

Service evaluation of the Virtual Services Team

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Executive summary

Bradford Teaching Hospitals

Background

 Bradford Teaching Hospital NHS Foundation Trust (BTHFT) established the Virtual Services Team (VST) with the aim of creating a single Trust-wide and multi-specialty virtual ward (Hospital at Home service) with single governance, information requirements, principles and oversight. The aim was to ensure that every major speciality in the Trust can offer access to the virtual ward to every clinically suitable patient

Approach

- A service evaluation of the VST activity was conducted using activity data from the service's launch on 26/06/2023 to 31/08/2024. The analysis included the substantive review of all VW admissions and explored the following:
 - ✓ Referral outcomes
 - ✓ VW length of stay
 - ✓ Admission type (step-up/down)
 - ✓ Return to hospital rate
 - ✓ Occupancy evolution
 - Admissions & discharges by day of the week

- Demographic analysis covering: age, sex, ethnicity and deprivation
- ✓ Patient & clinician feedback
- Impact on inpatient bed-days
- ✓ Cost of VW bed-day
- ✓ Return on Investment



Executive summary Key findings

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Adoption and reach	 7 specialties currently utilise the VST services
Service utilisation	 Referral acceptance rate of 80% with 754 patients admitted to the VW The average length of stay, of those discharged, was of 9.8 days The average monthly admission rate is steadily increasing, reaching 73 in FY24-25 Mix of step-up & step-down patients (50%-50%)
Patient profile	 VST patients are generally older than inpatients, with 67.4% over 55 years old v. 53.2% for the inpatient cohort Most deprived patients (deprivation index 1-3) are over-represented compared to the inpatient cohort (75.6% - 70.3%) Sex and ethnicity distributions are largely consistent with inpatient demographics
Patient and clinician satisfaction	 Patient satisfaction is exceptionally high, with 96.6% reporting good or very good experience Clinician feedback is overwhelmingly positive, with consultants praising the VST's positive impact on patient care and resource management
Impact on IP bed- days	 Significant impact on scaling demand for inpatient beds The estimated number of inpatient bed-days avoided was 1,671 in FY23-24 and 1,577 in FY24-25 the equivalent of 6.7 and 11.5 beds per day respectively
Cost-Effectiveness	 For FY23-24 VST delivered a positive return on investment with £2.1 for every £1 invested For FY24-25 VST delivered a positive return on investment with £4.9 for every £1 invested



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Background information





"To create one Trust-wide virtual ward with single governance, information requirements, principles and oversight; ensuring that every major speciality in the Trust is able to offer access to the virtual ward for every clinically suitable patient." Virtual Services Strategy



NHSE definition Virtual Wards provide hospital level care at home

virtual ward

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A virtual ward is a safe and efficient **alternative** to NHS bedded care.

Virtual wards support patients who would **otherwise be in hospital** to receive the acute care and treatment they need in their own home.

This includes either **preventing avoidable** admissions into hospital, or **supporting early** discharge out of hospital. • The acuity and complexity of the patient's condition differentiates virtual wards from other community and home-based services

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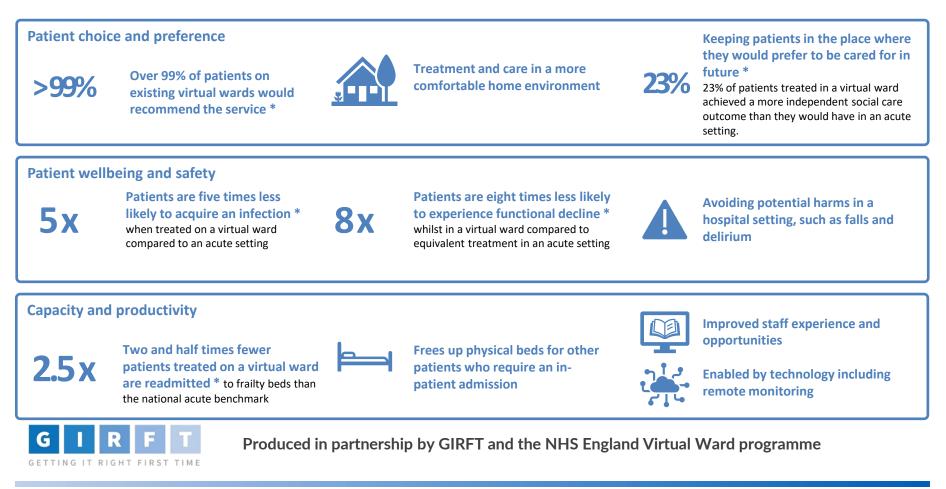
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- It provides urgent access to hospital-level diagnostics (such as endoscopy, radiology, or cardiology) and may include bedside tests such as point of care (POC) blood tests and point of care ultrasound
- It provides **hospital-level interventions** (such as access to intravenous fluids, therapy, and oxygen)
- It requires **daily input from a multidisciplinary team** and sometimes **multiple visits and provisions** for 24 h cover with the ability to respond to urgent visits, often **enabled by technology**
- It requires consultant practitioner specialist leadership and clear lines of clinical responsibility
- **Defined inclusion and exclusion criteria**, with defined target population and deliver a **time-limited short-term intervention** of 1–14 days.
- VW patients have equity of access to other specialty advice as though an in-patient.

NB: A virtual ward **is not** a mechanism intended for enhanced primary care programmes; chronic disease management; home intravenous or infusion services; intermediate or day care; safety netting; or proactive deterioration prevention. Wider virtual care supported services (including NHS@home) are scaling to enabling these cohorts to be increasingly supported at home / in the community,



The benefits seen in existing virtual wards Bradford Teaching Hospitals

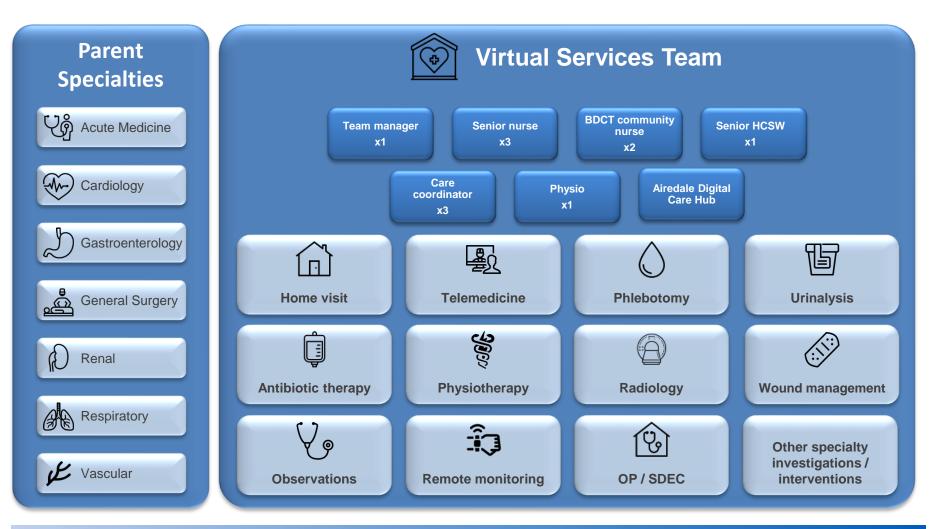




* The data is based on observations from single site analyses

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Virtual Services Team (VST)





Virtual Services Team (VST) Key characteristics





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Single team delivering Virtual Ward services to all adult specialties Single referral and recording mechanism within Cerner

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Patient accountability lies with a named Consultant Physician mirroring inpatient process





VST service evaluation

26/06/23 - 31/08/24





Methodology

- A service evaluation of the VST activity was conducted using activity data from the service's launch on 26/06/2023 to 31/08/2024
- The analysis included the substantive review of all VW admissions and explored the following:
 - ✓ Referral outcomes
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 - ✓ Occupancy evolution
 - \checkmark Admissions & discharges by day of the week

 Demographic analysis covering: age, sex, ethnicity and deprivation

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- ✓ Patient & clinician feedback
- Impact on inpatient bed-days
- ✓ Cost of VW bed-day
- ✓ Return on Investment

- Data sources:
 - ✓ Cerner (EPR)
 - ✓ Interviews of clinical staff including Consultant Physicians, ACPs and Nurses
- Assumptions:
 - The estimated number of inpatient bed-days avoided is based on clinician interviews which may introduce subjectivity. A further clinical audit may be required to validate the findings
 - 90% utilisation rate for inpatient beds was assumed to calculate the number of IP beds released per day
 - An average inpatient bed-day cost of £600, based on 2022/23 PLICS data, was used to calculate the
 opportunity saving, representing the costs avoided by treating patients at home





- Key metrics 26/06/23 – 31/08/24
- 754 patients admitted to the VW
- The average length of stay, of those discharged, was of 9.8 days (7.0-23.8)
- The return to hospital rate of 13.0% (7.6%-33.3%)

Key statistics to date								
Specialty	Admissions	Discharges	Bed-days (of discharged)	Average Length of stay	Patients returning to hospital	Return to hospital rate		
Acute Medicine	204	198	1,505	7.6	15	7.6%		
Cardiology	22	18	428	23.8	6	33.3%		
Gastroenterology	32	28	396	14.1	4	14.3%		
General Surgery	250	241	1,697	7.0	41	17.0%		
Renal	60	58	479	8.3	5	8.6%		
Respiratory	118	116	1,327	11.4	13	11.2%		
Vascular	68	66	1,187	18.0	10	15.2%		
Total	754	725	7,019	9.8	94	13.0%		



Together, putting patients first

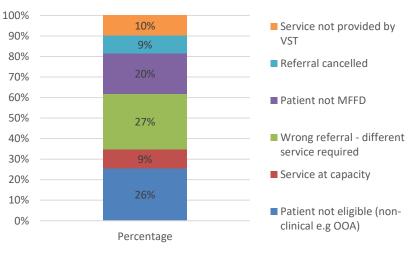
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- 938 patients were referred to the VW of which 754 (80%) were admitted to the service
- 20% of referrals (184 patients) were rejected as per the reasons outlined below

Referral analysis							
Specialty	Referrals	Accepted	Rejected	% rejected			
Acute Medicine	248	204	44	18%			
Cardiology	28	22	6	21%			
Gastroenterology	43	32	11	26%			
General Surgery	317	250	67	21%			
Renal	68	60	8	12%			
Respiratory	149	118	31	21%			
Vascular	85	68	17	20%			
Total	938	754	184	20%			











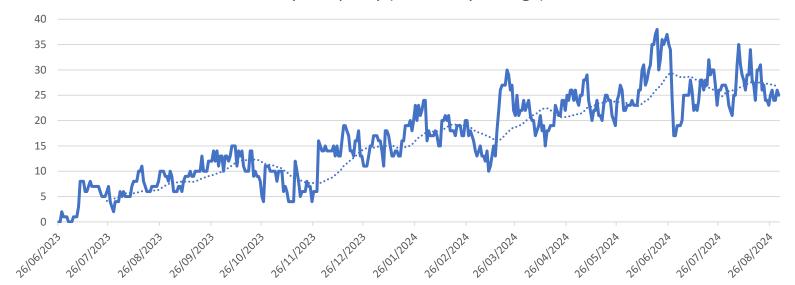
- Admissions 26/06/23 – 31/08/24
- 754 patients were admitted between 26/06/2023 and 31/08/2024 with an average of 54 admissions per month (excluding June 23). For FY24-25 the average monthly admissions were 73

Admissions by month								
Month	Acute Medicine	Cardiology	Gastroenterolo gy	General Surgery	Renal	Respiratory	Vascular	Total
2023								
Jun	0	0	0	2	0	0	0	2
Jul	5	0	0	15	0	0	4	24
Aug	8	0	0	13	0	4	2	27
Sep	10	5	0	11	0	8	1	35
Oct	12	0	2	20	0	7	0	41
Nov	13	0	1	21	0	10	0	45
Dec	15	0	4	20	0	5	13	57
2024								
Jan	21	3	0	11	4	13	2	54
Feb	14	0	1	16	7	8	2	48
Mar	13	3	1	14	8	14	3	56
Apr	19	2	2	18	1	9	8	59
May	13	1	3	22	6	12	9	66
Jun	22	3	4	23	16	13	10	91
Jul	24	4	4	18	6	8	4	68
Aug	15	1	10	26	12	7	10	81
Total	204	22	32	250	60	118	68	754





- **Occupancy rate** 26/06/23 – 31/08/24
- The occupancy rate has been steadily increasing as the VST model matures. The average daily occupancy in FY24-25 YTD is 25.2 patients



Daily occupancy (inc. 30-day average)

Average occupancy by Specialty

Period	Acute Medicine	Cardiology	Gastroenterol ogy	General Surgery	Renal	Respiratory	Vascular	Total
FY23-24	3.0	1.2	0.6	3.7	1.7	2.9	1.3	12.6
FY24-25	4.7	1.9	2.0	4.6	2.2	4.1	5.7	25.2



Together, putting patients first

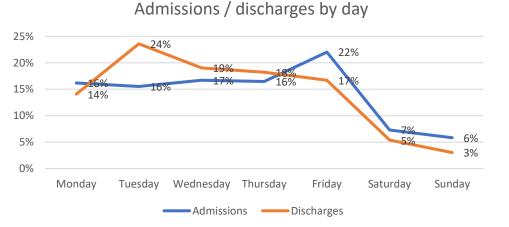
Admissions & discharges by day of the week 26/06/23 – 31/08/24

- Admissions and discharges predominantly take place during weekdays; 87% and 92% respectively
- Admissions are evenly spread over the weekdays with the exception of Friday where a 36% increase is observed, aligning to the IP admission/discharge profile
- Discharge pattern is more variable with discharges peaking on Tuesday

Admissions/discharges by day								
Day	Admissions	Discharges						
Monday	123 (16%)	102 (14%)						
Tuesday	117 (16%)	171 (24%)						
Wednesday	126 (17%)	138 (19%)						
Thursday	124 (16%)	132 (18%)						
Friday	166 (22%)	121 (17%)						
Saturday	55 (7%)	39 (5%)						
Sunday	43 (6%)	22 (3%)						
Total	754 (100%)	725 (100%)						

Virtual

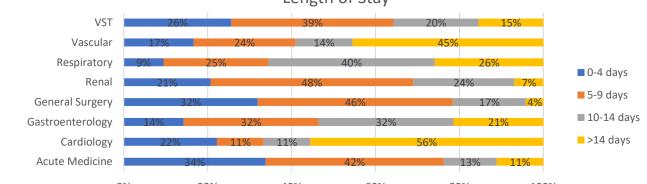
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- Length of Stay 26/06/23 – 31/08/24
- 84% of our admissions were up to 14 days, in line with the NHSE guidance
- Cardiology had the highest % of patients staying >14 days, with 56%, followed by Vascular (45%)
- On the other hand for General Surgery only 4% stayed >14 days whilst for Renal the rate was 7%



Length of Stay

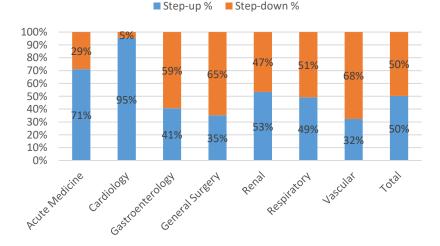
	0%	20%	40%	60%	80%	100%				
	Length of stay distribution by specialty									
LoS	Acute Medicine	Cardiology	Gastroenter ology	General Surgery	Renal	Respiratory	Vascular	Total		
0-4 days	67	4	4	77	12	11	11	186		
5-9 days	84	2	9	112	28	29	16	280		
10-14 days	25	2	9	42	14	46	9	147		
>14 days	22	10	6	10	4	30	30	112		
Total	198	18	28	241	58	116	66	725		







- VST supports both step-up and step-down patients* with an overall ratio of 50%-50%
- Cardiology recorded the highest step-up ratio (95%) relating to HF patients admitted directly from the community
- Conversely Vascular recorded the highest step-down ratio of 68% (VAC dressings & larvae therapy)



Admission ty	be by s	specialty
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Admission type							
Specialty	Admissions	Step-up	Step-down				
Acute Medicine	204	145 (71%)	59 (29%)				
Cardiology	22	21 (95%)	1 (5%)				
Gastroenterology	32	13 (41%)	19 (59%)				
General Surgery	250	88 (35%)	162 (65%)				
Renal	60	32 (53%)	28 (47%)				
Respiratory	118	58 (49%)	60 (51%)				
Vascular	68	22 (32%)	46 (68%)				
Total	754	379 (50%)	375 (50%)				





*Note: Step-up patients were defined those that were either admitted straight to the VW or spent <24 hours admitted to MAU or SAU



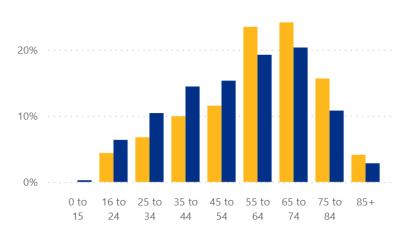
• The table below compares the age of the VW patients versus the inpatient population for the inscope specialties

 Patients admitted to VW are typically older than those on the inpatient wards with 67.4% being over 55 years old compared to 53.2% for the inpatient wards

Age distribution								
Age band	VST	Inpatients						
0 – 15	0%	0.3%						
16 – 24	4.4%	6.4%						
25 – 34	6.8%	10.4%						
35 – 44	9.9%	14.4%						
45 – 54	11.5%	15.3%						
55 – 64	23.5%	19.2%						
65 – 74	24.1%	20.3%						
75 – 84	15.6%	10.8%						
85+	4.1%	2.8%						

VST % and EPR % by Age Band

● VST % ● EPR %











- The table below compares the sex of the VW patients versus the inpatient population for the inscope specialties
- The sex distribution is approximately 50%-50% between male & female, aligned with that of the inpatient wards

53.3%

37.4%

 Further analysis would need to be conducted to explore the reasons behind the seemingly material over-representation of males in Cardiology and Vascular

	Female		49.9%	49.4%	6	
	Se	ex distrib	ution by spe	cialty		
	Specialty	V	ST	Inpatients		
	Specially	Male	Female	Male	Female	
Acu	ute Medicine	50.5%	49.5%	51.3%	48.7%	
(Cardiology	86.4%	13.6%	64.5%	35.5%	
Gas	stroenterology	40.6%	59.4%	50.8%	49.2%	
Ger	neral Surgery	42.8%	57.2%	45.4%	54.6%	
	Renal	58.3%	41.7%	51.2%	48.8%	

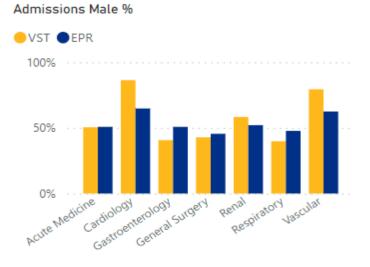
60.2%

20.6%

46.7%

62.6%

39.8%







Respiratory

Sex distribution

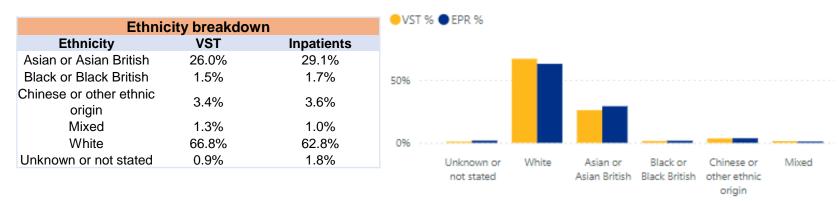
26/06/23 - 31/08/24

Sex distributionGenderVSTInpatientsMale50.1%50.6%Female49.9%49.4%



Ethnicity distribution 26/06/23 – 31/08/24

- The table below compares the ethnicity of the VW patients versus the inpatient population for the in-scope specialties
- Overall the case load of the VW aligns with that of the inpatient wards with regards to ethnicity



VST % and EPR % by Ethnicity Group



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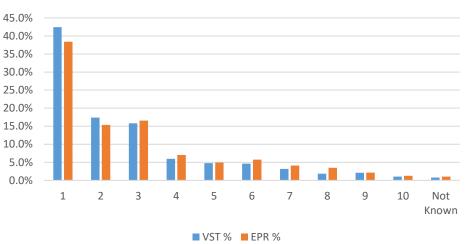
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Deprivation distribution 26/06/23 – 31/08/24

 Analysis of the deprivation score shows that most deprived patients (score 1-3) are overrepresented in the VST cohort compared to the inpatient cohort for the same period of time 75.6% v. 70.3%)

Deprivation score distribution						
Deprivation score	VST	Inpatients				
1	42.4%	38.4%				
2	17.4%	15.3%				
3	15.8%	16.6%				
4	6.0%	7.0%				
5	4.8%	4.9%				
6	4.6%	5.7%				
7	3.2%	4.1%				
8	1.9%	3.5%				
9	2.1%	2.1%				
10	1.1%	1.2%				
Not known	0.8%	1.0%				

Deprivation score distribution





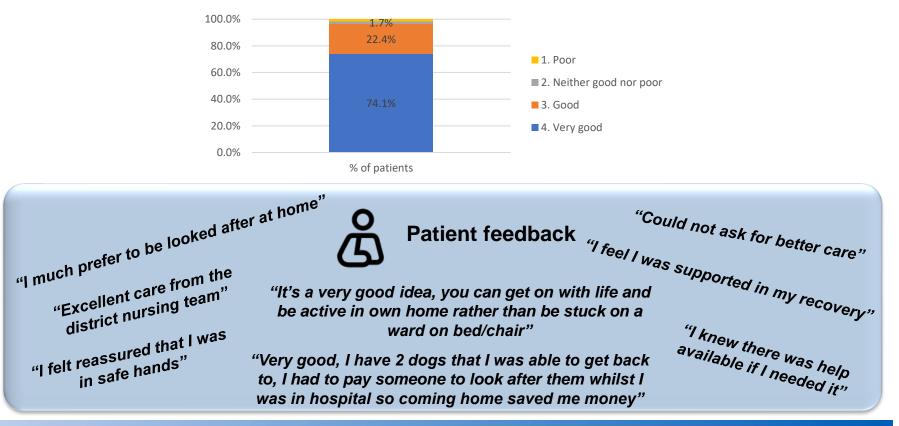
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Patient feedback

Based on FFT score collated 96.6% of patients (N=58*) reported a good or very good satisfaction score







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Clinician feedback

"The Virtual Ward, across the many and expanding number of specialties that it serves, has already proven to be a meaningful productive addition to the pathways that they offer. It has demonstrated that in providing safe at home care for patients, who would otherwise occupy a hospital bed, that it can provide safe comprehensive care enabling a patient to benefit from all of the advantages of being in their usual home environment. Undoubtedly, in these straitened times where resources are increasingly scarce, this is a development that can enable us to maintain our high quality professional care of patients whilst reserving the inpatient resource for those who need it most. Clearly, we are only part-way along this journey and there is still much work to do. All and any of those interested can contact any of the members of the Virtual Services Team for further information as we would only be too pleased to talk to you in the hope of fostering further engagement and driving wider adoption of this exciting opportunity." James Halstead, Upper GI Consultant & VW Clinical Lead

"I consider virtual wards as an integral part of the treatment of patients with heart failure, and in many ways we have been somewhat behind the curve with this approach to how we treat our patients. We have ample data that tell us that hospitalisation whilst potentially beneficial is an inherently risky prospect for many patients with severe disease and impaired immune systems. From a patient preference point of view, again we acknowledge that patients have a strong preference to be treated in their own home wherever possible. Until now, we've had no option but to keep patients in hospital for extended periods of time, a lot of which is spent with little or no direct interaction with staff. Virtual wards allow us to deliver the same interventions and monitoring for patients, with regular review to ensure that any deterioration is captured early and allows treatment to be changed or escalated to hospital admission." Jiv Gosai, Cardiology Consultant

"The Virtual Service Team has been one of the most important supporting services I have used in my life as a medical consultant. It not only provides reassurance to patients and the discharge team, but it is also a seed for massive future opportunities and much larger projects" **Tameem Tawfiq, Acute Medicine Consultant** "We know that patients who are discharged following a COPD exacerbation are at an increased risk of readmission to the hospital. The respiratory specialist virtual ward MDT has provided us with the ability to support an earlier discharge for patients' by delivering care directly into their homes during the acute illness and arranging a prompt outpatient follow up with the specialist team. The virtual service is an integral step in addressing this high readmission rate." **Tanveer Khalid, Respiratory Consultant**

"The Virtual Services Team is a very welcome addition to our array of virtual activities and delivers a consistently high standard of care for patients who are well enough to complete their treatment at home rather than in hospital. We will be looking to extend our use of the VRI from essential monitoring to therapeutic interventions in the home setting." John Stoves, Renal Consultant





VST impact 26/06/23 – 31/08/24



Impact on IP bed-days Limitations

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- To calculate the impact of the VW we interviewed Consultant Physicians, ACPs and nurses from all specialties and through looking at the case-mix of patients we calculated an approximate number of IP bed-days avoided
- Whilst this is a desktop exercise with obvious limitations it provides a useful insight on the beddays released by the operation of the Virtual Ward
- A clinical audit in each respective specialty may help confirm our findings





- In FY23-24 patients spent a total of 3,099 days on the VW resulting in 1,671 IP bed days avoided
- Assuming a 90% utilisation this is the equivalent of 6.7 beds per day

FY23-24 (June-March): Key statistics							
Specialty	Admissions	Discharges	VW Bed-days (of discharged)	Average Length of stay	IP bed-days avoided per patient	Total IP bed- days avoided	Beds @ 90% occupancy
Acute Medicine	112	109	793	7.3	3	327	1.3
Cardiology	11	9	226	25.1	11	99	0.4
Gastroenterology	9	8	71	8.9	3	24	0.1
General Surgery	143	140	978	7.0	6	840	3.3
Renal	19	15	130	8.7	2	30	0.1
Respiratory	69	61	640	10.5	3	183	0.7
Vascular	27	24	261	10.9	7	168	0.7
Total	390	366	3,099	8.5		1,671	6.7





- In FY24-25 patients spent a total of 3,920 days on the VW resulting in 1,577 IP bed days avoided
- Assuming a 90% utilisation this is the equivalent of **11.5 beds per day**

FY24-25 (April-August): Key statistics							
Specialty	Admissions	Discharges	VW Bed-days (of discharged)	Average Length of stay	IP bed-days avoided per patient	Total IP bed- days avoided	Beds @ 90% occupancy
Acute Medicine	92	89	712	8.0	3	267	1.9
Cardiology	11	9	202	22.4	11	99	0.4
Gastroenterology	23	20	325	16.3	3	60	0.4
General Surgery	107	101	719	7.1	6	606	4.4
Renal	41	43	349	8.1	2	86	0.6
Respiratory	49	55	687	12.5	3	165	1.2
Vascular	41	42	926	22.0	7	294	2.1
Total	364	359	3,920	10.9		1,577	11.5





Cost per VW bed-day FY23-24: 26/06/23 – 31/08/24

- For FY23-24 the total direct cost for running VW (exc. ANHST & BDCT input) was £488,291 delivering 3,099 VW bed days. The average VW bed-day direct cost was: £157.6
- For FY24-25 (April-August) the total direct cost for running VW (exc. ANHST & BDCT input) was £193,620 delivering 4,012 VW bed days. The average VW bed-day cost was: £49.4

Direct cost						
Period	Actual spend	VW bed-days	Direct cost per VW bed- day			
FY23-24	£488,291	3,099	£157.6			
FY24-25 (April-August)	£193,620	3,920	£49.4			

"The 2023/24 and 2024/25 business cases for VWs should be focused on their current phase of transformation, which includes investment in testing, adaption and generation of real-world evidence. **For the next two years the business case should not be aimed at demonstrating the long-term sustainability for VWs** – before the sustainability case can be made, more work is needed on: defining the optimal model, the transformation and integration of services and real-world evidence of impact."

Health Innovation Network: The benefits of Virtual Wards: writing a sustainable Business Case





Return on Investment FY24-25: 01/04/24 – 31/08/24

- We calculated the Return on investment presented as an opportunity saving, i.e. the costs directly avoided by patients spending less time in hospital by treating them at home. This is based on an average IP bed-day cost of £600*
- For FY23-24 VST delivered a positive return on investment with £2.1 for every £1 invested
- For FY24-25 VST delivered a positive return on investment with £4.9 for every £1 invested

Direct cost						
Period	Actual spend	IP bed-days avoided	Opportunity saving	Return on Investment		
FY23-24	£488,291	1,671	£1,002,600	2.1		
FY24-25 (April-August)	£193,620	1,577	£946,200	4.9		

Other benefits not considered above:

- Flow (e.g. gastroenteritis patients)
- o 379 downstream ward admissions avoided (see slide 18)
- ICU step-down
- Vascular: "If these patients were discharged from the vascular [IP] ward at +7 days they would need a very early diabetic foot/vascular/woundcare OPA within 1-2 weeks but at discharge from the current virtual ward these patients are now in a more stable situation and can be followed up 4-6 weeks after discharge from a physical bed." Kevin Mercer, Vascular Consultant



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Next steps

Further embedding of the service in all in-scope specialties

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Develop new referral streams to increase step-up admissions

Onboard additional specialties