Virtual Ward Evaluations

# Introduction

NHS England define a virtual ward as a “safe and efficient alternative to NHS bedded care that is enabled by technology”(1). Patients are supported in their usual place of residence to receive care and monitoring that they would otherwise receive in a hospital. Virtual ward based care may be entirely in place of an inpatient stay (‘step-up’ or ‘admissions avoidance’) or as a means of supported discharge, replacing the latter stage of an inpatient stay with virtual ward care (‘step-down’).

Virtual wards are being rolled out across ICSs to create additional capacity in the healthcare system. Capacity may be increased by more efficient and productive use of healthcare resources, freeing up inpatient beds and facilitating care in different settings. Virtual ward pathways have been developed initially for frailty and acute respiratory infection, with additional disease pathways such as heart failure and others to follow.

Providers and systems implementing virtual wards must ensure that this added capacity is financially sustainable and delivers benefits in line with allocated funding. Cost assessments of virtual wards would be helpful to build the case for broader rollouts and assist providers in planning and rolling out virtual wards.

However, evaluating the cost impact of a wide-ranging policy change, such as implementing virtual wards, is difficult. Difficulties arise from heterogeneities in the operation of virtual care wards, in formulating the correct counterfactual care option, and in obtaining a sufficiently mature and sufficient dataset. Even where data exists, there is limited standardisation of data models and definitions of how certain concepts should be recorded.

This document summarises the virtual ward datasets that are being compiled, who has been involved in work to evaluate virtual wards and what sorts of virtual ward resource evaluations have been completed.

# Data Available

There is no comprehensive national-level dataset for recording aspects of virtual ward care of the type that exists for hospital and community care. NHSE currently asks providers to submit data to a national ‘sitrep’, which collects monthly data on the number of patients on a virtual ward, referrals, and discharges. The data available is segmented according to broad ICD Chapter groupings, referral sources, (binned) age groups, ethnicity, and (binned) stay lengths. The data is aggregated to a higher level than the individual or visit and does not contain any financial values or information on resource usage other than stay length, which is often used as a proxy for resource usage in studies.

NHS England have proposed creating a minimum dataset for virtual wards that builds on the existing sitrep with further detail. This information, collated at the patient level, will provide a helpful template for collating data for future evaluations, providing additional contextual information for subgroup analysis and basic demographic information, which may be beneficial for constructing fair comparisons with inpatient care.

Local ICSs have also developed their own datasets, flows, and recording standards when setting up virtual wards, primarily to facilitate the operation of the virtual ward and for data sharing. These datasets are another potential data source for those interested in cost and resource evaluations.

# Who has done work in this area?

Virtual ward technology providers have produced some evaluations of resource and outcome effects of virtual wards(2), accepting the methodological limitations detailed below. These analyses, like other academic cost evaluations using real world data (3), find it difficult to completely match a comparator and virtual ward group and also tend to rely on translating a projected bed day saving using an average inpatient cost, which has been recognised as a common issue with analyses and which is likely to overstate benefits(4). Additionally, if evaluations are unable to adequately construct equivalent comparison groups for virtual ward patients and those having alternate care, then results may be affected, for example, if an evaluation compares costs for people on a virtual ward with costs for people having higher healthcare needs in an inpatient care setting.

There is more published academic evidence for hospital-at-home frailty care, as this area has been longer in operation and arguably has had more opportunities for study(5). A literature review of hospital-at-home schemes also noted the wide variety in claimed savings in studies, between a cost of EUR 2,000 and a benefit of EUR 8,000 per patient (2018 prices), though almost all were assessed with a risk of overstating savings. Like virtual ward evaluations more generally, overstatement of cost benefits may occur as a result of the omission of the (social) costs of informal care for virtual ward patients, difficulties in constructing an adequate comparison between hospital-at-home patients, who may have less severe health needs than inpatients, and the imprecision of using average inpatient day costs (6). Another recent overview found that resource usage for hospital-at-home was unclear (7).

At least one trust has conducted its own limited cost analysis (8), attempting to estimate financial benefits as the opportunity cost of an additional inpatient or avoided admission. Methodologies for these analyses make broad assumptions, for example, that every patient admitted to a virtual ward for step-up care would otherwise have been hospitalised and that the cost of that admission would be equal to an average cost of non-elective frailty admissions preceding the establishment of the virtual ward.

Academic Health Science Networks have also typically been involved in trust level evaluations, for example, the Wessex Academic Health Science Network’s rapid review of NHS Hampshire’s virtual frailty ward (9). This analysis uses an age and HRG-matched control group for step-down care, benefiting from inpatient and virtual ward data linkages. Step-up care is required to use a more generic age-matched control group. Both forms of care are translated into a financial impact via the use of average bed day costs, which, in the case of step-down care, has the potential for overstatement, as noted above. The average bed day saving of 3.7 days was multiplied by a cost of £333.81 to yield a £1,235 saving per patient.

Other rapid evaluations include the Innovation Collaborative South West Hertfordshire’s evaluation of a COPD virtual ward, which found that the virtual ward cohort had a lower length of stay with comparable readmission rates. Statistical significance was not possible due to the small size of the study population (10). The Health Innovation Network (South London) also reviewed a small cohort of patients treated within a virtual ward in Croydon, which found that the service could appropriately deliver care that patients were broadly satisfied with and a total estimated cost saving per patient of £742.44. The evaluation concluded that more data was needed to understand whether the effects on clinical outcomes and healthcare capacity were significant (11). A subsequent and more general rapid review was completed in November 2022, looking at several virtual wards in south-west London. Indicative modelling of financial savings from saved bed days was estimated at £3,000-£4,500 per patient, but this did not account for the costs of the virtual ward service. A further review to publish in December 2023 intends to evaluate virtual wards commissioned by South West London ICS.

The Kent Surrey Sussex Academic Health Science Network conducted a review of virtual wards in Northamptonshire (12), finding that the tech-enabled virtual ward had some economic benefits over the ‘traditional’ virtual ward, which did not have the remote monitoring and reporting technology, the tech-enabled virtual ward having a lower length of stay than the traditional virtual ward. Additionally, the Strategy Unit conducted a rapid review of a step-down paediatric virtual ward, with the results suggesting that the virtual ward released between 1-3 inpatient bed days per patient (13).

Norfolk and Norwich University Hospitals conducted a mixed methods evaluation, which found a high rate of patient satisfaction and a bed-day saving of approximately 50% compared to admitted care (14). A rapid evaluation by Newton Europe of Mid and South Essex ICS’s virtual wards found reduced hospital infection rates for those cared for on virtual wards and financial benefits via bed day savings(15). Finally, several bodies in the North West collaborated on a rapid review of virtual wards in Cheshire and Mersey (16), finding a positive bed day saving, though noting that quantifying the benefits of the bed savings requires additional work. More detail on these rapid evaluations and an evidence directory, split by theme, clinical pathway and country, is available [on the FutureNHS website](https://future.nhs.uk/NationalVirtualWards/view?objectId=145219493) for those who can access this resource.

GIRFT has produced a summary of existing virtual ward guidance in a concise format(17). The Health Foundation are planning a frailty evaluation and are currently looking for available data as part of a three-phase programme, working closely with a few sites to obtain local data. This analysis intends to produce descriptive analysis in the first two phases, followed by analyses of key outcomes, including readmission risk, stay length and mortality. Subgroup analysis will evaluate whether there are differential effects amongst certain groups. In addition, the health foundation [has conducted a representative survey of people](https://www.health.org.uk/news-and-comment/charts-and-infographics/how-do-the-public-and-nhs-staff-feel-about-virtual-wards), aiming to discover opinions and levels of support for virtual wards. This survey found that “*The UK public is, overall, supportive of virtual wards…But this support is finely balanced – with a further 19% unsure*”. Support for virtual wards was also lower in socioeconomic groups D and E relative to other groups.

Other evaluations and tools that may be available soon include a proposed ROI tool to be developed by the NHSE virtual ward team, qualitative work to be carried out by the Warwick Business School looking at barriers and enablers for virtual ward adoption, and work from NHS Elect looking at the burden of conditions which may be suitable for virtual ward care, alongside qualitative work regarding patient experience at different interaction points of the virtual ward pathway.

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