

What do virtual wards look like in England?

Paul Chappell, Melissa Co, Tom Hardie, Therese Lloyd, Charles Tallack, Malte Gerhold, Carl Mayers



**The
Health
Foundation**

**Improvement
Analytics
Unit**

This working paper is produced as part of the Improvement Analytics Unit, a partnership between NHS England and the Health Foundation. For more information about this work, see: www.health.org.uk/funding-and-partnerships/our-partnerships/improvement-analytics-unit

Authors

- Paul Chappell Paul Chappell (Senior Data Analyst, Improvement Analytics Unit, the Health Foundation, on secondment from NHS England)
- Melissa Co (Senior Data Analyst, Improvement Analytics Unit, the Health Foundation)
- Tom Hardie (Improvement Fellow, the Health Foundation)
- Therese Lloyd (Senior Analytical Manager, Improvement Analytics Unit, the Health Foundation)
- Charles Tallack (Director of Data Analytics, the Health Foundation)
- Malte Gerhold (Director of Innovation and Improvement, the Health Foundation)
- Carl Mayers (Assistant Director, Head of the Improvement Analytics Unit, the Health Foundation)

Contact details

- Melissa.Co@health.org.uk

Health Foundation working papers

Health Foundation working papers are outputs from our funded and in-house research activity.

The papers share findings from research and are subject to peer review prior to publication.

They are not published in the same form elsewhere, but the findings may be included in peer-reviewed journal articles.

Content may also be subject to change following further research and analysis.

Citation details: Chappell P, Co M, Hardie T, Lloyd T, Tallack C, Gerhold M, Mayers C. What do virtual wards look like in England? (Working Paper). Health Foundation; 2024 (<https://www.health.org.uk/publications/what-do-virtual-wards-look-like-in-england>).

Abstract

The Improvement Analytics Unit (IAU) is a partnership between the Health Foundation and NHS England. In this working paper, the IAU analyses aggregate national data on virtual wards to describe what virtual wards currently look like across England and discuss the effects of virtual wards on patients, staff and hospital capacity, as well as the gaps in the evidence.

Virtual wards provide hospital-level care to patients in their own homes. There are many different models of virtual wards. Some cover specific conditions (frailty, acute respiratory infections, heart failure wards), while others have a much broader range of patients.

In April 2022, NHS England launched its national virtual wards programme with the long-term aim of providing 40 to 50 virtual ward beds per 100,000 people in England. So far, every integrated care board in England has introduced virtual wards. Further aims of this programme include improving patient choice and experience, avoiding risks associated with inpatients stays and improving hospital flow by reducing lengths of stay and freeing up beds.

Virtual wards have the potential to improve outcomes for both patients and the health care system. But we need high-quality data, careful monitoring and robust evaluations to understand if this is the case – and for which patients and in what contexts. This will provide learning and drive improvement.

It is not yet clear if virtual wards reduce pressure on hospital beds. In December 2023, there were 11,800 virtual ward beds across England. 8,600 of those were occupied. We do not know how many of those patients would have been in hospital if they were not in a virtual ward bed. Better data will help with this.

Virtual wards may benefit some patients, but more research is needed, including on equity. They also may benefit patients with certain demographics or conditions more than others. Moving resources to virtual wards may also have unintended consequences for other services and their patients.

To enable better evaluation and improvement, we need good data. Current national virtual wards data only provide limited patient information. NHS England is developing a national minimum dataset for virtual wards that will allow better analyses.

Contents

Introduction	5
The NHS virtual wards programme and its aims	6
What is the evidence base for virtual wards?	7
What do virtual wards look like across England?	9
What do the available data tell us about virtual wards in England?	17
Are England’s new virtual wards easing the pressure on hospital beds?	18
How will we know if virtual wards are working?	19
Appendix	21
Appendix 1	21
Appendix 2.....	22
Acknowledgements	24

Introduction

When you are unwell, where would you rather be – at home, or in a hospital? Virtual wards provide acute care to patients in their own homes instead of in a hospital. **Most people (71%) say they would be open to being treated in a virtual ward**, depending on the circumstances.

The concept of virtual wards is not new. Similar programmes, referred to as **Hospital at Home programmes**, have provided hospital-level care in patients' own homes around the world since the 1960s. However, the introduction of the NHS England national virtual wards programme has rapidly increased the development of new virtual wards across England. NHS England launched its virtual wards programme in April 2022 after publishing guidance in December 2021. Its long-term aim was to provide 40 to 50 virtual ward beds per 100,000 people in England – a total of 24,000 virtual ward beds. **By December 2023, NHS England had reached approximately 11,800 virtual ward beds**. NHS England's aim was for virtual wards to reach 80% occupancy by the end of October 2023. By December 2023, NHS England virtual ward beds had reached just under 73% occupancy (approximately 8,600 patients).

Measuring virtual wards by numbers of virtual ward 'beds' can be confusing. The number of virtual ward 'beds' is not a measure of physical beds but rather an estimate of how many patients a clinical team can support. This means they are not exactly equivalent to hospital beds. Virtual wards provide the clinical support patients need at home instead of in hospital. Admission to a virtual ward can replace admission to hospital by providing 'step-up' care. Virtual wards can also allow quicker discharge after a hospital stay by providing 'step-down' care. Patients should receive the same monitoring and treatment as they would in hospital, including regular contact with their clinical team through a combination of phone or video calls, face-to-face visits or technology-enabled remote monitoring. Tests and treatments usually administered in hospital, like blood tests or intravenous drips, can also be provided.

The **Improvement Analytics Unit** is a partnership between the Health Foundation and NHS England. We help to evaluate NHS England improvement programmes and have been **following the progress of virtual wards** with interest. In this working paper, we analyse aggregate national data on virtual wards and describe what virtual wards currently look like across England. Based on several literature reviews and randomised controlled trials, we discuss the effects of virtual wards on patients, staff and hospital capacity, as well as the gaps in the evidence.

The NHS virtual wards programme and its aims

NHS England has a **clear definition** of virtual wards: short-stay (up to 14 days), acute-only services for people who would otherwise be in hospital. They can provide either 'step-up' or 'step-down' care. Patients should have access to the same services they would in hospital, including urgent diagnostics, blood tests, intravenous therapy, 24-hour management from a multidisciplinary team and face-to-face meetings with specialists.

NHS England has set out some of the anticipated benefits of virtual wards in their literature and guidance, such as improving **patient experience and outcomes, supporting patient choice and personalised care** and allowing patients to **avoid some of the risks associated with a hospital stay**. They **could also free up hospital bed capacity**, increase acute care capacity by providing care outside hospitals and **increase the effectiveness and efficiency of the workforce** by allowing them to look after more patients across hospital and home or different community services. NHS England also suggests that **virtual wards could improve hospital flow**. Patients could be discharged earlier from hospital, which could reduce lengths of stay, free up beds and reduce waiting times.

NHS England's **ambition** is that all virtual wards should be technology enabled, with clinicians, patients and carers making decisions together about the use of available technologies based on clinical appropriateness and patient/carer preferences. NHS England expects technology to reduce the burden on front-line staff so they can provide patients with better care. The technology should **provide patients** (and their carers) the means to measure vital signs and input them into an app or website. This could be done automatically, for example using wearable technology. These data feed into a digital platform or dashboard clinicians can review remotely, and they are alerted if a patient's health worsens.

What is the evidence base for virtual wards?

To understand if virtual wards are safe and effective, we need to understand how they compare to the alternative: inpatient hospital care. Much of the peer-reviewed evidence base for virtual wards is drawn from Hospital at Home programmes (most frequently treating older adults recovering from strokes, acute respiratory conditions and heart failure) and includes evidence from other countries. The majority of England's virtual wards are new, so there is currently little evidence about them in the academic literature. However, several local rapid evaluations have been completed, with more underway. To date, these have tended to focus on describing patients within their virtual ward without robust comparison with an inpatient hospital cohort.

Trials that pre-date England's virtual wards have found that virtual ward patients may have similar clinical outcomes to patients in hospital, such as mortality rates and hospital readmission rates. This suggests that virtual wards could be as effective as treating people in hospital – at least for some patients. Studies disagree on whether virtual wards perform better than inpatient care. The evidence for improvements in clinical outcomes is often not reliable. This can be seen in Cochrane Reviews on [step-up](#) and [step-down](#) Hospital at Home models and a review of [step-down care](#).

In [some studies](#), patients on virtual wards report higher satisfaction than those in hospital care. However, reviews conducted by [Leong et al \(2021\)](#) and [Arsenault-Lapierre et al \(2021\)](#) describe the evidence used as low quality, with inconsistent ways of measuring patient satisfaction. The experiences of staff and carers are lacking from these studies. [The few studies](#) that have considered their experiences found increased carer and staff burden when patients are on virtual wards. However, findings from the local rapid evaluations of virtual wards and anecdotal feedback from NHS staff show largely positive patient experiences.

[Some reviews and studies report](#) that virtual wards may be [cost saving](#) and [cost effective](#), but the quality of the evidence used to support this is low. There are often contradictory or unclear findings. These studies also only focus on the cost benefits for health care providers. Even if virtual wards are cost effective for providers, they may be causing [costs to shift from the NHS to patients and carers](#).

The [structure of the individual virtual wards evaluated varies widely across studies](#). There is therefore little clarity on what is needed to ensure effective and safe virtual wards. As the various models are so new, research has not yet addressed how virtual wards can use technology safely and effectively. Many interventions tested in the literature have much longer durations than NHS England's recommended 14-day length of stay for virtual wards. Some such interventions last for months, or even up to a year. It is unclear whether their effectiveness would be different for shorter intervention periods. More evidence is also needed on the effectiveness and safety of virtual wards for certain patient groups. For example, there is less research on paediatric virtual wards models. Patients who are deemed at too high risk for home-based care are also often excluded from trials.

Equity in virtual wards is also under researched. **Individuals who live alone or are socially isolated may have more difficulty accessing virtual wards, and some trials exclude patients without carer or family support at home.** Patients may need internet access at home in order to use some types of remote monitoring technology. The rollout of virtual wards could disadvantage patients with higher levels of socioeconomic deprivation. **The Health Foundation's survey** on virtual wards found that people in households where the primary income earner is on a lower income (or unemployed) are less supportive of virtual wards. People in these groups were also more likely to cite 'home suitability' as their reason for not wanting to be treated on a virtual ward.

There is very limited published evidence on the system-level consequences of virtual wards. **Unpublished local NHS evaluations** and Hospital at Home **studies from other countries** expected virtual ward beds to add to a hospital's total bed capacity, but further system-level research is needed to understand how moving patients onto a virtual ward affects inpatient ward capacity. Studies that examine system-level effects (such as capacity, patient flow, number of patients seen and staffing pressures) are scarce. As such, we do not yet know the most effective staffing models for different contexts, or if moving staff and resources to support virtual wards has any unintended consequences for other services or patients.

What do virtual wards look like across England?

There are many different kinds of virtual wards, but approximately half of the virtual wards in England are either for frailty or acute respiratory infection pathways. NHS England has produced guidelines for **each** of **these**, and each integrated care system (ICS) in England was expected to introduce virtual wards for both. **NHS England analysis indicates** that up to 50% of patients who may be clinically suitable for virtual wards could be treated on either frailty or acute respiratory infection virtual wards. In October 2023, NHS England also introduced new **guidance** for heart failure virtual wards, though ICSs are responsible for implementing them in a way that fits their local context. This is to ensure they meet local patient needs and can integrate well into patient pathways.

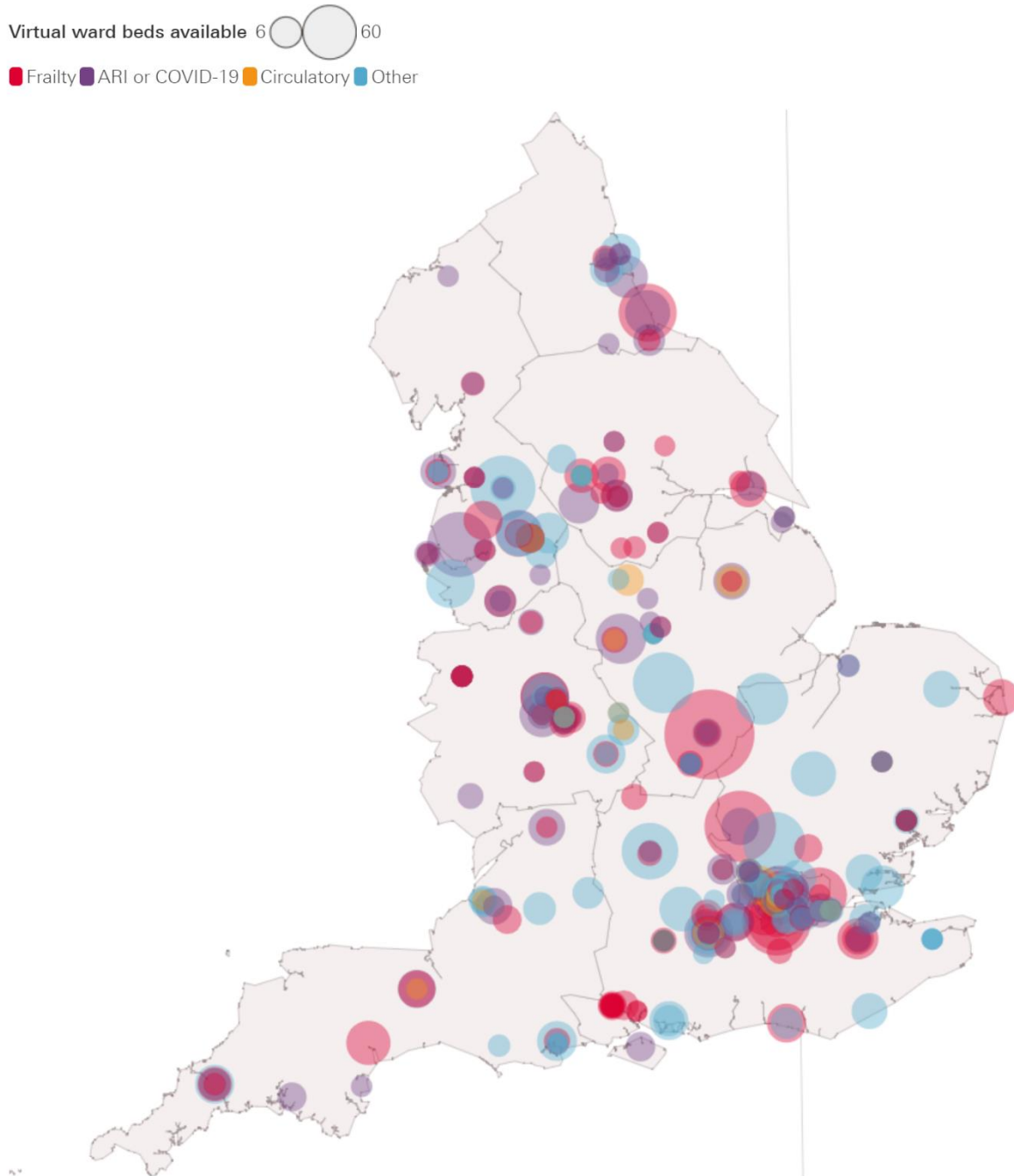
The IAU analysed NHS England's situation report (SitRep) data, which is based on summary information submitted by each virtual ward every 2 weeks. It provides information on virtual ward services, including capacity and occupancy. While the information collected is quite limited and missing data, it allows for a national overview of virtual wards. We included data from a period between 19 February and 7 April 2023 in our analysis. The continued rollout of new virtual wards and the push for more technology enablement since this period means there is likely now both more virtual wards and more technology-enabled virtual wards.

We classified each virtual ward in the data as one of four types: frailty, acute respiratory infection, circulatory diseases (including heart failure) and mixed/other. If the name of the virtual ward in the data clearly stated what type of ward it was, we used that classification. If not, we used a rule that if more than 80% of patients on a virtual ward were listed as being in the same broad diagnosis group, we classified the ward by that diagnosis group. We combined acute respiratory infection and COVID-19 virtual wards into a single group.

In April 2023, there were 354 virtual wards across England with a capacity of 8,194 virtual beds (Figure 1). The majority of virtual wards were for frailty (30%), acute respiratory infection (27%) or circulatory disease (8%) pathways.

Figure 1: Location and capacity of providers of 351 virtual wards in England, April 2023

Location and capacity of providers of 351 virtual wards in England, April 2023



 **The Health Foundation**
© 2024

Source: NHS England SitRep data collection • ARI = acute respiratory infection. Note: Points show location of providers of 351 virtual ward services rather than the location of virtual wards themselves. Providers can operate more than one virtual ward, and wards can be situated in locations other than where the providers are based, although most are based within close geographical proximity.

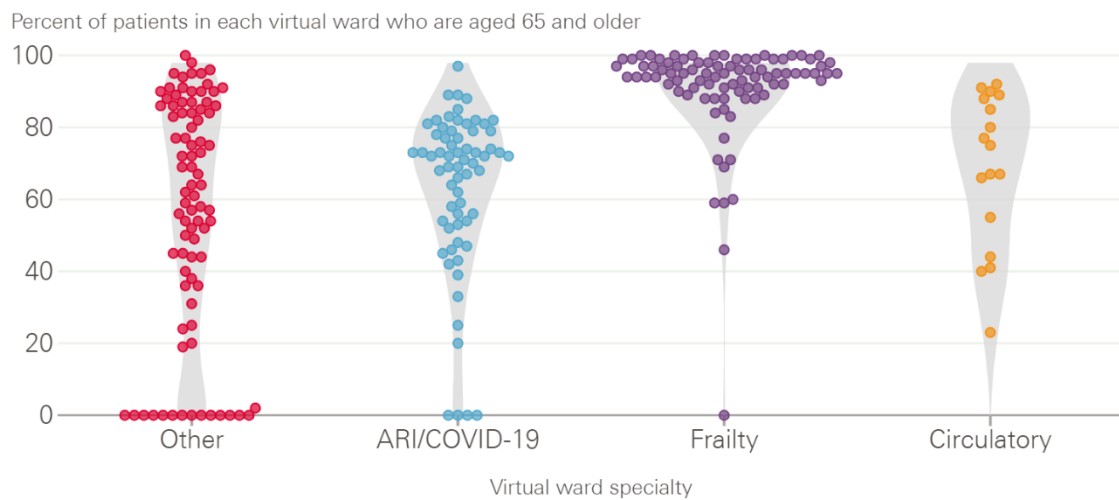
The ages of patients were very different across the NHS England virtual ward types (Figure 2). 91% of patients on frailty virtual wards (whose age was known) were aged 65 years and older. 64% of patients with known ages on acute respiratory infection virtual wards were

aged 65 years and older, and 9% were aged 16 years and younger. The age of patients across different acute respiratory infection virtual wards varied greatly, as seen in Figure 2.

Figure 2: Most virtual wards, regardless of type, serve high proportions of older adults

Most virtual wards, regardless of type, serve high proportions of older adults

Some **Other** virtual wards are paediatric, so only have patients 16 years and younger
Frailty virtual wards sometimes have patients younger than 65 years



 **The Health Foundation**
 © 2024

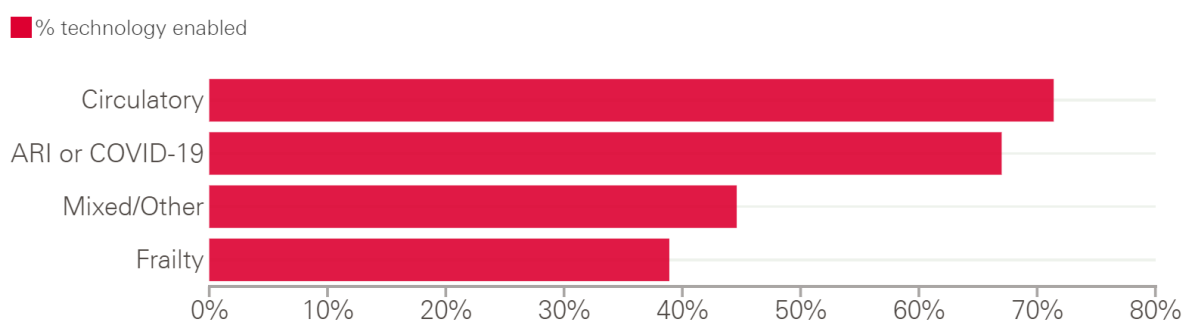
Source: NHS England SitRep data collection • ARI = acute respiratory infection. This graph shows one dot for each virtual ward. Proportions are calculated based on the number of patients whose age is known, excluding virtual wards with more than 15% missing data or fewer than 5 patients on average.

A little over half (181 of 354) of NHS England's virtual wards were technology enabled in April 2023 (Figure 3). There was large variation in the use of technology between the different types of virtual wards. 67% of acute respiratory infection virtual wards were technology enabled, and 71% of circulatory disease virtual wards were technology enabled. In contrast, only 39% of frailty virtual wards used technology-enabled remote monitoring. The SitRep data do not tell us what types of technology are being used on any given virtual ward. NHS England estimates that 60% of virtual wards are now technology enabled, but we expect that there are still differences in the use of technology between frailty, acute respiratory infection and circulatory disease wards.

Figure 3: Proportion of types of virtual wards enabled by technology

Proportion of types of virtual wards enabled by technology

354 virtual wards in England, April 2023



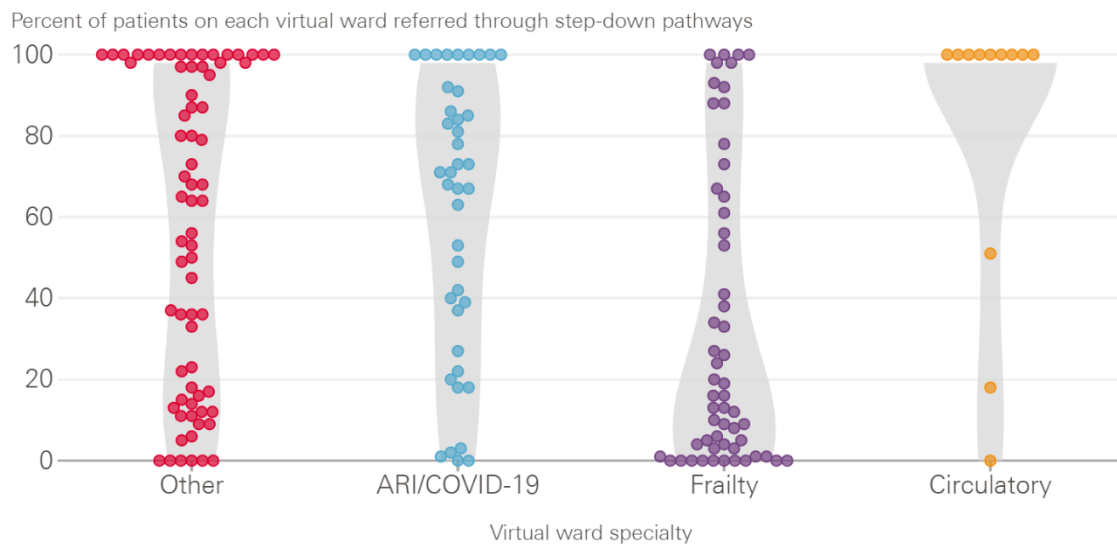
 **The Health Foundation**
© 2024

Source: NHS England SitRep data collection • ARI = acute respiratory infection.

The different types of virtual wards receive patients from different referral routes (Figure 4). Overall, 76% of patients (with known referral routes) on frailty virtual wards came from step-up routes, compared with 46% on acute respiratory infection virtual wards. Some frailty virtual wards specialise in either step-down or step-up care. This is also the case for some acute respiratory infection virtual wards. Overall, 15% of patients on frailty virtual wards and 28% on acute respiratory infection virtual wards had their referral route recorded as 'other or not known'.

Figure 4: Frailty wards tend to have more step-up patients, whereas ARI/COVID-19 and circulatory disease wards tend to have more step-down patients

Frailty wards tend to have more step-up patients, whereas ARI/COVID-19 and circulatory disease wards tend to have more step-down patients



 **The Health Foundation**
© 2024

Source: NHS England SitRep data collection • ARI = acute respiratory infection. This graph shows one dot for each virtual ward. Proportions are calculated based on of patients whose referral route is known, excluding virtual wards with over 15% of missing data or fewer than 5 patients on average.

The amount of time patients spent on virtual wards varied greatly (Figure 5). Two-thirds of patients with known lengths of stay (67%) on frailty virtual wards stayed on the ward for fewer than four days. 23% stayed for zero days, meaning that patients were admitted, treated and discharged on the same day. It is possible that some of this group were patients who did not meet the right criteria to be cared for on a virtual ward. Only 7% stayed for 10 to 14 days, and 7% stayed for more than 14 days. 61% of patients stayed on acute respiratory infection virtual wards for between 1 and 9 days, while 15% of patients on acute respiratory infection virtual wards stayed longer than the recommended 14 days. Length of stay on circulatory disease virtual wards was the most variable but also had the most missing data (9%). Of patients with known lengths of stay, 27% of patients on circulatory disease virtual wards stayed for less than a day, and 26% stayed for longer than the recommended 14 days.

Figure 5a: Frailty virtual wards have more patients with shorter lengths of stay

There is a lot of variation in length of stay across all virtual ward types

Frailty virtual wards have more patients with shorter lengths of stay

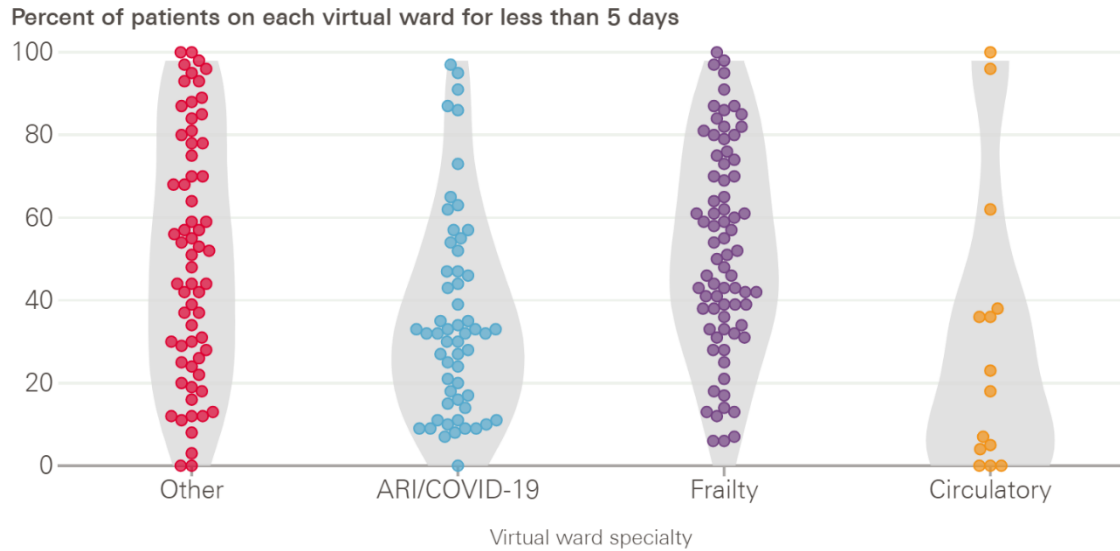


Figure 5b: ARI/COVID-19 virtual wards have more patients with lengths of stay between 5–14 days

There is a lot of variation in length of stay across all virtual ward types

ARI/COVID-19 virtual wards have more patients with lengths of stay between 5–14 days

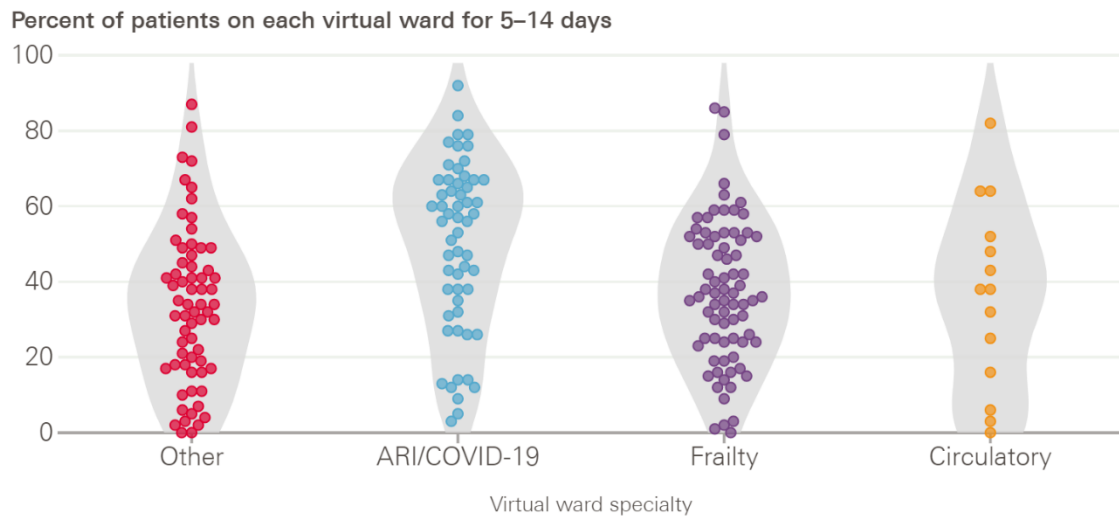
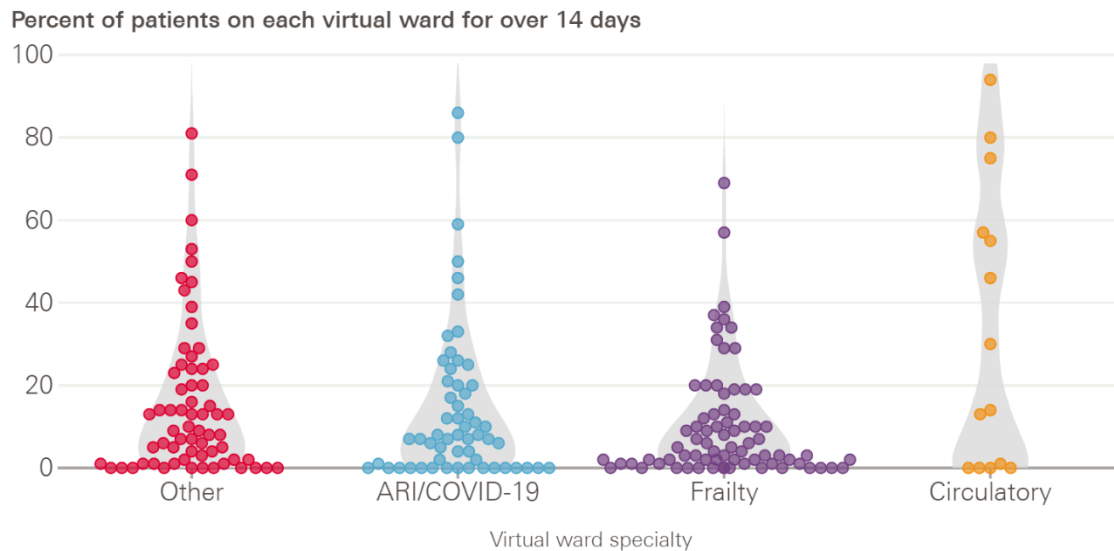


Figure 5c: Circulatory disease virtual wards have more patients with longer lengths of stay

There is a lot of variation in length of stay across all virtual ward types

Circulatory disease virtual wards have more patients with longer lengths of stay



 **The Health Foundation**
© 2024

Source: NHS England SitRep data collection • ARI = acute respiratory infection. This graph shows one dot for each virtual ward. Proportions are calculated based on of patients with known lengths of stay, excluding virtual wards with over 15% of missing data or fewer than 5 patients on average.

NHS England’s virtual ward SitRep data are very limited and are often missing key data. At the time of our analysis, they did not include, for example, data on specific patient diagnoses (only broader diagnosis groups based on ICD-10 categories like ‘diseases of the circulatory system’, ‘frailty’ and ‘COVID-19’). Some data were not well recorded; 27% of patients had their ethnicity recorded as ‘unknown’. Data quality also varied among virtual wards. In a small proportion (11%) of virtual wards, we found that over 80% of referral routes were listed as ‘unknown’.

What do the available data tell us about virtual wards in England?

We can see from the SitRep data that virtual wards are in active use across England. As of December 2023, there were close to 12,000 virtual ward beds at an average of 73% occupancy. According to the Health Foundation's recent [survey](#), 63% of NHS staff and 45% of the UK public are supportive of virtual wards, and 71% of the UK public are open to being treated through a virtual ward depending on the circumstances. The main reason members of the public were unsupportive was a preference for face-to-face care. This suggests some public concern around technology replacing face-to-face care, even though face-to-face care remains a large component of virtual wards. NHS staff thought the major factors to ensuring the success of virtual wards were timely access to hospital if a patient's condition changed and appropriate staffing.

The SitRep data also show the diversity of England's virtual wards, not only between the types of virtual wards but within each type as well. Some virtual wards operate differently to NHS England guidelines, and the different types of virtual wards serve very different groups of patients. The ages, and likely the severity of illness, of patients differ between the types of virtual wards, and length of stay varies greatly, even within a single type of virtual ward. Some virtual wards are more likely to be technology enabled, for example, acute respiratory infection wards. Other virtual wards are not yet using technology. Some specialise in step-up care, and some specialise in step-down care.

This diversity of approaches shows there are many different virtual ward models in use. This could be because ICSs have been able to adapt NHS England guidelines to meet their patients' needs. NHS England provides guidance on implementing frailty, acute respiratory infection and heart failure virtual wards, which we estimate made up 65% of virtual wards in England in April 2023. There are also many possible models of staffing, leadership and patient support. The best model will likely depend on both the local context and patient population. The diversity of virtual wards means that it is not sensible to evaluate them as a single initiative, or even by model of virtual ward. Evidence from a frailty virtual ward (typically short lengths of stays, limited technology enablement) will not automatically apply to a circulatory disease virtual ward (typically long lengths of stays, more likely to be technology enabled). Further, evidence from a step-down frailty ward in an affluent area with dedicated staff may not apply to a predominately step-up frailty virtual ward in a deprived area, where staff are working across different community services.

Evidence from the literature indicates that some patients who would otherwise be in hospital can be treated at home, but it is not clear if this evidence can be generalised for all virtual wards in the NHS England programme. There are many different models of virtual wards in development. It cannot be automatically assumed that all virtual wards in England will be effective on the basis of the evidence in the literature. Without better data, it is also difficult to understand whether patient access to virtual wards is equitable. To explore this, we need more detailed and well-recorded data on patients on virtual wards, as well as insights from listening to patient, carer and staff experiences.

Are England's new virtual wards easing the pressure on hospital beds?

It is not possible to understand from SitRep data whether virtual wards have eased pressure on hospitals. **Overall figures** suggest that hospital bed occupancy has not yet decreased over time, though we do not know what would have happened without virtual wards in place.

Inpatient bed occupancy could remain high even if virtual wards do 'free up' hospital beds. These beds may be used by patients who would not have been admitted previously because there were no beds available – that is, people whose health needs were previously unmet. If more people can receive the care they need – whether at home or in hospital – that is a good thing. We also know from talking to NHS staff that some beds on virtual wards are occupied by patients who refuse to go to hospital. We do not know how often this happens.

The SitRep data do not provide information on if patients on virtual wards would otherwise be in hospital. It is possible that some patients are receiving care on virtual wards that would not otherwise have been admitted. There is also a risk that, if staff are being diverted to virtual wards from other services either in the community or in hospital, less care is available elsewhere in the system. This is something else that needs to be explored.

How will we know if virtual wards are working?

The introduction and expansion of virtual wards in England has been a priority for NHS England. **An initial £450m was made available for their development over the past 2 years**, with 90% intended for investment in the workforce and 10% for technology. With the NHS under record pressures, it is important to ensure virtual wards are providing safe, high-quality and cost-effective care.

The diversity of virtual wards might reflect that each was tailored to its local context in a way that works best for the staff, system and patients in that area. However, this diversity makes the job of evaluation even more complex. No one evaluation will be able to determine whether virtual wards 'work', because different virtual ward models may perform differently. Multiple approaches are needed to examine the many patient- and system-level outcomes across a wide variety of local contexts and models.

Monitoring and evaluation needs to happen at both the local and national levels. At the local level, virtual ward teams, trusts and regional integrated care boards need to be able to monitor whether their virtual wards provide safe, effective and equitable care for patients, and are cost effective. This will help them make improvements as well as decisions on balancing limited staff and resources across services. Local virtual wards already record data on their patients and activities, but it is important to ensure they collect all the data required to monitor their services, and to a high standard. For example, to understand if their virtual ward is equitable, they will need good quality data on the necessary demographics. This will require the right information structures to capture the data and the staffing capacity to record it properly.

At a national level, large-scale evaluation of virtual wards across England will help gain important insights into the overall effectiveness, equity and safety of the different types of virtual wards. It could also help explore the variability in virtual wards and their outcomes. This, in conjunction with in-depth qualitative research, could in turn help determine 'what good looks like' and the key ingredients to achieve it. This will help policymakers and local teams to make decisions on implementation.

For such evaluations to happen, more detailed and standardised national-level data will be required. The SitRep data are currently the only national-level data available on virtual wards, but they are very limited. To address this, NHS England is working to introduce a national patient-level virtual wards minimum dataset by 2026 that aims to include all virtual ward providers, with some providers beginning to supply data this year. High-quality, standardised data from local virtual wards will be needed to feed into this, making investment in local data collection doubly important. The challenge will be bringing together data that are not currently standardised across virtual wards and that differ from information recorded in hospital wards.

The NHS England programme team is aware that the task of evaluating virtual wards will require a multifaceted approach across many organisations. The team has brought together

key evaluation stakeholders, including regional teams, academic institutions, government bodies and other organisations working on both local- and national-level evaluations. These stakeholders are working on a wide range of evaluations, with quantitative, qualitative and economic approaches. There is also an active online community of local virtual ward implementers on the FutureNHS platform who are sharing learnings and supporting other implementers in developing virtual ward practices.

Virtual wards are probably here to stay. With **an ageing population** and an increasing number of **individuals with multiple chronic diseases**, the health and care system will need to provide more support for people at home and in their communities. Virtual wards have the potential to improve many outcomes for both individual patients and the NHS system as a whole. They also have the potential to improve patient experiences and reduce the risks associated with hospital admissions, such as hospital-acquired infections, as well as increase hospital-level capacity without needing to build more hospitals. But virtual wards need to be implemented well, and efficiently. For this, we need high-quality data, careful monitoring and multiple robust evaluations to understand if their potential is being met – and for which patients, in what contexts. This will provide learning and drive improvements to help ensure virtual wards benefit both patients and the health care system.

Appendix

Appendix 1

Methods

To explore how virtual wards are being implemented across England, we analysed NHS England virtual wards SitRep data, which include aggregate-level data on the numbers of patients on virtual wards submitted fortnightly to NHS England by each virtual ward in England. We included data from four submission points between 19 February and 7 April 2023. These data provide information on the numbers of patients on virtual wards at each data collection point, the extent and type of technology enablement in use and the referral routes, discharge destinations and demographic characteristics of the patients. We averaged each of these metrics for each virtual ward across the four submission points in order to minimise the effect of week-to-week variation. Virtual wards with fewer than five patients on average during this period were excluded.

Patients in the SitRep data used were grouped into broad ICD-10 diagnosis categories (such as 'diseases of the circulatory system') as well as two additional categories for frailty and COVID-19 diagnoses. However, virtual ward specialty was not explicitly classified in the data. To compare different types of virtual wards, we classified each as one of the three types with available NHS England guidance (frailty, acute respiratory infection, circulatory diseases) or 'mixed/other', which could include wards specialising in other diseases or general wards with a mixed group of patients. We combined virtual wards focusing on acute respiratory infections and COVID-19 virtual wards into a single group. Where possible, we classified virtual wards based on the name of the ward. For virtual wards that could not be classified by name, we used a rule that if more than 80% of patients on a virtual ward were listed as being in the same broad diagnosis group, we classified the ward by that diagnosis group. If fewer than 80% of patients on a virtual ward were in the same broad diagnosis group, the ward was classified as 'other'. In absence of an explicit classification in the data, this was meant to provide an estimate for the representation of different types of virtual wards across the country, but it may not always correspond with how the virtual ward would classify itself.

Although these data provide a useful overview of the NHS England virtual ward rollout in spring 2023, much may have changed since then. Virtual wards have greatly expanded from the 8,194 beds we report on here to close to 12,000 beds now reported in NHS England's statistics. There were also issues with data completeness and missing data (see Appendix 2, Table 1). There may have been inconsistencies in the way providers submitted data for particular variables, and some providers missed submissions across the eight-week period. Certain variables were more likely to be missing data (such as ethnicity, as compared with length of stay). On top of this, some analyses should be treated with an extra level of caution. In particular, the data on technology enablement should be interpreted cautiously because it is often difficult for virtual ward providers to track and report who is using technology.

Appendix 2

Table 1: Demographics and patient pathways for virtual wards, by virtual ward type

		Frailty	ARI or COVID-19	Circulatory diseases	Mixed or other
Age group	0 to 15	0.1% (<10)	7.8% (110.5)	0.0% (0)	10.2% (368.4)
	16 to 24	0.3% (10.8)	1.1% (15)	0.2% (<10)	1.4% (51.2)
	25 to 34	0.6% (25.5)	1.8% (25.2)	1.7% (<10)	2.5% (90.7)
	35 to 44	1.0% (40.3)	2.8% (39.8)	3.7% (<10)	3.2% (115.8)
	45 to 54	1.9% (76.5)	5.2% (74)	8.6% (21.7)	5.4% (193.9)
	55 to 64	4.8% (192.8)	17.2% (245.2)	15.2% (38.4)	9.3% (336.7)
	65 to 74	12.3% (498)	26.0% (369.8)	24.4% (61.7)	15.0% (541.4)
	75 to 84	32.8% (1328.2)	28.2% (401.9)	28.3% (71.7)	25.3% (912.5)
	Over 85	44.1% (1784.5)	9.7% (138.2)	16.8% (42.5)	26.9% (971.2)
	Unknown	2.1% (83)	0.3% (<10)	1.1% (<10)	0.8% (29)
Gender	Male	39.8% (1610.1)	42.7% (607.8)	67.7% (171.1)	46.8% (1689.2)
	Female	55.4% (2241.4)	55.8% (794.8)	32.3% (81.8)	52.0% (1878.6)
	Unknown	4.8% (193.5)	1.5% (21.5)	0.0% (0)	1.2% (43)
	Ethnicity	White	63.1% (2554)	72.6% (1034.6)	61.1% (154.6)
	Asian or Asian British	2.7% (109.3)	3.5% (50.1)	10.3% (25.9)	4.4% (157.7)
	Black or Black British	1.1% (46.5)	1.1% (16.2)	2.6% (<10)	2.2% (79.6)
	Chinese or other ethnic group	0.8% (34)	1.1% (16.3)	3.4% (< 10)	2.3% (83.2)
	Mixed	2.0% (82.8)	4.1% (57.8)	1.7% (<10)	2.3% (83)
	Unknown	30.1% (1218.4)	17.5% (249)	20.9% (52.9)	27.5% (991.2)
Referral route	Acute hospital inpatient department	20.9% (845.1)	38.8% (552.1)	53.0% (134)	34.4% (1240.9)
	Outpatient department	0.5% (22.1)	1.8% (25.2)	4.5% (11.5)	2.9% (106.3)

	Emergency department	7.4% (299.6)	6.7% (95.1)	2.5% (<10)	6.8% (244.8)
	GP practice	12.4% (503.6)	7.5% (107.3)	0.9% (<10)	9.6% (346.9)
	Mental health service	0.0% (<10)	0.0% (0)	0.0% (0)	0.9% (30.8)
	Community health service	10.7% (433.6)	12.5% (178.2)	15.8% (39.8)	12.6% (456.3)
	NHS 111	0.8% (32.8)	0.0% (<10)	0.0% (0)	0.5% (19.2)
	NHS 999	7.9% (320.2)	0.4% (<10)	0.0% (0)	5.4% (196.6)
	Same-day emergency care	1.1% (42.8)	0.5% (<10)	0.0% (0)	4.8% (174.2)
	Urgent community response	23.6% (954.2)	4.0% (57)	3.0% (<10)	3.4% (122.2)
	Unknown	14.6% (589.2)	27.8% (395.8)	20.4% (51.5)	18.6% (672.6)
Length of stay	0 days	22.5% (828.4)	8.5% (116.5)	25.0% (51)	16.5% (534.4)
	1 to 4 days	44.1% (1624.4)	29.4% (403.8)	15.8% (32.2)	46.1% (1492.5)
	5 to 9 days	18.8% (692.3)	29.4% (403.9)	13.3% (27.2)	18.9% (613.4)
	10 to 14 days	6.8% (249.5)	14.4% (197)	13.6% (27.7)	7.5% (242.9)
	More than 14 days	6.7% (246.2)	14.1% (194.1)	23.4% (47.8)	7.6% (246.6)
	Unknown	1.1% (40.8)	4.1% (56.5)	8.9% (18.2)	3.3% (107.8)
Discharge destination	Usual place of residence	70.7% (2603.5)	63.3% (868)	77.6% (158.3)	75.1% (2431.3)
	Temporary place of residence	0.4% (14.1)	0.8% (11.5)	0.2% (< 10)	0.2% (<10)
	Care home	1.7% (64.2)	0.1% (<10)	0.1% (<10)	0.9% (30.8)
	Admission to hospital	9.1% (334.8)	4.2% (57.5)	2.9% (<10)	5.5% (178.8)
	Patient died	0.7% (25.8)	0.2% (<10)	0.4% (<10)	0.8% (24.8)
	Other	17.4% (639.2)	31.3% (430)	18.7% (38.2)	17.5% (565.3)

ARI = acute respiratory infection.

Acknowledgements

Many thanks to Liz Crellin for her data management support on this project. We would also like to thank Natalie Offord, Lynne Wright, Graham Sutton and the NHS England virtual wards team for their helpful feedback on earlier drafts of this working paper. We would like to thank NHS England for providing access to the SitRep data. Finally, we are grateful for advice from Will Kocur and the national virtual wards programme analysts regarding how capacity has been historically recorded in the SitRep data.