

Implementing a large multi-speciality virtual ward programme in the UK: A qualitative exploration of staff experiences and perspectives

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Submitted to: Journal of Medical Internet Research
on: April 09, 2025

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Implementing a large multi-speciality virtual ward programme in the UK: A qualitative exploration of staff experiences and perspectives

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Abstract

Background: The National Health Service in England is facing unprecedented demand on hospital services with virtual wards being a central tenet of the strategy to manage these ongoing pressures on capacity. Virtual wards combine digital and analogue tools, monitoring systems, and teams of multi-disciplinary care providers to support patients in their place of residence who might otherwise be cared for in hospital. Despite virtual ward programmes continuing to proliferate in the UK and across the globe, the models of care which support them are still evolving, and best practice in their design and implementation is yet to be fully established. It is therefore necessary to continue to gather evidence about the influences that shape their design and support their successful and sustained introduction.

Objective: To explore the experience of staff involved in designing, developing and delivering virtual wards as part of the national programme, in order to understand the factors that influence its implementation and sustainability.

Methods: Qualitative data were collected through semi-structured interviews with staff and senior stakeholders involved in developing, leading, and delivering the virtual ward programme within one of the largest integrated care systems in England. Data were analysed using directed content analysis, informed by the Non-adoption, Abandonment, Scale-up, Spread, and Sustainability (NASSS) framework.

Results: We interviewed 20 participants from clinical and non-clinical roles including service transformation leads, programme leads, physiotherapists, nurses and consultants. Using the NASSS framework, we identified several key findings. Patient context was as important as clinical criteria in determining referral suitability (Condition). Stand-alone digital monitoring solutions with offline capability improved accessibility (Technology). While benefits to patient rehabilitation and hospital capacity were widely understood, concerns over the lack of evidence remained (Value proposition). Clearer messaging about the nature and benefits of virtual wards was needed for patients and carers and staff described challenges with remote care and shared responsibility across settings (Adopters). Pre-existing collaborative arrangements helped but varied by speciality (Organisations). NHSE targets and metrics of success were considered unrealistic (Wider system). Finally, participants recommended more coherent regional planning that involved consultation with patients (Embedding over time).

Conclusions: If the UK's virtual wards programme is expected to move forward, it requires patients, their family and carers, and staff receive coherent messaging of their responsibilities and benefits. Targeted training and ring-fenced time for staff would help, as would the provision of purposely designed patient-facing technologies. Finally, extended planning and funding cycles are needed to gather robust evidence and refine virtual wards, ensuring better integration with existing services that incorporates patient preferences and needs from various socio-cultural backgrounds.

(JMIR Preprints 09/04/2025:75406)

DOI: <https://doi.org/10.2196/preprints.75406>

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Original Manuscript

Implementing a large multi-speciality virtual ward programme in the UK: A qualitative exploration of staff experiences and perspectives

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Background: The National Health Service in England is facing unprecedented demand on hospital services with virtual wards being a central tenet of the strategy to manage these ongoing pressures on capacity. Virtual wards combine digital and analogue tools, monitoring systems, and teams of multi-disciplinary care providers to support patients in their place of residence who might otherwise be cared for in hospital. Despite virtual ward programmes continuing to proliferate in the UK and across the globe, the models of care which support them are still evolving, and best practice in their design and implementation is yet to be fully established. It is therefore necessary to continue to gather evidence about the influences that shape their design and support their successful and sustained introduction.

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proposition). Clearer messaging about the nature and benefits of virtual wards was needed for patients and carers and staff described challenges with remote care and shared responsibility across settings (*Adopters*). Pre-existing collaborative arrangements helped but varied by speciality (*Organisations*). NHSE targets and metrics of success were considered unrealistic (*Wider system*). Finally, participants recommended more coherent regional planning that involved consultation with patients (*Embedding over time*).

Conclusion: If the UK's virtual wards programme is expected to move forward, it requires patients, their family and carers, and staff receive coherent messaging of their responsibilities and benefits. Targeted training and ring-fenced time for staff would help, as would the provision of purposely designed patient-facing technologies. Finally, extended planning and funding cycles are needed to gather robust evidence and refine virtual wards, ensuring better integration with existing services that incorporates patient preferences and needs from various socio-cultural backgrounds.

Keywords: Virtual wards; Qualitative research; Digital health; Health services research; Remote monitoring

Introduction (322)

The potential of VWs has driven their implementation across North America [13], Australia [14], the Far East [15] and Europe [16]. In the United Kingdom (UK), the National Health Service (NHS) is relying on VWs to help ease the pressure of unprecedented demand for inpatient care [1, 17, 18]. The NHS has invested £500 million with the aim of creating between 40 and 50 virtual ward beds per 100 000 people by the end of 2025 [19, 20]. This was supported via a series of regional VW programmes delivered by local integrated care systems and overseen by regional VW leads.

Despite the proliferation of VWs in the NHS and elsewhere, the models of care which support them

are still evolving, and there is a need to continue gathering evidence about the factors that shape their design and support their successful implementation [7, 19]. The NHS national VW programme offers a useful opportunity to meet this need, and the work presented here describes the experiences of senior decision makers, clinical leads, and those delivering a multi-speciality VW in one of the largest integrated care systems in England. By analysing the qualitative data using an *a priori* framework purposely developed to explore the implementation of digital health interventions [21], we offer structured and transferable learning to inform future iterations of VWs applicable to the UK and beyond.

Methods (557)

The work explores the experiences of a range of staff involved in developing and delivering the VW. Data were gathered using semi-structured interviews and analysed using a directed content analysis informed by the Non-adoption, Abandonment, Scale-up, Spread, and Sustainability (NASSS) framework developed by Greenhalgh et al which provides opportunity for structured learning that is readily transferable across various digital health initiatives [22-24].

The NASSS Framework

The NASSS framework was developed specifically to help plan the implementation and rollout of technology-enabled care programmes [25]. Its multi-dimensional structure allows the systematic identification of the various elements that contribute to the successful delivery of technology-enabled care interventions at scale. The framework consists of seven domains relating to, 1) the complexity of the *Condition*; 2) the nature of the *Technology*; 3) the *Value proposition* to stakeholders; 4) the attitudes of and impact on *Adopters*; 5) the culture and capacity of the *Organisation*; 6) the influence of the *Wider system*; and 7) the steps needed for the intervention to *Embed over time*. These domains and the underpinning rationale are summarised in Figure 1 and further described in Table 1.

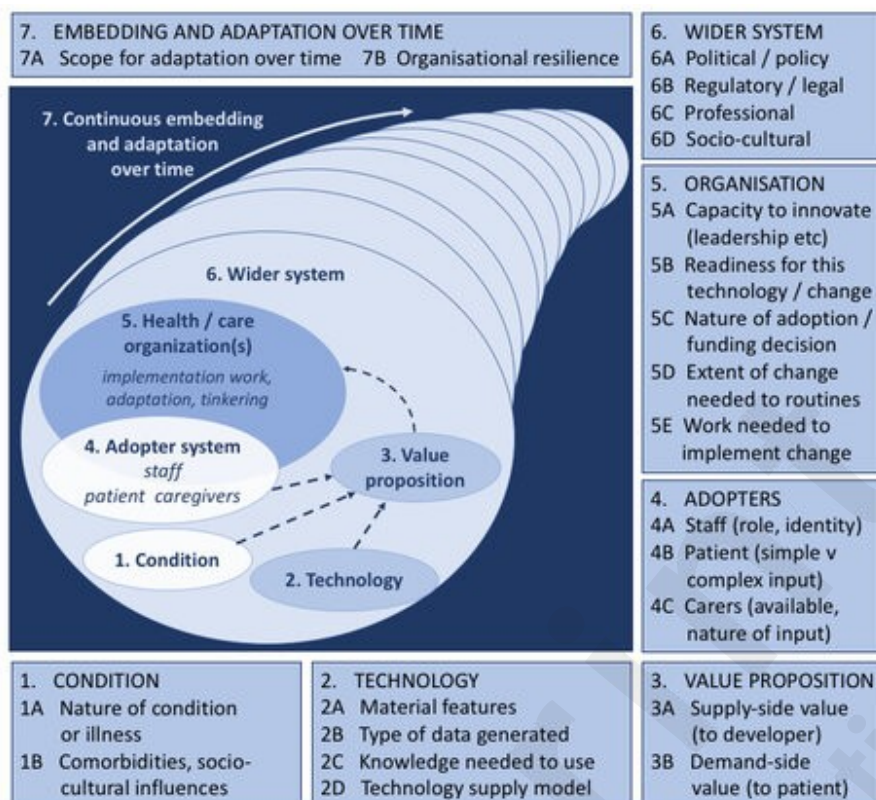


Figure 1: Summary of the NASSS framework [25]

Setting/Recruitment

The VW programme was delivered by a secondary care trust supported by a local community care trust located in a large, diverse city in the UK. Both trusts are part of one of the largest integrated care systems in the NHS. Participants were to be purposively sampled to include the NHSE regional virtual ward team (nested within the local regional Urgent and Emergency Care team), clinical leads, and those delivering the VW. Those eligible were identified by the VW programme Steering Group consisting of representatives from each VW. Staff participants were approached by the VW programme leads or senior (virtual) ward staff and those who agreed were then contacted by a researcher via email and offered the opportunity to ask questions before being consented prior to the commencement of the interview. The intention was to undertake a total of 25 interviews following the recommended estimations of sample size to achieve saturation [26]. The study was approved by

University of Birmingham's Science technology engineering and mathematics ethical approval committee (ERN_13-1085AP41).

Data Collection

Semi-structured interviews were conducted over the phone or via an online platform (Zoom or MS Teams) by IL and RL, who have extensive qualitative experience and backgrounds in applied health research and medical sociology. They were unknown to participants. The interviews followed pre-designed topic guides that included questions about participants' roles in developing or supporting the implementation of the VW programme, and their personal experiences of delivering the service, including their interaction with regional and national VW teams [these are summarised in Supplementary File 1]. Interviews were digitally recorded and transcribed verbatim by an approved transcription service. The data were then managed using NVivo10 software and Excel.

Data analysis

The final data set from the interviews was used in a directed content analysis to populate the NASSS framework [25, 27]. Both IL and RL ~~experienced qualitative researchers~~ independently coded the same sample of transcripts, fitting the data within the relevant themes of the NASS framework using a directed content analysis [27, 28]. Any differences in coding were discussed between the two authors, and a consensus was reached. The remaining transcripts were then divided and coded independently. The final allocation of the data within the coding framework was conducted by IL and agreed upon by all authors.

Results

Participant characteristics

A total of 20 participants were interviewed including one at national level, two with the NHSE

regional team, two with responsibilities for VWs at Integrated Care System (ICS) level, seven with the Secondary Care Trust (SCT), and four with the Community Care Trust (CCT). Job roles included service transformation leads, programme leads, physiotherapists, nurses and consultants. Each interview lasted between 27 and 60 minutes. One participant dropped out after agreeing to being interviewed but identified a replacement of similar role and seniority.

Table 1: Influences on implementation and application to VW presented with the NASSS framework*

Domain	Definition	NASSS designated influences on implementation	Findings from VW programme
Condition	The condition(s) or specialities for which the intervention has been designed.	The complexities of the condition including cognitive function	• There were notable variations in the model of care between specialities • Referral onto the VW was determined by clinical criteria alongside the patient's digital literacy, connectivity, and family/social support
Technology	The technologies or other innovation that is being introduced. Including hardware and software, a novel protocol or pathway – or some combination of these.	The material properties of the technology, including functionality and accessibility.	• Patient numbers were restricted by the reliance of the planned patient dashboard on patient-owned technology e.g., smartphones, or PCs • Accessibility to VWs increased following introduction of a hospital distributed, standalone tablet with offline capability
Value proposition	The proposed value (financial or otherwise) that the new technology/care model generates.	The potential improvements in quality, safety, inclusivity, and efficiency of the care delivered.	• There were widely acknowledged benefits to patients of VWs including greater retention of confidence and independence • Staff recognised the potential of VWs to increase hospital capacity but expressed reservations around the lack of evidence
Adopters	The intended users of the technology or other innovation. This includes patients/lay people, professionals, administrative and support staff.	Acceptability to, Patients and family/carers: Including preferences, reassurance, suitability, clinical contact Staff: including the impact on current	• VWs met patient preference for care at home • Patients and their families/carers appeared to lack awareness of what a VW was, or their benefits • Staff reflected on the challenges of sharing responsibilities for a patient

		roles and professional traditions.	across teams and trusts and the need for additional skills in teleconsultations and remote patient management
Organisations	The cultural and organisational characteristics of the organisations involved. This includes structure, capacity, and capability to adopt new ways of working. As well as resources of staff and infrastructure.	Readiness for the innovative pathway including extent of change needed, and the ability to incorporate the technology	• Pre-existing collaborative organisational relationships were supportive but were specific to speciality • There was a lack of data interoperability between Trusts
		Staff capacity and capability and the culture and work practices that supported the learning of individuals and/or the organization	• Slow recruitment meant the early phases were reliant on temporary workforce structures and flexible staff
Wider system	The regional and national and local context for the introduction of the technology or programme	The impact of national and local policies and objectives and localised socio-cultural factors	• Staff felt NHSE dictated targets for numbers of VW beds and their occupancy were unrealistic and captured by poorly defined metrics
		The presence of inter-organisational networking and collaborative initiatives in supporting implementation.	• Different working practices across trusts and specialities were brought into alignment where possible and productive • The support of the regional NHSE team was noted.
Embedding over time	The key changes and uncertainties expected to affect the integration of the technology/innovative pathway over the next 3-5 years.	The ability of the technology and supporting processes to be incorporated into routine care.	• There is a need for greater standardisation in the design of VWs across specialities • Patient representatives should be involved in development of the ward

*(after Abimbola et al., 2019[24], Greenhalgh et al., 2020[29], Greenhalgh et al., 2017a[25] Gani and Litchfield 2025 [30])

Qualitative data

Staff experiences of delivering the VWs are described below within the seven domains of the NASSS framework alongside illustrative quotes where staff are identified by their job category and their role in delivering the service.

Condition

The varying complexities of the conditions

The design of the VW varied by speciality with significant disparities in referral criteria, staffing models, processes of care, and numbers of patients recruited:

"...so respiratory was quite specific in terms of criteria to get onto the virtual ward, so completely focused on COPD early supported discharge ... frailty was much more about a wider remit of if somebody is deemed clinically suitable...The increase in occupancy on the virtual wards for frailty have been much better and quicker... whereas respiratory have found it much harder to get going"

P09, Service lead, [SCT]

Staff went on to describe contextual considerations beyond clinical criteria that influenced referral on to the VW, including the patients' domestic circumstance, their digital literacy and connectivity, and psychological preparedness (*"even though clinically they've met the criteria for virtual ward psychologically they are not ready for that"* P18, Service delivery, CCT). There was also the issue of whether patients could independently measure the required physiological parameters:

“...you’re thinking “...Really? Would they be able to manage that?” It’s not just being able to tick a box and questions on [patient tablet], it’s being able to actually do a blood pressure, or your SPO₂ [oxygen saturation levels] or do a temperature.”

P19, Service delivery, CCT

Technology

Material properties of the technology

The original offer consisted of using a bespoke digital platform accessed via personal computer, tablet, or smart phone. However, only a small number of clinically suitable patients possessed the necessary hardware, internet connectivity and digital literacy:

“...we just aren’t finding the numbers, we don’t have equipment to give them... we haven’t got time to sit and teach them how to use that level of platform, and also we aren’t finding that many patients that are able to use that level of platform.”

P05, Service lead, SCT

As a result the early stages of the implementation relied on telephone and in-person contact to monitor patients. Latterly, a decision was made to purchase a pre-existing purposely designed patient tablet, which improved accessibility as it precluded the need for patients to possess their own hardware, had a simple easily interpretable interface, and offline capability.

Value proposition

Better quality care for patients

Staff understood the benefits to the physical and mental well-being of patients of being cared for in the familiar home environment. This included greater retention of confidence, independence, and physical activity, alongside reductions in hospital acquired infections.

Increased efficiency

From a service perspective, the potential of VWs to ease pressure on inpatient care by providing a cost-effective alternative was widely recognised by staff. Some, however, expressed concern that policymakers' desire to increase capacity outweighed considerations of quality:

"Virtual ward is a kneejerk reaction...because we need to create capacity. It wasn't necessarily designed and put together with the first thought of 'Let's provide better patient care', it's more about 'We need some capacity!', and then pitch your care after that."

P15, Service lead, SCT

These concerns were further amplified by the apparent lack of evidence (*"...there's a flaw with the national [VW] programmes. They don't have any evidence..."* P02, Service Transformation Lead, SCT). This led one service lead to opine that it felt like a gamble *"There's never really been a robust evidence base that says that it's worked. So it felt like a hell of a punt"* P06, Hospital Services Lead, SCT

Adopters

Patient preference for care at home

Staff described patients' appreciation of leaving the hospital early to be cared for at home, particularly for those who had experienced firsthand the issues of overcrowding, (*"the option, to say, 'Go home from a trolley' they're overjoyed!" P16, Service lead, SCT*). More broadly the benefits to a patient's broader well-being of receiving care at home, such as familiar food and a quieter environment were also recognised.

Understanding of VWs

There was a lack of coherent messaging around the VW programme, including the support provided and their potential benefits. This meant patients were frequently unaware that their hospital discharge constituted a transferral to the "Virtual Ward", and their family members or carers, were suspicious of the hospital's motivation behind the early discharge:

"... [its] the older population that are more nervous of going home, and their carers of having them home, 'You just want to get mum and dad out, and we're going to be doing all the personal care, and all you're going to do is phone them every day?' The families need to be reassured as well."

P18, Service lead, CCT

Impact on professional traditions

The delivery of virtual wards required clinicians adopt new ways of working. This involved the handover of recovering patients to other care teams in the community counter to usual care where clinicians retained direct responsibility until discharge (*"...clinicians have found*

that really, really, difficult... [for] the old school nurses and clinicians among us it doesn't sit well..." P18, Service lead, CCT). These changes to work practices also included an increased reliance on remote monitoring and teleconsultation requiring a slightly different set of skills:

"Clinicians are concerned about that [remote consultation], because they're so used to doing a face-to-face, even to be able to do a few 'obs' [observations] on a patient, just to get a bit of information and talk to them - it's different doing that by telephone, or virtually... It's a different mindset...and different decision-making skills..."

P19, Service delivery, CCT

Organisation

Extent of change

Participants described how the respiratory VW benefited from strong, pre-existing relationships between local partners. However, for those delivering the frailty VW, such collaborative pathways were less established, leading to uncertainty in where clinical responsibility lay:

"... you have a consultant telling you - or advising you - to 'halve the medication'... 'double the medication'. Now that's great as the consultant, and I don't question the validity in her decision-making, but...we're always taught as nurses you don't just do as you're told, ... So, I was very clear to the staff to [write] that...'This is the conversation, The advice given was this, Therefore I shared this information with the patient, and they agreed' ... not for blame, but to share that responsibility equally..."

P17, Service delivery, CCT

Readiness for technology

Familiar challenges of data interoperability emerged [31], with staff describing how patient data were added manually to spreadsheets in community settings:

“They [IT systems] need to be better, because we’re still tending to rely on maybe a spreadsheet or something to collate things on”

P19, Service delivery, CCT

Staff capacity and capability

It was noted that delays in recruiting to the VW, in part due to uncertainty over short-term funding cycles led to interim staffing solutions to deliver the service, with staff being sometimes reluctantly co-opted to work on the VW:

“...there’s actually nobody employed at the moment - or hardly anybody - to do virtual wards, because it being a new project. So, they’re just beg and borrowing people from other parts to do it.”

P19, Service delivery CCT

The Wider System

The impact of national and localised policies

Participants described what they considered to be NHSE’s unrealistic expectations of how quickly they expected the programme to be up and running (*“...it was forced through,*

pushed through at speed” (P03, Clinical Lead, SCT)). They also felt the number of beds that the NHSE were expecting sites to deliver were unrealistic amidst some sites were gaming the system to meet these targets:

“The numbers were bonkers...the numbers that were stated [by NHSE] ... they were suggesting within 18 months you’d be opening up the size of a district general hospital!”

P06, Hospital Services’, SCT

The way NHSE defined the metric of bed utilisation (i.e., proportion of virtual wards occupied) was also considered problematic as it failed to account for how many unique patients were using the beds and what the overall length of stay was *per patient*.

The presence of inter-organisational networking

There was an understanding that the teams associated with the different specialities across the CCT and SCT had independently developed or adapted different processes when the VW programme began. However, to be sustainable, the VW teams would face a choice to align these where appropriate or otherwise leave in place where reflective of localised context (*“... it’s knowing where it’s worth trying to align and where it’s worth actually accepting that it might be done a little bit differently.” P06, UHB, Service lead*). At a system level, programme leads described the constructive relationship with NHSE’s Regional VW team who acted as advocates for the local VW offer:

“...on a number of occasions [the regional link person] would actually on our behalf go back [to the national team] and say ‘I don’t think this is the right

approach', or 'actually, the way they're approaching it and the numbers they're putting against this, is right'..."

P02, Service Transformation Lead, SCT

Embedding over time

The ability of VWs to be incorporated into routine care

Pre-existing pathways for respiratory and frailty care were very different leading to the community team accommodating two different approaches to VWs. As a result, steps are underway to develop a more generic community component:

"If I could give one bit of advice over a year ago to everybody starting virtual wards is don't start it in one specialty... I found it quite hard to standardise the operational side. Because... and I suppose it was timing, we had to setup different ways of delivering stuff in different specialties at different times..."

P18, Service lead, CCT

Staff described how patients had not been involved in the development of the VW programme ("*...from processes that I have been involved in... you'd have a service user present...To my knowledge that hasn't been done.*" P13, Service lead, SCT). Nor were there joined-up consultations across the ICS as to how VWs and in-patient wards could be developed in partnership to meet growing demand:

"I know that on the acute side they will have done a calculation that says we need another 100 acute beds in [Location]...You just know intuitively that virtual wards is part of that solution, but the plans for how many acute beds we need and how

many virtual ward beds need they are very separate, we're not doing this as a joint enterprise..."

P14, Service lead, SCT



Discussion (1355)

Principal results

The rapid implementation of a VW programme across a large ICS in England, provided opportunity to gain valuable insight into the practicalities of delivering VWs at scale and speed. In considering our findings within the domains of the NASSS framework (as summarised in Table 1), we found that: patient context was as important as clinical criteria in determining suitability for referral (*Condition*); stand-alone digital monitoring solutions with offline capability increased accessibility (*Technology*); the benefits to patient rehabilitation, and hospital capacity were widely understood but concerns remained over the lack of evidence (*Value proposition*): for patients and carers there was a need for more prominent messaging of the nature and benefits of VW; staff described the challenges presented by remote care and sharing responsibility across trusts (*Adopters*); pre-existing collaborative arrangements helped but their maturity varied by speciality (*Organisations*): NHS targets, and their metrics of success were considered unrealistic (*Wider system*); finally, there were recommendations for more coherent regional planning that involved consultation with patients (*Embedding over time*). Below we set these findings within the context of existing literature on VWs and similar models of technology-enabled care.

Limitations

The NASSS framework proved a capable means of analysing and presenting staff experience of a significant VW offer to a large diverse patient population. However, at the time of the data collection, only the step-down approach was employed, though admission avoidance is now an equally important element of this and other VW models. The wide range of roles and responsibilities of participants provided a thorough health service perspective though

the numbers recruited were lower than expected particularly of those delivering the service. This is likely attributable to the pressure staff were under delivering the VW in the early phase without sufficient numbers dedicated to the role. It's recognised that the planned exploration of patients, caregivers, and the broader healthcare system, will provide a more complete understanding of the overall impact.

Comparison with prior work

Condition

Although VWs are typically referred to as a singular care offer our participants described notable variations between specialties for example in staffing models and reliance on digital tools as also witnessed in previous VW programmes [8]. It also became apparent that the social context of patients – such as digital literacy and the ability to gather reliable physiological data, and the need for broader assistance with tasks like meal preparation and hygiene- was as important as the clinical referral criteria, again as recognised in other examples of virtual wards and remote monitoring [1, 2, 15, 32].

Technology

The digital transformation of healthcare, including the growing use of VWs envisioned by policymakers in England and further afield, is predicated on the incorporation of digital healthcare technologies [33-35]. However, participants described how the VW existed as a hybrid service which was as reliant on telephone and in-person contact, as digital technologies, as observed in multiple VW services across the globe [1, 6, 8, 15, 36-38]. The limited number of patients that could use the intended monitoring platform offers another

demonstration of how the digital divide is perpetuated by expectations that all patients possess the necessary digital software, literacy, and connectivity [39-44]. In contrast when the service followed recommendations for using digital health tools, that had a single login, could be used off-line, and had simple-to-use, readily interpretable interfaces the VW became available for a wider range of patients [45-47].

Value Proposition

Participants recognised the need for additional in-patient capacity [48], they also understood the previously reported benefits of VWs such as reducing secondary infection rates and rehabilitation times [49-51]. Despite this, staff shared concerns witnessed in previous VW initiatives of a rush to implementation in advance of sufficient evidence of VW efficacy and safety [8]. Such clinician concerns over safety have been reported previously in VWs particularly for complex patients or where there were high-levels of clinical uncertainty [2, 52-60]. The role of clearly communicating evidence is key to successful change management and more coherent messaging on the existing evidence around the efficacy and safety of VWs may help address these concerns [61].

Adopters

The successful delivery of VWs requires remote monitoring and the accrual of specialised skills in teleconsultation [2, 62-65]. This acknowledgement has led to the creation of a specialised training for those employed on VW programmes [66]. The favourable patient response to early discharge on to a VW has been witnessed at other sites in the NHS VW programme [67-72], as well as a range of VW offers in other countries [49, 64, 73, 74].

However, participants reported that some families were suspicious of the rationale behind “Virtual Wards” or their specific benefits. There was a lack consistent patient facing messaging which is known to play a key role in successfully implementing technology-enhanced health services such as VWs [75], its absence can also lead to a lack of engagement with digital health tools and ultimately impact clinical outcomes [63, 76-78].

Organisation

Interprofessional collaboration is key to sustaining VWs [79] and the NHS’s guidance for the clinical leadership of VWs specifically recommends that responsibilities are openly negotiated and clearly defined between teams working in different settings [80, 81]. Despite this, participants described uncertainties in where clinical responsibility lay between community staff and hospital-based consultants, an issue witnessed previously in VW services [38, 62]. The lack of data interoperability that surfaced in this study is shared across multiple models of integrated care in the NHS [82-85] and it led to patient data being entered manually despite the associated risk of error [86]. In response the NHS has produced specific recommendations for the procurement of digital platforms for VWs [87].

In the UK and globally it is understood that the capacity to adopt innovative, technology-enhanced care is limited by the number and experience of the existing workforce [88-90]. Participants described the impact of delays in recruitment to the VW, some of which reflected wider shortages in appropriately trained or experienced NHS staff that could derail the expected proliferation of VWs in the UK [91, 92]. There was also hesitation in employing staff due to uncertainty over long-term funding, and there have been concerns expressed

more broadly that short-term funding cycles are inhibiting long-term service improvement in the NHS [93], and specifically regards VWs [94].

Wider system

Centrally mandated and highly reductive targets have been previously criticised for distorting the implementation of complex system-wide initiatives in the NHS [95]. Participants questioned both the metrics and the feasibility of creating the expected number of occupied VW beds [32, 95]. More achievable numbers provided by senior VW staff were fed back to national leads via the regional NHSE VW team with the result that targets were readjusted, suggesting that in the future more honest conversations with central commissioners might produce consensual targets that better accommodate local context [94, 96, 97].

Embedding over time

The considerable variation in the design of each VW presented difficulties for the staff delivering the service and at this particular site service leads are intending to deliver a more generic model of VW, in line with previous recommendations for common standards and processes in the delivery of VWs [49]. There was a lack of patient input into the early stages of designing the VW and the next iteration may benefit from earlier and more structured patient involvement to help bridge the gap between technology and patient-centred care [98-101].

Conclusions

VWs appear to be a lasting component of healthcare delivery, yet evidence of how they might be optimised is still emerging. This study highlights several longstanding challenges that remain unresolved and merit careful thought for future iterations. As detailed further in Supplementary File 2, these include the need for clearer communication about the benefits of VWs and the responsibilities placed on patients and their families or carers, the development of accessible digital tools that accommodate varying levels of digital literacy, and more focused training for staff. Ultimately, for VWs to become a sustainable model of care, they must move beyond short-term planning and funding cycles and prioritise patient-centred design, with goals aligned across care settings and organisations.

Acknowledgements

N/A

Conflicts of interest

N/A

Abbreviations

CCT	Community Care Trust
ICS	Integrated Care System
NASS S	Non-adoption, Abandonment, Scale-up, Spread, and Sustainability (Framework)
NHS	National Health Service
SCT	Secondary Care Trust
UK	United Kingdom
VW	Virtual Wards

Data Availability

The data that support the findings of this study are available on request from the corresponding author, [IL]. The data are not publicly available due to restrictions their

containing information that could compromise the privacy of research participants.



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Supplementary Files

Multimedia Appendixes

Supplementary File 1 Topic Guide.

URL: <http://asset.jmir.pub/assets/9d4b147b9f991ed9d9548930de5583d8.docx>

Supp file 2 Considerations for future VW implementation.

URL: <http://asset.jmir.pub/assets/8a530f58ec3d6c7b0172c0536f30f7bf.docx>

CONSORT (or other) checklists

COREQ.

URL: <http://asset.jmir.pub/assets/bdd545c1ac12a24eacb80195ac1f8acd.pdf>