PPL

May 2024

South East Region Virtual Wards Evaluation

Final Report

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Executive Summary

Foreword

PPL Senior Advisor, and former Chief Executive of the Nuffield Trust, Nigel Edwards, introduces this evaluation report

While Virtual Wards (VWs) as we know them today build on a long history of Hospital at Home models, there has been a rapid growth in capacity over the past two years. All 42 ICBs across England have invested in this model of care, based on a national definition for VWs but with wide variation in the models and pathways being delivered.

This South East region project has been a pragmatic and pioneering evaluation of VW implementation over the prior two years, focused on impact and cost-effectiveness of 'admission avoidance' pathways. **The report is one of the largest of its type that I am aware of globally,** analysing over 22,000 virtual ward admissions across 29 South East virtual wards, which accounts for 49% of the South East's overall VW capacity.

The report highlights benefits such as positive impact on avoided non-elective admissions, a strong return on investment, and **areas for improvement such as the reduction of health inequalities** associated with VWs, specifically for the BME and Core-20 populations.

Below are some of the key findings;

1) **Impact on non-elective admissions:** Are VWs one of the solutions to reducing the growing number of non-elective (NELs) hospital admissions? The answer from this report is yes, they can be. This analysis of over 22,000 admissions demonstrated that – on average – 1 NEL admission 'avoided' was shown to be *correlated* with 2.5 virtual ward admissions. For the wards analysed alone, the virtual ward admissions are correlated with over 9,000 avoided non-elective admissions a year. When examined, alongside the thematic analysis, some more mature VWs can achieve a 1:1 association between the 'avoided' non-elective admissions and VW activity. The factors for this performance include well-staffed and skilled wards, positive relationships between acute and community trusts, a focus on frailty at scale, use of technology and operating for over two years.

2) **Net financial benefit:** Of the 18 pathways analysed, there was an overall **total annualised net benefit of £10.4 million**. This suggests that yes, overall, admission avoidance VWs do provide a cost-effective solution to care when compared with traditional inpatient stays. As with the association seen with reductions in non-elective admissions, there is variety of impact across the pathways with some less developed, smaller pathways showing no net benefit at this stage – but with the potential to mature in areas such as skills development, leadership technology and, importantly, focusing on population groups such as the frail.

3) **Inequalities analysis:** Introduction of new services can widen inequalities' gaps, particularly access to services. The report highlights a negative impact across ethnic and socio-economic groups, who seem to have less access to these services. This evaluation was constrained by incomplete demographic data collection. Further work is required to understand the differences and the extent to which the findings reflect preferences, digital literacy, availability of carers, issues with housing and/or design features that make these models either less attractive or less likely to be considered by referring clinicians. Some of the pathways evaluated had been intentionally designed and using imaginative steps, to reduce the inequality gradient and to improve access but there is more evaluation required to understand how best to address this.

It is impressive to see a pragmatic approach to rapid large-scale evaluation built into the development of a new service model and that the timing of this has allowed some models to be evaluated when they have had a chance to mature and develop. This avoids the risk of premature conclusions about effectiveness or costs. As more virtual wards are established and as the model of care develops, further pragmatic evaluations of this type will be important. **The findings of this evaluation signify a step-change forward** in terms of validating the potential of virtual wards to reduce hospital activity in a cost-effective way, and provide focus for the future direction of virtual wards as they take their place within a modern digitally enabled health service.

Nigel Edwards, PPL Senior Advisor

Virtual wards in the South East

The South East region is responsible for delivering **1,939 virtual ward beds** that collectively provide health services for approximately **9.4 million people.** This represents **24 virtual ward beds per 100,000*.**

The region includes **six Integrated Care Systems** (ICSs), **32 NHS Trusts** delivering acute, community and ambulance services.

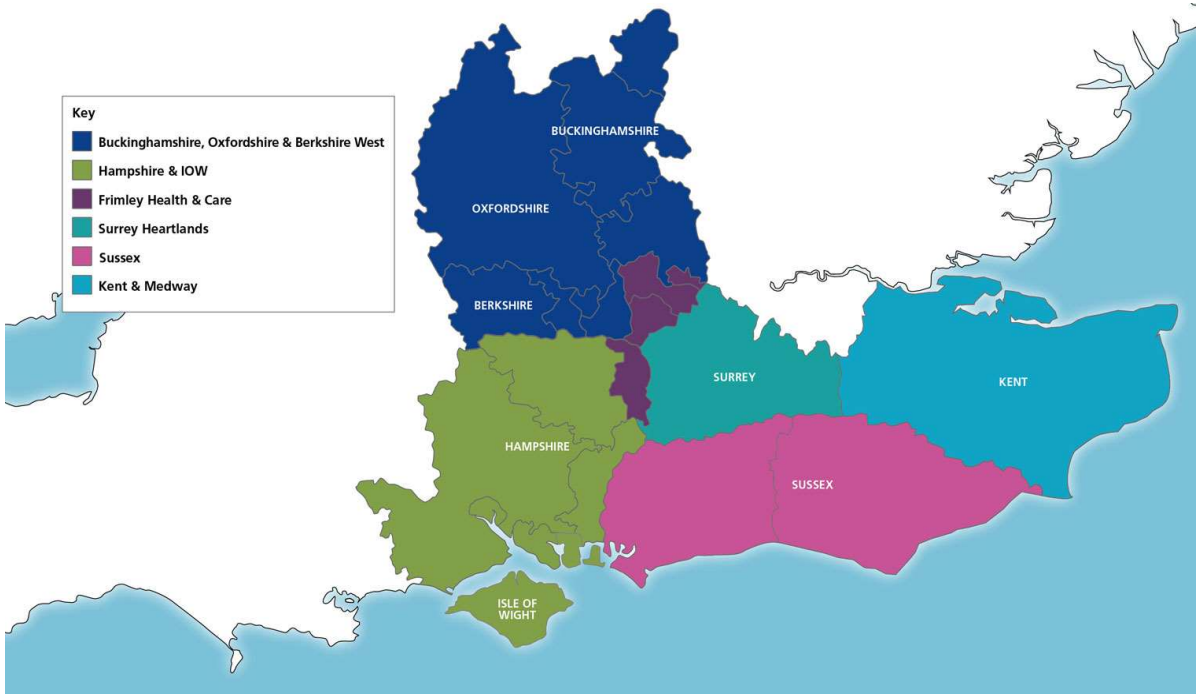
Providers are responsible for delivering **1,939 admission avoidance and early supported discharge virtual ward beds across 76 virtual wards** with 52% of this bed capacity reported to be technologically enabled*.

Virtual ward bed capacity in the region has **grown 20% over the past six-months** whilst the proportion of technologically enabled beds has also **increased by 10%** and snapshot occupancy **increased 10% over the same period.**

This suggests not only the ongoing creation of new virtual ward services but the continued integration of technology to support service provision across the region.

Current bed capacity consists of approximately:

- 31% Frailty
- 9% Respiratory
- 18% Other**
- 42% Mixed (Any combination of Frailty, Respiratory and Other specialities)



Capacity and occupancy figures are presented as reported in the 26th February 2024 SitRep report.

** A full list of virtual ward specialties including those classified as 'Other' can be found on page 33 of the full evaluation report.

Our evaluation of virtual wards – bridging the evidence gap

Our independent evaluation of virtual wards in the South East is a pioneering effort to fill the critical evidence gap, offering actionable insights for healthcare providers, policymakers, and researchers.

Why is this evaluation needed?

Evidence Gap: As noted by the Health Foundation's February 2024 paper, there is a very limited published evidence on the system level consequences (such as patient flow and capacity) of virtual wards[6].

Limitations of previous evaluations: To date, there has not been a large-scale (recent evaluations have focused on hundreds of admissions), comprehensive evaluation examining multiple conditions across providers and Integrated Care Systems (ICSs).

Policy and Practice Implications: With healthcare systems under increasing pressure, virtual wards offer a promising solution but require solid evidence to guide widespread implementation and investment.

Innovating Care Delivery: By providing detailed insights into the operation and outcomes of virtual wards, this evaluation supports the evolution of healthcare towards more personalised, efficient, and accessible services.

The Uniqueness of this Evaluation

Comprehensive Approach: Our Magenta Book 3-stage evaluation approach encompasses a wide array of metrics including clinical outcomes, patient satisfaction, cost-effectiveness, and system impacts.

Scale of the evaluation: Our evaluation has analysed over 26,000 virtual ward admission avoidance attendances (22,794 once annualised to adjust for variation in the 'ages' of wards analysed) and been enabled by a large patient-level dataset. Our analysis incorporates 29 virtual wards which cover 64% of all South East region virtual ward admissions as of February 2024.

Advanced Analytical Techniques: We used robust data science methodologies, including predictive modelling to accurately assess the efficacy and efficiency of virtual wards.

Stakeholder Engagement: Collaborating with healthcare professionals, patients, and policymakers to ensure a multifaceted understanding of virtual ward impact.

PPL is an independent evaluator: who has carried over 200 evaluations over the last 15 years in the public sector.

Evaluating virtual wards – our approach and outputs

Our evaluation independently assesses virtual wards' effectiveness, employing a structured methodology to cover six key areas specified in the Invitation To Tender (ITT), in alignment with the **Treasury's Magenta Book 3-stage evaluation** guidelines[7].

Process evaluation To understand the context within which the virtual wards have been implemented and support to develop a deep understanding of the core components of each virtual ward and the variation in the models.

- P1 – Are virtual wards being delivered as local providers intended?
- P2 - How have contextual and external factors influenced the delivery and functioning of virtual wards?
- P3 - What can be learned from the delivery of virtual wards so far?
- P4 - How have patients, carers, and staff experienced virtual wards?

Impact evaluation To demonstrate quantitative and qualitative impact, with a focus on admission avoidance, provision of equitable access and outcomes, and inequalities.

- IM1 – Has the implementation of virtual wards been associated with its intended impact of reducing hospital activity so far?
- IM2 – How might differences across virtual wards drive differences in impact?
- IM3 – To what extent have different groups at risk of inequalities (including ethnicity, deprivation, gender) seen differences in impact and why?

Cost-benefit evaluation System cost benefit analysis, with a focus on admission avoidance.

- C1 – Have virtual wards been cost-effective so far?
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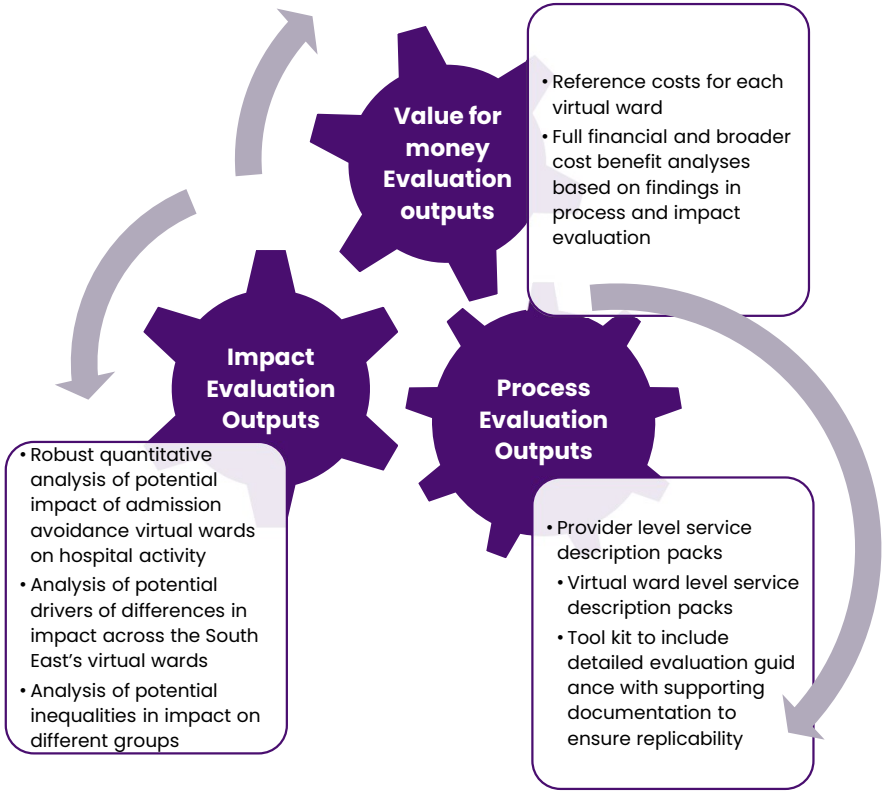

Key findings – impact and cost-benefit evaluation

Most important findings of the evaluation, highlighting significant data points, trends, and any unexpected results organised around the evaluation's key questions or objectives.

Key conclusions

1. Virtual wards in South East England are **associated** with **a positive impact on non-elective (NEL) hospital activity – on average 1 NEL admission 'avoided' was shown to be *correlated* with 2.5 virtual ward admissions,** with some more mature virtual wards achieving a 1:1 association between the 'avoided' NEL admissions and virtual ward activity.
2. There is evidence of **positive net financial benefits** associated with the regional virtual ward provision – overall total **annualised** net benefit of £10.4 million, for the virtual wards analysed.
3. **It is clear that the longer they run, the more likely virtual wards are to show impact**, as volumes of admissions going through virtual wards increase, and costs per admission start to fall.
4. **Black & minority ethnic (BME) people are consistently underrepresented in virtual ward patient cohorts.** However, there is are significant gaps in ethnicity data recorded in patient level data.
5. **Core-20 representation in virtual ward patient cohorts is more mixed**, however it is more consistently reported.

The impact evidenced in this evaluation varies greatly between geographies and pathways – with our qualitative evaluation understanding reasons driving this variation.

Headline figures

Number of virtual wards analysed	**29**
% of all virtual ward admissions in the South East admitted to virtual wards analysed as part of this evaluation (as of 26th February 2024 snapshot from national 'SitRep' report)	**64%**
Total annualised virtual ward admission avoidance admissions across virtual wards analysed	**22,794**
Estimated avoided NEL admissions per year associated with admission avoidance admissions of virtual wards analysed	**9,165**
Estimated gross benefit per annum associated with admission avoidance admissions of virtual wards analysed	**£24.5m**
Estimated gross cost per annum associated with admission avoidance admissions of virtual wards analysed	**£14.2m**
Estimated net benefit per annum associated with admission avoidance admissions of virtual wards analysed	**£10.4m**

Key findings – process evaluation

P1 – Are virtual wards being delivered as local providers intended?

- They are being delivered as local providers intended to some extent. Context-specific variation drives how effectively virtual ward services are being delivered.
- Virtual wards adopting a flexible implementation approach and building upon existing services more frequently reported effective implementation.
- Having a pre-existing service engaged in delivering aspects of acute care and remote monitoring in the community is a significant theme amongst staff that felt their virtual wards were delivered as intended. As those services were able to draw on established SOPs, professional relationships and an incumbent skilled workforce.
- In some cases, funding limitations in ICBs alter virtual ward delivery plans away from original intentions and have meant providers draw from other budgets and their existing workforce to staff new services. Misaligned strategies and expectations can undermine collaborative efforts to develop integrated services.
- Successful patient identification strategies demonstrate the reach of virtual wards; however, opportunities remain to ensure that the model effectively mitigates the influence of underlying health inequalities that might preclude some groups from presenting to the service.

P2 - How have contextual and external factors influenced the delivery and functioning of virtual wards?

- Seasonal service demands (peaking between October and February) drive virtual ward activity through increased patient volumes and acuity.
- Large or rural geographies can prove challenging to a single, centralised virtual ward team, but some services mitigated this issue by spreading a larger team across multiple localities with representation from the full MDT.
- Digital integration, if done well, leads to more effective tech enabled virtual wards that improves information sharing processes within and across healthcare organisations. Misaligned digital strategies and technical incompatibilities across healthcare providers and GPs can hinder effectiveness.
- A shared workforce can support operational resilience by prioritising focus across co-located services in response to demand.
- Healthcare organisations adjacent to virtual ward services play a fundamental role in supporting the delivery of holistic patient-centred care. A range of factors are responsible for determining the extent of operational integration and collaboration between complimentary services which ultimately influence the effectiveness of virtual ward activity.

Key findings – process evaluation

P3 - What can be learned from the delivery of virtual wards so far?

- Virtual ward clinicians and managers frequently felt that positive examples of virtual ward delivery championed patient-centred care and achieved success with the support of strong clinical leadership that advocated for the experience of patients and clinicians at a system-level.
- The capability of virtual ward services to effectively meet acute patients' needs in the community is a common challenge as services can lack the equipment, skills or clinical governance to deliver the required interventions (such as intravenous fluids). This can sometimes result in the need for a hospital attendance despite virtual ward admission.
- Virtual ward clinicians felt that the complexity and time required to provide care is not necessarily reflected within current measures of acuity such as NEWS2 or the Clinical Frailty Score.

P4 – How have patients, carers, and staff experienced virtual wards

- Patient experience of virtual ward services has generally been positive. Patients articulate an appreciation for home-based care, being closer to family and more comfortable than in an acute hospital setting
- Carers recognised the benefits of patients being treated in their own home and having more independence. However, carers did acknowledge the increased burden of care.
- Staff viewed virtual wards generally positively and saw value in the model of care. Some virtual ward staff feel patients recover more quickly as a result. Additionally, virtual ward staff recognised that they enjoyed working in a new and developing services that enabled them to develop new skills. However, some staff did feel operational pressures relating to virtual wards.
- Some staff observed inequalities in access driven by the requirements for virtual ward services to be able to deliver safe care such as a means of verbal communication and fixed address. The patient groups accessing virtual ward services are influenced by those most likely to present to the healthcare system. This was sometimes felt to be not representative of the wider patient population. In some areas, virtual ward outreach activities to engage black & minority ethnic communities have been planned to educate and raise the profile of virtual ward services.

Key findings – what a good virtual ward looks like

Based on our findings, we have set out below what the data suggest – and what virtual ward managers and clinicians told us – are characteristics more likely to lead to virtual wards which: impact on reduced hospital usage, and function effectively

	Typical success criteria	Barriers to success
Timing and scale	1. *The longer virtual wards run, the more likely they are to show impact on NEL admissions. Primarily due to them being larger; and being able to spread set-up, staff, and digital costs across a larger pool of admissions but also due to having time to embed the some of the elements below*	1. *Acknowledgement that virtual wards take time to **demonstrate** impact given the time needed to scale up, but also the time needed to build and embed collaboration and ways of working*
Staffing and resourcing	1. *Strong clinical leadership – advocating for the experience of patients and clinicians* 2. *Collaborative working, focusing on the patient, with strong links between acute, community, and primary care settings (for example carrying out daily MDT ward rounds)* 3. *Well-resourced, experienced teams with a blended skills mix (including acute and community experience)*	1. *Fragmented clinical leadership* 2. *Teams not joined up across different services, and staff feeling under-confident with new ways of working if not properly implemented* 3. *Lack of proper funding can lead to recruitment challenges, or overworked staff*
Enablers	1. *Digital integration, if done well, leads to more effective tech enabled virtual wards* 2. *Referrals received through a single point of access or via an urgent community response service*	1. *If there are misaligned digital strategies across healthcare providers and primary care* 2. *Insufficient data support and inefficient manual data collection processes*

Conclusions

Key conclusions from our independent evaluation are presented below (subject to the stated caveats on the next slide)

1	Virtual Wards in South-East England are *associated* with **a positive impact on non-elective (NEL) hospital activity – on average 1 NEL admission 'avoided' was shown to be *correlated* with 2.5 virtual ward admissions,** with some more mature virtual wards achieving a 1:1 association between the 'avoided' non-elective admissions and virtual ward activity
2	There is evidence of **positive net financial benefits** associated with the regional virtual wards provision – the majority of virtual wards analysed generated an estimated positive net benefit.
3	**Black & minority ethnic (BME) people are consistently underrepresented in virtual ward patient cohorts.** However, there are significant gaps in ethnicity data recorded in patient level data. Respondents have identified several ways the system can better support these groups access virtual wards – which we recommend are taken forward immediately.
4	**The impact evidenced in this evaluation varies greatly between geographies and pathways** – with our qualitative evaluation understanding reasons driving this variation.
5	**It is clear that the longer they run, the more likely virtual wards are to show impact** – this is through a combination of higher volumes going through the wards, costs per admission typically falling over time, and the benefit per admission increasing.
6	**Our evaluation has identified a clear set of enablers** (including having sufficient funding, experienced staff, collaborative working, and strong clinical leadership) and **barriers** (inadequate resourcing, fragmented leadership, mis-aligned digital strategies) to effective virtual ward working.
7	**This evaluation is the starting point** – the South East needs to build on the evidence gathered and lessons learned in this evaluation, and to work closely with individual pathways to support continuous improvement of the virtual ward offering in the South East.

Caveats to this evaluation

Limitations of the evaluation, including those around data quality, methodology, and the scope of the evaluation.

Caveats

1. **This evaluation has looked at the virtual ward level, but has been a South East region evaluation** – more should be done at the individual virtual ward level to understand drivers for impact, and what can be improved.
2. **The nature of the available data means this is ultimately an aggregate analysis looking at correlations between overall levels of virtual ward and non-elective activity**, rather than a patient-level analysis mapping individual journeys. A patient-level analysis at a regional level would mean more effective controlling for exogenous factors, though the scale of this evaluation means meaningful conclusions can still be drawn.
3. **Differences in the way cost data is collected and compiled across the wide range of providers in the South East may have introduced inconsistencies** into this data which could be mitigated by more standardised data collection.
4. **Different virtual wards are at different levels of maturity** – therefore impact and cost-benefit results may be skewed **against** those wards that have only been operating for a few months.
5. **The scope of the impact and cost-benefit work was focused on admission avoidance beds, therefore our impact and cost-benefit analysis has not focused on early supported discharge virtual wards.** We do recommend that further work is done to evaluate early supported discharge beds.
6. **We were not provided with the necessary data to undertake impact or cost-benefit analysis for three admission avoidance wards, so these results are not a complete picture of the South East's virtual wards offer** - although we do have representation across all ICSs and have analysed virtual wards accounting for 64% of South East virtual ward admissions as per the SitRep snapshot on the 26th of February 2024.
7. **We have reviewed impact on a range of criteria, including cost-benefit, admissions avoidance, patient, carer, staff experience.** However there will be other elements of impact this study did not have the scope to achieve (such as clinical impact, or broader economic impact).
8. **Estimated 'financial values' of avoided activity were based on national tariffs and other averages** which do not account for South East specific cost variations or differences in acuity.
9. **Estimates** for the BME population relevant to each virtual ward have been calculated using census 2021 data, **where suppressed values (below five) have been averaged according to total 2021 population estimates** – this may **overestimate** suppressed values (which are **most often BME population estimates**) of which many represent zero-values in reality.

Next Steps

High-level suggested next steps following this evaluation.

1. Socialise this document with key stakeholders

- *Share this document with key South East region, ICB, and Place stakeholders to share findings.*

2. Additional impact analysis

- *Whilst this is currently the largest evaluation of its kind in the UK, our work identified a number of areas of evaluation/analysis that could be improved upon – including:*
    - *Evaluating the impact of early supported discharge beds in the South East region (as the cost-benefit and impact elements of the evaluation focused exclusively on admission avoidance beds).*
    - *Improve the robustness of these results by (1) improving the quality of input datasets including provider financial returns and provider patient-level datasets, and (2) making more robust assumptions on the value of avoided NEL admissions based on South East data.*
    - *Use this evaluation's conclusions to develop and investigate new hypotheses on the drivers of differences in impact, cost, and benefit between virtual wards, such as acuity, length of stay, and demographics.*

3. System level

- *Continue to evaluate impact on an ongoing basis across the region (using our toolkit as the starting point, potentially through an automated dashboard).*
- *Through existing (or new) processes, ensure lessons learnt from evaluation are translated into on the ground changes.*

4. Pathway level continuous improvement

- *This evaluation has reviewed at a high level the impact and success criteria for virtual wards. More can be done at the pathway level to do more in-depth assessments of what has worked well, what has worked less well – with a focus on implementing change.*
- *We have identified that more could be done by the system to support access to virtual wards for certain groups – such as certain black & minority ethnic groups, or those without permanent residences. This should be looked into in more detail as a priority.*

Additional information

Guidance on where to find more detailed information – this is a thorough evaluation report, and we have provided signposting to specific sections, tables, or appendices for readers seeking deeper insights into particular aspects of the evaluation.

If I want to know more about...	I should go to...
Our approach to this evaluation	Evaluation Approach (pages 22 to 26)
A summary of virtual wards in the South East region (and a summary of each pathway)	Understanding the "As-Is" (pages 27 to 33) Appendix 3 – Model Profiles (pages 85 to 114)
What clinicians and managers of virtual wards told us about what worked well, and less well	Process evaluation (pages 38 to 43)
What methodology we used to estimate impact	Methodology Overview – Impact Analysis (pages 45 to 46)
A more detailed breakdown of our impact findings	Impact, Cost-benefit and Health Inequality Evaluation (page 47)
How to update the impact/cost-benefit analysis for my pathway	Our accompanying toolkit (separate document)

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Introduction

Strategic context for virtual wards evaluation

Virtual wards represent a strategic shift towards delivering hospital-level care in patients' homes, including care homes aimed at alleviating system pressures, enhancing patient care, and improving health outcomes.

Background

Acute hospital care (including emergency, non-elective, and elective), consumes nearly half of the NHS budget, faces immense pressure from an aging population and the growing prevalence of chronic health conditions. Access to hospital beds, a critical NHS performance indicator, is challenged by evolving healthcare needs and technological advancements in diagnosis and treatment [1].

System Pressures

- **Demographic Shifts:** "The future of NHS human resources and organisational development report" mentions an aging population and shifting burden of disease due to increased prevalence of chronic conditions demanding greater healthcare resources and healthcare innovation[2].
- **Hospital Care Limitations:** While necessary, hospital care poses risks for vulnerable populations, particularly older individuals, highlighting the need for alternative care models[2].
- **Policy Directions:** Government health policies advocate for reducing NEL admissions by enhancing community and outpatient services, enabled by digital and technology advances[3].

Virtual wards: Addressing the Need

Virtual wards are positioned as a pivotal response to the dual challenges of meeting acute care needs and managing hospital demand, driven by[4]:

- Addressing acute care needs outside hospitals, **reducing risks for vulnerable groups** and **easing hospital bed demand**.
- Delivering hospital-level care at home **supporting a range of conditions,** in some cases using **digital platforms** for remote monitoring.

National context for virtual wards evaluation

Virtual wards offer a scalable, effective model for alleviating system pressures, enhancing patient care, and improving healthcare workforce efficiency.

NHS England define a virtual ward as 'a safe and efficient alternative to bedded hospital care that is enabled by technology' which usually looks to support patients to safely manage their health and care at home or in a care home[5].

2013 – 'Hospital at home' services **have been around for more than 10 years.**

2020 – The COVID-19 pandemic and the emergence of new technologies led to **an increased focus**.

2022 – **ICSs were funded to develop pathways** for acute respiratory infections (ARIs) and frailty as a minimum.

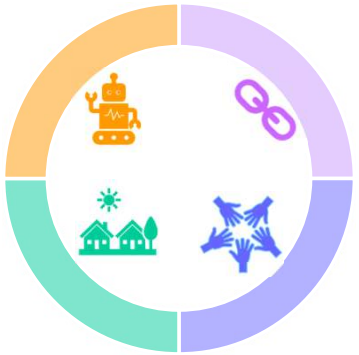
2023 – **Longer-term ambitions were introduced** for systems to have 80% utilisation by September 2023, and going forward to have capacity equivalent to 40-50 'beds' per 100,000 population

Guidance around developing virtual wards has set out several steps to support ICS leaders. To tailor the service appropriately, ICS are told to consider the context of local populations, providers and workforce, which has resulted in **models that are widely variable**.

The below diagram sets out some of the components of how **virtual wards can address system pressures in the short-term and give the system more resilience in the long-term**.

Technology provision to allow hospital-level care including diagnostics and treatment.

Replacing the need for admission, and facilitating people being able to safely leave hospital sooner.



Bridging the gap between hospitals and patients' homes.

Multi-disciplinary teams (MDTs) managing patients much more proactively resulting in improved health outcomes for people.

Regional context for virtual wards evaluation

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The region includes **six Integrated Care Systems** (ICSs), **32 NHS Trusts** delivering acute, community and ambulance services.

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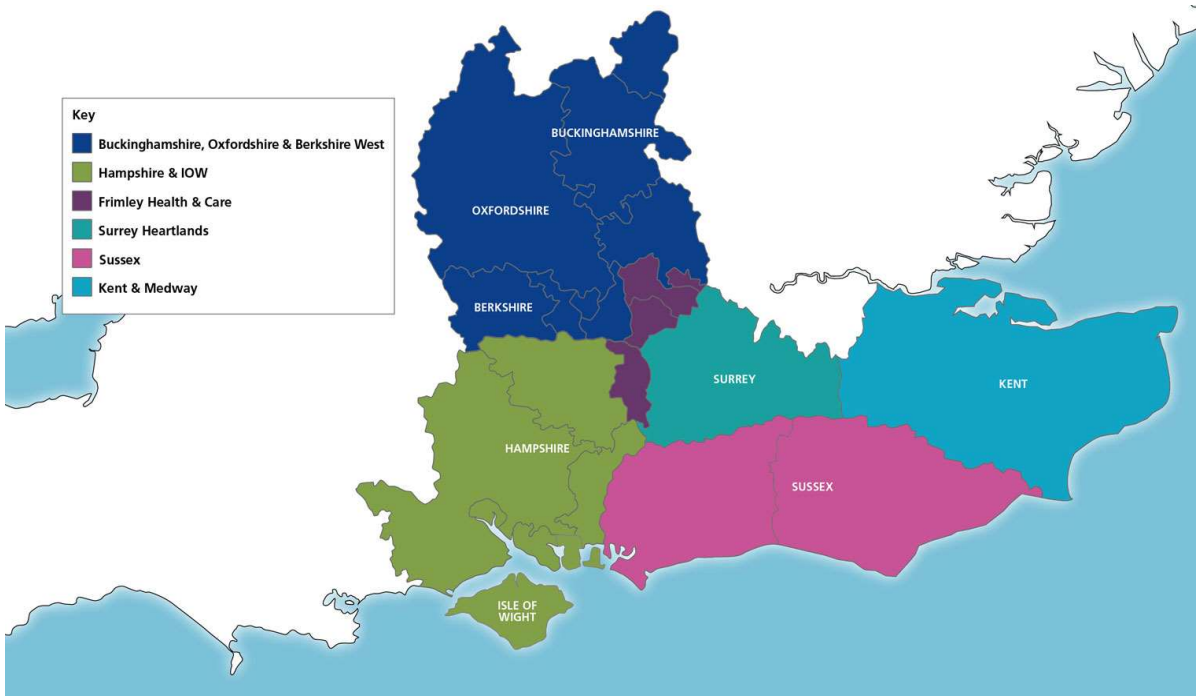

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Rationale for evaluation of virtual wards

The rapid expansion of virtual wards highlights the need for an evaluation to assess the extent of their effectiveness in reducing NEL admissions, alleviating NHS pressures, and to investigate the extent to which they are cost effective.

Key Evaluation Focus Areas	**Admissions Avoidance:** Given the strategic aim to reduce NEL admissions, evaluating virtual wards' effectiveness in this area aligns with government health policies and broader objectives of the NHS Long Term Plan.
	Cost-Effectiveness: Assessing the financial sustainability of virtual wards is essential for influencing ongoing and future investments, particularly in the context of NHS budget allocations.
	Service Variability: The South East region exhibits varied virtual ward service maturity levels, necessitating a nuanced approach to evaluation that considers each service's unique characteristics and digital maturity.
Importance of Evaluation	**Strategic Alignment:** Ensures virtual ward expansion is in lockstep with national health objectives, specifically in alleviating hospital care pressures and promoting community-based care alternatives.
	Assessing financial sustainability: Objectively reviews evidence to assess the value of virtual wards in improving the financial sustainability of the healthcare delivery ecosystem
	Service Optimisation: Identifies best practices and areas for improvement across different virtual ward models, fostering a culture of continuous improvement and innovation.

A comprehensive evaluation of virtual wards is crucial for validating their role in transforming healthcare delivery. By focusing on avoiding NEL admissions, cost-effectiveness, and understanding service variability, we can assess the extent to which virtual wards effectively contribute to the NHS's strategic goals and justify future investment in their expansion.

Our evaluation of virtual wards – bridging the evidence gap

Our evaluation of virtual wards is a pioneering effort to fill the critical evidence gap, offering actionable insights for healthcare providers, policymakers, and researchers.

Why is this evaluation needed?

Evidence Gap: As noted by the Health Foundation's February 2024 paper, there is a very limited published evidence on the system level consequences (such as patient flow and capacity) of virtual wards[6].

Limitations of previous evaluations: To date, there has not been a large-scale (recent evaluations have focused on hundreds of admissions), comprehensive evaluation examining multiple conditions across providers and Integrated Care Systems (ICSs).

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Advanced Analytical Techniques: We used robust data science methodologies, including predictive modelling to accurately assess the efficacy and efficiency of virtual wards.

Stakeholder Engagement: Collaborating with healthcare professionals, patients, and policymakers to ensure a multifaceted understanding of virtual ward impact.

PPL is an independent evaluator: who has carried out over 200 evaluations over the last 15 years in the public sector.

** The 64% figure is based on a snapshot of admissions as of 26th February 2024 national 'SitRep' report for virtual wards. This figure represents all admissions going through the virtual wards we analysed – some of these admissions were early supported discharge and therefore not included in the analysis*

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Evaluation Approach

Summary of our approach and outputs

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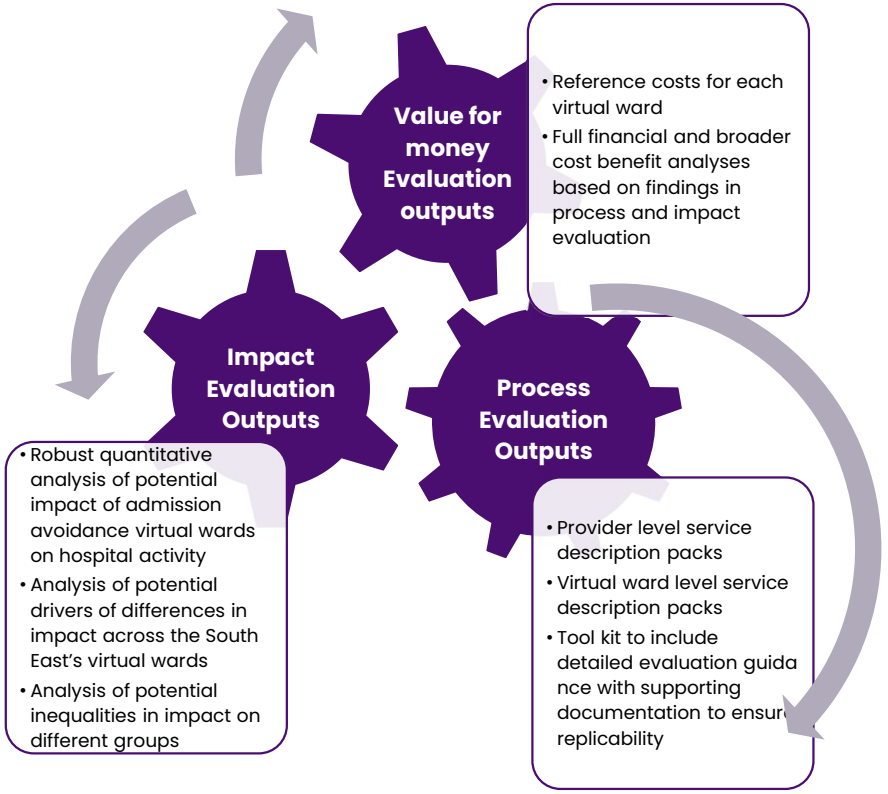
Cost-benefit evaluation System cost benefit analysis, with a focus on admission avoidance.

- C1 – Have virtual wards been cost-effective so far?
- C2 – Is the intervention the best use of resources?



Process evaluation framework

The process evaluation aims to **understand planned and current delivery of virtual wards** across providers to assess whether plans have been effectively executed, and to understand drivers of positive delivery and common challenges. The process evaluation also aims to **understand patient, carer, and staff experience** of virtual wards to date.

Evaluation outcomes

1. Understand whether virtual wards are being delivered as designed and, if not, how they are being delivered currently
2. Understand how patients, carers, and staff have experienced virtual wards so far

→

KLOEs

P1 – Are virtual wards being delivered as local providers intended?

- Which aspects of each virtual ward are being delivered according to business case and SOP documentation?
- What could be delivered more effectively?
- Were there any unexpected issues that obstructed delivery?
- Have the necessary financial and human resources been made available?
- To what extent have virtual wards reached the people they intended to reach?

P2 - How have contextual and external factors influenced the delivery and functioning of virtual wards?

P3 - What can be learned from the delivery of virtual wards so far?

- What do positive examples of delivery have in common?
- What common challenges have provider experienced in delivery?

P4 - How have patients, carers, and staff experienced virtual wards?

- What has the experience of virtual wards from the perspective of patients, carers, and staff been so far?
- Have patients, carers, and staff members from groups at risk of inequalities (including ethnicity, deprivation, gender) had significantly different experiences or access?

Evaluation outputs

1. ICS-level service description packs
2. Thematic analysis of virtual ward delivery experiences.
3. Tool kit to include detailed evaluation guidance with supporting documentation to ensure replicability

Appendix 2 (Evaluation framework) sets out in detail the approach this evaluation has taken to answering the KLOEs above to realise the evaluation outcomes

Impact evaluation overview

The impact evaluation aims to understand the degree to which virtual wards are delivering outcomes relating to **reductions in hospital activity**, and whether the extent of this impact varies for groups at risk of inequalities (including ethnicity, deprivation, gender).

Evaluation outcomes

1. Understand the degree to which virtual ward implementation is associated with reduced hospital activity
2. Understand potential drivers for differences in impact, including external factors
3. Understand the extent to which virtual wards have had a different impact on groups at risk of inequalities

KLOEs

IM1 – Has the implementation of virtual wards been associated with its intended impact of reducing hospital activity so far?

- To what extent can the outcomes be attributed to the intervention? How confident can we be of this?
- How much can be attributed to external factors?

IM2 – How might differences across virtual wards drive differences in impact?

- What features make a virtual ward more likely to realise its intended outcomes? Maturity? Technology?

IM3 – To what extent have different groups at risk of inequalities (including ethnicity, deprivation, gender) seen differences in impact and why?

Evaluation outputs

1. Robust quantitative analysis of potential impact of virtual wards on hospital activity
2. Analysis of potential drivers of differences in impact across the South East's virtual wards
3. Analysis of potential inequalities in impact on different groups

Appendix 2 (Evaluation framework) sets out in detail the approach this evaluation has taken to answering the KLOEs above to realise the evaluation outcomes

Cost-benefit evaluation overview

The cost-benefit evaluation aims to **understand the balance of costs and benefits** delivered by individual virtual wards, and the intervention as a whole in the South East from a financial perspective, and more broadly.

Evaluation outcomes

1. Estimate whether virtual wards have led to a net financial benefit so far

→

KLOEs

C1 – Have virtual wards been cost-effective so far?

- What is the reference cost of each virtual ward?
- What are the direct financial costs and benefits for the relevant organisations and systems?
- What is the financial cost-benefit ratio?
- What are the broader costs and benefits, accounting for impact on all individuals, organisations, systems, and society?

Evaluation outputs

1. Reference costs for each virtual ward
2. Benefit for each virtual ward, and at the regional level
3. Cost-benefit ratio for each virtual ward, and at the regional level

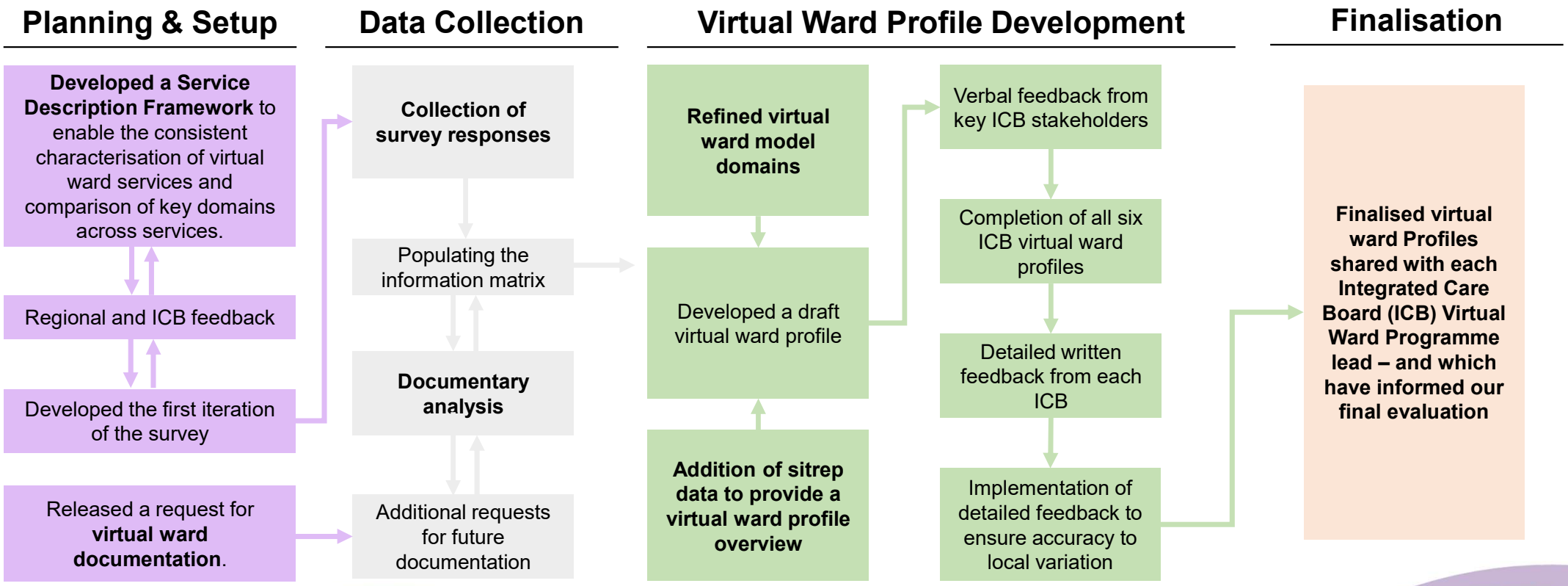
Appendix 2 (Evaluation framework) sets out in detail the approach this evaluation has taken to answering the KLOEs above to realise the evaluation outcomes

PPL

Understanding the “As is”

Understanding the “as is” methodology overview

By gathering and structuring information from business case and standard operating procedure documentation, the development of virtual ward profiles provided a descriptive snapshot of each ward’s operations*. This served as a **baseline for comparison** in our analysis and a **tool for shared learning** across the region.



**Virtual ward operations included both admission avoidance and early supported discharge functions.*

Virtual ward provision across ICSs

The data **suggest varying levels of virtual ward provision** across the ICSs. BOB ICB shows the highest absolute capacity followed by Kent and Medway ICS with Sussex ICS representing the lowest capacity and number of pathways. Hampshire and Isle of Wight ICS stands out with the highest number of pathways and Frimley ICS with the highest capacity per 100,000 GP registered adult population.

ICS	Number of providers *(*1)*	Number of pathways *(*1)*	Capacity *(*1)*	Patients registered at a GP Practice *(*1)*	Capacity per 100,000 registered patients
Buckinghamshire, Oxfordshire and Berkshire West (BOB)	6	12	516	1,614,333	32
Frimley	4	10	223	667,037	33
Hampshire and Isle of Wight	8	29	347	1,614,176	21
Kent and Medway	7	20	438	1,612,785	27
Surrey Heartlands	5	8	223	925,154	24
Sussex	3	8	192	1,537,758	12
TOTAL	**33**	**87**	**1,939**	**7,971,243**	**24**

Key insights:

- **Buckinghamshire, Oxfordshire, and Berkshire West (BOB) ICS** has the highest capacity at 516.
- **Frimley ICS** has the highest capacity per 100,000 registered patients (33).
- **Hampshire and Isle of Wight ICS** has the highest number of pathways (29) provided by 8 providers.
- **Kent and Medway ICS**, with 7 providers and 20 pathways, has the second highest capacity.
- **Surrey Heartlands ICS** has the same capacity as Frimley ICS despite differing registered population sizes.
- **Sussex ICS** has the lowest capacity (192) with 3 providers and 8 pathways.

Source:

1. Virtual Wards SitRep 26/02/2024

Virtual ward models across ICSs in the South East (1/2)

We summarise below the virtual ward models operational in each South East ICS, showcasing the variety and innovation in care delivery, emphasising the tailored approaches adopted by different ICSs to meet specific local healthcare needs and challenges.

Buckinghamshire, Oxfordshire and Berkshire West (BOB)

Oxfordshire Countywide Hospital at Home Model: integrates hospital-at-home with specialist services across the county. It focuses on swift rehabilitation and medical treatment access under a medical consultant's leadership.

Children's Community Nursing H@H Model: works in partnership with the acute paediatric team and safely manages children in the home setting and escalates any concerns regarding a deteriorating child.

Berkshire West Frailty Model: objective is to reduce unnecessary NEL admissions and promote early supported discharge. The service has seen improvements in clinical supervision and patient communication.

Virtual Acute Care Unit Model: patients with specific conditions are managed remotely to avoid admission, supported by thrice-weekly MDT ward rounds and daily huddles involving a comprehensive healthcare team.

Buckinghamshire Hospital at Home Model: Patients are referred for admission avoidance or early supported discharge. They receive a mix of automated remote monitoring, virtual, and face-to-face care.

Frimley

Respiratory Model: provided by Frimley Health NHS Foundation Trust. They are the sole provider of specialist respiratory virtual ward services within the Frimley ICS.

Urgent and Emergency Care Model: serves to support same day emergency care services in Frimley by providing a pathway for admission avoidance and early supported discharge home.

Frailty Model: implemented by two providers within the ICS. The Frailty South offering is delivered through Frimley Health NHS Foundation Trust. The Frailty pathway constitutes an essential element of the Virtual Hospital.

Oncology Model: provided by Frimley Health NHS Foundation Trust. They are the sole provider of specialist Oncology virtual ward services within the Frimley ICS and operate as a specialist virtual ward integrated within the FHFT 'Virtual Hospital' model.

Frailty North Ward: service offers face-to-face care for adults over 18 in health/social crises, operating 7 days a week with a focus on avoiding unnecessary admissions and enabling early discharge.

Hampshire and Isle of Wight

Virtual Health Hub Model: incorporates a wide range of specialist pathways, which draw upon a broad mix of clinical expertise. The individual virtual wards share a common set of processes, except for the Frailty and COPD pathways which have their own specific requirements.

Solent Frailty Model: delivered across Portsmouth Frailty and Southampton Frailty pathways within the Solent NHS Trust to provide community-based virtual ward support.

Isle of Wight Respiratory Model: built upon an established respiratory nurse specialist service and Community Rapid Response Team and utilises tech-enabled care at home to achieve admission avoidance.

Virtual ward models across ICSs in the South East (2/2)

We summarise below the virtual ward models operational in each South East ICS, showcasing the variety and innovation in care delivery, emphasising the tailored approaches adopted by different ICSs to meet specific local healthcare needs and challenges.

Kent and Medway

East Kent Model Acute: provided by East Kent Hospitals University NHS Foundation Trust (EKHUFT). It delivers virtual ward services across cardiac, respiratory and general medicine specialities.

East Kent Community Model: jointly provided by Kent Community Healthcare Foundation Trust (KCHFT) and EKHUFT. It delivers virtual ward services across frailty, cardiac, respiratory and general medicine specialities.

West Kent Acute Model: delivered jointly by KCHFT and Maidstone & Tunbridge Wells NHS Trust. It is used to provide both frailty and general medicine ward-level care at home.

West Kent Community Model: provided by KCHFT, it delivers virtual ward services across frailty, cardiac, respiratory and general medicine specialities.

Medway Model: This digitally enabled hospital at home model provides general medicines and respiratory care and is delivered by both the acute Medway NHS Foundation Trust and Medway Community Healthcare Provider.

Dartford and Gravesham Model: encompasses four specialist pathways. It is used to deliver virtual ward services across frailty, cardiac, respiratory, paediatric and general medicine specialities.

Surrey Heartlands

Surrey Downs Virtual Ward Model: operated by Epsom and St Helier University Hospitals NHS Foundation Trust. This model provides hospital level care to a varied range of patient cohorts requiring urgent care and treatment including those living with frailty, heart disease and respiratory disease.

East Surrey Virtual Ward Model: delivered collaboratively by multiple providers, offers a single access point for referrals, both early supported discharge to aid discharges.

Ashford and St Peter's Model: delivered collaboratively by multiple providers, offers a single access point for referrals, employing both early supported discharge and admission avoidance models to aid discharges and prevent readmissions.

Sussex

ESHT General Model: delivered solely by the East Sussex Healthcare NHS Trust. It offers a multi-discipline and digitally enabled virtual ward service 7 days per week.

SCFT in partnership with UHSx and SaSH Hospital@Home: provides care for acute conditions, aiming to reduce hospital stays. It offers daily contact and regular MDT case management reviews.

SCFT Urgent Community Response (UCR) Plus: UCR staff and a GP jointly manage the service delivery, co-located to offer multi-specialty enhanced care aimed at reducing unnecessary NEL admissions.

Acorns CYP Virtual Ward: offers expert care, such as IV therapy and nutrition management, for children up to 17 years old, facilitated by skilled nurses through early hospital discharge for a wide range of needs.

Characterising virtual ward services

Our analysis unveils the complex landscape of virtual ward operations, highlighting significant variations that exist across different implementations.

Our analysis comprehensively characterises virtual ward operations through extensive review of virtual ward documentation, surveys, and existing quantitative databases. This multi-faceted approach allows us to delineate the delivery of virtual ward services across five key domains: **Operations, Clinical, Workforce, Digital, and Quality Improvement.** Understanding these variations is crucial for identifying best practices, informing policy development, and guiding the strategic expansion of virtual ward services.

Operations	Clinical	Workforce	Digital	Quality Improvement
•**Description:** Non-clinical characteristics describing routine virtual ward operation, including hours of operation, referral processes, and out-of-hours provision. •**Significant Variation Example:** Some virtual wards operate 24/7 with direct patient referral capabilities, while others are restricted to weekday operations with referrals only through healthcare providers.	•**Description:** Clinical characteristics such as care delivery methods, admission criteria, ward round arrangements, and medical treatment capabilities. •**Significant Variation Example:** Variability in admission criteria, with some virtual wards focusing on paediatric care, while others cater to chronic disease management.	•**Description:** Staffing structure, skill mix, and whole-time equivalent contribution of the virtual ward staffing. •**Significant Variation Example:** Differences in staffing models, from multidisciplinary teams including doctors, nurses, and physiotherapists, to nurse-led models with periodic consultant oversight.	•**Description:** Utilisation of digital platforms within virtual ward operations, including electronic documentation, remote monitoring, and digital process automation. •**Significant Variation Example:** Some virtual wards leverage advanced AI-driven platforms for patient monitoring and alerting, while others use basic digital tools for documentation and communication.	•**Description:** How virtual wards record and utilise feedback from patients, carers, and staff to inform service enhancements. •**Significant Variation Example:** Some virtual wards implement sophisticated feedback mechanisms like real-time digital surveys to identify service gaps, whereas others rely on periodic manual feedback collection and review meetings for quality improvement.

Note: These domains characterise models of virtual ward service delivery within the virtual ward profiles found in Appendix 3.

Virtual ward specialities across the region

The table below presents a summary of different medical specialities currently being delivered through virtual wards across the South East Region. There is a large degree of heterogeneity across the region with different specialities often being delivered in parallel within a single virtual ward.

Virtual ward specialties	
	General Medicine: a comprehensive specialty focusing on the diagnosis, treatment, and prevention of adult diseases across a wide spectrum, not limited to any specific organ system.
	Respiratory: Respiratory medicine specialises in the care of patients with diseases and conditions affecting the lungs and breathing, such as asthma, Chronic Obstructive Pulmonary Disease (COPD), and pneumonia.
	Frailty: Concentrates on the holistic management of older patients with complex, multi-system vulnerabilities, aiming to improve their resilience and quality of life.
	Oncology: Oncological care delivered through the virtual ward is dedicated to the treatment and management of cancer and secondary associated complications. encompassing various modalities like chemotherapy, immunotherapy, and targeted therapy.
	Paediatrics: Paediatrics focuses exclusively on the health and medical care of infants, children, and adolescents, addressing a broad range of acute and chronic conditions.
	Palliative Care: Palliative Care provides comprehensive symptom management, psychosocial support, and quality-of-life improvement for patients with serious, life-limiting illnesses.
	Stroke: Stroke medicine is focused on the acute and rehabilitative care of patients who have suffered cerebrovascular events, including prevention and recovery strategies.
	Cardiac: Cardiac specialty deals with disorders of the heart and circulatory system, offering treatment for conditions like coronary artery disease, heart failure, and arrhythmias.

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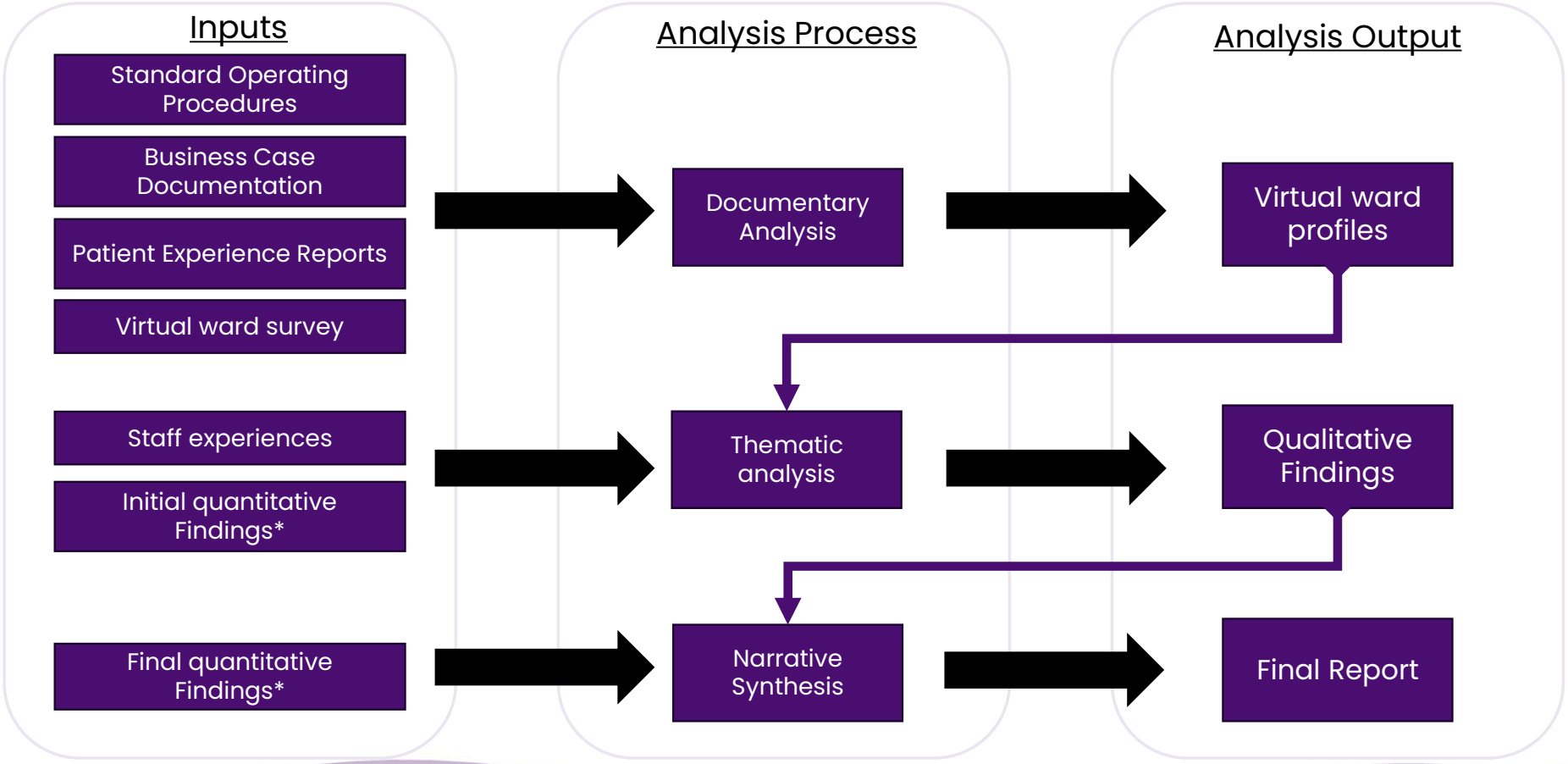
Process Evaluation

Process evaluation methodology overview

Our qualitative research approach set out within the evaluation framework utilises virtual ward documentation and staff experiences to profile prominent models of virtual ward service provision and explore factors influencing delivery.



*Quantitative findings are produced by the virtual ward impact evaluation. The methodology for quantitative analysis is shown later in this report.

Data sources and collection

The process evaluation is informed by a mix of documented protocols and personal accounts. Virtual ward documentation, surveys, and patient experiences enabled an understanding of 'As is' state of virtual ward service provision and the experiences of patients, and staff involved with them.

Data source	Collection method	Sampling strategy
Virtual ward documentation • Standard Operating Procedures • Business Cases • Patient and Carer Experience Reports	An information request was circulated by email to all ICS virtual ward programme managers across the South East region. A question bank was provided to support staff to identify and share additional documentation that could contribute information outlined in the Service Description Framework.	**Convenience sampling** was initially used due to its speed, cost-effectiveness and ease of implementation. **Purposive sampling** was then conducted to improve the rate of response for pathways responsible for high proportions of overall virtual ward activity.
Virtual ward survey	The survey was developed using an online platform. The survey link was then circulated to ICS virtual ward programme managers to cascade to their virtual ward teams. Results were then exported to help populate the data collection matrix.	**Convenience sampling** was initially used due to its speed, cost-effectiveness and ease of implementation. **Purposive sampling** was then conducted to improve the rate of response for pathways responsible for high proportions of overall virtual ward activity.
Virtual ward staff experiences • Managerial • Clinician	Interviews were conducted with virtual ward managers and clinicians. Responses were documented by a scribe and later coded and logged into the thematic analysis tool.	**Snowball sampling** was used to improve efficiency and overall reach of recruitment. virtual ward programme managers were requested to nominate clinicians and managers with experience of virtual wards of interest to the evaluation.

Thematic analysis approach

Qualitative data generated through interviews underwent thematic analysis utilising the thematic analysis tool to generate new insights from the experiences of virtual ward staff and patient experience reports. The most prominent theme were then identified and reported on within the evaluation.

The thematic analysis followed a five-step process to identify themes.

Familiarisation

- Interview transcripts are read thoroughly to enable researchers to become familiar with the data.

Coding

- Identify interesting extracts or initial interpretations from the transcribed data.

Generating themes

- Collate codes into potential subthemes based on shared characteristics.

Reviewing themes

- Review all emerging subthemes in relation to the underlying transcribed data.

Refining and defining themes

- Refine each subtheme and aggregate into parent themes.
- Create definitions for each consistent with the underlying data.

Thematic analysis 'domains'

To present the thematic analysis findings we categorised the KLOEs into distinct but interconnected domains: **Delivery and Implementation**, **Contextual and External Influences**, **Challenges and Lessons Learned**, and **Experience of Stakeholders**.

KLOEs	Domain	Section
P1 – Are virtual wards being delivered as local providers intended? • Which aspects of each virtual ward are being delivered as intended? • What could be delivered more effectively? • Were there any unexpected issues that obstructed delivery? • Have the necessary financial and human resources been made available? • To what extent have virtual wards reached the people they intended to reach?	**Delivery and Implementation**	• 1a: Adherence to Design • 1b: Resource Allocation • 1c: Accessibility and Reach
P2 - How have contextual and external factors influenced the delivery and functioning of virtual wards?	**Contextual and External Influences**	• 2a: Environmental Factors • 2b: System Integration
P3 - What can be learned from the delivery of virtual wards so far? • What do positive examples of delivery have in common? • What common challenges have provider experienced in delivery?	**Challenges and Lessons Learned**	• 3a: Common Challenges • 3b: Effective Practices
P4 - How have patients, carers, and staff experienced virtual wards? • What has the experience of virtual wards from the perspective of patients, carers, and staff been so far? • Have patients, carers, and staff members from groups at risk of inequalities (including ethnicity, deprivation, gender) had significantly different experiences or access?	**Experiences of Stakeholders**	• 4a: Patient and Carer Experiences • 4b: Staff Experiences

Process evaluation findings – delivery and implementation

Virtual wards build on existing healthcare services, with personalised and flexible care but face challenges in technological integration. While effective in identifying patients, ensuring equitable access for diverse demographics remains an obstacle.

	KLOE 1: Are virtual wards being delivered as intended by local providers?		
	1a: Which aspects are being delivered as intended	**1b: What factors have obstructed delivery?**	**1c: To what extent have virtual wards reached the people they intent to reach?**
Overview	To some extent – there is a broad range of context-specific variation in how effectively aspects of virtual ward services are being delivered. Virtual wards that adapt flexibly and build on existing services often report more effective implementation, despite a wide variation in the effectiveness of specific service aspects.	Budget constraints can shift virtual ward delivery away from initial plans, requiring providers to use other funds and current staff to support new services. Additionally, misaligned strategies and expectations can undermine collaborative efforts to develop integrated services.	Virtual wards were felt to reach target patients effectively through strong clinician relationships, a single point of access and outreach activities to build a shared understanding of their services. Integrating with adjacent health services' patient lists further enabled prevention of admissions and facilitated early supported discharge activity.
Key Themes	**Integration with Existing Services.** Having an established service which delivered similar support to planned virtual ward care was a significant theme amongst staff that felt their virtual wards were delivered as intended. It reportedly enabled those services to draw on established SOPs, professional relationships and an incumbent skilled workforce.	**Funding Security.** Non-recurrent ICB funding hindered delivery by necessitating recruitment for difficult to fill fixed-term posts, creating operational delays. The available budget was often viewed to be insufficient to cover the full cost of virtual ward operations. To mitigate this providers adapted service plans, used internal staffing and in some instances continued recruitment at risk.	**Effective Patient Identification.** Virtual wards effective in accessing their target patient cohorts benefitted from strong professional relationships with referring clinicians across acute and community settings and a single point of access for referral. Outreach activities to educate and develop a shared understanding of virtual ward offerings helped develop new connections during implementation.
	Implementation approach. Where virtual ward services are being delivered as originally intended, adequate timelines were set for staff integration, governance processes and relationship development. Using an iterative approach allows for adaptability to meet patient needs amidst unforeseen system constraints.	**System Governance.** Organisational politics emerged as a prominent theme obstructing delivery. In some instances, misaligned expectations between virtual wards and health partners, clashing strategies between neighbouring ICB territories, and power imbalances between NHS Trusts hindered coordinated decision-making in integrated systems.	**Patient list integration.** Some staff reported that integrating patient lists from neighbouring health services could enhance their reach for target cohorts. Access to ambulance lists improved admission avoidance, and visibility of hospital discharge lists enabled proactive early supported discharge facilitation.

Process evaluation findings – contextual and external factors

The effectiveness of virtual wards, in terms of scalability and efficiency, is hampered by funding constraints and technological hurdles. While integrating virtual wards into current healthcare systems holds potential, technological challenges interrupt care delivery.

	KLOE 2: How have contextual and external factors influenced the delivery and functioning of virtual wards?	
	2a: How have contextual factors outside of the healthcare organisation influenced virtual ward operations?	**2b: How have organisational factors external to the virtual ward service influenced virtual ward operations?**
Overview	Seasonal service demands and virtual ward geographies are key contextual factors influencing virtual ward activity. Virtual ward operations can be designed to mitigate the impact of both transient and structural drivers of virtual ward activity.	Healthcare organisations adjacent to virtual ward services such as adult social care and ambulance services play a fundamental role in supporting the delivery of holistic patient-centred care. A range of factors are responsible for determining the operational integration and level of collaboration between complimentary services which ultimately influence the ability of virtual ward services to deliver effective care.
Key Themes	**Winter Pressures.** Winter pressures between October and February were frequently recognised as a contextual driver of virtual ward activity. Virtual ward clinicians and managers experienced an increase in both the volume and acuity of patients. Virtual wards that utilised a shared workforce with clinical staff maintaining Urgent Community Response, triage or acute healthcare responsibilities were able to prioritise their focus to meet service demands.	**Virtual ward integration.** Virtual ward integration was a prominent theme indicating the importance of strong community and acute healthcare relationships to recognise additional care needs and coordinate existing care effectively. Misaligned digital strategies across primary and secondary healthcare providers have created a heterogenous digital landscape and barrier to integrated working. Efforts to implement digital platforms at a system level are ongoing but must overcome organisational resistance to change as some providers wish to seek a return on their investment into existing platforms.
	Virtual ward geography. The need to conduct home visits over large geographic areas emerged as a key theme driving an increase in virtual ward workload. Centralised virtual ward services operating from a single location were challenged by this. Some services mitigated this issue by spreading a larger team across multiple localities with representation from the full MDT. However, more rural patients continued to necessitate a significant level of travel time for clinicians.	**Collaborative working.** Ensuring virtual ward representation across the health system, ICS-level leadership support and a shared understanding of the virtual ward offer were key themes contributing to effective collaborative working with health system partners across both primary and secondary healthcare settings.

Process evaluation findings – challenges and lessons learned

Success in virtual wards hinges on adept data management and organisational flexibility, with strategic leadership and effective management practices being crucial. The ability to offer flexible services and robust leadership guides the development of adaptable virtual ward models of care and efficient operations.

	KLOE 3: What can be learned from the delivery of virtual wards so far?	
	3a: What do positive examples of delivery have in common?	**3b: What common challenges have provider experienced in delivery?**
Overview	Virtual ward clinicians and managers frequently felt that positive examples of virtual ward delivery championed patient-centred care and achieved success with the support of strong clinical leadership that advocated for the experience of patients and clinicians at a system-level.	Common challenges are often oriented to the capability of virtual ward services to effectively meet all of an acute patients' needs in the community and in managing service demands where expectations based on measures of acuity and volume do not align with the time require to manage clinically complex patients.
Key Themes	**Patient-centred care.** Staff across the system considered virtual ward services to exemplify patient-centred care by empowering patients with a choice on where they receive care. Virtual wards were felt to enable better care as clinical assessment and treatment at home enabled a more holistic consideration of the person and their lifestyle. Thus, creating opportunities to identify and introduce support for unmet health needs.	**Limited clinical capabilities.** Some virtual ward services were challenged by having insufficient service offerings that did not meet all patient's needs in the home setting such as the ability to deliver intravenous medication or conduct point of care testing. Where there was an absence of an integrated community teams to conduct home visits, this lowered the threshold to direct a patient to same day emergency care.
	Strong clinical leadership. Effective leadership emerged as a theme having a significant role in the successful implementation and delivery of virtual ward services. Expert clinicians in senior roles were seen to advocate for clinicians at all levels of the health system enabling them to lead service development to meet patient needs. It was recognised that protecting clinical leaders time to lead service development efforts was essential as often their time was often stretched between existing clinical responsibilities and their leadership role.	**Clinical demands.** Clinical demand within the virtual ward cohort was a notable theme and common challenge for staff. Patient cohorts shift in acuity and clinical complexity as virtual ward services mature and referring clinicians develop a shared understanding and trust in the service. It was felt that demand and acuity measures might not reflect clinical complexity driving discrepancies between operational expectations and the experience of clinicians.

Process evaluation findings – experiences of stakeholders

Patients overwhelmingly favour home-based care despite access disparities, indicating a need for efforts to improve inclusivity. Staff transitioning to virtual ward models of care face workload and system challenges, underscoring the importance of thorough training and support.

	KLOE 4: How have patients, carers, and staff experienced virtual wards?	
	4a: What has the experience of virtual wards from the perspective of patients, carers, and staff been so far?	**4b: Have patients, carers, or staff members from groups at risk of inequalities had significantly different experiences or access?**
Overview	Patient and staff experiences have been broadly positive toward virtual ward services. Recognising the benefits of receiving care at home and the new opportunities it offers. However, the experience of carers may differ as they are faced with an increased burden of care.	There is variation in the experiences of virtual ward services across the region. Staff have observed inequalities in access driven by the needs of virtual ward services to be able to deliver safe care such as a means of communication and fixed address. People accessing services is shaped by people presenting to the healthcare system which was not felt to be representative of the wider patient population.
Key Themes	**Patient and carer experience.** Most patient experiences of virtual ward services are positive and articulate an appreciation for home-based care, an ability to be closer to family and be more comfortable than in an acute hospital setting. However, patient support networks and carers have been seen to shoulder an increased burden of care as a result.	**Inequitable access to virtual wards.** Inequitable access was felt to emerge due the requirements that allow for safe virtual ward practice. Language barriers presented challenges when language support was not available via translator, or the digital platform used. Homeless people, lodgers and members of the travelling community without fixed addresses were also recognised to have difficulty accessing services.
	Staff experience. Despite clinical and operational challenges, staff viewed virtual wards positively and saw value in the model of care. Some virtual ward staff feel patients recover more quickly as a result. Additionally, virtual ward staff recognised that they enjoyed working in new and developing services that enabled them to develop new skills.	**Representative patient cohorts.** Responses vary on how well virtual ward cohorts mirror the broader patient population. Where representation is lacking, services tend to be used predominantly by white British individuals. Some staff felt differences in ethnic representation were shaped by differences in people presenting to healthcare services. Some virtual ward outreach activities to engage black & minority ethnic communities have been planned.

Process evaluation findings – patient and carer experience

The overwhelmingly positive feedback from patients and carers underscore the critical role of virtual wards in providing patient-centred, compassionate care that aligns with patients' and carers' needs and preferences.

We conducted an analysis of feedback from patients and carers who have experienced the virtual ward services across the region. The analysis revealed critical insights into the service's impact on patient care and support provided to carers during challenging times.

Compassionate and Professional Care	Feedback consistently highlights the compassionate, professional, and supportive nature of the virtual ward teams.
	Example: Families describe the care as "exceptional," noting the kindness, honesty, and professionalism that made challenging situations more bearable.
Individualised and Effective Pain Management	The importance of tailored pain relief strategies is a recurrent theme, underscoring the need for personalised care plans.
	Example: Carers emphasise the critical role of effective pain relief, tailored to individual patient needs, as a cornerstone of quality care.
Enhanced End-of-Life Experience	Several responses reflect on how virtual ward services enabled loved ones to spend their final days at home, surrounded by family, fulfilling their last wishes with dignity.
	Example: A carer expressed gratitude for allowing their husband to pass at home with dignity, emphasising the respectful treatment received by both the patient and family.
Digital Inclusion and Remote Support	Positive reception of digital platforms for continuous monitoring and communication, ensuring timely medical intervention and advice.
	Example: Patients and carers value the reassurance and convenience provided by remote monitoring and digital communication, enabling efficient symptom management at home.
Quality of Life Improvement	Feedback highlights how virtual ward services significantly improve patients' quality of life by allowing them to remain at home, reducing readmissions, and minimising the risk of nosocomial infections.
	Example: Successful admission to a virtual ward, allowing a patient with brain cancer to be cared for at home with comprehensive remote support exemplifies the service's ability to enhance patient outcomes and satisfaction.

PPL

Impact, Cost-benefit and Health Inequality Evaluation

Selection criteria for impact and cost-benefit analysis

To ensure this evaluation of virtual wards across the South East yields meaningful results, a set of wards was chosen to meet the following criteria:

1. There should be at least **one ward for each ICB** in the region
2. The set of wards combined must account for **over 50% of virtual ward admissions** in the South East region as per the SitRep snapshot
3. The wards chosen should focus on **admission avoidance admissions**
4. Where possible, wards with different providers, delivery models, tech-enablement, and specialty were chosen to enable comparisons

In addition to the above, wards were also selected based on patient level data set availability and quality. A large number of wards were not included in our impact and cost-benefit analysis due to data challenges. For individual virtual wards we have created separate data packs for the full details of the data quality audits.

This evaluation did not primarily focus on constructing a representative sample of virtual wards in the region. Rather, selecting a set of wards with well-coded data representing a large portion of the region's admission avoidance virtual ward activity **ensures the conclusions drawn on the intervention's overall efficacy are as robust as possible**.

Due to differences in start and end dates for different virtual wards, **figures set out in this section are annualised and therefore do not represent the real number of virtual ward admissions** in the South East over a year.

Annualised results enable comparison of virtual wards and therefore an understanding of potential drivers of differences in results.

	All wards	Wards analysed
Admission snapshot	3,344	2,130 **(64%)**
Capacity snapshot	1,939	968 **(49%)**

Admissions and capacity figures are taken from the SitRep snapshot for 26th February 2024

ICB	All wards	Wards analysed
Surrey Heartlands	8	3
Buckinghamshire, Oxfordshire And Berkshire West	12	10
Frimley	10	1
Kent And Medway	20	2
Sussex	8	1
Hampshire And Isle Of Wight	29	11

Impact evaluation methodology overview

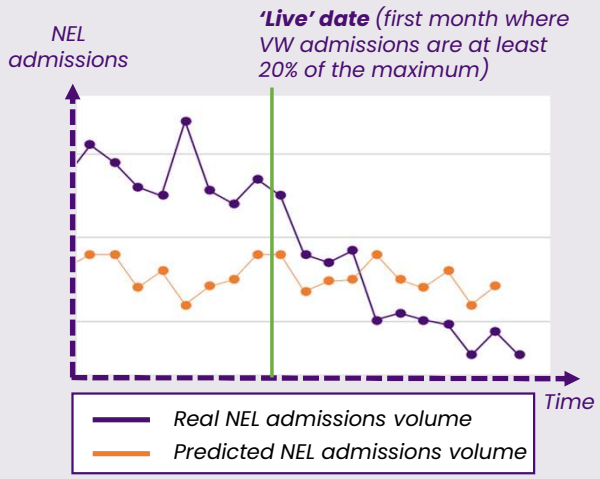
Our evaluation quantifies the impact of admission avoidance virtual ward activity by comparing hospital data with patient-level virtual ward admissions data. We sought to understand whether virtual wards are associated with reductions in NEL admissions since their introduction and, if a reduction in admissions is evident, how many avoided admissions within said reduction can be associated with the activity of the virtual ward. To investigate, the evaluation conducted two tests, a 'trend' test and a 'impact' test, setting a high bar for impact. **Additional detail on the methodology is found in Appendix 6**.

Data inputs

- **Secondary Uses Service (SUS) NEL admissions data** focused on the relevant cohort (age, condition, geography) to minimise 'noise' when looking for correlations.
- Virtual Ward **Patient Level Data** submitted by the virtual ward provider, excluding 'stays' shorter than 45 minutes
- **Aggregation of wards** by geography and condition to align virtual ward analyses to available cuts of hospital data (Appendix 7)

Analysis

Trend test



The trend test looks for changes in the level of NEL admissions against a prediction based on previous data running back to 2018, generated using **SPC methodology** and excluding the Covid-19 period (March 2020 to April 2021). The prediction estimates NEL admission volumes in a **'counterfactual'** world where the virtual ward was not implemented.

The test compares the **difference in real and predicted NEL admissions before and after the introduction of a virtual ward***. If the real volume of admissions falls relative to the prediction once the virtual ward is introduced, as in the example to the left, the virtual ward 'passes' the test.

Impact test

The impact test: **"How strong is the association between the number of virtual ward admissions and falling NEL admissions?"**

For every month (after the date at which virtual ward admissions were greater than 20% of its maximum monthly volume) where NEL admissions were below the prediction and the virtual ward was operational...

$$\frac{\textbf{Number of virtual ward admissions this month}}{\textbf{Predicted NEL this month} - \textbf{Real NEL this month}} = \textbf{Impact 'ratio'}$$

(The impact ratio has a **'floor' at 1** to account for other factors that may have reduced NEL admissions)

Outputs

Trend test	Impact test
Yes	2.34

The trend test result indicates if there has been **a fall in hospital activity relative to the predicted level** since the establishment of the virtual ward (yes/no).

The ratio calculated by the impact test is presented as **the number of virtual ward admissions associated with one NEL avoidance.** Lower values indicate effectiveness in generating NEL avoidances.

**where wards pre-dated April 2022, we tested the trend before and after April 2022*

Summary of impact evaluation findings

This evaluation's analysis of the impact of virtual wards on NEL admissions found that **South East England's virtual wards are strongly correlated with reduced NEL activity**. Total NEL admissions trended below predicted levels after the introduction of virtual wards in many cases, and across the region the ratio of virtual ward admissions correlated with a single 'avoided' NEL admission was approximately 2.5:1 (i.e. 1 NEL admission 'avoided' was shown to be *correlated* with 2.5 virtual ward admissions)

Ward name	Age Category	Total annualised virtual ward admissions	Trend Test *Do NEL admissions fall further below predicted admissions after the virtual ward is live?*	Impact Analysis		
				Impact Test	Annualised avoided NEL	VW admissions -> 1 NEL avoidance*
TOTALS		**22,797**	**12/20 passed**		**9,165**	**2.49**
Ward 1	Legacy (>2 years)	1,711	Below	2.83	486	3.52
Ward 2	Mature (1-2 years)	730	Above	5.64	58	12.58
Ward 3	Mature (1-2 years)	363	Above	1(0.79)	324	1.12
Ward 4	Legacy (>2 years)	1,188	Below	1.26	911	1.30
Ward 5	Legacy (>2 years)	334	Above	334 (no impact)	0	334 *(not included in average)*
Ward 6	Legacy (>2 years)	1,328	Above	34.48	34	39.06
Ward 7	Legacy (>2 years)	818	Below	1(0.52)	669	1.22
Ward 8	Mature (1-2 years)	1,908	Below	1.66	1,003	1.90
Ward 9	Mature (1-2 years)	1,781	Above	3.75	76	23.43
Ward 10	New (<1 year)	461	Below	7.44	29	15.90
Ward 11	Mature (1-2 years)	199	Above	72.22	1	199.00
Ward 12	Mature (1-2 years)	1,098	Below	3.84	159	6.91
Ward 13	Mature (1-2 years)	965	Below	3.13	170	5.68
Ward 14	Legacy (>2 years)	3,776	Below	1.03	3,345	1.13
Ward 15	Mature (1-2 years)	2,397	Below	10.55	60	39.95
Ward 16	Mature (1-2 years)	156	Below	1(0.31)	153	1.02
Ward 17	New (<1 year)	217	Above	1(0.32)	205	1.06
Ward 18	Legacy (>2 years)	1,865	Below	8.25	95	19.63
Ward 19	Mature (1-2 years)	1,266	Below	1(0.65)	1,184	1.07
Ward 20	Mature (1-2 years)	233	Above	1.08	203	1.15

** This figure differs from the impact test output because it accounts for those virtual ward admissions who were admitted to hospital and therefore do not constitute 'avoidances'*

Cost-benefit evaluation methodology overview (1/2)

This evaluation builds on impact analysis by estimating the **annualised net benefit associated with each virtual ward pathway**, using monthly total spend data submitted by Providers, and the impact ratio for the virtual ward in question. **Note 'benefit' as used in the following slides refers to the 'value of saved activity', rather than cashable savings.**

Data inputs

- **Monthly total virtual ward spend,** submitted by virtual ward providers.
- The **impact ratio** (number of virtual ward admissions associated with one hospital avoidance).
- Virtual ward **Patient Level Data** submitted by the virtual ward providers, including discharge destinations.
- **Assumptions on the 'value' of NEL admissions** (See Appendix 5) as specific to the cohort in question as possible, and broken down by short and long stays.

Analysis

Cost calculation

Our analysis calculates the **monthly costs associated with the relevant group under analysis** (by age, health condition, geography, pathway type, and admissions avoidance):

- Monthly costs submitted by the Provider are apportioned according to the percentage of admissions which we included in our analysis (admission avoidance, age filters, condition filters, etc.).
- Where on costs have not been submitted by the Provider an on cost-assumption is applied (the average % on-cost of available financial datasets provided to this evaluation).

The resultant monthly total cost across the cost/benefit period is **annualised** to calculate an estimate for the annualised total cost of delivering that virtual ward.

Benefit calculation

Benefits are calculated by estimating the **number of monthly hospital avoidances associated with the activity of the virtual ward** and applying an assumption on the **value** of said hospital avoidances. The number of avoided NEL admissions is based on the volume of virtual ward admissions multiplied by the impact ratio. The number of virtual ward admissions who were discharged into an inpatient setting ('failed avoidances') are subtracted to give a final estimate of avoided NEL admissions associated with the virtual ward in question.

Total monthly total benefits are calculated using short and long stay tariffs, applied according to the proportion of short and long stay NEL admissions that occurred within the cost benefit period.

The total benefit across the cost/benefit period is **annualised** to calculate an estimate for the annualised total cost of delivering that virtual ward.

Outputs

The difference between the annualised cost and annualised benefit estimates produce an **annualised "net benefit" generated by the virtual ward.**

A positive result implies the Ward is running at a "net benefit", and a negative result implies the Ward is running at a "net cost".

Cost-benefit evaluation methodology overview (2/2)

The calculations set out below are carried out on a month-by-month basis to mirror the impact testing methodology. Results for every month in which the virtual ward is operational and financial data is available (the 'cost-benefit analysis period') are added together, and the result is annualised to enable comparison across different wards and a single region-wide figure to be calculated.

Monthly total spend by the provider of this virtual ward

Total cost to the provider of this virtual ward during the 'cost-benefit' analysis period

X

10.5%

On cost assumption

***IF** on-costs are not included in the financial data, we apply the average % on-cost across all financial returns which included on-costs, which was 10.5%*

X

Month-by-month **% of virtual ward admissions in patient-level data relevant to this analysis**

Our analysis only looks at the relevant portion (by ward, age, referral source, condition, etc.) of virtual ward admissions in the relevant provider's patient-level dataset. As such, we assume a flat per-patient cost and multiply the total cost by the proportion of all virtual ward admissions that are relevant. This gives us an estimate of the cost of providing the virtual ward to the patients relevant to our analysis.

=

Monthly total cost (total across cost benefit period)

X 12/(months in cost benefit period)

Annualised total cost

Ratio of short stays to long stays based on breakdown of non-elective admissions for the relevant geography during the cost benefit period

% short stay avoidances

Monthly virtual ward admissions during analysis period (excluding 'stays' shorter than 45 minutes)

Virtual ward admissions associated with one avoided NEL admission (from impact analysis), capped at 1

−

Monthly virtual ward admissions subsequently admitted to hospital

=

Estimated monthly long and short stay **NEL admissions avoided**

X 12/(months in cost benefit period)

Annualised NEL admission avoidances

X

Short stay tariff

X

Long stay tariff

% long stay avoidances

Monthly total benefit (total across cost benefit period)

=

X 12/(months in cost benefit period)

Annualised total benefit

***Please note**: Virtual ward costs and NEL admission reference costs do not include overhead costs (such as building costs or corporate costs)*

Summary of cost-benefit evaluation findings

This evaluation's analysis of the cost-benefit of virtual wards based on the theoretical value of the estimated avoided NEL admissions, set out in the previous page, found that **in aggregate the South East's virtual ward offer is a significant net benefit financially** (where benefit refers to the value of saved activity). This evaluation looked exclusively at benefits in hospital settings.

Ward name	Age Category	Total annualised virtual ward admissions	Cost-benefit analysis			Cost-benefit (per virtual ward patient) analysis		
			Total annualised gross benefit	Total annualised gross cost	Total annualised net benefit	Average benefit per VW admission	Average cost per VW admission	Average net benefit per VW admission
TOTALS		**21,272**	**£24.5m**	**£14.2m**	**£10.4m**	**£1,154**	**£665**	**£488**
Ward 1	Mature (1-2 years)	1,711	£1,522,991	£716,632	£806,360	£890	£419	£471
Ward 2	Mature (1-2 years)	730	£149,727	£915,689	-£765,962	£205	£1,255	-£1,050
Ward 3	Legacy (>2 years)	363	£294,134	£385,798	-£91,664	£810	£1,063	-£253
Ward 6	Legacy (>2 years)	1,328	£39,483	£741,193	-£701,710	£30	£558	-£528
Ward 7	Mature (1-2 years)	818	£2,634,253	£245,932	£2,388,320	£3,220	£301	£2,920
Ward 8	Mature (1-2 years)	1,908	£3,016,693	£528,673	£2,488,020	£1,581	£277	£1,304
Ward 9	New (<1 year)	1,781	£153,750	£523,493	-£369,743	£86	£294	-£208
Ward 10	Mature (1-2 years)	461	£48,658	£176,914	-£128,256	£106	£384	-£278
Ward 11	Mature (1-2 years)	199	£1,768	£130,034	-£128,266	£9	£653	-£645
Ward 12	Mature (1-2 years)	1,098	£536,403	£358,484	£177,919	£489	£326	£162
Ward 13	Legacy (>2 years)	965	£509,041	£312,352	£196,689	£528	£324	£204
Ward 14	Mature (1-2 years)	3,776	£10,703,122	£3,179,806	£7,523,316	£2,835	£842	£1,992
Ward 15	Mature (1-2 years)	2,397	£148,964	£1,862,430	-£1,713,465	£62	£777	-£715
Ward 16	New (<1 year)	156	£373,056	£629,885	-£256,829	£2,391	£4,038	-£1,646
Ward 17	Legacy (>2 years)	217	£602,658	£1,292,770	-£690,112	£2,777	£5,957	-£3,180
Ward 18	Mature (1-2 years)	1,865	£344,163	£694,369	-£350,206	£185	£372	-£188
Ward 19	Mature (1-2 years)	1,266	£3,183,049	£1,261,332	£1,921,717	£2,514	£996	£1,518
Ward 20	Legacy (>2 years)	233	£277,800	£196,418	£81,382	£1,192	£843	£349

Note: two pathways analysed as part of the impact analysis did not have sufficient financial data for a cost benefit analysis.

Inequalities evaluation methodology overview

Our inequalities analysis sought to understand two characteristics of the virtual ward admissions data: **the completeness of data coding for ethnicity and deprivation**, and **the extent the BME and Core 20 population (those in the most deprived 20% of wards) are accessing virtual wards**.

The results of the impact and inequalities analyses refer to the **same group of admissions**. Admissions recorded as early supported discharge, or outside of the target demographic/ condition for a given virtual ward were not included in the inequalities analysis.

Data inputs

- Virtual Ward **Patient Level Data** submitted by the virtual ward provider
- **Ethnicity population data by from most recent available census** by Local Authority (suppressed data is averaged according to total population estimates)
- **Index of Multiple Deprivation (IMD)** by Lower Super Output Area (LSOA)

Analysis

Coding completeness

The completeness of ethnicity and deprivation coding are calculated separately as a simple percentage:

$$\frac{\textit{Total number of admissions with ethnicity/ deprivation coding}}{\textit{Total number of admissions (admission avoidance, within target demographic)}} = \textit{\% coding complete}$$

Difference in access

In order to understand the extent BME and Core 20 patients have been accessing virtual wards, our analysis calculates the % over/under representation of BME and Core 20 patients within the virtual ward admissions, relative to the most relevant LSOA (IMD) or local authority (ethnicity) geography. Where a model is looking at a specific age cohort, deprivation / BME percentages have been filtered to ensure a like-for-like comparison. Below is an example for ethnicity:

% of admissions who are BME		*% of relevant Local Authority population who are BME*		*% over/under-representation*
4%	-	8%	=	-4%

In this example, BME people are under-represented by 4 percentage points.

Outputs

Our analysis provides an assessment of virtual ward data quality and reporting on ethnicity and deprivation, setting out where data quality is low and requires improvement.

Our analysis calculates the % under or over representation of BME and Core 20 populations within virtual wards, and an indication of the extent to which these populations are accessing the intervention.

Summary of inequalities evaluation findings by ethnicity

There are significant gaps in the completeness of ethnicity data reported against virtual ward admissions. Of those virtual wards with ethnicity data recorded, BME people are underrepresented in the patient cohort in **the majority** of virtual wards relative to the relevant local population. This underrepresentation varies between 1 and 13 percentage points.

Ward name	Provider	ICB	Ethnicity coding completeness	BME VW admissions (%)	% of population who are BME in relevant geography	Difference in access for BME population
Ward 5			54%	9%	14%	-5%
Ward 4			49%	3%	3%	0%
Ward 6			87%	8%	22%	-13%
Ward 1			99%	4%	6%	-2%
Ward 3			88%	12%	22%	-10%
Ward 2			90%	7%	5%	2%
Ward 7			100%	11%	14%	-2%
Ward 8			53%	1%	2%	-1%
Ward 9			39%	0%	2%	-1%
Ward 11			92%	11%	3%	8%
Ward 13			0%	NO ETHNICITY DATA		
Ward 10			15%	0%	4%	-4%
Ward 12			0%	NO ETHNICITY DATA		
Ward 14			70%	7%	2%	5%
Ward 15			55%	1%	2%	-1%
Ward 18			19%	6%	5%	1%
Ward 17			93%	0%	2%	-2%
Ward 16			78%	5%	13%	-8%
Ward 20			64%	0%	7%	-7%
Ward 19			55%	3%	2%	1%

Please note: 1. All numbers are rounded to 1 integer and therefore may not sum exactly
2. Relevant BME population percentages are calculated with averaged suppression values, averaged according to total population estimates

Initial conclusions from inequalities evaluation by ethnicity

Challenges in virtual ward service access and representation stem from insufficient ethnicity data capture, language and cultural barriers, and a misalignment between referral demographics and geographic profiles. Conversely, integrating cultural competency and targeted community engagement has shown promise in enhancing service accessibility.

Drivers of Underrepresentation and Access Challenges

- **Underrepresentation in Referrals:** The demographic composition of referrals often does not match the geographic area's demographic profile.
- **Lack of Ethnicity Data Capture**: There is a significant challenge in capturing ethnicity data due to reliance on GP practices' systems, which at times do not systematically capture patient ethnicities. This hampers understanding of demographic representation within virtual ward services.
- **Language and Cultural Barriers**: The absence of multilingual support in certain remote monitoring devices and difficulties in accessing translators for non-English-speaking patients, particularly in emergency situations, have been highlighted as barriers.

What has worked to encourage access to virtual ward services

- **Cultural Competency and Language Support**: Incorporating staff who are not only linguistically diverse but also culturally competent has been crucial. Efforts like employing a Nepalese-speaking nurse have helped bridge language gaps and improve service accessibility.
- **Targeted Community Engagement:** Actively reaching out to and engaging with black & minority ethnic communities through cultural gatherings and community-specific health discussions has shown promise in improving awareness and uptake of the service.

Suggested next steps

- **Need for targeted research to understand the barriers to access**: Staff are keen to address the observed disparities in referrals by reviewing in more detail the existing processes and engaging with services and communities.

Summary of inequalities evaluation findings by deprivation

Our evaluation found varied results relating to virtual ward access for those living in more deprived areas. Patients who live in a Core-20 area are overrepresented in a number of virtual wards by up to 6%, while are underrepresented in others by up to 10%. Index of Multiple Deprivation (IMD) admissions data was found to be **much more complete** than ethnicity data.

Ward name	Provider	ICB	IMD coding completeness	Core-20 VW admissions (%)	% of population living in Core-20 LSOAs in relevant geography	Difference in access for Core-20 population
Ward 5			89%	6%	4%	2%
Ward 4			70%	3%	3%	1%
Ward 6			98%	3%	3%	-1%
Ward 1			99%	1%	2%	-1%
Ward 3			72%	0%	0%	1%
Ward 2			66%	1%	0%	0%
Ward 7			99%	2%	1%	0%
Ward 8			96%	1%	1%	1%
Ward 9			93%	8%	8%	0%
Ward 11			93%	4%	14%	-10%
Ward 13			99%	22%	21%	0%
Ward 10			92%	19%	15%	4%
Ward 12			99%	22%	19%	4%
Ward 14			100%	20%	13%	6%
Ward 15			100%	3%	2%	0%
Ward 18			99%	0%	0%	0%
Ward 17			100%	1%	0%	1%
Ward 16			100%	0%	1%	-1%
Ward 20			99%	22%	24%	-2%
Ward 19			99%	11%	14%	-2%

Please note: All numbers are rounded to 1 integer and therefore may not sum exactly

Initial conclusions from inequalities evaluation by deprivation

Digital exclusion and social determinants of health, such as homelessness and poor living conditions, pose significant barriers to accessing virtual ward services for patients from deprived backgrounds. Providing essential physical resources and enhancing accessibility through collaboration with local charities and services have helped to improve service uptake.

Drivers of Underrepresentation and Access Challenges

- **Digital Exclusion:** Patients from deprived backgrounds often struggle with digital access, lacking either the technological tools or the skills necessary to engage with virtual health services. Many patients were engaging with digital health services for the first time, indicating a broader need for digital inclusion efforts.
- **Social Determinants of Health:** Complex social conditions, such as homelessness or living in areas with poor housing, directly impact the ability of individuals to engage with virtual ward services. These conditions often coincide with other barriers, including transportation issues and physical accessibility. Examples include patients lacking stable housing or those living in accommodations unsuitable for home-based care (e.g., only having upstairs living spaces).

What has worked to encourage access to virtual ward services

- **Provision of Physical Resources:** Directly addressing the material needs of deprived patients through the provision of monitoring equipment that requires no input from patients (which reduces digital literacy barriers) and promotes a level of self-care and management that would otherwise be inaccessible. The distribution of blood pressure monitors and other health monitoring devices has allowed patients from deprived backgrounds to engage in their health management without the need for travel, reducing one barrier to access.
- **Enhanced Accessibility through Collaboration:** Strengthening partnerships with local charities, GP practices, and community services has been pivotal in reaching patients in deprived areas, ensuring they are aware of and can access the services available. Collaborations with local charities have facilitated the provision of care to very poor individuals or those living in 'care deserts', highlighting the importance of community-based support networks.

Next steps

- Next steps to improve access from deprived groups include: enhancing digital inclusion, tailoring services to meet material needs, strengthening community partnerships, conducting targeted outreach and education, assessing and addressing social determinants of health.

Lessons learnt from impact evaluation

Most virtual wards were found to be impactful in preventing NEL admissions with a smaller number of low-impact outliers. **Initial conclusions** on drivers of good performance and obstacles in the delivery of virtual wards were **informed by comparing key domains across virtual ward profiles and combining quantitative results with findings from our thematic analysis.**

Top 3 by avoided NEL admission per virtual ward admission	
ICB	Provider
Ward 19	
Ward 14	
Ward 7	

Bottom 3 by avoided NEL admission per virtual ward admission	
ICB	Provider
Ward 5	
Ward 15	
Ward 11	

What did the data show?

- The strongest results suggest that, when delivered well, virtual wards can safely support patients who would have otherwise been admitted to hospital to stay at home – these wards saw nearly 1:1 associations between significant falls in NEL activity and rising virtual ward activity.
- Most virtual wards we analysed performed well on both trend and impact tests, meaning they are associated with significant falls in NEL activity.

What did staff report went well in these Integrated Care Systems?

- Recruitment success was felt to be enabled by people being interested in the virtual ward model, advertising highly banded roles and providing flexibility to work full-time over four days per week.
- Strong professional relationships in both acute and community health services enabled more integrated ways of working.
- Good data support was felt to enable faster implementation of virtual ward services.

What were the common features in the top 3?

- The top 3 virtual wards operate a minimum of 08:00 – 20:00 over 7 days per week.
- The top 3 virtual wards conduct daily MDT ward rounds, 7 days per week.

What challenges were reported in these Integrated Care Systems?

- Staffing of virtual wards was made difficult as there was a small recruitment pool for experienced staff with the necessary combination of acute and community skills.
- Low staff confidence was expressed due to working autonomously with greater levels of uncertainty and risk.
- Large recruitment challenges as non-recurrent funding necessitated hiring for less attractive fixed-term posts.

What were the common features in the bottom 3?

- No significant commonalities were observed between virtual ward key domains, ICB or specialty.

** Thematic findings are generalised up to the ICS level. Please see Appendix 4 for the interview stakeholder map to see interview contributors.*

Lessons learnt from cost-benefit evaluation

Half of virtual wards analysed were found to be associated with a positive net financial benefit. **Engagement with staff and leaders, a comparison of key domains across virtual ward profiles, and our analysis of provider financial submissions, underpin these initial conclusions** on what makes virtual wards cost-effective.

Top 3 by Net Benefit per virtual ward patient	
ICB	Provider
Ward 19	
Ward 14	
Ward 7	

Bottom 3 by Net Benefit per virtual ward patient	
ICB	Provider
Ward 2	
Ward 16	
Ward 17	

What did the data show?

- Half of virtual wards analysed were associated with a positive net benefit, and the correlation between impact (virtual ward admissions associated with 1 NEL avoidance) and cost-effectiveness (net benefit per virtual ward patient) was not as strong as expected, suggesting cost per patient is a significant driver of net benefit. Generating 'avoidances' is therefore not a guarantee of cost-effectiveness.
- The mean net benefit per virtual ward patient was £244 with a median value of £204. Indicating an even distribution of results across the region.

What did staff report went well in these Integrated Care Systems?

- Recruitment success was felt to be enabled by people being interested in the virtual ward model, advertising highly banded roles and providing flexibility to work full-time over four days per week.
- Strong professional relationships in both acute and community health services enabled more integrated ways of working.
- Good data support was felt to enable faster implementation of virtual ward services.

What were the common features in the top 3?

- The top 3 virtual wards operate a minimum of 08:00 – 20:00 over 7 days per week.
- The top 3 virtual wards conduct daily MDT ward rounds, 7 days per week.

What challenges were reported in these Integrated Care Systems?

- Operational delays driven by recruitment, procurement and funding challenges.
- Insufficient funding to implement and staff virtual ward services without drawing from existing budgets.
- Insufficient data support and inefficient manual data collection processes.

What were the common features in the bottom 3?

- No significant commonalities were observed between virtual ward key domains, ICB or specialty.

** Thematic findings are generalised up to the ICS level. Please see Appendix 4 for the interview stakeholder map to see contributors.*

Analysis of findings by maturity (1/2)

The launch of the national virtual wards programme in April 2022 saw increased funding and a mandate for expansion of virtual ward capacity. Some South East providers adapted 'legacy' services, whilst others set up new virtual wards. Comparing 'new' virtual wards (those that started admitting patients after January 2023), 'mature' virtual wards (those that started admitting patients between April 2022 and January 2023), and legacy virtual wards allows conclusions to be drawn on whether **maturity is a key condition for impactful and cost-effective virtual ward delivery**.

1. Virtual wards that have been operating for more than 2 years are associated with more avoided NEL admissions, lower cost per patient, and higher benefit per patient than those less than a year old

- There is a clear and direct correlation between increasing maturity of a given virtual ward and (1) falling cost per patient, and (2) rising net benefit per patient.
- There is also a direct relationship between the size of a virtual ward and its maturity. This could either mean that those virtual wards with more time to develop tend to make the decision to expand, or that virtual wards which aim for scale tend to last longer as they deliver better value for money.
- Not only did costs fall with pathway maturity, the variation in cost per patient fell. The difference between the highest and lowest cost per patient amongst legacy virtual wards was £541, whilst the same figure for mature virtual wards was £3,761.

AGE CATEGORY*	New (<1 year)	Mature (1-2 years)	Legacy (> 2 years)
Ward count	2	11	7
Total volume p.a.	678	11,096	11,020
Total associated NEL avoidances p.a.	234	3,391	5,540
Virtual ward admissions -> 1 NEL avoidance	2.90	3.27	**1.99**
Total cost p.a.	£1,469,684	£7,104,588	£5,577,932
Cost per virtual ward patient	£2,168	£640	**£506**
Gross benefit p.a.	£651,316	£8,644,385	£15,244,012
Gross benefit per virtual ward patient	£961	£779	**£1,383**
Net benefit p.a.	-£818,368	£1,539,798	£9,666,080
Net benefit per virtual ward patient	-£1,207	£139	**£877**
Average ward size	339	1,009	1,574

Analysis of findings by maturity (2/2)

3. The difference between new and mature pathways' net financial benefit per patient is driven primarily by falling cost per patient, whilst the difference between mature and legacy virtual wards is driven by higher benefit per patient

- The difference in per patient costs between new and mature virtual wards is likely driven by initial set-up costs and the operational 'teething problems' that most interventions of this kind face.
- The driver of difference in net benefit between mature and legacy pathways is more ambiguous – the stronger association with avoided admissions undoubtedly plays a part, but legacy virtual wards may also focus on specialities or cohorts which they know are particularly costly when admitted to hospital.

4. The higher benefit per patient may be driven by improved operational effectiveness as virtual ward managers broadly reported on the time necessary to achieve full operational effectiveness.

- *In recognition of the time to recruit and embed staff:*

  'recruitment of the right people for the roles needed time to embed and upskill those staff as necessary.'

  'We anticipated staffing challenges and planned for 2 rounds of recruitment to fill posts.'

- *Virtual ward staff also highlighted that the time to implement services was longer than first expected.*

  'It took 6 months for clinical leads to fully understand the virtual ward service being implemented.'

- *It was reported that having more time to plan would have improved the clinical delivery of virtual ward services.*

  'Needed more time for implementation, to enable better clinical planning and evidence-based service development.'

Analysis of findings by specialty (1/2)

By grouping wards by 'specialty' we can begin to control for variations, such as those in maturity or delivery model, and **understand the extent to which speciality determines the impact of a virtual ward**. This comparison is of relevance because national guidance recommends frailty and respiratory as starting points for virtual ward programmes.

1. Virtual wards treating frail patients have the strongest association with NEL avoidances per virtual ward admission.

- As a cohort, frail people are more likely than average to have an unplanned hospital admission. This higher baseline likelihood could be driving strong performance in our tests.
- Alternatively, key features of virtual wards – continuous monitoring, and the focus on keeping people at home for longer – may be particularly effective at keeping frail people out of hospital.

2. There was no significant difference in cost per virtual ward admission by specialty – the per-patient cost of frailty virtual wards in our analysis was slightly higher than average.

- Assumptions that per patient virtual ward costs for frail people would be driven up due to their complexity and/or longer length of stay
- To draw accurate conclusions on the reasons for this result, a robust analysis of the determinants of cost – including length of stay – in virtual wards would be necessary

SPECIALTY*	*Frailty*	*Respiratory*	*Mixed / Other*
Ward count	14	3	3
Total volume p.a.	19,876	893	2,025
Total associated NEL avoidances p.a.	8,574	233	358
Virtual ward admissions -> 1 NEL avoidance	**2.32**	3.83	5.66
Total cost p.a.	£12,521,847	£503,366	£1,126,991
Cost per virtual ward patient	£630	£564	**£557**
Gross benefit p.a.	£23,877,870	£328,226	£333,617
Gross benefit per virtual ward patient	**£1,201**	£368	£165
Net benefit p.a.	£11,356,023	-£175,140	-£793,374
Net benefit per virtual ward patient	**£571**	-£196	-£392
Average ward size	1,420	298	675

Analysis of findings by specialty (2/2)

3. Frailty virtual wards have a significantly higher estimated net financial benefit per virtual ward admission

- This is partially driven by the stronger performance mentioned in point 1 on the previous page.
- Primarily this is driven by the higher average tariff cost assumption used to define the 'value' of a single avoided NEL admission (see Appendix 5) – the higher-than-average cost of frail elderly NEL admissions is well-evidenced.
- Both above factors mean frailty virtual wards are associated with significantly more gross, and therefore net, benefit.

4. The frailty wards we looked at are much larger on average, particularly compared to respiratory wards

- This does not necessarily mean that one is causing the other - we did not take a random sample - but it could mean that what we are interpreting as frailty's effect on impact could actually just be size

5. Tech-enablement does not lead to improved impact on hospital avoidances, in contrast to the analysis of all virtual wards presented on the next slide – this stands against the observation

- Tech-enabled frailty pathways are associated with slightly fewer avoided NEL admissions than non-tech enabled frailty pathways
- This finding aligns with evidence from staff who suggested that '*tech-enabled remote monitoring is often not appropriate for most of the elderly and frail cohort*.'

Frailty & tech-enablement	*Frailty-focused, and tech-enabled*	*Frailty-focused, not tech-enabled*
Ward count	8	6
Total volume p.a.	12.314	7,562
Total associated NEL avoidances p.a.	5,276	3,298
Virtual ward admissions -> 1 NEL avoidance	2.33	**2.29**

Analysis of findings by tech-enablement (1/2)

Tech-enabled virtual wards promise to support the delivery of care by enabling clinical information to be readily available to inform clinical decision making and improve patient outcomes. Separating tech-enabled virtual wards from those without allows a comparison that allows us to **understand the effect tech-enablement has on the impact of a virtual ward**.

1. Admissions to tech-enabled virtual wards were associated with more avoided NEL admissions than non-tech-enabled wards.

- Our analysis suggests that currently in the South East region the use of technology is associated with larger associated reductions in NEL admissions.
- Tech-enabled wards in this analysis were similar in average size to non-tech enabled virtual wards, and both included a mix of delivery models, suggesting the difference in impact is likely driven by choices around the use of technology.

"Some patients need support with remote monitoring and not all patients are appropriate." – Virtual ward clinician

2. The cost of tech-enabled virtual wards are significantly higher than non-tech-enabled virtual wards, although net benefits are slightly higher.

- This discrepancy means that, despite a much higher gross benefit per patient, the net benefit per patient for tech-enabled virtual wards was only slightly higher than that for non-tech-enabled virtual wards.
- Tech-enabled virtual ward pathways are more expensive and are often associated with implementation delays.

"Digital technology procurement was a challenge due to slow and complicated governance processes resulting in delays." – Virtual ward manager

TECH-ENABLEMENT*	Yes	No
Ward count	11	9
Total volume p.a.	13,109	9,685
Total associated NEL avoidances p.a.	5804	3361
Virtual ward admissions -> 1 NEL avoidance	**2.26**	2.88
Total cost p.a.	£10,589,482	£3,562,722
Cost per virtual ward patient	£808	**£368**
Gross benefit p.a.	£16,750,829	£7,788,884
Gross benefit per virtual ward patient	**£1,278**	£804
Net benefit p.a.	£6,161,348	£4,226,162
Net benefit per virtual ward patient	**£470**	£436
Average ward size	1,192	1,076

Analysis of findings by tech-enablement (2/2)

3. Amongst those tech-enabled virtual wards, virtual wards with higher costs tend to be those established more recently, whilst the older tech-enabled virtual wards have costs in-line with the average across analysed virtual wards.

- The set-up costs involved with procuring technology providers, primarily remote-monitoring, and other set up costs likely inflates the per-patient cost for these pathways in our period of analysis. If this is the case, the same analysis run in a year's time should show a sharp fall in the per patient cost

Tech-enabled virtual wards by age – top & bottom 3	*Age in months (according to date of first admission in patient-level data)*	*Cost per virtual ward patient*
Ward 14	20	£842
Ward 18	20	£372
Ward 15	20	£777
Ward 3	10	£5,957
Ward 2	6	£1,063
Ward 17	6	£1,255

Analysis of findings by provider type

Several virtual ward staff suggested their context within an acute or community provider influenced the success of virtual ward operations. By grouping virtual ward services according their place within an acute or community healthcare provider we can **understand the extent to which these contexts influence the impact and cost-effectiveness of virtual wards**.

1. Virtual wards delivered by acute healthcare providers are more impactful than those from community providers in avoiding admissions.

- Acute virtual wards required fewer virtual ward admissions to 'generate' one avoided NEL admission, suggesting greater efficacy as an admission avoidance intervention.
- This difference in impact is not reflected in gross benefit figures. This is likely because community providers are more likely to be focused on frailty. One avoided frailty admission has a higher theoretical financial value in this model than other avoidances.

2. Virtual wards delivered by community healthcare providers may have benefited from economies of scale.

- There is a significant difference in average ward size between acute and community providers. The difference in gross financial cost per virtual ward may be driven by this scale factor.

PROVIDER TYPE*	*Acute*	*Community*
Ward count	9	7
Total volume p.a.	6,280	13,899
Total associated NEL avoidances p.a.	2,778	5,094
Virtual ward admissions -> 1 NEL avoidance	**2.26**	2.73
Total cost p.a.	£5,168,400	£7,682,317
Cost per virtual ward patient	£823	**£553**
Gross benefit p.a.	£8,157,511	£15,938,341
Gross benefit per virtual ward patient	£1,299	£1,147
Net benefit p.a.	£2,131,484	£8,256,025
Net benefit per virtual ward patient	£289	**£594**
Average ward size	670	1,986

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Conclusions

Conclusions

Key conclusions from our independent evaluation are presented below (subject to the stated caveats on the next slide)

1	Virtual Wards in South-East England are *associated* with **a positive impact on non-elective (NEL) hospital activity – on average 1 NEL admission 'avoided' was shown to be *correlated* with 2.5 virtual ward admissions,** with some more mature virtual wards achieving a 1:1 association between the 'avoided' non-elective admissions and virtual ward activity
2	There is evidence of **positive net financial benefits** associated with the regional virtual wards provision – the majority of virtual wards analysed generated an estimated positive net benefit.
3	**Black & minority ethnic (BME) people are consistently underrepresented in virtual ward patient cohorts.** However, there are significant gaps in ethnicity data recorded in patient level data. Respondents have identified several ways the system can better support these groups access virtual wards – which we recommend are taken forward immediately.
4	**The impact evidenced in this evaluation varies greatly between geographies and pathways** – with our qualitative evaluation understanding reasons driving this variation.
5	**It is clear that the longer they run, the more likely virtual wards are to show impact** – this is through a combination of higher volumes going through the wards, costs per admission typically falling over time, and the benefit per admission increasing.
6	**Our evaluation has identified a clear set of enablers** (including having sufficient funding, experienced staff, collaborative working, and strong clinical leadership) and **barriers** (inadequate resourcing, fragmented leadership, mis-aligned digital strategies) to effective virtual ward working.
7	**This evaluation is the starting point** – the South East needs to build on the evidence gathered and lessons learned in this evaluation, and to work closely with individual pathways to support continuous improvement of the virtual ward offering in the South East.

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Next Steps

Next Steps

High-level suggested next steps following this evaluation.

1. Socialise this document with key stakeholders

- *Share this document with key South East region, ICS, and Place stakeholders to share findings*

2. Additional impact analysis

- *Whilst this is currently the largest evaluation of its kind in the UK, our work identified a number of areas of evaluation/analysis that could be improved upon – including:*
    - *Evaluating the impact of early supported discharge beds in the South East region (as this evaluation focused primarily on admission avoidance beds)*
    - *Improve the robustness of these results by (1) improving the quality of input datasets including provider financial returns and provider patient-level datasets, and (2) making more robust assumptions on the value of avoided admissions based on South East data.*
    - *Use this evaluation's conclusions to develop and investigate new hypotheses on the drivers of differences in impact, cost, and benefit between virtual wards, such as acuity, length of stay, and demographics.*

3. System level

- *Continue to evaluate impact on an ongoing basis across the region (using our toolkit as the starting point, potentially with an automated dashboard)*
- *Through existing (or new) processes, ensure lessons learnt from evaluation are translated into on the ground changes*

4. Pathway level continuous improvement

- *This evaluation has reviewed at a high level the impact and success criteria for virtual wards. More can be done at the pathway level to do more in-depth assessments of what has worked well, what has worked less well – with a focus on implementing change at the service level*
- *We have identified that more could be done by the system to support access to virtual wards for certain groups – such as certain ethnic minority groups, or those without permanent residences. This should be looked into in more detail as a priority*

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Appendices

Contents

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116 to 117	*Appendix 5: Desk research resources*
118 to 122	*Appendix 6: Trend and impact test methodology*

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Appendix 1: References

Appendix 1: References

Below are the references utilised throughout the document.

1. Smith et al., 2014. NHS hospitals under pressure: trends in acute activity up to 2022.
2. Issar, 2021. The future of NHS human resources and organisational development report.
3. Department of Health and Social Care, 2023. The government's 2023 mandate to NHS England.
4. NHS England, 2022. Virtual ward including Hospital at Home.
5. Supporting clinical leadership in virtual wards – A guide for integrated care system clinical leaders.
6. What do virtual wards look like in England?
7. The Magenta Book.

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Appendix 2: Evaluation framework

Evaluation – summary aims and approach

This evaluation framework sets out a **structured approach** to delivering an evaluation that addresses the six areas identified in the initial invitation to tender (ITT) documentation, whilst also using the Treasury's Magenta Book evaluation approach.

The ITT for this project identified six areas to evaluate*

- **Cost efficacy** compared to an emergency medical admission.
- **Qualitative and quantitative evidence of virtual ward admission avoidance impact**.
- **Deep understanding of the core components of each virtual ward** and the **variation in the models.**
- **Evidence of equitable access and outcomes** for all patient groups.
- **Understanding of long-term trends** to support forecasting and planning.
- **Impact of technological enablement** *(TBC)

Using the Magenta Book 3-stage evaluation approach

1. Process evaluation: to understand the context within which the virtual wards have been implemented and support to develop a deep understanding of the core components of each virtual ward and the variation in the models.

2. Impact evaluation: to demonstrate quantitative and qualitative impact, with a focus on admission avoidance, provision of equitable access and outcomes, and inequalities.

3. Value for money evaluation : system cost benefit analysis.

**These areas form the basis of the evaluation, but through discussions with you, we have agreed on specific outcomes, and key lines of enquiry to test. These incorporate the 6 areas above, and are described in more detail in the rest of this evaluation framework*

Virtual wards Theory of Change

As set out in Magenta Book guidance (Appendix B), this evaluation **starts by articulating the Theory of Change** underpinning virtual wards. Clarity on inputs, outputs, outcomes, and impact allows key assumptions to be identified and, where they lack evidence, to become key lines of inquiry (KLOEs) for this evaluation. A rapid evidence evaluation (Appendix C) was carried out to understand how well-evidenced the assumptions underpinning this theory of change are. The below is a generalised theory of change and may vary across providers and pathways.

Inputs:

- Provision of **acute clinical care at home** for a short duration as an alternative to care in hospital.
- Digital platform that allows for the **remote monitoring** of a patient's condition
- **In-person care**, e.g., to deliver a care assessment or acute level interventions such as IV therapy.

Outputs:

- High utilisation of additional tech/non-tech enabled capacity to safely and effectively manage suitable patients with **a range of conditions,** including for people with respiratory problems and COVID-19, heart failure or acute exacerbations of a frailty-related condition.

Outcomes:

- **Reduced emergency department (ED) presentations.**
- **Reduced hospital admissions.**
- A more **cost-effective allocation** of system resources.
- **Improved paid/unpaid carer experience through** involvement in care planning and by ensuring adequate support and communication with clinical teams is in place.
- **Improved patient experience** by supporting increased patient choice and personalised care.
- **Improved staff experience** and beneficial for staff who cannot undertake patient-facing activities.

Impact:

- Patients **consistently receive safe and more convenient care in non-acute settings** such as their own homes or care homes and improves the experience of patients, carers, and staff.
- Systems can **narrow the gap between demand and capacity in hospitals** by reducing hospital activity.
- Health and care resources are deployed in the most **cost-effective** way.

Context for this Theory of Change:

- **Acute hospital care consumes almost half of the entire NHS budget** and **increasing demand for hospital beds** (influenced by a growing, ageing population with an increasing prevalence of chronic health problems, and changes in the technology used to diagnose and treat ill health).
- **Health policy is aimed at cutting the number of emergency and other admissions** by providing more, better services outside of hospital.
- Healthcare professionals have been considering **new ways to respond to the acute care needs of older people with frailty and other long-term conditions**.

Process evaluation overview

The process evaluation will aim to **understand planned and current delivery of virtual wards** across providers to assess whether plans have been effectively executed, and to understand drivers of positive delivery and common challenges. The process evaluation will also aim to **understand patient, carer, and staff experience** of virtual wards to date.

Evaluation outcomes

1. Understand whether virtual wards are being delivered as designed and, if not, how they are being delivered currently
2. Understand how patients, carers, and staff have experienced virtual wards so far

KLOEs

P1 – Are virtual wards being delivered as local providers intended?

- Which aspects of each virtual ward are being delivered as intended?
- What could be delivered more effectively?
- Were there any unexpected issues that obstructed delivery?
- Have the necessary financial and human resources been made available?
- To what extent have virtual wards reached the people they intended to reach?

P2 - How have contextual and external factors influenced the delivery and functioning of virtual wards?

P3 - What can be learned from the delivery of virtual wards so far?

- What do positive examples of delivery have in common?
- What common challenges have provider experienced in delivery?

P4 - How have patients, carers, and staff experienced virtual wards?

- What has the experience of virtual wards from the perspective of patients, carers, and staff been so far?
- Have patients, carers, and staff members from groups at risk of inequalities (including ethnicity, deprivation, gender) had significantly different experiences or access?

Evaluation outputs

1. ICS-level service description packs
2. Thematic analysis of virtual ward delivery experiences.
3. Tool kit to include detailed evaluation guidance with supporting documentation to ensure replicability

Detailed process evaluation approach (1/2)

Outcomes	KLOEs	Evaluation outputs	Method	Data source
Was the intervention delivered as intended?	• P1 – Was the intervention delivered as local providers intended? • P2 - How have contextual and external factors influenced the delivery and functioning of virtual wards? • P3 - What can be learned from the delivery?	For each virtual ward, understand the **planned and actual**: • Delivery process (timelines, lead providers, capacity, clinical leadership, referral sources etc.) • Workforce model (staffing mix, whole time equivalents, banding, agency proportion etc.) • Financial model (predicted cost, funding structure, governance, set up cost, running cost etc.) • Clinical model (speciality, acuity, triage model, care intensity, etc.) • Digital model (tech enablement level, tech provider, dashboards, etc.) **ICS-level virtual ward profiles packs** including a short narrative on delivery to date **Thematic analysis of virtual ward delivery experiences** including delivery challenges and how they were overcome based on evidence gathered	Gather information from the following sources: 1. **Comprehensive desk-based review of documentation and data** provided by Programme Team and providers (SOPs, business cases, UEC summit outputs, evaluations, original baselining activity, etc.) 2. **Survey** sent to all providers requesting information not sufficiently covered in documentation 3. If the first two sources are exhausted and there are still gaps, set **up 1-2-1 conversations** with providers to ensure they are filled Evidence from the above sources will be **analysed on a ward-by-ward basis** to create a service description and short 'delivery narrative' for each provider and virtual ward Thematic analysis of all wards to **identify common challenges and how they were overcome**, accounting for contextual factors	• SOP • Foundry • PLDS • Cost data from providers • Clinical leadership guidance (used for maturity matrices) • Regional tech enablement survey • Survey outputs • Any Interview outputs

Detailed process evaluation approach (2/2)

Outcomes	KLOEs	Evaluation outputs	Method	Data source
Patient experience	• P4 - How have patients, carers, and staff experienced virtual wards?	For each virtual ward: • Thematic understanding of overall **patient experience and access**, of experience and access for specific patient groups at risk of inequalities (including ethnicity, deprivation, gender), and any divergences between the two. Across virtual wards, an understanding of the factors experienced by staff that drive differences across virtual wards and providers, and drivers of any inequalities in patient experience.	Primarily a **synthesis and analysis of all existing work** from health organisations in the South East to capture experiences of patients, carers, and staff, with potential additional engagement to address any significant gaps. **Thematic analysis of patient, carer, and staff experience for each virtual ward, and an overall thematic analysis** across all virtual wards. **Separate analysis of experiences of patients, carers, and staff from groups at risk of inequalities**. Identification of any differences with the main analysis above.	• Summary outputs of existing engagement work • Outputs from engagement run as part of this project, including surveys, group engagements, and 1-2-1 interviews
Carer experience		For each virtual ward: • Thematic understanding of overall **carer experience**, of experience for specific carer groups at risk of inequalities (including ethnicity, deprivation, gender), and any divergences between the two. Across virtual wards, an understanding of the factors that drive differences across virtual wards and providers, and drivers of any inequalities in patient experience.		
Staff experience		For each virtual ward: • Thematic understanding of overall **staff experience**, of experience for specific staff groups at risk of inequalities (including ethnicity, deprivation, gender), and any divergences between the two. Across virtual wards, an understanding of the factors that drive differences across virtual wards and providers, and drivers of any inequalities in patient experience.		

Impact evaluation overview

The impact evaluation will aim to understand the degree to which virtual wards are delivering outcomes relating to **reductions in hospital activity**, and whether the extent of this impact varies for groups at risk of inequalities (including ethnicity, deprivation, gender).

Evaluation outcomes

1. Understand the degree to which virtual ward implementation is associated with reduced hospital activity
2. Understand potential drivers for differences in impact, including external factors
3. Understand the extent to which virtual wards have had a different impact on groups at risk of inequalities

KLOEs

IM1 – Has the implementation of virtual wards been associated with its intended impact of reducing hospital activity so far?

- To what extent can the outcomes be attributed to the intervention? How confident can we be of this?
- How much can be attributed to external factors?

IM2 – How might differences across virtual wards drive differences in impact?

- What features make a virtual ward more likely to realise its intended outcomes? Maturity? Technology?

IM3 – To what extent have different groups at risk of inequalities (including ethnicity, deprivation, gender) seen differences in impact and why?

Evaluation outputs

1. Robust quantitative analysis of potential impact of virtual wards on hospital activity
2. Analysis of potential drivers of differences in impact across the South East's virtual wards
3. Analysis of potential inequalities in impact on different groups

Detailed impact evaluation approach

Outcome	KLOEs	Evaluation outputs	Method	Data source
Reduced emergency department attendance **Reduced hospital admissions**	• IM1 – Is the implementation of virtual wards associated with a reduction in hospital activity?	For each pathway: • **Ratio of virtual ward activity to estimated ED attendances avoided** • **Ratio of virtual ward activity to estimated avoided admissions**	• Use pathway profile to **define the relevant cohort** in terms of fields available in SUS dataset for ED attendances and admissions • **Define the relevant geographies and hospitals** by linking PCNs to providers • **Rate and age standardise numbers of ED attendances** and generate a baseline based on similar areas • **Calculate ratio** of virtual ward bed days to estimated avoided ED attendances • **Rate and age standardise numbers of hospital admissions** and generate a baseline based on similar areas	• Patient-level dataset • Full SUS acute dataset (since 2018) • Age distribution data • Service description packs and any other process evaluation outputs • Outputs from engagement run as part of this project, including surveys, group engagements, and 1-2-1 interviews
	• IM2 – How might differences across virtual wards drive differences in impact?	Narrative on **drivers of high/low hospital activity avoidance ratios** based on understanding of differences in pathway delivery (service level descriptions) and differences in impact (results from IM1)	• Use pathway profiles to **identify potential relationships** between virtual ward features and impact on outcomes in IM1 • **Refine hypotheses** through engagement with virtual ward leaders focused on interpreting quantitative results in IM1	

Detailed impact evaluation approach

Outcome	KLOEs	Evaluation outputs	Method	Data source
Reduced emergency department attendance **Reduced hospital admissions**	• IM3 – To what extent have different groups at risk of inequalities (including ethnicity, deprivation, gender) seen differences in impact and why?	For each pathway: • IM1 outputs (ED attendance and admissions avoidance ratios) for groups at risk of inequalities (including ethnicity, deprivation, gender), at as granular a level as possible Narrative on potential **drivers of differences in impact** on groups at risk of inequalities	• **Re-run method from IM1** but define and identify groups of interest in SUS data and patient-level dataset • **Test findings from the above** as part of the same engagement set out in IM2	• Patient-level dataset • Full SUS acute dataset (since 2018) • Age distribution data • Service description packs and any other process evaluation outputs • Outputs from engagement run as part of this project, including surveys, group engagements, and 1-2-1 interviews

Cost-benefit evaluation overview

The cost-benefit evaluation will aim to **understand the balance of costs and benefits** delivered by individual virtual wards, and the intervention as a whole in the South East from a financial perspective, and more broadly.

Evaluation outcomes

1. Estimate whether virtual wards have led to a net financial benefit so far

→

KLOEs

C1 – Have virtual wards been cost-effective so far?

- What is the reference cost of each virtual ward?
- What are the direct financial costs and benefits for the relevant organisations and systems?
- What is the financial cost-benefit ratio?
- What are the broader costs and benefits, accounting for impact on all individuals, organisations, systems, and society?

Evaluation outputs

1. Reference costs for each virtual ward
2. Benefit for each virtual ward, and at the regional level
3. Cost-benefit ratio for each virtual ward, and at the regional level

Detailed cost-benefit evaluation approach

Component	KLOEs	Evaluation outputs	Method	Data source
A more **cost-effective allocation** of system resources	• C1 – Did the intervention have a net positive cost benefit impact?	For each virtual ward: • **Reference costs** (costs per patient per bed day) • Estimated financial value of **benefits (hospital activity avoided) for each unit of care** delivered based on impact evaluation outputs • Estimated **financial cost benefit ratio** based on the above unit costs • Qualitative analysis of **broader social cost benefit** of intervention, including experience of individuals and clinical impact	• Analyse cost data received from South East team, run '**data cleaning**' and assurance to identify any potential inaccuracies • **Divide any total cost figures by virtual ward total days of care** to calculate unit costs • Estimate net **quantitative value of benefits in financial terms** of avoided ED attendance and hospital admission using cost data from SUS by developing estimated value of avoided ED attendance and value of admissions using HRG code for each relevant cohort • **Qualitative analysis of 'value' of improved experience for patients, carers, and clinicians** through multiple lenses (financial, clinical, etc.), including impact on disadvantaged groups • **Qualitative assessment of broader social value** based on all outputs gathered by this evaluation, and desk research.	• Cost of admission / ED attendance for relevant cohort for each virtual ward • Research on impact of avoidances on system • Research on social value of improved experience

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Appendix 3: Virtual ward model profiles

Oxfordshire Countywide Hospital at Home Model Summary

The countywide Hospital at Home (H@H) model outlined below is jointly provided across organisational boundaries by three providers through a shared vision and process.

Provider/s	Pathway/s
Oxford University Hospitals NHS Foundation Trust	Oxon Acute Virtual Ward
Oxford Health NHS Foundation Trust	Oxford Health Virtual Ward
PML/DOCMED Federation Hub	H@H

Quality improvement

Patient and staff feedback is being utilised to identify service improvement areas and learning. **A single operational model was developed to support consistency and communication**

Operations

Operates 8am – 10pm, 7 days a week and accepts referrals for all patients who are acutely unwell who can be supported in the community. **Operates across organisational boundaries**.

Digital

Digital services with **interoperable flow of data**. **Interventions documented on the patient's electronic patient care record**.

Clinical

Automatically triaged following electronic referral. **Rehabilitation to regain or optimise functioning to reduce the risk of deconditioning**.
Rapid access to appropriate medical treatments.

Workforce

A medical consultant acts as the clinical lead for the delivery of virtual ward services in a team of ACPs, nurses, pharmacists, paramedics and occupational therapists.

*The hospital at home service is presented collectively as a single model as all three virtual ward pathways identified above operate from the same standard operating procedure.

Oxfordshire Children's Community Nursing (CCN) H@H Model Summary

Provider	Pathway
Oxford Health NHS Foundation Trust	Oxfordshire Children's Virtual Ward

The service works in partnership with the acute paediatric team and safely manages children in the home setting and escalates any concerns regarding a deteriorating child.

Quality improvement

Patient and staff feedback is being utilised to identify service improvement areas and learning.

Digital

The Children's Ambulatory Outreach at Home Virtual bed board is a virtual patient management system utilised by nurses to admit, document and discharge patients.

Operations

Clinical assessments and management of acutely unwell children in the community through **continued monitoring** of their condition until they are deemed fit for discharge.

Clinical

Delivers **three clinical pathways**: bronchiolitis, gastroenteritis and viral induced wheeze in over 2-year-olds, offering a structured method to either increase or decrease support depending on the severity of the child's illness.

Workforce

A medical consultant acts as the clinical lead. This model utilises a significant nursing cohort.

Buckinghamshire Hospital at Home Model Summary

Provider	Pathway
Buckinghamshire Healthcare NHS Trust	Buckinghamshire Hospital at Home

Patients are referred for admission avoidance or early supported discharge. They receive a mix of automated remote monitoring, virtual, and face-to-face care. The service is tailored to patient needs.

Quality improvement

Feedback from patients, carers, and staff is collected through surveys and meetings with a shift towards digital collection for patients and carers. Adjustments are made based on this feedback to improve operations.

Digital

Staff document interventions in the patient's electronic care records. Services, including telephone and in-person consultations, are adapted to patient needs, with multilingual information expanding on the remote platform.

Operations

Patients are referred by community clinicians, acute clinicians, or through triage from ambulance services. Conditions accepted include respiratory, clinical infections, palliative end of life and frailty. The service offers automated remote monitoring, virtual reviews, and face-to-face care.

Clinical

MDT ward rounds involve consultants, nurses, and other healthcare professionals, offering a range of clinical interventions from IV treatments and palliative care to oxygen therapy and wound management.

Workforce

Clinical accountability is held by a medical consultant. The team comprises, nurses, AHPs, pharmacists, administrators, and scientists.

Berkshire West Frailty Model Summary

Provider	Pathway
Berkshire Healthcare NHS Foundation Trust	Berkshire West Frailty

The key objective is to reduce unnecessary hospital admissions and promote early supported discharge. The service has seen improvements in clinical supervision and patient communication.

Quality improvement

Improved quality of clinical supervision and communication about the service's role to patients. **Training for staff career advancement** has been implemented.

Digital

EHIA initiated to support the development and learning of the services' digital accessibility, specifically addressing health inequalities in patient populations.

Operations

This service operates 8am to 8pm, 7 days a week. The focus is on **preventing unnecessary hospital admissions.** Referrals for the service come from a broad range of sources.

Clinical

An **MDT huddle occurs daily**, seven days a week. This meeting is **attended by various healthcare professionals** and the service provides clinical interventions such as medications, pulse oximeters and oxygen therapy.

Workforce

A consultant geriatrician acts as the clinical lead. The staff mix includes ACP, non-registered clinical health and care staff, nurses, pharmacists and physiotherapists.

Berkshire West Virtual Acute Care Unit Model Summary

Provider	Pathway
Royal Berkshire NHS Foundation Trust	Berkshire West VACU

Patients with specific conditions are managed remotely to avoid admission, or to support early discharge.

Quality improvement

Feedback from patients, carers, and staff, collected via surveys and direct feedback methods, drives improvements in care approaches, operational timings, and staffing models.

Digital

Remote monitoring services are not provided, and digital inclusion strategies are being considered in the procurement of new digital solutions.

Operations

Patients are referred by acute clinicians for conditions like pulmonary embolism, pneumonia, alcohol withdrawal, and COVID-19 with management conducted remotely via video or voice calls.

Clinical

MDT ward rounds occur thrice weekly, complemented by daily huddles, involving consultants, doctors in training, nurses, physician associates, and pharmacists. A range of treatments and procedures are in place, including blood transfusions and electrolyte replacement.

Workforce

A medical consultant holds clinical accountability and leads an MDT of nurses, pharmacists, administrators, and scientists.

Respiratory Model Summary

The Respiratory model outlined below is provided by Frimley Health NHS Foundation Trust. They are the sole provider of specialist respiratory virtual ward services within the Frimley ICS.

Provider/s	Pathway/s
Frimley Health NHS Foundation Trust	Respiratory (AIR)
	Respiratory South

Quality improvement

Patient and Carer experiences are captured through 'Friends and Family' surveys. Staff feedback is captured during staff meetings or nationally mandated staff surveys. Feedback captured has been used to improve the availability of medication for patients and reduce GP workload.

Digital

Patient records are divided between EMIS in the south and EPIC/RiO in the north, with the BHFT Frailty VW (N) and the respiratory team using RiO. A hybrid system of EPIC and RiO is used in the north. Remote monitoring is conducted exclusively through telephone communication, and patients manually monitor their O2 saturation, which is then reported to VW staff and manually recorded in the EMIS EPR. The healthcare practice emphasises both face-to-face and telephone interventions to ensure comprehensive patient care and digital inclusion.

Workforce

Virtual ward capabilities are achieved through the integration of teams, leveraging the existing respiratory workforce and their expertise, while also augmenting it with additional staff to expand and enhance the delivery of respiratory virtual ward services.

Operations

The VW operates 7 days per week between 08:00-20:00. Supporting admission avoidance and early supported discharge. Acute hospitals, community healthcare services and the local ambulance service refer into the service.

Clinical

In the SPA, triage is centralised, differing from the North's approach where it is managed by a team of specialist respiratory staff who handle direct referrals and integrate these into the FHFT Virtual Ward pathways. It provides daily face-to-face care supported by telephone monitoring and weekly MDT ward rounds.

Urgent and Emergency Care Model Summary

Provider/s	Pathway/s
Frimley Health NHS Foundation Trust	Urgent and Emergency Care

The urgent and emergency care model outlined below serves to support same day emergency care services in Frimley by providing a pathway for admission avoidance and early supported discharge home.

Quality improvement

The 'Friends and Family' survey was implemented as a mechanism to capture patient and carer experiences in October 2023 and has not been utilised to inform virtual ward service improvement efforts. Whilst staff feedback is gathered through the National NHS Staff Survey.

Digital model

Remote monitoring has been implemented using the Docobo digital platform. Pulse Oximetry equipment is provided to patients and telephone monitoring is offered where a digital approach is not appropriate.

Operating model

The service operates 08:30-18:30 Mon-Fri and 09:00-17:00 weekends to enable both admission avoidance and early supported discharge from SDEC services in Frimley. Referrals are generated by A&E, AECU, GP's and local ambulance services.

Clinical model

Clinical triage is exclusively conducted by an acute medicine specialist. Face-to-face care is supported by daily remote monitoring. MDT ward rounds are performed 5 days per week and attended by the virtual ward ACP and medical consultant.

Workforce model

The UEC virtual ward is ACP led with in-reach from medical consultant with day-to-day oversight from nurse consultant. There are ongoing vacancies for nursing and non-registered clinical health and care staff.

Frailty Model Summary

Provider/s	Pathway/s
Frimley Health NHS Foundation Trust	FVW SOUTH

The FICS Frailty Virtual Ward is a model implemented by two providers within the ICS. The Frailty South offering is delivered through Frimley Health NHS Foundation Trust and constitutes an essential element of the Virtual Hospital.*

Quality improvement

Multiple methods for capturing patient, carer and staff experience are utilised within this model. This has provided opportunities to provide upstream feedback to shape operational service improvement efforts and downstream feedback to guide the professional development of health and care staff.

Digital

Digital and remote monitoring platforms are consistent across all FHFT virtual wards. The remote monitoring dashboard Docobo is integrated with the connected care shared record (which teams can access through EPIC or EMIS). Vitals are recorded manually by the patient and shared via an app or telephone call.

Operations

The Frailty model acts as a core service within the broader 'Virtual Hospital' Model delivered by FHFT. The FVW SOUTH pathway operates 8-8, 7 days a week for acute and community frailty patients referred within the FHFT Trust. Additionally, it provides out of hours support to adjacent specialty virtual wards within FHFT.

Clinical

All referrals (acute and community) are triaged through the SPA ANP or consultant. Interventions include IV and SC delivery of medications, catheter care, functional assessments and a range of blood and urine analysis available as POCT's.

Workforce

The frailty model features a dedicated virtual ward MDT consisting of ACPs, Consultant Doctors, Nurses, Occupational Therapists and Physiotherapists.

*The Frailty North is managed by Berkshire Healthcare NHS Foundation Trust.

Oncology Model Summary

Provider/s	Pathway/s
Frimley Health NHS Foundation Trust	Oncology VW

The Oncology model is provided by Frimley Health NHS Foundation Trust, the sole provider of specialist Oncology virtual ward services within the ICS and operate as a specialist virtual ward integrated within the FHFT 'Virtual Hospital'.

Quality improvement

Patient and carer feedback is collected through national experience surveys. Virtual ward staff are additionally given the opportunity to provide feedback during team and individual meetings.

Digital model

The virtual ward utilises an EPR and provides clinicians access to relevant GP documentation. There are remote monitoring capabilities in place which require staff to manually inputting data communicated via telephone into the patient EPR.

Operating model

Virtual ward services operates Mon-Fri 8-4pm service. It support both admission avoidance and early supported discharge from GP, oncology outpatients, acute inpatient and Macmillan support services in Frimley. Referrals are typically generated by clinicians however; patients can directly access the service by self-referral.

Clinical model

Patients are triaged daily by Cancer ACP's, CNSs. There is a wider cancer MDT of Oncologists, AHPs, Acute medical physicians and other in-patient teams. Cancer CNSs conduct telephone reviews, face to face consultations are only available in hospital. Patients are discussed in cancer site specific MDTs if appropriate (clinical need such as cancer progression, or worsening symptom burden).

Workforce model

Work is ongoing to determine workforce needs. Currently, clinical support is delivered by the existing CNSs without additional funding. Plans are underway to submit a funding proposal to the Cancer Alliance.

Frailty North Ward Summary

Provider/s	Pathway/s
Berkshire Healthcare NHS Foundation Trust	Frailty North Ward

The service offers face-to-face care for adults over 18 in health/social crises, operating 7 days a week with a focus on avoiding unnecessary admissions and enabling early discharge.

Quality improvement

Patient feedback is systematically gathered via the IwantGreatCare platform, while feedback from carers is not collected. Staff feedback is informally collected daily during morning huddles and in one-on-one meetings. staff feedback has been used to review and potentially revise virtual ward processes and protocols.

Digital model

For all patients referred to the Virtual Ward, staff complete and update an electronic Virtual Ward capture form upon patient discharge from the UCR/VW pathway. Currently, remote monitoring is not implemented. An EHIA has been initiated across all virtual ward services to support the development and learning of virtual ward/digital accessibility.

Workforce model

The team comprises of a wide skill mix with clinical accountability resting with the virtual ward Consultant Geriatrician. No temporary or agency staff reported to be employed.

Operating model

The service provides face-to-face care for adults over 18 experiencing health and/or social crises, characterised by a sudden decline in health and wellbeing. It aims at avoiding unnecessary admissions and facilitating early supported discharge. The service operates 7 days a week.

Clinical model

After initial triage, a team member visits the patient for assessment and to agree on a treatment plan, which may include IV fluids, IV antibiotics, palliative care (as needed), nebulisers, and suppositories. Multidisciplinary team (MDT) rounds take place daily, seven days a week. The team consists of advanced clinical practitioners, consultants, nurses, paramedics, pharmacists, and physiotherapists.

Virtual Health Hub Model Summary

Provider/s	Pathway/s
Hampshire Hospitals NHS Foundation Trust	Tissue Viability VW, Acute diagnostics virtual ward, Acute Respiratory Infection, General Medicine, Heart Function, COPD, Care Home Virtual Ward, Frailty & Ortho-geriatric Virtual Ward, South West Care Home Virtual Ward, High Intensity Users

The Virtual Health Hub incorporates a wide range of specialist pathways, which draw upon a broad mix of clinical expertise.* The individual virtual wards share a common set of processes, except for the Frailty and COPD pathways which have their own specific requirements.

Quality improvement

Patient, carer, and staff feedback is collected regularly and used to inform service improvements.

Digital model

Utilises remote monitoring and telephone/video conferencing, but there is limited (to no) interoperability and a lack of support for developing data dashboards.

Operating model

Provides a 7-day-a-week service with extended hours with internal referrals managed through a digital referral systems.

Clinical model

Triaged following electronic referral (or referral via the single point of access), with appropriate patients proactively followed up by the team. Ward rounds occur once per week per virtual ward.

Workforce model

Contains a broad mix of clinical expertise and is led day-to-day by a Consultant Nurse, Lead Pharmacist, and Clinical Service Manager.

*The Virtual Health Hub embraces 10 specialist virtual wards which share the same SOP. Different virtual wards have individual SOPs too, but these were unavailable at the time of the evaluation.

Solent Frailty Model Summary

The Solent frailty model outlined below is delivered across Solent NHS Trust to provide community-based virtual ward support.

Provider/s	Pathway/s
Solent NHS Trust	Portsmouth Frailty
	Southampton Frailty

Quality improvement

Patient and Carer feedback is gathered via the Remote Monitoring provider and used to inform service improvements.

Operating model

Remote monitoring is utilised to reduce the need for hospital admission within the elderly and frail patient cohort. This is delivered across-organisational boundaries via face-to-face interventions and support.

Digital model

Remote monitoring is in situ utilising the Doccla platform. Patient vitals are recorded and automatically uploaded to a monitoring dashboard which interoperates with the SYSTEM1 EPR for documentation.

Clinical model

Face-to-face visits are supported by patient instigated remote monitoring. MDT meetings are conducted once per day and five days per week to plan the delivery of a both medical and therapeutic clinical interventions.

Workforce model

This virtual ward model is led by consultant doctors with an MDT consisting of ACPs, nurses and non-registered clinical health and care staff. Accounts have been given to suggest ongoing recruitment challenges and the need for agency staff to support this virtual ward model.

Isle of Wight Respiratory Model Summary

Provider/s	Pathway/s
Isle of Wight NHS Trust	Respiratory Virtual Ward

This model was built upon an established respiratory nurse specialist service and Community Rapid Response Team and utilises tech-enabled care at home to achieve admission avoidance.

Quality improvement

Patient and Carer feedback is gathered and compiled into Patient Experience reports, which are used to improve the service.

Digital

Digital services with **interoperable flow of data**. **Interventions documented on the patient's electronic patient record** (SystemOne) and GP records accessed via CHIE. Interoperability with remote monitoring (Whzan) requires manual initiation.

Operating

Built on the COVID Oximetry virtual ward model (2020), adding frailty (2022) and OHPAT (2023). The virtual ward operates 7 days per week between 08:00 – 18:00. With patients to call 111/999 for out of hours support.

Clinical

Triaged following clinical review against inclusion criteria. Patient must be 'Safe' to stay at home.
Admission avoidance, supports early discharge and improves clinical trajectory and rehabilitation for **patients diagnosed with COVID, LRTI or assessed and confirmed frailty.** Safe and effective use of prescribed medicines, multidisciplinary support, signposting to other services.

Workforce

Clinical oversight are provided by Geriatric and Respiratory consultants and consultant nurses whilst utilising community services to support rehabilitation and long-term needs.

East Kent Model Acute Summary

Provider/s	Pathway/s
East Kent Hospitals University NHS Foundation Trust	KM_EK_EKHUFT_Heart KM_EK_EKHUFT_OPATIV KM_EK_EKHUFT_ARI

The East Kent model outlined below is jointly provided by KCHFT and EKHUFT. It delivers virtual ward services across frailty, cardiac, respiratory and general medicine specialities.

Quality improvement

Patient and Carer experiences are captured through surveys delivered through the virtual ward monitoring hub platform. Staff feedback is recorded through dedicated meetings for feedback. Feedback captured has been used to improve patient-led clinical decision making and identify staff training needs.

Digital

Remote monitoring is performed via point of care tests, ECG and POCUS machines integrating with the Docobo monitoring dashboard. All necessary equipment is provided to patients with face-to-face interventions where a digital approach is not possible.

Operations

Virtual ward services and support are provided 7 days per week between 08:00-20:00 to support both admission avoidance and early supported discharge from acute hospital settings. Referrals are generated by virtual ward in reach into the acute setting and clinician-to-clinician referrals from community services.

Clinical

Daily face-to-face care supported by automated remote monitoring. MDT ward rounds are performed 7 days per week to deliver medical management to frailty, cardiac, respiratory patients.

Workforce

Virtual ward capabilities are delivered through a hybrid model utilising both healthcare professionals staffed within the virtual ward and utilising pre-existing allied health professional community teams.

East Kent Community Summary

Provider/s	Pathway/s
Kent Community Health NHS Foundation Trust	KM_EK_KCHFT_Frailty

The East Kent model outlined below is jointly provided by KCHFT and EKHUFT. It delivers virtual ward services across frailty, cardiac, respiratory and general medicine specialities.

Quality improvement

Patient and Carer experiences are captured through surveys delivered through the virtual ward monitoring hub platform. Staff feedback is recorded through dedicated meetings for feedback. Feedback captured has been used to improve patient-led clinical decision making and identify staff training needs.

Digital

Remote monitoring is performed via point of care tests, ECG and POCUS machines integrating with the Docobo monitoring dashboard. All necessary equipment is provided to patients with face-to-face interventions where a digital approach is not possible.

Operations

Virtual ward services and support are provided 7 days per week between 08:00-20:00 to support both admission avoidance and early supported discharge from acute hospital settings. Referrals are generated by virtual ward in reach into the acute setting and clinician-to-clinician referrals from community services.

Clinical

Daily face-to-face care supported by automated remote monitoring. MDT ward rounds are performed 7 days per week to deliver medical management to frailty, cardiac, respiratory patients.

Workforce

Virtual ward capabilities are delivered through a hybrid model utilising both healthcare professionals staffed within the virtual ward and utilising pre-existing allied health professional community teams.

West Kent Acute Summary

Provider/s	Pathway/s
Maidstone And Tunbridge Wells NHS Trust	West Kent MTW Acute Pathway

The West Kent model is delivered jointly by Kent Community Health NHS Foundation Trust and Maidstone & Tunbridge Wells NHS Trust. It is used to provide both frailty and general medicine ward-level care at home.

Quality improvement

Patient experiences are captured through Friends and family feedback forms. Carer feedback is not routinely sought. Staff feedback is recorded through electronic staff surveys. Feedback captured has been used to review processes for dispensing patient medications.

Digital model

Remote monitoring has been implemented using the Luscii digital platform. This is integrated with the Sunrise EPR platform for automated data sharing. All necessary equipment is provided to patients with face-to-face interventions where a digital approach is not possible.

Operating model

Virtual ward services and support are provided 7 days per week between 08:00-20:00 to support both admission avoidance and early supported discharge from acute hospital settings. Referrals are generated by virtual ward in reach into the acute setting and clinician-to-clinician referrals from community services.

Clinical model

Face-to-face care is supported by daily remote monitoring. MDT ward rounds are performed 5 days per week to deliver medical management to frailty patients.

Workforce model

A medical consultant acts as the clinical lead for the delivery of virtual ward services in a team of nurses and pharmacists.

West Kent Community Summary

Provider/s	Pathway/s
Kent Community Health NHS Foundation Trust	KM_WK_KCHFT_Frailty

The West Kent model is delivered jointly by Kent Community Health NHS Foundation Trust and Maidstone & Tunbridge Wells NHS Trust. It is used to provide both frailty and general medicine ward-level care at home.

Quality improvement

Patient experiences are captured through Friends and family feedback forms. Carer feedback is not routinely sought. Staff feedback is recorded through electronic staff surveys. Feedback captured has been used to review processes for dispensing patient medications.

Digital model

Remote monitoring has been implemented using the Luscii digital platform. This is integrated with the Sunrise EPR platform for automated data sharing. All necessary equipment is provided to patients with face-to-face interventions where a digital approach is not possible.

Operating model

Virtual ward services and support are provided 7 days per week between 08:00-20:00 to support both admission avoidance and early supported discharge from acute hospital settings. Referrals are generated by virtual ward in reach into the acute setting and clinician-to-clinician referrals from community services.

Clinical model

Face-to-face care is supported by daily remote monitoring. MDT ward rounds are performed 5 days per week to deliver medical management to frailty patients.

Workforce model

A medical consultant acts as the clinical lead for the delivery of virtual ward services in a team of nurses and pharmacists.

Medway Model Summary

Provider/s	Pathway/s
Medway Community Healthcare	KM_MS_MCH_ARI
Medway NHS Foundation Trust	KM_MS_MFT_SMART

The virtual ward model for delivering respiratory virtual ward services in Medway is summarised below. This service is delivered by Medway Community Healthcare Provider.

Quality improvement

Patient and staff feedback is collected through digital surveys and in-person meetings. The carer experience is not routinely captured. Patient feedback has not been reported to be utilised in quality improvement however, staff feedback has led to staffing and training improvements.

Digital model

The virtual ward utilises an EPR and provides clinicians access to relevant GP documentation. Remote monitoring capabilities are in place which feed into a monitoring dashboard however, the dashboard does not directly integrate with the EPR system.

Operating model

This virtual ward supports both admission avoidance and early supported discharge from acute hospital settings. Referrals into the service take place through clinician-to-clinician handovers from both the community and acute settings as well as via patient self-referrals directly into the service.

Clinical model

Patients are triaged daily, and the care delivery method such as face to face or telephone review being adapted to meet patient acuity. POCT is also available within this virtual ward alongside a full suite of therapeutic equipment.

Workforce model

A medical consultant holds clinical accountability and leads an MDT composed of nurses, physiotherapists and pharmacy technicians.

West Kent Community Summary

Provider/s	Pathway/s
Kent Community Health NHS Foundation Trust	KM_WK_KCHFT_Frailty

The West Kent model is delivered jointly by Kent Community Health NHS Foundation Trust and Maidstone & Tunbridge Wells NHS Trust. It is used to provide both frailty and general medicine ward-level care at home.

Quality improvement

Patient experiences are captured through Friends and family feedback forms. Carer feedback is not routinely sought. Staff feedback is recorded through electronic staff surveys. Feedback captured has been used to review processes for dispensing patient medications.

Digital model

Remote monitoring has been implemented using the Luscii digital platform. This is integrated with the Sunrise EPR platform for automated data sharing. All necessary equipment is provided to patients with face-to-face interventions where a digital approach is not possible.

Operating model

Virtual ward services and support are provided 7 days per week between 08:00-20:00 to support both admission avoidance and early supported discharge from acute hospital settings. Referrals are generated by virtual ward in reach into the acute setting and clinician-to-clinician referrals from community services.

Clinical model

Face-to-face care is supported by daily remote monitoring. MDT ward rounds are performed 5 days per week to deliver medical management to frailty patients.

Workforce model

A medical consultant acts as the clinical lead for the delivery of virtual ward services in a team of nurses and pharmacists.

West Kent Community Summary

Provider/s	Pathway/s
Kent Community Health NHS Foundation Trust	KM_WK_KCHFT_Frailty

The West Kent model is delivered jointly by Kent Community Health NHS Foundation Trust and Maidstone & Tunbridge Wells NHS Trust. It is used to provide both frailty and general medicine ward-level care at home.

Quality improvement

Patient experiences are captured through Friends and family feedback forms. Carer feedback is not routinely sought. Staff feedback is recorded through electronic staff surveys. Feedback captured has been used to review processes for dispensing patient medications.

Digital model

Remote monitoring has been implemented using the Luscii digital platform. This is integrated with the Sunrise EPR platform for automated data sharing. All necessary equipment is provided to patients with face-to-face interventions where a digital approach is not possible.

Operating model

Virtual ward services and support are provided 7 days per week between 08:00-20:00 to support both admission avoidance and early supported discharge from acute hospital settings. Referrals are generated by virtual ward in reach into the acute setting and clinician-to-clinician referrals from community services.

Clinical model

Face-to-face care is supported by daily remote monitoring. MDT ward rounds are performed 5 days per week to deliver medical management to frailty patients.

Workforce model

A medical consultant acts as the clinical lead for the delivery of virtual ward services in a team of nurses and pharmacists.

Medway Model Summary

Provider/s	Pathway/s
Medway Community Healthcare	KM_MS_MCH_ARI
Medway NHS Foundation Trust	KM_MS_MFT_SMART

The virtual ward model for delivering respiratory virtual ward services in Medway is summarised below. This service is delivered by Medway Community Healthcare Provider.

Quality improvement

Patient and staff feedback is collected through digital surveys and in-person meetings. The carer experience is not routinely captured. Patient feedback has not been reported to be utilised in quality improvement however, staff feedback has led to staffing and training improvements.

Digital model

The virtual ward utilises an EPR and provides clinicians access to relevant GP documentation. Remote monitoring capabilities are in place which feed into a monitoring dashboard however, the dashboard does not directly integrate with the EPR system.

Operating model

This virtual ward supports both admission avoidance and early supported discharge from acute hospital settings. Referrals into the service take place through clinician-to-clinician handovers from both the community and acute settings as well as via patient self-referrals directly into the service.

Clinical model

Patients are triaged daily, and the care delivery method such as face to face or telephone review being adapted to meet patient acuity. POCT is also available within this virtual ward alongside a full suite of therapeutic equipment.

Workforce model

A medical consultant holds clinical accountability and leads an MDT composed of nurses, physiotherapists and pharmacy technicians.

Dartford and Gravesham Model Summary

Provider/s	Pathway/s
Dartford And Gravesham NHS Trust	KM_DGS_DGT_HatH
	KM_DGS_DGT_Heart
	KM_DGS_DGT_Paed
	KM_DGS_DGT_Frailty

The Dartford and Gravesham model outlined below encompasses four specialist pathways. It is used to deliver virtual ward services across frailty, cardiac, respiratory, paediatric and general medicine specialities.

Quality improvement

Patient experiences are captured using electronic or paper-based 'Friends and Family' survey however, the experience of carers is not routinely captured. Staff feedback to captured during regular team meetings and has been used to improve clinical handover processes.

Operating model

Virtual ward services and support are provided 7 days per week between 08:00-18:00 to support admission avoidance and early supported discharge. Out of hours cover is jointly shared between acute and community teams. Referrals are typically generated in the acute setting.

Digital model

This model currently operates using the Current Health platform to achieve digitally enabled and automated remote monitoring. However, paper-based patient documentation necessitates a manual transcription of information from the dashboard to patient notes.

Clinical model

Triage is conducted by a virtual ward clinician. Wards within this model are equipped to deliver IV and SC medications, conduct POCTs and deliver inhaled therapies. A consultant-led daily MDT is attended by a team of AHPs and specialist doctors, as necessary.

Workforce model

This virtual ward model is led by specialist consultants with an MDT of nurses and therapy AHPs. Vacancies are most prominent in specialist pathways such as paediatrics, requiring additional temp or agency cover.

*The hospital at home service is presented collectively as a single model as all three virtual ward pathways identified above operate from the same standard operating procedure.

Surrey Downs Virtual Ward Model Summary

Provider/s	Pathway/s
Epsom And St Helier University Hospitals NHS Trust	Surrey Downs Virtual Ward

Surrey Downs operates one virtual ward designed to provide hospital level care, intervention and medical oversight to a varied range of patient cohorts requiring urgent care and treatment including those living with frailty, heart disease and respiratory disease

Quality improvement

Patient experience is routinely collected whilst staff feedback is provided ad hoc. Patient experience is actively used for quality improvement and to share learnings across the system.

Digital

Patient information is shared in compliance requirements to facilitate individualised care. Alternative arrangements are made where the use of technology is not suitable for a patient.

Operations

One virtual ward team treating adults aged 18 or over requiring hospital level care. The service provides rapid assessment and comprehensive wrap around care to people in their own home.

Clinical

Designed to provide hospital level care, a range of interventions and medical oversight to patients in their own homes including discharge support for patients in hospital on an improving trajectory and those **showing early signs of deterioration in the community.**

Workforce

The virtual ward comprises of a multidisciplinary team which include doctors, advanced care practitioners, physician associates, nurses, therapists, pharmacist, Rehabilitation support workers, co-ordinators and administrators.

East Surrey Virtual Ward Model Summary

Provider	Pathway
Surrey And Sussex Healthcare NHS Trust	East Surrey virtual ward

The service, delivered collaboratively by multiple providers, offers a single access point for referrals, both early supported discharge to aid discharges.

Quality improvement

There are plans to gather feedback via the Surrey ICB monitoring platform. A collective agreement is in place to use insights for quality improvement and to share learnings.

Digital model

Daily reviews of patients are recorded electronically, and the nursing team conducts face-to-face monitoring and treatment. A remote monitoring platform will be centrally procured.

Operating model

Delivered in collaboration with multiple providers offering a single point of access for referrals providing an early supported discharge model to support discharges.

Clinical model

Patients return **home where the virtual ward team continues their care in the community.** Suitable for short-term intervention, these patients, including those with dementia, should be able to stay safely in their own environment.

Workforce model

Nursing and support staff: two matrons and two HCAs. Additional support is provided by the UCR and ICT when necessary.

Ashford and St Peter's Model Summary

Provider	Pathway
Ashford And St Peter's Hospitals NHS Foundation Trust	Frailty VW

The service, delivered collaboratively by multiple providers, offers a single access point for referrals, employing both early supported discharge and admission avoidance models to aid discharges and prevent readmissions.

Quality improvement

Patient and carer feedback is collected through various channels**.** Staff suggestions from MDT meetings are considered for improvement.

Digital model

Personalised care plans are tailored to each patient's digital abilities and include face-to-face and telephone support. 'Tech Angels' are being introduced to facilitate implementation.

Operating model

Service focused on personalised care through admission avoidance and early supported discharge. Referrals can come from a range of sources.

Clinical model

The MDT is lead by a consultant geriatrician as the accountable clinician. Various healthcare professionals are brought into the MDT according to need to deliver a range of acute-level interventions including palliative medications delivered by syringe driver.

Workforce model

Nursing and support staff: two matrons and two HCAs. Additional support is provided by the UCR and ICT when necessary.

ESHT General VW Summary

The East Sussex virtual ward model is delivered solely by the East Sussex Healthcare NHS Trust. It offers a multi-discipline and digitally enabled virtual ward service 7 days per week.

Provider	Pathway
East Sussex Healthcare NHS Trust	ESHT Virtual Ward

Quality improvement

Patient experience feedback has led to better processes for distributing discharge letters. Similarly, staff feedback has influenced the functioning of the Virtual Ward Hub, facilitating a transition to working on the same site.

Digital model

Remote monitoring of pulse oximetry, blood pressure, and temperature is carried out using the Current Health automated platform. This data is then integrated into Nerve Centre for Board Round activities and duplicated in the SystmOne EPR platform for clinical documentation.

Operating model

ESHT provides an integrated model offering complete step-up and step-down Virtual Ward (VW) services to all adults registered with a local GP. This includes a core team and a coordinating Virtual Health Hub, enhanced with specialist care in cardiac, respiratory, and frailty seven days a week.

Clinical model

Triage is conducted by VW clinicians within the Virtual Ward Hub. Face-to-face care is supported by digitally enabled daily remote monitoring. MDT ward rounds are attended by a multi-specialty MDT seven days per week.

Workforce model

Led by consultant doctors and primarily staffed by dedicated nurses, with significant representation from AHPs. Nurses also account for most vacant positions.

SCFT Hospital@Home Summary

The service provides care for acute conditions, aiming to facilitate admission avoidance and earlier discharge from hospital. It offers daily patient contact and regular MDT review.

Provider	Pathway
SCFT in partnership with UHSx and SaSH Hospital@Home	• VW Midhurst Palliative Care • BH and HWLH Virtual Ward Respiratory • CHMS Virtual Ward Other Specialities • Worthing and Chichester VW

Quality improvement

Patient, carer and staff feedback has led to the new general VW model evidenced in the evaluation from the pilot completed. Creating a greater impact on system flow, admission avoidance and improved outcomes

Digital model

Care plans and drug history (or medicines on admission) are documented on SystmOne. Patients are assessed for the suitability of remote monitoring devices at any stage.

Operating model

The service focuses on acute conditions like respiratory issues and frailty. It aims to reduce hospital admissions and enable earlier discharges through nursing, therapy, and care at home.

Clinical model

All referrals are reviewed within 2 hours. The service caters to patients over 18, with daily contact through various methods. Board Rounds and Virtual Ward Rounds/MDTs are conducted regularly for discharge planning and case discussions.

Workforce model

The service has 7.9 WTE permanent staff including nurses and consultants, overseen by a Senior Clinical Decision Maker (this data is for partially delivered VW across Sussex and may not be representative of total service delivery).

Urgent Community Response (UCR) Plus Summary

Provider	Pathway
Sussex Community NHS Foundation Trust	UCR Plus

UCR staff and a GP jointly manage the service delivery, co-located to offer multi-specialty enhanced care aimed at reducing unnecessary hospital admissions.

Quality improvement

Patient, carer and staff feedback has led to the new general VW model evidenced in the evaluation from the pilot completed. Creating a greater impact on system flow, admission avoidance and improved outcomes.

Digital model

All referrals are recorded on the appropriate UCR or UCR Plus Caseload in SystmOne.

Operating model

The service delivery is jointly handled by UCR staff and a GP. They are co-located to provide multi-specialty enhanced care. The primary goal is to avoid unnecessary hospital admissions.

Clinical model

UCR, in partnership with ACP/Clinical Lead and UCR GP, assesses referrals for eligibility in the UCR Plus program, targeting patients over 18. It includes daily board rounds for care coordination, and collaboration with additional services for holistic care delivery.

Workforce model

The UCR GP is responsible for medical decision-making and oversight relating to the episode of care.

Acorns CYP Virtual Ward Summary

Provider	Pathway
University Hospitals Sussex NHS Foundation Trust	Acorns Service

The data and information on Acorns service has been captured using service specification and SOP

The service offers expert CYP outreach care, such as IV therapy and nutrition management, for children up to 17 years old, facilitated by skilled nurses through early hospital discharge and admission avoidance for a wide range of needs.

Quality improvement

The service provides regular evaluation to inform quality improvement. This includes questionnaires that include an opportunity for parents/carers to comment improvements, to meet the requirements of the Francis inquiry report (2013). This has led to an 81.6% reduction in re-attendance in ED.

Digital model

The service provides telephone and video assessment for patients with both operational and clinical pathways to manage PEWS. Patients are also able to access Accurx

Operating model

The H@H service, available seven days a week and following a visit to the Children's Emergency Department, supports early hospital discharge for children with complex health needs or disabilities.

Clinical model

Upon referral, the H@H team conducts an initial assessment and collaborates with families to design care plans, including specialised services like IV therapy and nutrition management for children up to nearly 17 years, registered with a Brighton & Hove GP.

Workforce model

Highly skilled nurses with specialist knowledge to meet the diverse range of needs of patients and their families.

PPL

Appendix 4: Stakeholder engagement

Process Evaluation – Interview Stakeholder Map

ICB	Provider	Virtual Ward	Role (Generalised)
Buckinghamshire, Oxfordshire And Berkshire West	Berkshire Healthcare NHS Foundation Trust	All virtual wards	Manager (Clinical)
		Berkshire West	Manager (Operational)
	PML/DOCMED Federation Hub	Hospital at Home	Manager (Operational)
Frimley	Berkshire Healthcare NHS Foundation Trust	Frailty North Ward	Leadership
	Frimley Health NHS Foundation Trust	All virtual wards	Leadership
			Manager (Operational)
		Respiratory (AIR)	Manager (Clinical)
		Respiratory South	Clinician
			Manager (Operational)
		Oncology	Manager (Clinical)
			Leadership
		FVW South	Manager (Clinical)
Hampshire And Isle Of Wight	Southern Health NHS Foundation Trust	All virtual wards	Manager (Clinical)
Kent And Medway	Medway Community Healthcare	KM_MS_MCH_ARI	Manager (Clinical)
			Clinician
Surrey Heartlands	Epsom And St Helier University Hospitals NHS Trust	All virtual wards	Leadership
		Surrey Virtual Ward	Clinician
			Non-Clinical support staff
			Manager (Clinical)
Sussex	East Sussex Healthcare NHS Trust	ESHT	Manager (Operational)
			Manager (Clinical)

PPL

Appendix 5: Desk research sources

Desk research sources – NEL admission cost assumptions

Ward type	Cost of a single average hospital admission	Cost of an average bed day in hospital
Any patient / IV Therapy	**£1,957** *(average cost in Oxford in 2016, inflation adjusted)*	**£351** *(Research (uses excess bed day figure))*
COPD / Respiratory	**£2,751** *(average cost in Oxford in 2016, inflation adjusted)*	**£275** *(National tariff 2022/23 HRG DZ65A)*
CYP	**£4,930** *(National tariff 2022/23 HRGs PC to PX)*	**£462** *(National tariff 2022/23 HRGs PC to PX)*
Frailty / Palliative	**£4,974** *(Unit Costs of Health and Social Care 2022)*	**£349** *(Unit Costs of Health and Social Care 2022)*
MSK	**£2,980** *(Modelling for MSK first contact practitioners, inflation adjusted)*	**£596** *(based on an average 5 day stay from our SEL data)*

PPL

Appendix 6: Trend and impact test methodology

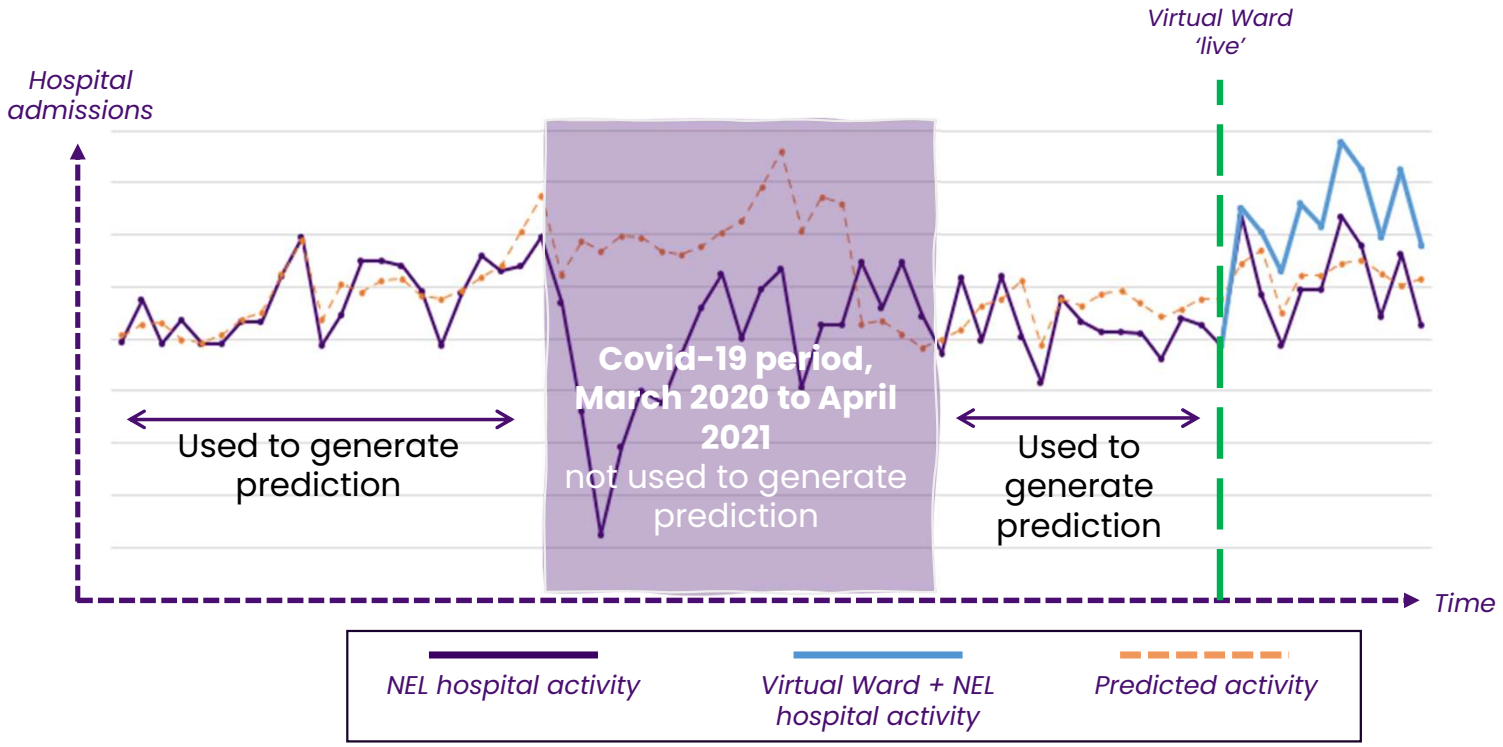
Summary of modelling approach: SPC activity prediction

To understand whether hospital activity for a given Trust has diverged significantly from its trend since the introduction of a Virtual Ward, this evaluation uses a **Statistical Process Control (SPC) approach** to generate a prediction for **expected hospital activity, should no Virtual Ward have been introduced.**

To generate this prediction, the SPC approach uses **all past admissions data available for the Trust (excluding Covid-19), prior to the month the Virtual Ward went 'live'.** The 'live' month is calculated as the month where admissions first exceed 20% of the Ward's highest monthly admissions volume.

The SPC approach accounts for annual cycles, and uses these to generate a prediction, an upper bound, and a lower bound.

The approach looks specifically at **patients who are eligible for the virtual ward** (age, ICD-10 code, geography, etc.).



Summary of modelling approach: trend and impact test

Once a prediction is generated, **two tests** are carried out to understand if hospital activity has diverged from predicted levels, had no Virtual Ward been introduced. Both tests set **a high bar for impact**, and are set out below.

Trend test

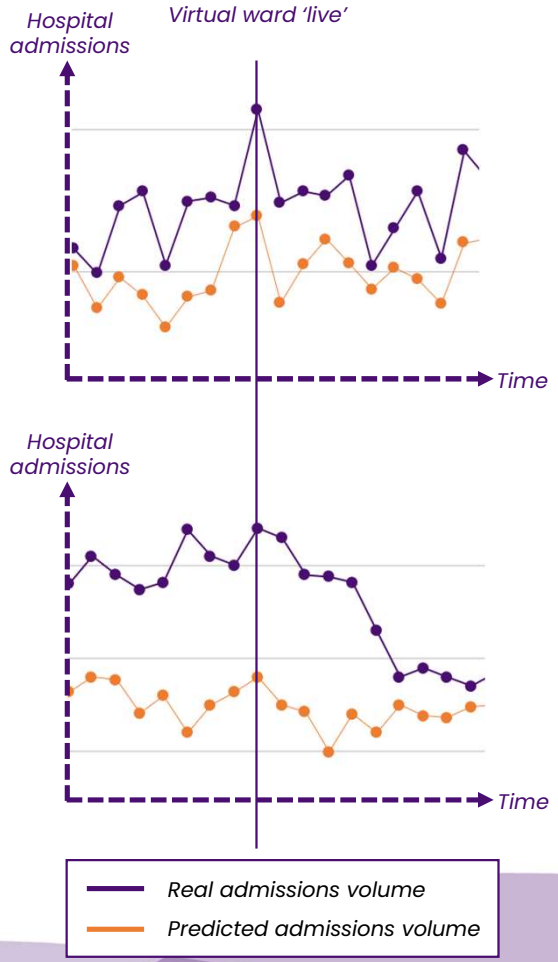
- The trend test asks: **"Do admissions fall further below predicted admissions after the Virtual Ward is 'live'?"**
- To answer this, **the trend test compares the area on the graph between the actual hospital admissions data line and the predicted hospital admissions data line, as a monthly average,** after the Virtual Ward went live (excluding Covid-19) and the same length of time before the Ward went live. This describes **the extent the hospital data diverges from the prediction line** (where below the line gives a positive value, and above the line gives a negative value).
- If the net area below the prediction line is on average greater since the Virtual Ward went 'live' than prior, then the answer to the above question is "yes": admissions do fall further below predicted admissions after the Virtual Ward went 'live'.
- If the net area below the line is on average smaller since the Virtual Ward went 'live' than prior, then the answer to the above question is "no".

Impact test

- The impact test asks **"How strong is the association between the number of virtual ward admissions and falling non-elective admissions"**, by calculating a prediction for the number of Virtual Ward admissions associated with avoiding one NEL hospital admission.
- For only those months where hospital admissions activity fell below the predicted activity, the impact test calculates the total difference in admissions between the prediction and the actual hospital data. This provides an estimate for **the total hospital admissions avoided over the period the Virtual Ward has been live.**
- A ratio is then calculated between the total hospital admission avoidance, and the total number of Virtual Ward admissions associated with those avoidances (i.e. the total number of Virtual Ward admissions while the Ward is 'live').
- This ratio is presented as **the number of Virtual Ward admissions associated with <u>one</u> hospital avoidance** (with a minimum 'cap' of no less than one Virtual Ward admission per one hospital avoidance).

Trend & impact analysis examples (1/2)

The below examples represent the four **possible sets of results** associated with the 'trend' and 'impact' tests set out in the previous slide. Please note, the data used to illustrate these potential sets of results are based on **dummy data**.



Case 1 – no virtual ward impact

- **Does not pass the trend test** – The real number of admissions does not trend further below the predicted admissions line once the virtual ward is introduced.
- **Does not pass the impact test** – No months where the virtual ward is in operation where the real number of admissions is below the predicted admissions volume.

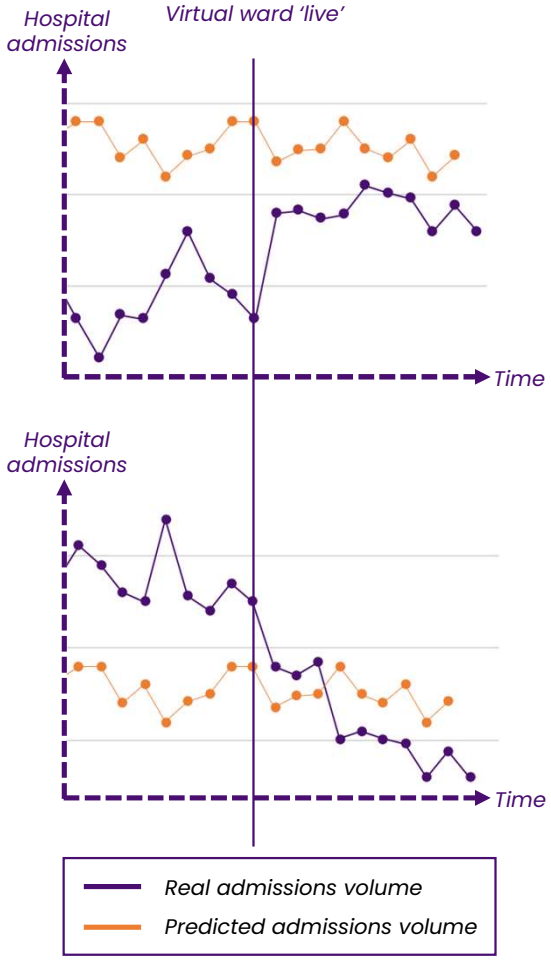
Example results panel	
Trend test - Do admissions fall further below predicted admissions after the Virtual Ward is 'live'?	**No**
Impact test – Virtual Ward admissions associated with one less hospital admission	**N/A**

Case 2– mixed evidence

- **Passes the trend test** – In this example the real number of admissions is lower relative to the predicted admissions once the virtual ward is introduced.
- **Does not pass the impact test** – No months where the virtual ward is in operation where the real number of admissions is below the predicted admissions volume.

Example results panel	
Trend test - Do admissions fall further below predicted admissions after the Virtual Ward is 'live'?	**Yes**
Impact test – Virtual Ward admissions associated with one less hospital admission	**N/A**

Trend & impact analysis examples(1/2)



Case 3 – mixed evidence

- **Does not pass the trend test** – The real number of admissions does not trend further below the predicted admissions once the virtual ward is introduced.
- **Passes the impact test** – There are multiple months where the virtual ward is operational and the real number of admissions is significantly lower than the predicted admissions volume.

Example results panel	
Trend test - Do admissions fall further below predicted admissions after the Virtual Ward is 'live'?	No
Impact test – Virtual Ward admissions associated with one less hospital admission	#

Case 4 – strong evidence for positive impact

- **Passes the trend test** – In this example the real number of admissions is lower relative to the predicted admissions once the virtual ward is introduced.
- **Passes the impact test** – There are multiple months where the virtual ward is operational and the real number of admissions is significantly lower than the predicted admissions volume.

Example results panel	
Trend test - Do admissions fall further below predicted admissions after the Virtual Ward is 'live'?	Yes
Impact test – Virtual Ward admissions associated with one less hospital admission	#

Virtual Ward pathways are given a RAG rating according to the **predicted Virtual Ward admissions associated with one hospital admission**.

Impact rating	
Low impact	Over 6 Virtual Ward admissions
Moderate impact	2-6 Virtual Ward admissions
High impact	Less than 2 Virtual Ward admissions