgia, IBS, Colonic polyps, Cholecystectomy

History:

Admitted with PR bleeding, diarrhoea and abdominal pain. CT showed pancolitis.

Virtual ward intervention:

Discharged to virtual ward after 2 days in hospital. Observations were monitored. During one day where her symptoms were especially severe, she required escalation to surgical registrar on call. We reviewed the observations and continued management at home. She was prescribed anti emetics on the virtual ward to provide relief for her nausea which was effective. Gradually her symptoms improved

Time spent on virtual ward 13 days

Conclusion

Challenges and next steps:

- Establishing clinician confidence – generate evidence by means of audit to show the positive effect of General surgery virtual wards
- Establish diagnostic pathways to facilitate timely investigations once patients are 'discharged'
- Focus on early supportive discharge of elective patients

Contact information:

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Hannah Chapman

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SPEAKING NOW



Dr Gurnak Singh Dosanjh

GP & ICB Clinical Lead for Home First
Leicester, Leicestershire and Rutland ICB

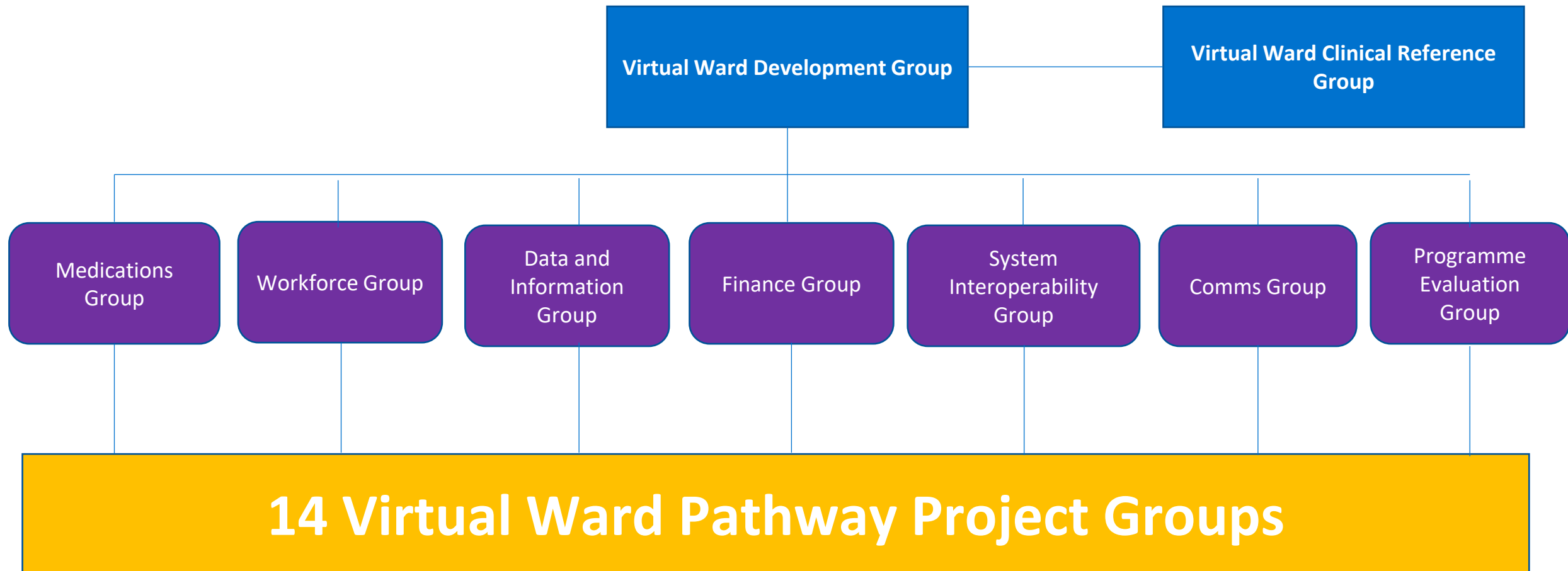
I will be discussing...

“Is The Patient At The
Heart of Your Digital
Transformation?”

Setting The Scene



Virtual Wards Programme Structure



Setting The Scene

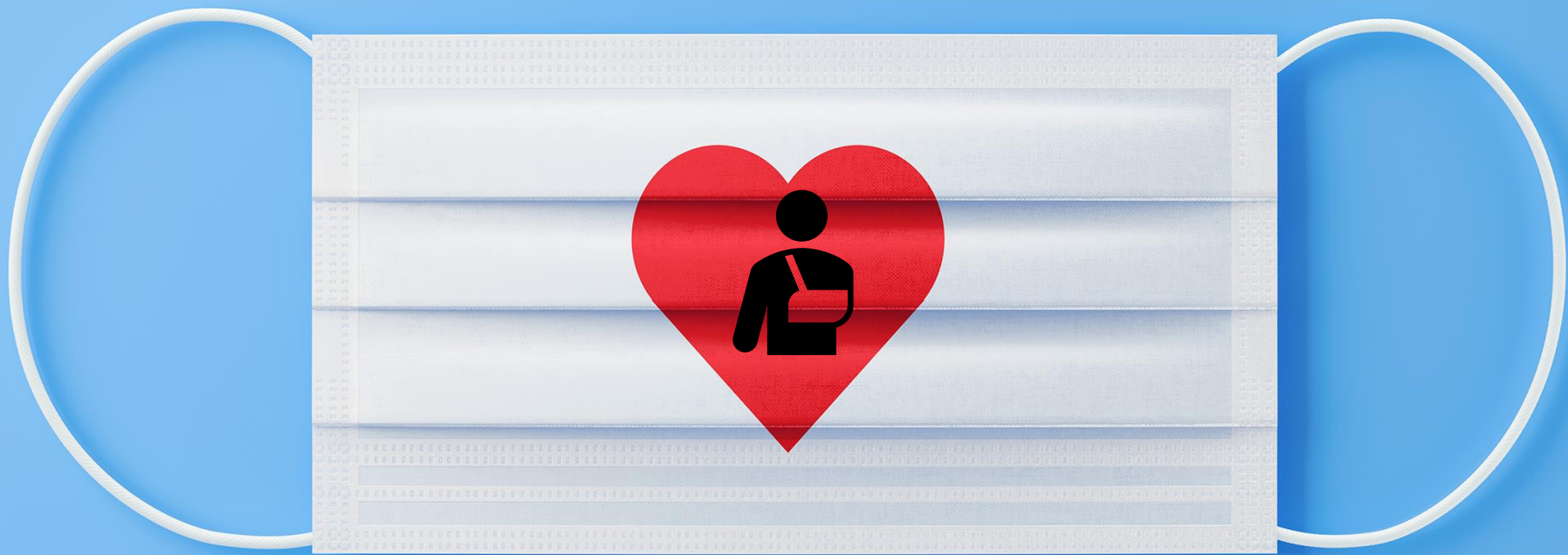


Pillars Of Transformation

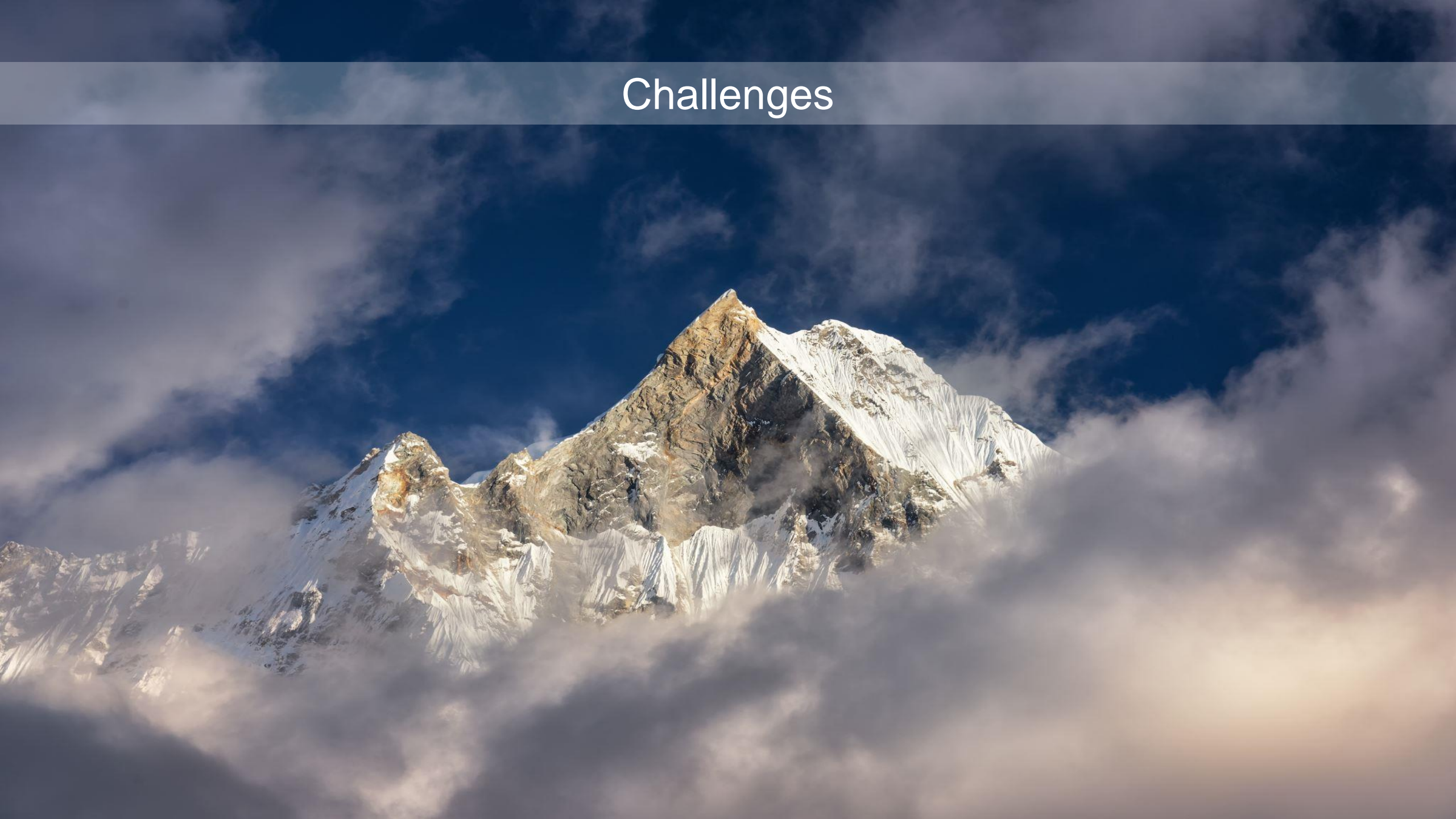


Methodology

Technology



Challenges







Find The
Missing
Piece

Shared Learnings





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Thursday 2nd March 2023 - 10:50am – 15:00pm – Hatfields Conference Centre, London
Conference hosted by Convenzis Group Limited



The NHS Virtual Wards Conference South 2023



Q&A PANEL



**Dr Gurnak Singh
Dosanjh**

GP & ICB Clinical Lead for
Home First - Leicester,
Leicestershire & Rutland ICB



Dr Baribefe Olufemi

Doctor - East Suffolk North
Essex Foundation Trust
(ESNEFT) - Ipswich Hospital



Hannah Chapman

Ward Manager & Lead Nurse for
Virtual Wards
East Suffolk North Essex
Foundation Trust (ESNEFT) -
Ipswich Hospital



THANKS FOR ATTENDING



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