

Summary report:

Real-world mixed-methods evaluation of the impact and implementation of the Hospital at Home Services established across BOB ICS



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Executive summary



Executive summary

Overview

The length of this report reflects the complexity of the evaluated system, encompassing services at varying stages of development and maturity.

Evaluation Background:

- **Considerable time, money, and resources** have been invested into the Buckinghamshire, Oxfordshire, and Berkshire West Integrated care system (BOB ICS) Hospital at Home (HaH) programme. However, the **impacts of this new model of care are unknown**. Furthermore, an understanding of the **core components of each of the services** is required to support the system to define how best to implement HaH services in future.
- **Health Innovation Oxford & Thames Valley** were commissioned by BOB ICB to coordinate a real-world evaluation of HaH services across the system to enable BOB ICS to develop and spread the HaH model of care.
- This real-world service evaluation aims to understand how the services are being implemented and their impact on service users, the workforce, and the wider health and care system. More specifically, it aims to answer the following questions:

1. What are the core components of each of the hospital at home services established across BOB ICS?

2. What are the patient profiles of those admitted to the hospital at home services?

3. What are the levels of acuity and complexity of needs of the patients being treated by the hospital at home services?

4. Do the hospital at home services deliver positive outcomes that improve the health, wellbeing, and experience of service users?

5. How do the hospital at home services impact the system?

6. How do the hospital at home services impact the workforce?

Evaluation Approach:

This evaluation was conducted between September 2023 and January 2024. A mixed-methods approach was used combining quantitative and qualitative approaches to capture both process and impact outcomes, as well as the perspectives of staff. Using triangulation in a convergent design, qualitative and quantitative data were analysed separately and then brought together to gain additional insight through comparisons and joint interpretation.

Semi-structured interviews and an electronic survey administered to HaH staff were used to understand the impact on the workforce, service implementation, challenges, and opportunities for improvement. These were supplemented by a document review.

Routine demographic, clinical, and health services data were extracted monthly from Provider EPR systems. This patient-level data was linked to various service/activity data to evaluate healthcare utilization impacts before and after HaH treatment.

Report content:

This report distils the findings from a comprehensive evaluation, providing an overview of the essential insights and conclusions, highlighting:

- *Good practice*
- *Key areas of variation*
- *Challenges faced by the services and the evaluation*

This report offers recommendations for service development, drawing from the experience and learnings of BOB ICS. These recommendations are intentionally designed to be widely applicable and can be used by other systems to support service development and improvement.

Executive summary

BOB ICS Headline figures (Sept 2023- Jan 24)

Access

6500 adults and 320 children were discharged from the BOB ICS HaH services accounting for 46,685 and 715 bed days, respectively.



Length of stay (LoS) and readmission to HaH

Mean HaH LoS was 7 days for adults and 2 days for children. For 9% of adult discharges and a small number of children (n=5) the HaH admission was preceded by an earlier HaH stay within 28 days.

Discharge destination

83% of adults and 97% of children stayed in their domestic home with no new or additional support needs from health and social care.



The average effect of the HaH intervention for priority activities (calls to 111, ambulance incidents and conveyances, ED attendances and non-elective admissions) is estimated to be a decrease in activity counts of 0.6 activities per patient discharge.



Calls to 111

Reduced by 58% for adults and 85% for children*

Emergency admissions

reduced by 73% for adults and 85% for children*



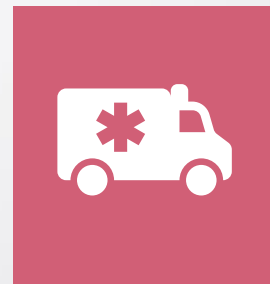
Emergency admissions (overnight)

reduced by 70% for adults and 90% for children*



Type 1 ED attendances

reduced by 75% for adults and 88% for children*



Ambulance incidents

reduced by 66% for adults and 85% for children*

Ambulance conveyances reduced by 69% for adults and 83% for children*

Executive summary

Key findings

- **Variation in Models:** There is significant variation in the models of care and stages of development across different HaH services, impacting the nature of the intervention received by patients.
- **Demographics:** Adults treated by the services were more likely to be white, female and older (mean age 74 years), while children treated were typically young (0.8 years) and were mainly white, and male. Adults presented with a range of acute illnesses and exacerbations of chronic conditions such as COPD, COVID-19, heart failure and cellulitis, with palliative care provided for those with advanced or life-limiting illnesses. The most common primary diagnoses were pneumonia (10%) and urinary tract infections (8%) among adults, while children were predominantly treated for acute bronchiolitis (67%) alongside gastrointestinal and viral infections.
- **Referrals** came from a wide range of sources and were predominantly aimed at admission avoidance (60%), with variation dependent on service focus (frailty, palliative care vs. broader conditions) and provider type (acute, community/GP-led, integrated).
- **Care setting:** Most patients were treated at home (88%) and many adults (35%) lived alone without informal caregivers.
- **Factors potentially contributing to health inequalities:** Access for the Core 20 population and patients with substance dependence, severe mental illness, dementia, learning disability and autism varied across services.
- **Length of stay and readmission to the service:** HaH Length of stay was generally short for both adults (mean; 7 days) and children (mean; 2 days), with approximately 9% of adults and a small number of children (n=5) readmitted to the HaH service within 28 days.
- **Acuity and complexity of needs:** The data highlights a diverse patient population, characterized by varying levels of frailty, physiological acuity, and medication complexity. While average physiological acuity (National Early Warning Score 2; NEWS2 score of 1.4) and medication burden (1.6 medications per patient) appear relatively low, patients exhibit moderate frailty (Clinical Frailty Scale; CFS of 6). Some patients required intensive treatments like IV antibiotics, diagnostic evaluations such as point-of-care ultrasound, and multidisciplinary monitoring and review. Accordingly, a comprehensive, patient-centered approach is crucial, integrating tailored care plans to address the medical, physical, psychological, and social needs across this spectrum of complexity.
- **Healthcare utilisation:** The findings suggest that across BOB ICS, the HaH intervention is associated with a statistically significant reduction in the number of calls to 111, ambulance incidents and conveyances, ED attendances and Emergency admissions in the 28 days post discharge compared to 28 days prior to the HaH episode. However, the degree to which these activities are reduced varies between providers and pathways.
- **Workforce impact:** The impact on the workforce is characterized by both positive aspects and challenges. The positives include a supportive environment, professional development opportunities, and strong teamwork, which contribute to staff feeling valued and motivated. However, challenges such as increasing workloads, staffing shortages, and integration difficulties need addressing. Improvements in remote working, workload management, and access to medical support are necessary, alongside enhanced training, better technology use, and stronger collaboration with the voluntary sector.

Executive summary

key conclusions and recommendations

The evaluation highlights some clear benefits of HaH services from a service user, staff and system perspective. **Key conclusions are as follows:**

1. HaH services across BOB ICS effectively treated a diverse range of adults and children at home.

They provided care through home visits, calls, and remote monitoring, addressing varying levels of acuity and complexity for chronic, acute, and palliative conditions.

2. The evaluation found significant variation in HaH service models and implementation.

- This affects the nature of the HaH intervention patients receive; therefore, outcomes should be generalized with caution.

3. The findings indicate that HaH services across BOB ICS are associated with reduced healthcare utilization.

- This included fewer emergency calls and hospital admissions, thus contributing to system-wide efforts to alleviate acute pressures and reduce hospitalizations.

4. HaH staff reported positive experiences.

- Staff enjoy working in multidisciplinary teams and developing new skills whilst feeling they make a difference by providing holistic care. However, they emphasized the need for comprehensive training and better integration and communication across teams.

5. Efforts should focus on regularly monitoring and improving HaH service access for specific patient groups.

- This should consider, among others, level of deprivation and ethnic minorities. There are significant gaps in ethnicity data recorded and improvement of reporting should be prioritised.

6. The evaluation identified challenges, key areas of variation, and development opportunities.

- Services should enhance efficiency, effectiveness, and equity by addressing these issues and leveraging opportunities, whilst recognising that the services are at varying levels of maturity.

Recommendations to expand and enhance current services and support the development of new pathways include:

Evaluation and data monitoring

Further evidence and data monitoring are needed to fully understand HaH services' impact, including cost-effectiveness, post-discharge support, caregiver burden, the roles of remote monitoring and telehealth and comparison of outcomes to hospital admissions, to enable continuous quality improvement. Standardized data collection should be implemented to ensure consistency and comparability across services.

Service users

To improve patient experience and outcomes, use PROMs and PREMs, enhance discharge and follow-up processes, address disparities through equalities impact assessments, proactively identify high-risk patients, tailor services to community needs, and engage patients and communities through co-design and collaboration.

Workforce

To improve workforce development and support, provide dedicated training and mentoring, recruit experienced staff and establish mentorship programs, create career progression opportunities, enhance technology use, promote staff well-being and work-life balance, and continuously optimise team composition to meet evolving service needs.

System

To enhance service delivery, implement real-time data analytics, ensure access to shared care records, streamline referral processes, boost referrals and access, improve interdisciplinary collaboration with social care and the voluntary sector, and invest in advanced telehealth infrastructure where appropriate.

Evaluation background, aims and methodology



Evaluation background, aims and methodology

Introduction

Important: for the purposes of this evaluation, the single term of hospital at home is used to describe both virtual ward and hospital at home services.

Evaluation background

- Global healthcare systems are challenged by ageing populations, rising demands, and limited capacity, leading to frequent costly hospital admissions and reduced care efficiency (Levi et al., 2019; de Sousa Vale et al., 2020). This has prompted the adoption of alternative care models like virtual wards to provide hospital-level care outside traditional settings.
- **Virtual wards (also known as hospital at home, HaH services)** are an emerging model of healthcare delivery whereby community-dwelling patients at risk of hospital admission (**admission avoidance, step up care**), or readmission (**early supported discharge, step down care**) are provided with a short period (typically <14 days) of intensive transitional care delivered by a multidisciplinary team of healthcare professionals. HaH services combine virtual and face-to-face provision to facilitate urgent access to hospital-level assessment and care delivered in the patient's usual place of residence (care homes included). Patients may also be supported by relatives or carers.
- **Considerable time, money, and resources** have been invested into the HaH programme across Buckinghamshire, Oxfordshire, and Berkshire West Integrated care system (BOB ICS). However, the **impacts of this new model of care are unknown**. Furthermore, an understanding of the **core components of each of the services** is required to support the system to define how best to implement HaH services in future.
- **Health Innovation Oxford & Thames Valley** were commissioned by BOB ICB to coordinate an independent real-world evaluation of HaH services across the system to enable BOB ICS to develop and spread the HaH model of care.

An Evaluation subgroup made up of relevant stakeholders (i.e. BOB ICS and HaH staff) was established to develop and refine the strategic approach to the evaluation including key questions, metrics, data collection tools and methods.

Report purpose and structure:

This summary report distils the findings from a comprehensive evaluation of the HaH services across BOB ICS, consolidating key results for both adults and children. It provides an overview of essential insights, highlighting:

- *Good practice*
- *Key areas of variation*
- *Challenges faced by the services and the evaluation.*

Additionally, the report offers recommendations for service development, drawing from the experience and learnings of BOB ICS, with the intention that these recommendations can be widely applicable and used by other systems to support service development and improvement.

The length of this report reflects the complexity of the evaluated system, encompassing services at varying stages of development and maturity.

Other outputs that were developed as part of the project include*:

- **Comprehensive evaluation report** for BOB ICS, including detailed Provider-specific data and analysis to guide future planning, service optimization, and scale-up.
- **In-depth service descriptions.**
- **Patient experience data collection tool.**
- **Patient reported outcomes guide.**

Evaluation background, aims and methodology

Aims and key questions of interest

The aims of this real-world evaluation are to:

Part A: Process evaluation

1. Understand how the hospital at home services are being implemented across BOB ICS.

Part B: Impact evaluation

2. Understand the impact of the Hospital at Home services established across BOB ICS on service users, the workforce and the wider health and care system.

Evidence has been generated for the following key evaluation questions:

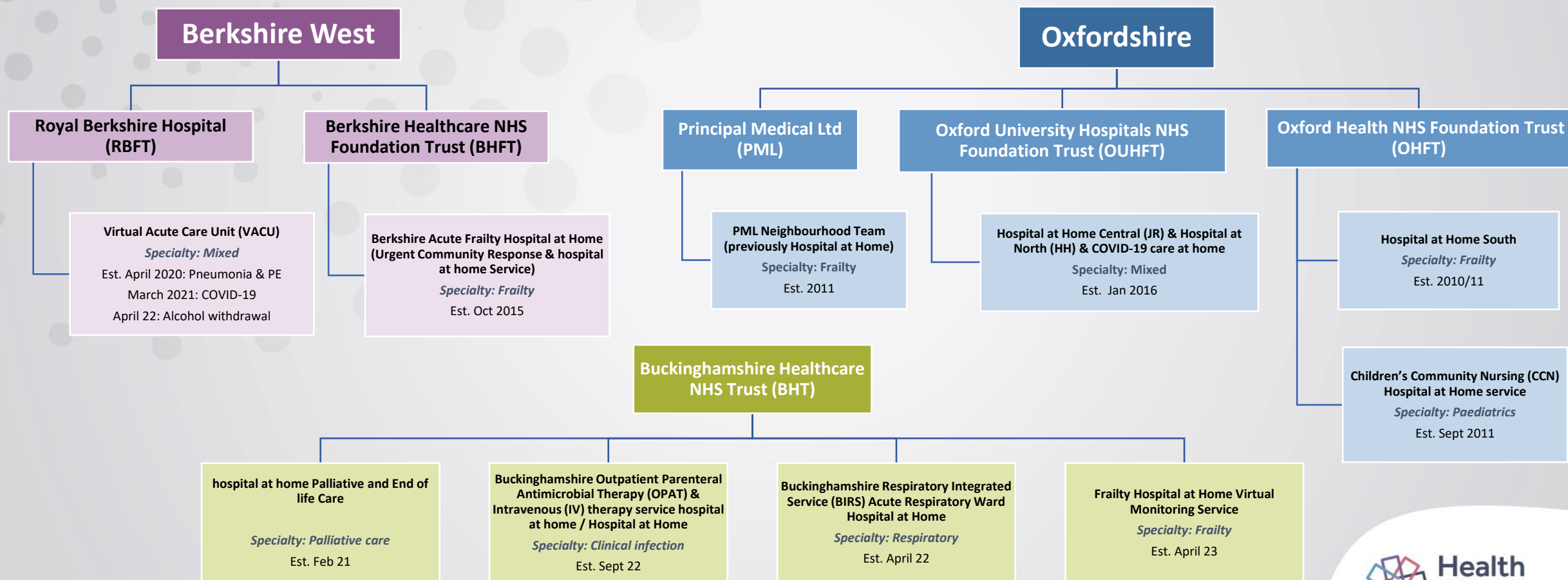
	Question
Part A: Process evaluation (Implementation)	
	What are the core components of each of the hospital at home services established across BOB ICS?
Part B: Impact evaluation (Outcomes)	
Service Users	What are the patient profiles of those admitted to the hospital at home services?
	What are the levels of acuity and complexity of needs of the patients being treated by the hospital at home services?
	Do the hospital at home services deliver positive outcomes that improve the health, wellbeing, and experience of service users?
Workforce	How do the hospital at home services impact the workforce?
System	How do the hospital at home services impact the system?

Wherever possible, evaluation questions were answered using existing data flows and data collected routinely to minimise the burden on the system.

Evaluation background, aims and methodology

HaH services and pathways included in the evaluation

The HaH services established across BOB ICS are delivered by **6 healthcare providers across 3 places**. The following 10 HaH pathways highlighted in the graphic below (established between 2010 and February 2023) were included in the evaluation:



Important: As of 4th December, the two hospital at home services led by OUHFT and OHFT combined to form one operating model, affecting both implementation and data submissions. Also, data for OHFT's Childrens HaH service has been analysed and presented separately and is therefore not included under any Provider, Place or System breakdowns.

Evaluation background, aims and methodology

High level summary of the evaluation approach

This summary report provides an overview of the methodology used. Further details are available upon request from Health Innovation Oxford & Thames Valley.

This real-world service evaluation was conducted between September 2023 and January 2024 (5 months) across BOB ICS. All patients discharged between 1st September 2023 and 31st January 2024 were included.

Evaluation Design

- **A mixed-methods approach** was used combining quantitative and qualitative approaches to capture both process and impact outcomes, as well as the perspectives of staff.
- **A non-randomized pre-post cohort design** compared healthcare utilization pre- and post-HaH intervention at 7-, 14-, 28-, and 60-day intervals.

Data Collection

- **Quantitative Data:** Routine demographic, clinical, and health services data were extracted monthly from Provider Electronic Patient Record (EPR) systems.
- **Manual data collection activity:** Additionally, HaH clinicians manually extracted data from EPR systems for the first 50 adults discharged during two pre-specified time points. Data of interest included Clinical Frailty Score, factors contributing to health inequalities, and details on medications, diagnostics, monitoring, and interventions delivered during HaH admission.
- **Data linkage:** The patient-level data was linked to data on seven types of services to assess the impact of the HaH treatment on healthcare utilization using SCAS111 and PLD incident data, ECDS, SUS SEM APC, and NAC data flows.

- **Qualitative Data:** Semi-structured interviews and electronic surveys were conducted with HaH staff to provide in-depth insights into staff experiences, challenges, and service implementation. A document review was also conducted to seek a greater understanding of service implementation.

Data Analysis

- **Qualitative data** from open-ended survey responses, field notes, and interviews were thematically analysed with iterative coding and theme refinement.
- **Patient-level data analysis**, conducted by the South, Central, and West Commissioning Support Unit (SCW CSU), included data manipulation, cleansing, processing, and statistical analyses as per a data analysis plan. Within the results, units with missing data on an individual item are excluded from analysis and therefore the denominator may vary for each item.
- **Triangulation in a convergent design:** qualitative and quantitative data were analysed separately and then integrated to gain additional insight through comparisons and joint interpretation.
- **Longitudinal multilevel regression models** estimated the intervention effect on healthcare utilisation (further details on *slide 39*).
- **Subgroup analyses** were performed according to the reason for referral; Step up (admission avoidance) or Step down (early supported discharge) (further details on how this was defined can be found on *slide 17*).

Results and discussion

Evaluation Question: What are the **core components** of each of the **hospital at home services** established across **BOB ICS?**

The following slides provide a high-level overview of the process evaluation findings. Detailed service descriptions were created as part of the evaluation highlighting the core components of each of the HaH services.



Process evaluation findings

Service Implementation

Key finding: There is large variation in the models of care and services are at different stages of development therefore the nature of the HaH intervention that patients received differed between providers.

While the principles of VW/HaH may be consistent across the UK, it is acknowledged that the implementation and scale-up of these services varies significantly due to variations in local healthcare needs, resources, and infrastructure.

- **Across BOB ICS, the services are at different stages of development;** some have been established for a significant number of years and refined and others are very recently established.
- **Most services are a build on existing services,** but they are now being enhanced and extended with technology via remote monitoring and Point of Care Testing (POCT; including blood tests and ultrasound).
- Accordingly, **the nature of the HaH intervention that patients received differed between providers.**
- Furthermore, the nature of the services **changed within each site over time.**

***Important:** Due to the significant variation across models the implementation of each service must be considered when interpreting the data.*

Key areas of variation across services and pathways (overview on the next slide) include:

-  Maturity (date of establishment)
-  Clinical conditions supported
-  Model of care (acute, community, GP-led or integrated)
-  Primary function (i.e. early supported discharge and admission avoidance)
-  Availability
-  Access for referrers
-  Capacity and occupancy
-  Workforce
-  Service delivery type (degree of technology enablement)
-  Strengths, challenges and opportunities

Evaluation question summary:

What are the core components of each of the hospital at home services established across BOB ICS?

NB: Service core components and bed numbers detailed in this report were accurate as of January 2024. However, we acknowledge that bed numbers have increased since the completion of the evaluation, and services are constantly developing.

The table below provides a high-level overview of the core components of the HaH services established across BOB ICS highlighting variation across the system:

	Berkshire Acute Frailty Hospital at Home	Royal Berkshire Hospital Virtual Acute Care Unit (VACU)	Buckinghamshire Hospital at Home Services	Oxfordshire Hospital at Home Services (adults)	Oxfordshire Children's Community Nursing Hospital at Home Service
Maturity	Service established in Oct 2015 (development on a service)	First pathway established in April 2020	First pathway established in April 2022	Services established between 2011 and 2016 (as an evolution of current services)	Service established Sept 2021 (build on an established community nursing team)
Patient cohort	Supports adults (18+) experiencing a health and/or social crisis (a sudden deterioration in the patients' health and wellbeing).	Supports adults (18+) with 21 conditions but has 4 established pathways for alcohol withdrawal, Pulmonary Embolism, Pneumonia and COVID-19.	Supports 4 pathways: Respiratory, Clinical Infection, Frailty, Palliative and End of Life Care (age varies per pathway).	Supports adults (16+) with an acute exacerbation of a frailty-related condition or stable acute respiratory infection (including Covid-19). Teams also provide interventions and interim care to palliative care patients.	Supports acutely unwell children in the community in the Oxfordshire area under 4 established pathways (Bronchiolitis, Gastroenteritis, Viral induced wheeze in over 2-year-olds and IV antibiotics). They also accept non-pathway referrals and support children on the end-of-life pathway.
Model of care	Community-led	Acute-led	Integrated	Acute, community and primary care-led model of care delivered by 3 providers	Community-led model of care delivered by OHFT nursing staff with medical support from the OUHFT acute Paediatric Team.
Primary focus	All services enable early supported discharge and admission avoidance (primary focus of all services).				
Access	Available 08:00-20:00, 7 days a week with out of hours medical support by WestCall, advice from in house pharmacist and nursing by community nursing team (district nurses).	Available between 08:00-20:00, 7 days a week with locally arranged provision of out-of-hours cover.	Availability dependent on pathway with locally arranged provision of out-of-hours cover.	Available 08:00-20:30, 7 days a week (OHFT and PML available until 22:00) with locally arranged provision of out-of-hours cover.	Available 08:00-20:00, 7 days a week with locally arranged provision of out-of-hours cover.
Onboarding from	SDEC, ED, AMU, VACU, acute hospital wards, UCR, care homes, SCAS, GPs, primary care clinicians and other community teams (incl. district nurses, palliative care etc.).	SDEC, ED, AMU, acute hospital wards and Maternity (COVID-19/Covid Medicines Delivery Unit only).	SDEC, ED, AMU, UCR, acute hospital wards, care homes, SCAS, GPs and primary care clinicians.	SDEC, ED, AMU, VACU, acute hospital wards, UCR, local minor injuries units, SCAS, GPs, primary care clinicians and other community teams (incl. district nurses etc.).	ED, acute hospital wards, Clinical Decision Unit (CDU) & GPs.
Maximum capacity	30 beds as of Jan 2024	124 beds as of Jan 2024	124 beds as of Jan 2024	185 (OUHFT/OHFT) & 25 (PML) as of Jan 2024	12 as of Jan 2024
Workforce	Staffed by a multi-skilled team of nurses, paramedic practitioners, pharmacists, occupational therapists, physiotherapists, therapy assistants, healthcare assistants, support workers, consultant geriatrician and GP with specialist interest.	Staffed with MDT clinicians including Physician's Associates, Pharmacists, Nurses (including respiratory CNS), Medical Consultants, Specialty Registrars and Consultant Microbiologist with clinical admin support.	Staffed with MDT clinicians including AHPs, Pharmacists, Nurses and a medical Consultant with administrative support.	Staffed with MDT clinicians including AHPs, Pharmacists, GPs and a Medical Consultant with administrative support.	Staffed with MDT clinicians including band 6 nurses with enhanced paediatric nursing skills.
Service delivery type	F2F home visits (according to needs) with telephone communication support.	Patient observations are monitored remotely via regular phone/video calls. Patients are also brought back to clinic for F2F care.	Daily check ins (according to need) with HCP via telephone, video call, remote monitoring using Docobo Platform. Home visits when required.	F2F home visits (according to needs) with telephone communication support. Oxygen saturation monitored remotely via regular phone calls to patients (COVID-19 only).	F2F home visits supported by telephone and virtual assessments via email videos or video consultation software.

Evaluation Question: What are the **patient profiles** of those admitted to the hospital at home services?



Service activity and capacity

Key finding: The BOB ICS HaH services treated **5,055 adults and 310 children** in the place they call home. There are many factors that impact a service's capacity and ability to accept new referrals.

During the evaluation period (Sept 23-Jan 24), **6,500 adults and 320 children were discharged** from the BOB ICS HaH services. This accounted for **5,055 and 310 separate individuals**, respectively. There were a total of **46,685 bed days** spent on the adult HaH services and **715 bed days** on the Children's HaH service.

		No. of discharges	No. of separate individuals	Bed days	Average no. of discharges per month	Capacity* (beds)
BOB ICS	Adults only	6,500	5,055	46,685	1300	500
	Children only	320	310	715	64	12

Table 1: No. of individual patients seen, bed days, average no. of discharges per month and capacity across BOB ICS.



Challenge: Capacity management. Providers commented that consideration should be had for variable demands and needs during different periods for each organisation. The evaluation highlighted that there are several factors that impact a service's capacity and ability to accept new referrals effectively including:

- Resources
- Availability/operating hours
- Staffing levels and skills mix
- Patient acuity and complexity
- Geographic coverage and service area
- Referral criteria and eligibility
- Access: Referral pathways and processes
- Communication and collaboration with referrers
- Maturity of services
- Care availability
- Flexibility in care delivery (face to face visits and remote monitoring)

Good practice: All providers offer step up and step-down access and admission avoidance is the priority focus for the HaH services. Across BOB ICS:

- **60% (n=3,550)** of adults were referred for **admission avoidance**
- **40% (n=2,320)** of adults were referred for **early supported discharge**.

Services focused on **frailty and palliative care** received a greater proportion of referrals for admission avoidance than those treating a broad range of conditions.

Definitions	
Admission avoidance (step up)	A patient who has been referred to a HaH service from an ED attendance, outpatient appointment, community, ambulance service or where an activity link has not been established, and where a patient receives a step up in care.
Early Supported Discharge (step down)	A patient who has been referred to a HaH service following inpatient admission, who received a step down in care.

Table 2: Definitions of Step Up and Step Down used to derive the referral reason subgroups

Service access

Referral sources

Key finding: HaH Services accept referrals from a wide variety of services and HCPs. Some referral routes are more established than others and the source of referrals received are dependent on the type of provider delivering the service.

☑ **Good practice:** HaH Services accept referrals from a wide variety of services and healthcare professionals. Place-based Single Point of Access (SPA) systems are being developed across all locations to streamline referrals and several initiatives are in place to increase referrals and identify patients as early as possible in the pathway.

The greatest proportion of referrals to the BOB ICS adult HaH services came from (Figure 1):

1. **Acute hospital inpatient wards (40%)**
2. **Community Services (16%)**
3. **Acute Same Day Emergency Care (10%)**
4. **GPs (10%)**
5. **Emergency Department (8%)**

Referral source was **unknown for 625 adult discharges** and all paediatric discharges. It has been suggested that **'other sources of referral'** include care homes, nursing homes and self-referrals.

The source of referrals received was dependent on the **type of provider delivering the service** (i.e. community/GP-led models vs acute-led models vs. integrated care models) reflecting different operational focuses and patient pathways.

🚶 **Challenge:** Some referral routes are more established than others, and multiple access routes are available to referrers. This can lead to operational complexity, inconsistent referral quality, data management issues, potential miscommunication, and unequal access across the system.

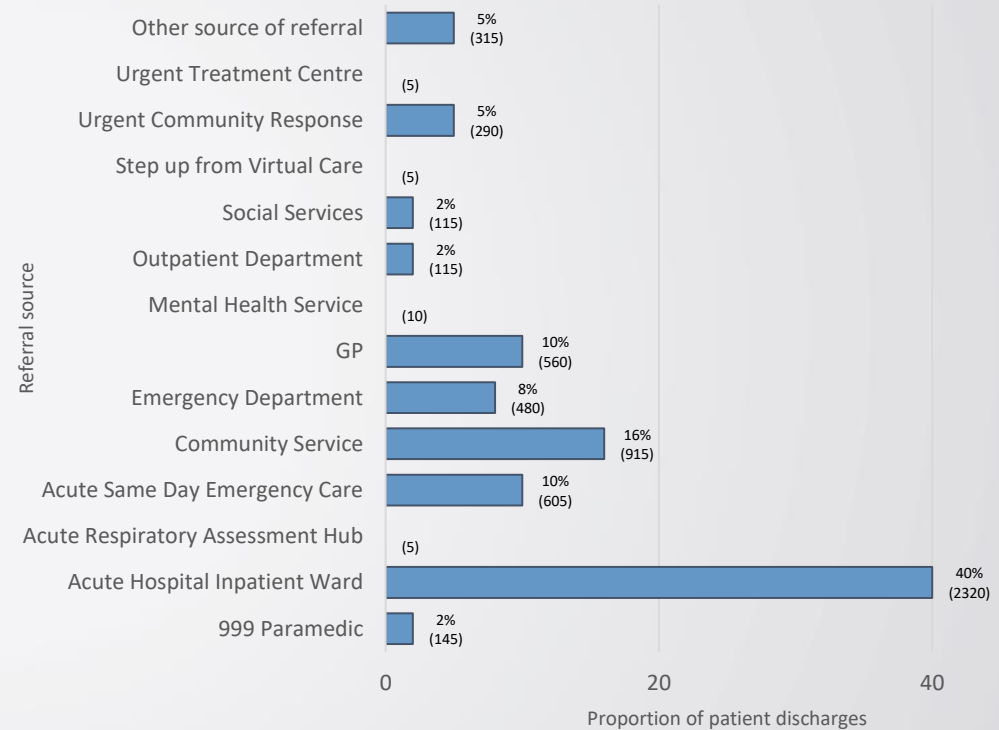


Figure 1: Referral source of adults discharged by the HaH services across BOB ICS.

Patient demographics

Discharges by gender, age and ethnicity

Key finding: Adults treated by the HaH services were more likely to be female and children were more likely to be male. Adults treated by the HaH services were older (76% were aged ≥65 years). Children treated were aged between 0-14 years. Most patients were 'White British' but there are significant gaps in the completeness of adult ethnicity data.

Gender: 55% (n=3,575) of adults were female and 45% (n=2,920) were male. 38% (n=120) children were female and 62% (n=200) were male.

Age (Figure 2)

- Over **half (62%)** of patients discharged from the adult services were **aged 75 years or above**, and approximately a **third (33%)** were **aged 85 or above**.
- The age of adults and children ranged from **16-107** and **0-14** years old, respectively.
- The mean age of adults and children discharged was **74.1 ± 18 years** and **0.8 ± 1.9 years**, respectively.
- Adults who were admitted to the service for **early supported discharge** were slightly younger (**71.7 ± 18 years, range 16-107**) than those admitted for **admission avoidance** (**75.5 ± 18.1 years, range 16-105**).

Ethnicity (Figure 3)

- Most patients were **'White British'** comprising **71%** of adult discharges and **78%** of paediatric discharges.
- There were a small number of ethnic minorities discharged from the services, with the groups with the largest proportion being either **'Asian/Asian British'** (**3%; adults and 10%; children**).



Challenge: *There are significant gaps in the completeness of adult ethnicity data, making it difficult to determine whether this sample is representative of all HaH patients. This also poses a challenge for accurately assessing and addressing health disparities among different ethnic groups. Ethnicity data were complete for 97% of children. However, for a considerable proportion of adult patients, ethnicity was 'Unknown' (4%) or 'Not recorded' (19%).*

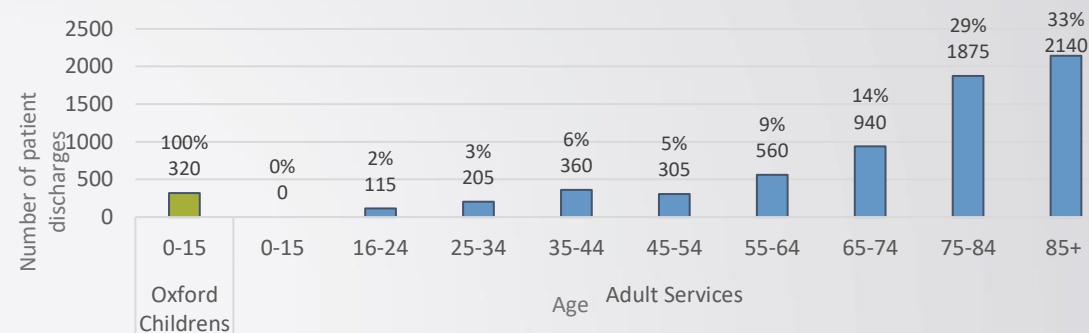


Figure 2: Age distribution of patients discharged from the HaH services

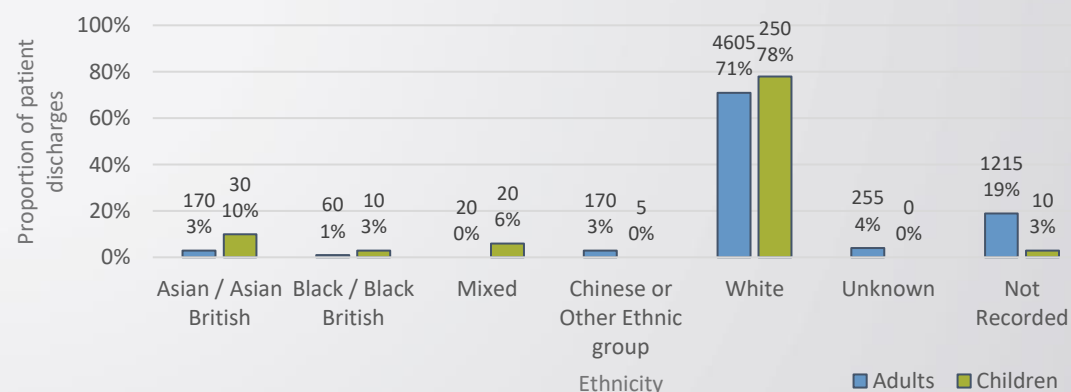


Figure 3: HaH discharges by ethnicity

Patient demographics

Factors potentially contributing to health inequalities

Key finding: There was no difference in access for adults living in a Core-20 area across the BOB ICS cohort*. A notable proportion of patients accessing services had severe mental illness (3%) and severe dementia (3%).

Socioeconomic deprivation has been linked to detrimental healthcare outcomes.

- Across BOB ICS the average deprivation decile was **7.6 ± 2.3 (adults) and 7.2 ± 2.4 (children)**. The proportion of patients accessing the service who live in the most deprived quintile was **3% (adults) and 7% (children)**.
- **There was no difference** in access for adults living in a Core-20 area across the BOB ICS cohort*. Across the **children's service**, these children were **overrepresented by 4%**.

		Core-20 HaH discharges (%)	% of ICB population living in Core-20 LSOAs	Difference in access for core-20 population	Unknown (n)	Not recorded (n)
BOB ICS	All adults	3% (n=215)	3%	0%	10	25
	Children only	7% (n=25)	3%	+4%	0	5

Table 3: Access to the HaH services for the core-20 population

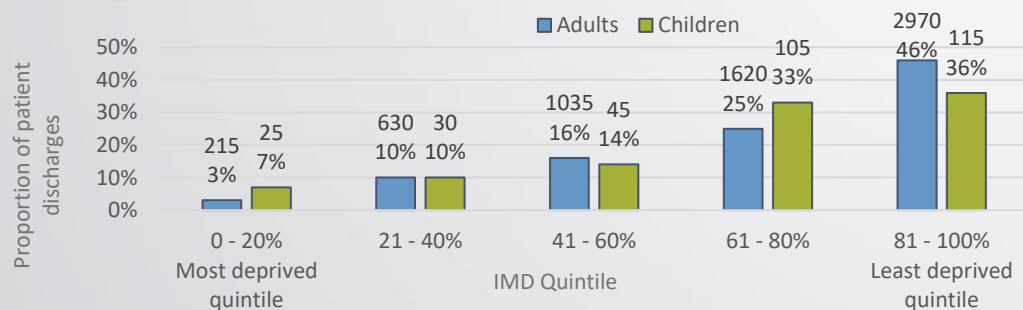


Figure 4: HaH discharges by IMD Quintile

Across BOB ICS, for the sample of adults (n=740) that data were provided for:

- A small number of patients (n=5) accessing the services were
 - **dependent on alcohol or drugs** or dependence was reported but the type was not stated
 - had a **moderate or severe learning disability** or had a positive diagnosis of **autism**.
- 3% of patients had a **severe mental illness**.
- A proportion of patients had **mild (3%), moderate (6%) or severe (3%) dementia**. For 3% of patients, dementia was reported but the severity not stated. Providers commented that dementia is likely to be underreported.

Good practice: HaH services use several methods to mitigate against health inequalities including providing digital support and training, collaborating with community organizations, addressing affordability barriers, tailoring communication and care delivery, using language services, involving patients in pathway development, and providing digital equipment to those who need it.

* The extent to which the core 20 population accessed the services was examined by calculating the % over/under representation of core 20 patients within the patient discharges, relative to the local ICB population (using Gov UK 2019 data).

Patient demographics

Primary diagnosis on admission

For each HaH discharge, providers were asked to submit the patient's primary diagnosis code and the chapter to which this related.

Analysis of ICD-10 codes demonstrates the breadth of HaH practice, as shown in *Figure 5*.

The most common primary diagnoses were **pneumonia (10%)**, **urinary tract infections (8%)** and **COVID-19 (4%)**. However, services treated a range of:

- *Chronic conditions/exacerbations of respiratory or cardiovascular conditions* including: **heart failure (4%)**, **atrial fibrillation (1%)**, **pulmonary embolism (1%)** and **chronic obstructive pulmonary disease (COPD) (1%)**.
- *Acute illnesses, incidents or other conditions* including **cellulitis (3%)**, **acute lower respiratory infection (2%)**, **Anaemia (1%)**, **influenza (1%)**, **sepsis (1%)** and **gastroenteritis/colitis (1%, n=30)**.

The services also provided **palliative care** to patients with advanced illness or life-limiting conditions.

Among the 320 children treated by the HaH service, **acute bronchiolitis** was the most prevalent condition reported (67%, n=215). However, the service also treated:

- **Gastrointestinal infections (6%, n=20)**
- **Other viral infections (site unspecified) (5%, n=15)**
- **Other respiratory conditions** originating in the perinatal period (3%, n=10)
- **COVID-19 (4%, n=10)**.



Challenge: *The quality and capture of diagnostic coding varies between trusts.*

Key finding: The HaH services treat patients with a diverse range of patients with chronic conditions, acute illnesses and other conditions. Acute bronchiolitis was the most common condition treated by the children's HaH service.

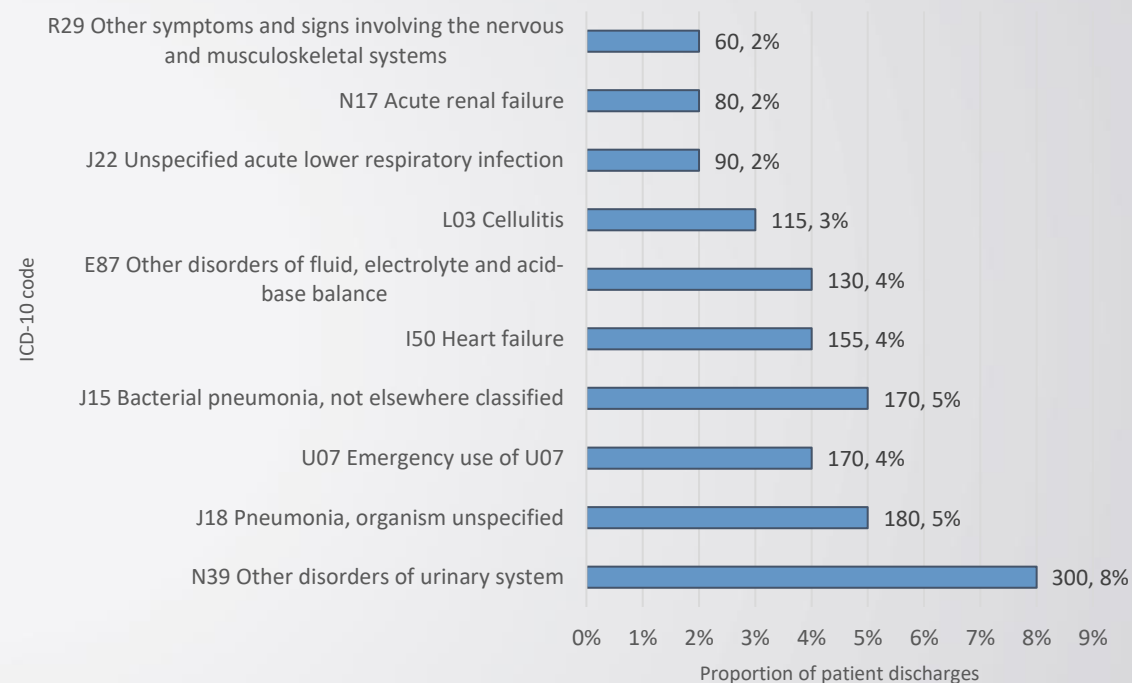


Figure 5: Relative proportions of the top 10 diagnostic codes of adult HaH patients discharged across BOB ICS (by % of known records).

Patient demographics

HaH Length of stay and Readmission to the HaH service within 28 days

Key finding: 89% of adult and 100% of paediatric discharges had a HaH LoS less than or equal to 14 days. The average HaH LoS was **7 days and 2 days for adults and children, respectively**. 9% of adults were readmitted to the services within 28 days.

The HaH services provided short-term interventions with **most adults (89%) and all children (100%)** having HaH lengths of stay (LoS) lower than or equal to 14 days.

Across the services (adults; n=6,175 and Children; n=320):

- **6%** of adults and **4%** of children had a HaH LoS of **0 days**.
- **47%** of adults and **94%** of children had a HaH LoS of **4 days or less**.
- The mean LoS across was **7.1 ± 7.5 days** for adults and **2.2 ± 1.4 days** for children.
- Mean LoS was longer for adults referred for ESD (**8.1 ± 8.2 days**) than those referred for AA (**6.5 ± 6.8 days**).

Readmission to the HaH service within 28 days:

- For **9% (n=465)** of adult discharges the HaH admission was preceded by an earlier HaH stay within 28 days. However, data were not recorded for 1385 discharges. **A small number of children (n=5)** had a previous admission to the HaH service within 28 days.
- Rate of readmission to the adult HaH services was **higher for step up patients (10%, n=275)** than **step down patients (7%, n=115)**

Providers commented that recurrent readmissions may be due to complex medical conditions, medication management or non-adherence, social determinants of health, inadequate support from caregivers, lack of patient education and self-management skills or unresolved clinical issues.

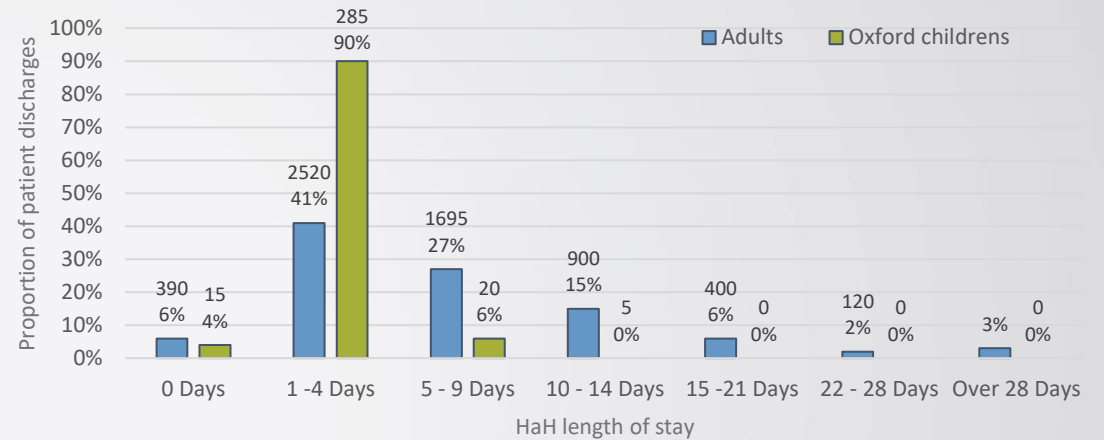


Figure 6: HaH discharges by length of stay

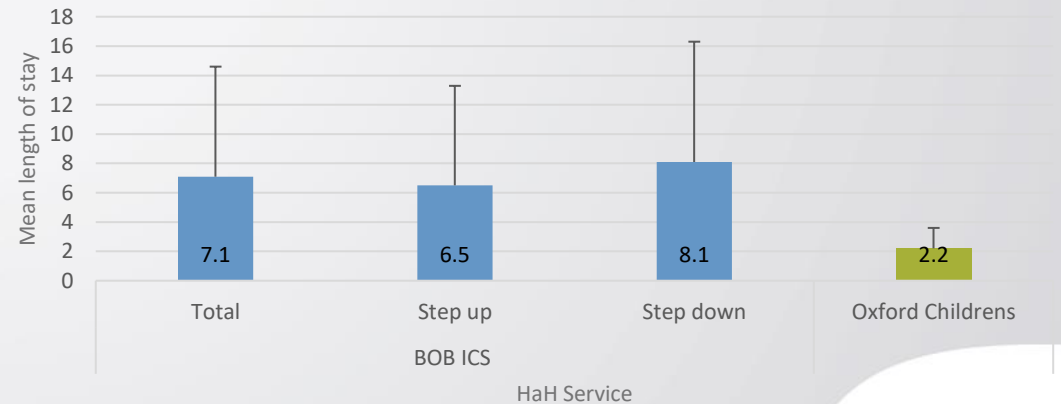


Figure 7: Mean HaH LoS for discharges across BOB ICS.

Factors impacting HaH LoS

Key finding: There are numerous factors that influence HaH LoS. No meaningful relationship was observed between HaH LoS and age.

Across BOB ICS, the relationship between adult HaH LoS and age was explored (Figure 8).

A correlation coefficient of -0.022 indicates a very weak negative correlation between HaH length of stay and age at admission. This implies that other factors likely have a much stronger influence on determining length of stay in this context.

Evaluation findings suggest that HaH LoS can vary depending on numerous factors such as:

The patient's clinical condition and acuity: Severity and complexity (including acute symptoms and treatment response) influence LoS.

Degree of frailty: Patients with a higher degree of frailty typically require longer stays due to increased care needs and complexities.

Type of treatment and interventions provided: Patients requiring intensive interventions such as IV antibiotics often have a longer LoS.

Reassessment and monitoring requirements: Patients requiring frequent reassessment and monitoring may have longer LoS to ensure treatment efficacy and patient stability.

Availability of support services in the home: Caregiver support, community services and enhanced care packages influence the management of complex medical needs at home.

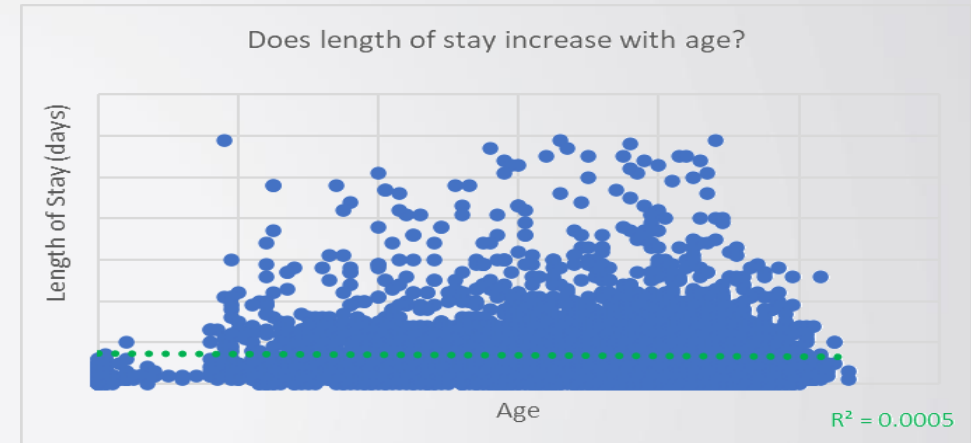


Figure 8: scatter plot displaying patient age at admission vs HaH LoS.

LOS ≥ 14 days: Providers commented that patients often have complex conditions or chronic infections (i.e. infective endocarditis), wounds, heart failure or rapidly progressive conditions that need intensive input (i.e. neuro conditions). HaH staff note these cases are extremely resource-intensive for the acute trust and therefore home-based treatment may optimize resource utilization.

0-day LoS: Patients are often referred for falls or long lies, COVID-19, pneumonia, or for urgent end-of-life care. They may have been referred directly from ED or SDEC and often require follow-up assessments, diagnostics or medications. Some may not require further input, while others may need escalation of care.

Scatter plot considerations:

- NULL ages have been removed (where the derived age could not be calculated)
- NULL Length of Stay (LoS) have been removed
- Outliers removed for LoS: over 60 days

Care setting

Setting and level of support available at point of referral

Key finding: Most patients (88%) were treated in a domestic home. 12% of patients were treated in a care home but data are incomplete. 35% of adults lived alone with no informal care available. Level of support available should be considered at point of referral.

88% (n=2,430) of adults were treated in a domestic (private) home.

- **35% of patients lived alone** with no informal care available and 23% with informal care available.
- **4% lived alone with domiciliary care package** with no informal care available and 4% with informal care available.
- **15% lived with informal carer 24/7** with no domiciliary care package and 6% plus domiciliary care package.
- For 2% of patients, level of support was not reported.

12% (n=320) of adults were treated in a care home

- **7%** of patients had nursing support in the care home.
- **5%** were without nursing support in the care home.

Data were incomplete with 3,745 missing records.



Challenges: *The HaH care setting and level of support available is poorly recorded but should be considered at point of referral.* Providers suggested the data may be unreliable and may underestimate the number of care home patients treated as there are no structured mechanisms for capturing data on patients treated in care homes. Importantly, nursing home and residential home data weren't captured.

For some services, accessing care is difficult and for some patients, inadequate support may result in hospital admission. Delivering care to individuals without a fixed address also poses challenges including limited access to technology, continuity of care issues due to frequent relocations, and complex health needs requiring tailored support.

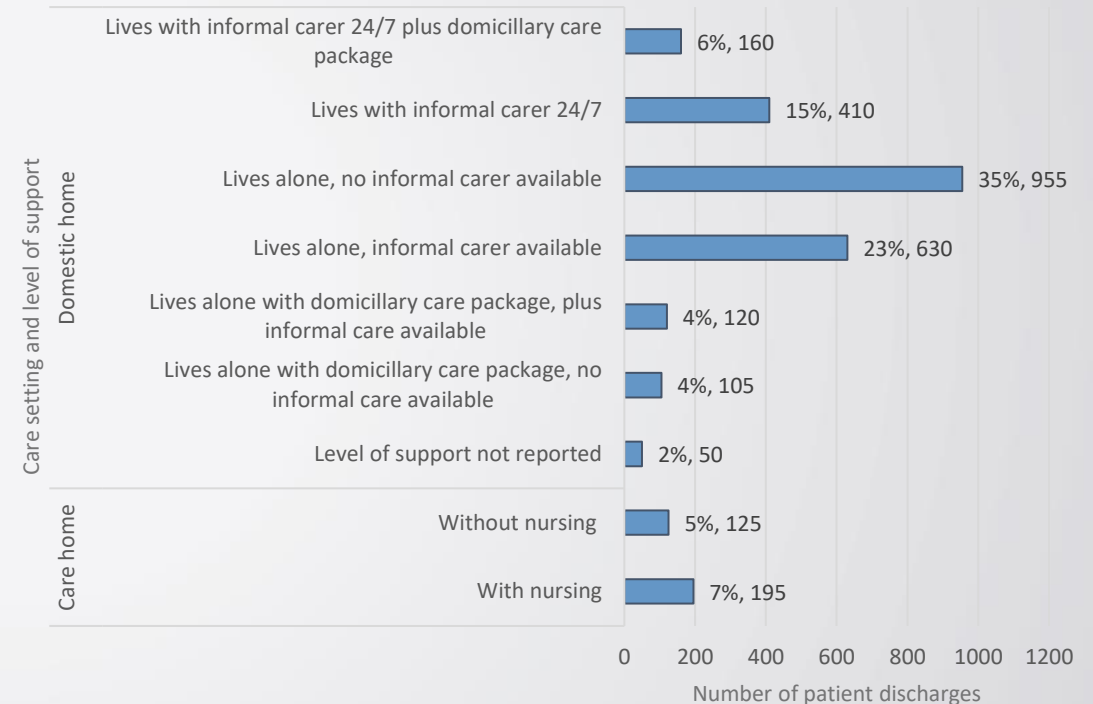


Figure 9: Care setting and level of support at referral (Adult discharges only)

Variation across the system

Patient profiles (adults only)

Patient volumes, capacity, and care processes vary significantly across services, with differences in rates of referral for admission avoidance, patient demographics, length of stay, readmission rates, and casemix. This variation is influenced by service scope, available resources and whether services adopt a generalist or condition-specific model of care.

The table below summarises the variation in patient profiles for adults across the system:

	Range across the system
Service activity <ul style="list-style-type: none"> No. of patient discharges No. of individual patients Average no. of discharges per month 	245-2,000 175-1,750 161-313
Capacity (beds)	25-185
Reason for referral	31%-100% admission avoidance
Gender	52-58% Female
Age <ul style="list-style-type: none"> Mean Proportion of patients ≥75 years 	16-107 60.5-85.1 32%-88%
Ethnicity <ul style="list-style-type: none"> Difference in access for ethnic minority residents compared to local population Data completeness 	-15% to +8% 1% -100% unknown/not reported
Length of stay <ul style="list-style-type: none"> Mean Proportion of patients with LoS ≥14 days 	5.1-8.6 3%-19%
Care setting	0%-48% care home
IMD score <ul style="list-style-type: none"> Mean deprivation decile Difference in access for Core-20 population 	6.7-8.2 -4% to +3%
HaH readmission within 28 days	7% (n=85) to 30% (n=75)

Evaluation question summary:

What are the patient profiles of adults admitted to the hospital at home services?

Of the 6,500 adults and 320 children discharged from the BOB ICS HaH services:

Primary diagnosis



Adults presented with a range of acute illnesses and exacerbations of chronic conditions such as COPD, COVID-19, heart failure and cellulitis, with palliative care provided for those with advanced or life-limiting illnesses. The most common primary diagnoses were pneumonia (10%) and urinary tract infections (8%) among adults, while children were predominantly treated for acute bronchiolitis (67%) alongside gastrointestinal and viral infections.

Reason for referral (step up/step down)



Adults were referred predominantly for admission avoidance. Whilst services have both step-up and step-down pathways in place, services focused on frailty and palliative care receive more referrals for admission avoidance than those treating a broad range of conditions.

Care setting and level of support available at referral



Most patients were treated at home (88%) and many adults (35%) lived alone without informal caregivers.

Age, Gender and Ethnicity



Adults treated by the services were more likely to be white, female and older (mean age 74 years), while children treated were typically young (0.8 years) and were mainly white, and male.

Referrals



Adults are referred from a wide range of services and HCPs and the source of referrals received are dependent on the type of provider delivering the service (acute, community/GP led or integrated).

Factors contributing to health inequalities



Access for the Core 20 population varies across services as per the IMD score. Access for patients with substance dependence, severe mental illness, dementia, learning disability and autism varies across services.

HaH Length of stay and readmission



HaH Length of stay was generally short for both adults (mean 7 days) and children (4 days or less), with approximately 9% of adults and a small number of children (n=5) readmitted to the HaH service within 28 days.

Evaluation question: What are the levels of **acuity and complexity of needs** of the patients being treated by the hospital at home services?



Degree of frailty

CFS score on admission

Key finding: HaH services across BOB ICS treated patients with varying degrees of frailty. 39% of adults were severely frail or terminally ill. On average, patients were moderately frail. The variability in scores within and across services suggests a diverse patient population, ranging from relatively fit individuals to those with significant frailty.

The **Clinical Frailty Scale (CFS)** is a tool used to assess the degree of frailty in older adults.

The severity of frailty in patients admitted to HaH services may impact care needs, resource utilization, caregiver support, risk of adverse outcomes, care planning and goals of care, length of stay, discharge planning, and overall patient outcomes.

HaH services across BOB ICS treated patients with varying degrees of frailty (*Figure 10*).

- CFS score ranged from **1 (very fit) to 9 (terminally ill)**.
- With a **mean clinical frailty scale of 6** recorded upon the first clinical assessment, patients admitted to the services across BOB ICS were **moderately frail on average**.
- However, **39% of patients** were deemed **severely frail or terminally ill**.
- Patients admitted for admission avoidance were more frail than those admitted for early supported discharge (*Table 4*).

Challenges: Acute frailty and Geriatric Assessments.

Whilst most providers have an established system for acute frailty assessment, most do not monitor its use, measure its effectiveness and Comprehensive Geriatric Assessments are not conducted consistently or systematically due to the length of time they take to complete (1hr-2hr+ assessment).

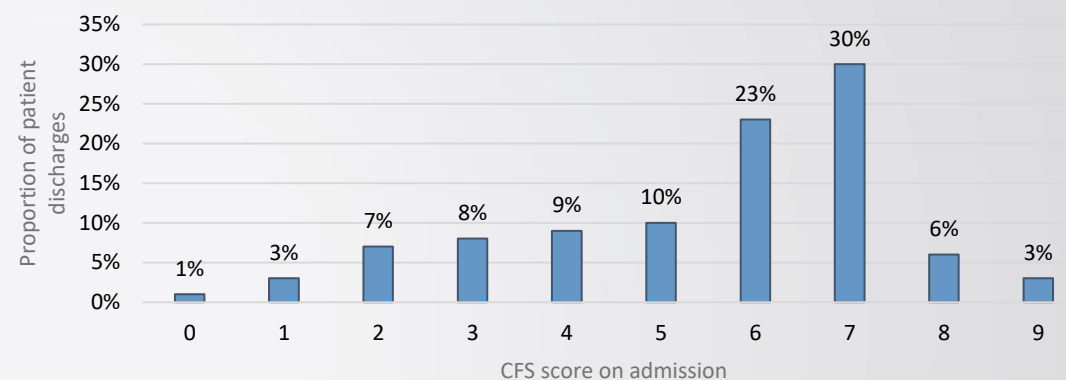


Figure 10: CFS score on admission to HaH service.

		CFS score Mean (SD)	Average degree of frailty	Range	Mild-moderate frailty (CFS 5-6)	Severely frail or terminally ill (CFS 7-9)
BOB ICS Adults	All (n=1,285)	6 (1.9)	Moderate	1-9	33%	39%
	Step Up (n=890)	6 (1.7)	Moderate	1-9	34%	48%
	Step Down (n=385)	5 (2)	Mild	1-9	24%	21%

Table 4: Degree of frailty across BOB ICS.

Risk of deterioration

NEWS2 score on admission

Key finding: HaH services treated patients with a wide range of early warning scores similar to those observed across patients that arrive at hospital, although timing of recording is inconsistent making it challenging to draw conclusions. HaH services treat patients with a wide range of NEWS2 scores suggesting that patients exhibit diverse levels of physiological acuity, with some being relatively stable and others at higher risk of clinical deterioration.

The National Early Warning Score 2 (NEWS2) assesses illness severity and risk of clinical deterioration in adults, with higher scores indicating greater risk and necessitating timely intervention, intensive monitoring, frequent reassessment, and access to rapid response services.

- HaH services treated patients with a **wide range of NEWS2 scores (0-15; Figure 11)**, which are comparable to those observed in patients arriving to hospital, as assessed by Acute Medicine teams in the UK (Society for Acute Medicine Benchmarking Audit, 2023). However, there was considerable variability in scores, suggesting the need for individualized assessment and monitoring.
- On average, patients discharged from the services would be considered to have **relatively low NEWS2 scores (1.4 ± 1.8)** and therefore be considered stable or at low risk of clinical deterioration.
- **However, 6% of patients were at risk of clinical deterioration (NEWS2 ≥ 5)**. These patients may require more intensive monitoring, interventions, adjustments to their treatment plans and escalation of care and visits would likely be carried out by senior band 6, band 7 team members or doctors.

Good practice: All services have clear, formalised pathways developed collaboratively in place to support early recognition of deteriorating symptoms and escalation.

 **Challenges:** Data reliability and NEWS2 scoring in HaH services.

Concerns about data reliability, varying timing of NEWS2 score recording, challenges in remote assessment, and limited applicability to certain patient populations, along with data completeness issues, hinder the ability to draw reliable conclusions from this data.

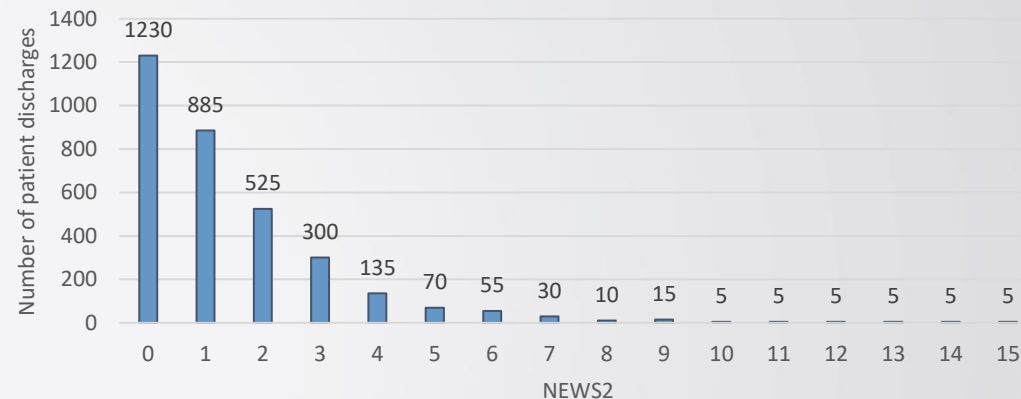


Figure 11: NEWS2 on admission to HaH service

		Mean (SD)	Range	NEWS2 ≥ 5
BOB ICS	All adults (n=3,270)	1.4 (1.8)	0-15	6%
	Step up (n=1,805)	1.5 (2)	0-15	6%
	Step down (n=1,280)	1.3 (1.5)	0-9	3%

Table 5: Mean NEWS2 and risk of deterioration on admission to HaH service

Medications prescribed

Key finding: Only 63% of discharges were associated with medication prescription. The wide range of medication counts (0-13) indicates variability in the complexity of medical needs, with some patients requiring minimal pharmacological interventions and others requiring multiple medications for the management of chronic or acute conditions.

The number of different prescriptions required for an individual patient is a suggested marker of the acuity and/or complexity of the patient's medical condition.

Of the **915 discharges with medication data:**

- **Medication prescription rate:** 63% of discharges were associated with medication prescription.
- **Number of medications per patient:**
 - The number of distinct medications prescribed per patients across the system ranged from **0-13 medications**.
 - With an average **1.6±2.14 medications prescribed per patient** discharge; most patients likely received a limited number of medications during their HaH admission.
- **Pathway type:** The average number of medications prescribed per discharge was similar for **step-up** and **step-down patients** (Table 6).
- **Polypharmacy:** **36% of patients** requiring medication needed **2 or more different medications** during their treatment.

The wide variability in medication prescription suggests that there may be a subset of patients with significant medication needs. Some patients may have complex medical conditions requiring multiple medications, while others may have received fewer medications due to milder illness or specific treatment protocols.

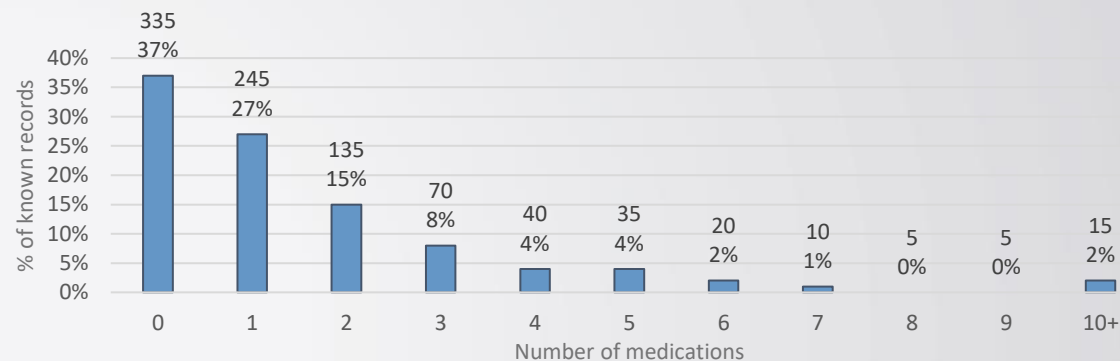


Figure 12: Patient Discharges by Count of Medications received for BOB ICS (Adults only)

		No. of discharges with a medication prescribed	Mean (SD)	Range	≥2 medications
BOB ICS	All adults (n=915)	575 (63%)	1.6 (2.14)	0-13	36%
	Step up (n=410)	250 (61%)	1.7 (2.28)	0-13	36%
	Step down (n=380)	240 (63%)	1.6 (2.2)	0-13	37%

Table 6: Number of adult discharges with a medication prescribed and polypharmacy rates.

Note of caution: We suspect that clinicians may have interpreted the "medications prescribed" outcome metric differently. Some may have focused only on the medications they prescribed during the patient's time in HaH, while others may have considered all medications the patient was on, such as those listed in GP records. This potential variation in interpretation could impact the consistency and reliability of the medication data in the evaluation.

NB: Prescribing information was submitted for both September and January for BHT, OUH & RBFT. Prescribing information was submitted only for September for BHFT & OHFT. No prescribing information was received for Oxon Childrens or PML. A '0' in the medications count means the provider has submitted any of the following in the "medications prescribed" field: '0', 'Nil', 'No', 'None'.

Variety and types of medications

Key finding: Considering the type of medications prescribed, a subset of patients are likely to be high acuity with complex needs. A weak positive relationship between medication administrations and length of stay was observed.

HaH patients may require intravenous medications, oxygen therapy, or other interventions typically provided in a hospital setting.

The top 5 medication categories recorded were as follows:

- **IV antibiotic** (n=160, 18%).
 - **IV fluid** (n=160, 18%).
 - **Oral antibiotic** (n=150, 17%).
 - **Anticoagulant** (n=90, 10%)
 - **Diuretic** (n=90, 10%)
- The use of IV fluids and IV antibiotics indicates that a subset of patients are likely to be high acuity with complex needs, potentially due to severe infections and dehydration or electrolyte imbalances.
 - The provision of these therapies in a home setting highlights the intensive and comprehensive care provided by HaH and the ability to manage conditions that traditionally require hospital admission.
 - Additionally, the significant use of oral antibiotics, anticoagulants, and diuretics reflects the management of various complex conditions, such as infections, thromboembolic risks, and heart failure.

Overall, the variability in treatment administration across hospital at home providers reflects the diverse needs of patients receiving these services.

Does the number of medications prescribed increase with length of stay?

- The correlation coefficient of 0.241 demonstrates a relatively weak positive correlation between the number of medication administrations and HaH length of stay (*Figure 13*).
- This suggests that while there may be some association between the two variables, other factors likely play a more significant role in influencing length of stay.

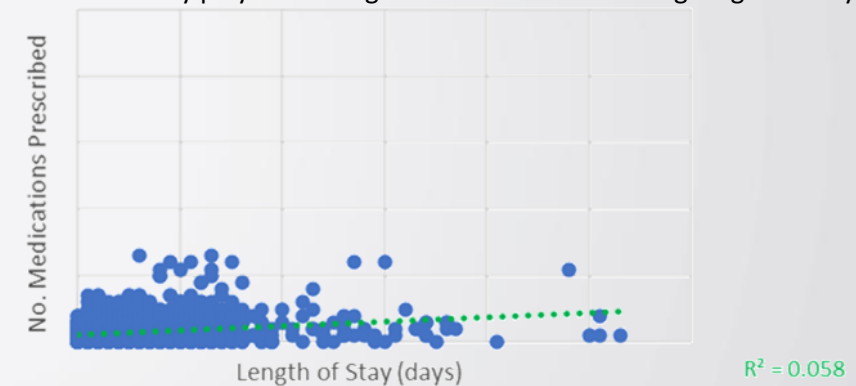


Figure 13: scatter plot displaying no. of medications prescribed vs HaH LoS.



Challenge: Medication administration and access:

- Staff face challenges with electronic prescribing, administering IV medications/fluids due to governance issues, and proper medication storage, leading to delays in treatment or hospital discharge and capacity issues.
- Easier access to medicines, especially when pharmacies are closed, and simpler procedures for medication administration are required.

Diagnostics, multidisciplinary support and care

Key finding: Staff utilise a comprehensive range of advanced diagnostics to thoroughly assess and manage patients with acute and chronic conditions, they also require significant multidisciplinary support and care reflecting the high acuity and complexity of their needs.

Good practice: Services are currently working towards providing urgent and equitable access to hospital-level diagnostics.

- Staff utilize a wide range of advanced diagnostics, including bedside tests, to inform clinical decision-making, enable early intervention, and optimize management. These diagnostics, such as point-of-care blood tests, point-of-care ultrasound, CT scans, chest X-rays, and ECGs, suggest a comprehensive approach to evaluating and monitoring patients' health status (Figure 14).



Challenge: Significant diagnostic constraints, including the lack of point-of-care testing devices, insufficient training even when devices are available, and a shortage of specialists to report urgent images, create barriers to timely imaging and delay definitive diagnosis and treatment.

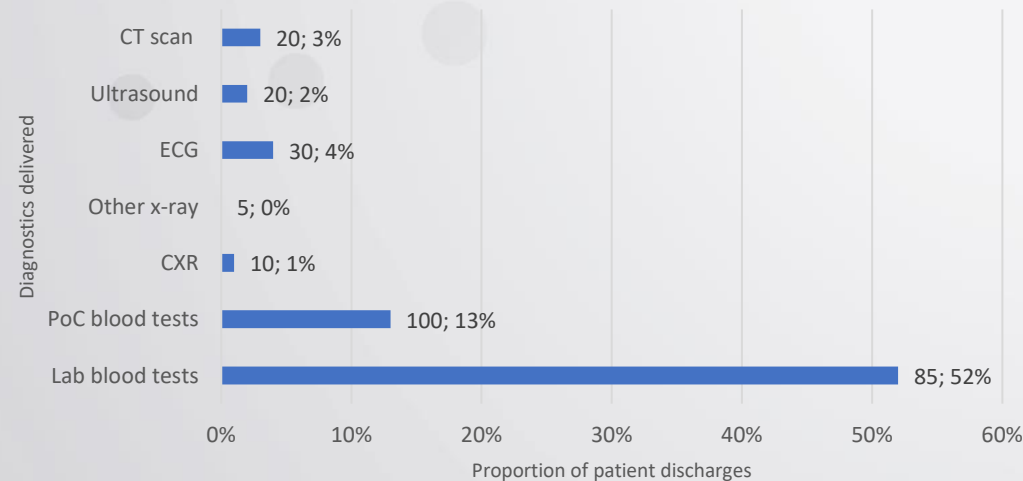


Figure 14: Diagnostic investigations performed during admission (adults only)

Good practice: All services have access to specialty advice and guidance, along with regular board rounds with a senior medical decision maker.

- HaH patients require significant multidisciplinary support and care (Figure 15).
- The data highlights that a subset of patients may have complex medication regimens, functional impairments, or deconditioning, and require intensive support, specialized pharmacy input, rehabilitation, 24/7 monitoring, and home equipment to support independent living.
- The data highlights the need for a holistic care approach involving pharmacists, occupational therapists, physiotherapists, and reablement services, as well as urgent care packages, night sitter support, and home modifications to meet their complex healthcare needs.

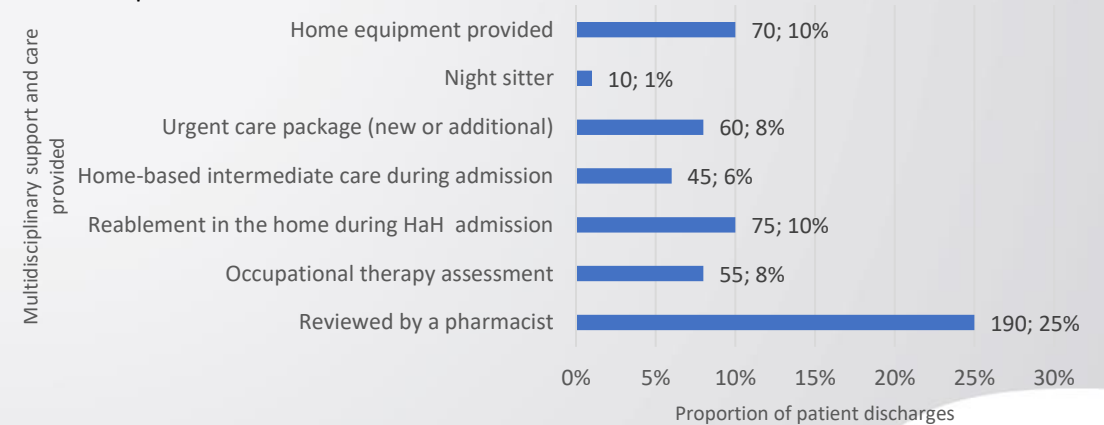


Figure 15: MDT support provided during admission (Adults only)

Variation across the system

Acuity and complexity of needs (adults only)

The data highlight significant variation in the acuity and complexity of needs among HaH patients. For instance, the degree of frailty ranges widely and the number of medications prescribed varies from none to multiple, reflecting diverse health conditions and treatment requirements.

The table below summarises the frailty, NEWS2 scores and medications data highlighting the varied acuity and complexity of needs across the system:

	Range across the system
Degree of frailty: <ul style="list-style-type: none"> • Mean • Proportion of patients with CFS ≥ 7 • Average degree of frailty 	1-9 2.7- 6.6 0%-62% Managing well-Severe
NEWS2: <ul style="list-style-type: none"> • Mean • Proportion of patients with NEWS2≥ 5 	0-15 0.6-2.5 1%-18%
No. of medications prescribed: <ul style="list-style-type: none"> • Mean • Proportion of patients with ≥ 2 medications 	0-13 0.2-2.9 15%-50%
Number of patient discharges with the following medications prescribed: <ul style="list-style-type: none"> • IV fluid • IV antibiotic • Oxygen 	0% (n=5) -28% (n=150) 0% (n=5) - 30% (n=10) 0-0% (n=5)

Evaluation question summary:

What are the levels of acuity and complexity of needs of the patients being treated by the hospital at home services?

The data highlights a diverse patient population, characterized by varying levels of frailty, physiological acuity, and medication complexity.

- Although the average physiological acuity (NEWS2 score of 1.4) and medication burden (1.6 medications per patient) appear relatively low, patients exhibit moderate frailty (CFS of 6), indicating a higher vulnerability to adverse health outcomes.
- **All HaH services treated patients with varying levels of acuity and complexity of needs** ranging from those with minimal frailty and low physiological acuity to those with significant frailty and higher physiological risk.
- **A subset of patients required intensive treatments** like IV antibiotics, diagnostic evaluations such as point-of-care ultrasound, and multidisciplinary monitoring and review to support the management of their acute or complex conditions potentially highlighting those with higher acuity levels or more complex medical needs within this population.
- Accordingly, a **holistic multidisciplinary and patient-centered approach to care delivery is required**. Tailored care plans and interventions are needed to address the diverse medical, physical, psychological, and social needs across this spectrum of complexity.

Other considerations affecting the acuity and complexity of needs among others include:

The complexity and severity of their condition, including disease trajectory, comorbidities, end of life care and mental capacity

Symptom burden such as pain, dyspnoea, nausea, and fatigue

Psychosocial needs and social requirements

Coordination of care among multiple providers

Frequency of clinical monitoring required to detect changes in condition and manage symptoms, including remote monitoring/consultations, home visits or telephone calls

Workforce resources required (incl. skills and expertise)

Other scoring systems i.e. Waterlow pressure sore scale, falls risk, 4AT rapid test for delirium

Level of support required for safe and effective care delivery at home

Risk of complications or adverse events that may require escalation of care or hospital transfer

Cognitive and mental health assessment

Evaluation Question: Do the hospital at home services deliver positive outcomes that improve the **health, wellbeing and experience** of service users?



Discharge destination

Key finding: Most adults (83%) and children (97%) were discharged to their usual place of residence with no ongoing support needs from health and social care.

The primary goal of HaH services is to deliver care to people in their usual place of residence wherever possible and wherever appropriate.

Of 6500 adult discharges across BOB ICS, the top 3 discharge destinations were as follows (Table 7):

1. **Stayed in domestic home, no new or additional support needs from health and social care (83%)**
2. **Re-admission to hospital ward (Step back up to physical Bed) (5%)**
3. **Existing care home resident discharged to care of facility (4%)**

3% of patients died (≥ 65 patients were under a palliative pathway) reflecting the opportunity for healthcare providers to offer patients the choice to receive end-of-life care in their usual place of residence to improve comfort and experience.

Of the 320 paediatric discharges: 97% stayed in domestic home with no new or additional support needs from health and social care.

Disposition	BOB ICS	Step Up	Step down	Childrens
Stayed in domestic home, no new or additional support needs from health and social care	4830 (83%)	2,480 (77%)	1880 (91%)	310 (97%)
Re-admission to hospital ward	265 (5%)	180 (6%)	85 (4%)	0
Existing care home resident discharged to care of facility	225 (4%)	195 (6%)	25(1%)	0
Died	150 (3%)	110 (3%)	15(1%)	0
Stayed in domestic home discharged to new or ongoing reablement	110 (2%)	90 (3%)	10 (1%)	0
ED admission	75 (1%)	55 (2%)	20 (1%)	0
Other	70 (1%)	20 (1%)	10 (1%)	10 (3%)
Stayed in domestic home discharged to home-based intermediate care	50 (1%)	35 (1%)	10 (1%)	0
Discharge to EoLC service	30 (1%)	25 (1%)	5 (0%)	0
Discharge as a new admission to a Care Home which is likely to be permanent	5 (0%)	5 (0%)	5 (0%)	0
Discharge to a Community Rehabilitation Bed. For rehabilitation or short-term care in a 24-hour bed-based setting	5 (0%)	5 (0%)	0(0%)	0
Community hospital admission, discharged from service	5 (0%)	5 (0%)	0 (0%)	0
Stayed in domestic home discharged to community rehabilitation	0 (0%)	0 (0%)	0 (0%)	0
Not Reported	675	340	260	0

Table 7: Discharge destination of HaH patients

Evaluation Question Summary:

Do the hospital at home services deliver positive outcomes that improve the **health, wellbeing and experience** of service users?

Discharge destination

The data reveals that **most patients were effectively managed at home with minimal need for additional healthcare or social support services.**

- Additionally, **only a small proportion of patients experienced complications or required further medical intervention** to the point at which inpatient care or ED admission was required.
- **The data reflects positively on the health outcomes of patients.**
- The services are enabling patients to recover in a familiar environment, surrounded by their support network and supporting their ability to live independently.
- The data also highlights a **potential for cost savings and greater resource efficiency** by reducing the demand for hospital admissions and extensive in-home care.

A copy of the patient experience data collection tool and patient reported outcomes guide can be made available upon request.

Health, wellbeing and experience

The collection and implementation of patient reported experience and outcome measures (PREMs and PROMs) across the BOB ICS was inconsistent.

As part of the evaluation, the following were developed with the evaluation subgroup with input from VCSE organisations and a small (n=5) group of patients and carers.

1. Patient reported experience model including:

- a **questionnaire** to measure the service user's perceptions of their experience following discharge from the HaH services (validated by Picker and the University of Oxford and modified for this purpose).
- **Recommendations** to help HaH services implement the questionnaire.

2. Patient reported outcome measures (PROMs) guide for the following specialties

- Frailty
- Respiratory
- Cardiology
- Palliative care

to support services to assess the quality of care delivered from the patient perspective and help measure outcomes which service users consider important.

Evaluation Question: How do the hospital at home services impact the **system**?



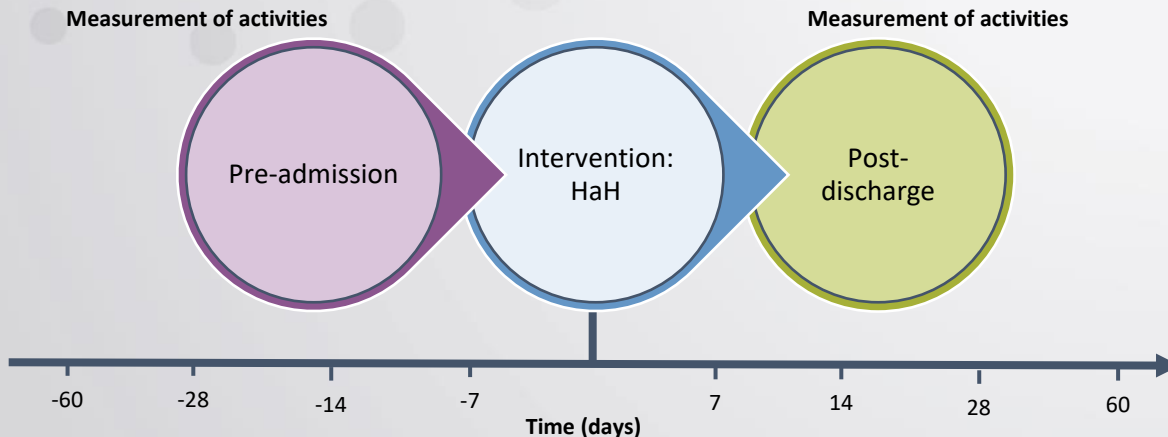
Methodology

Pre-test Post-test design

Patient level data was linked to data from seven types of services. The following fields were used to link Provider-submitted data to other data sets*:

- Admission date by HaH service
 - length of stay (overnight)
 - Pseudonymised NHS number
- } Data is summed to derive a discharge date.

Counts were measured for eight distinct activity types (e.g. ambulance conveyances). The number of activities linked to each patient discharge were captured at repeated time points (7, 14, 28 and 60 days) pre-admission and post discharge for each of the activities. To understand the comparative impact on healthcare utilisation, post discharge activity counts are compared to preadmission counts for the respective time points. Activity counts are cumulative.



To assess the impact of the HaH intervention, a complex analysis was required due to difficulties in isolating effects across various activities and providers, along with data quality issues, among others.

The analysis involved:

- **Method:** Eight longitudinal multilevel regression models, one for each activity type (e.g., ambulance conveyances), were used to evaluate differences in activity counts at 7-, 14-, and 28-days post-discharge for adults only. An additional model assessed how referral reasons (step-up vs. step-down) moderate the intervention's impact on priority activities (all activities excluding outpatient and elective admissions).
- **Model Structure:** Each model had three levels—provider, patient, and time—allowing intercepts and slopes to vary by provider and patient and adapting based on the intervention. This structure provided a detailed understanding of the intervention's effects over time.
- **Activity-Specific Analysis:** Models were split by activity type to capture varying effects and to simplify interpretation for non-technical audiences.
- **Control Variables:** Time-invariant patient-level characteristics (age, IMD quintile, length of stay) were included to account for relevant patient differences.

Diagnostic checks indicated that most models fit well, though the Outpatient Attendance model showed some issues.

Overall, the models effectively explained variance in activity counts with minimal error.

Activities linked to HaH patients (adults only)

Table 8 shows the mean number of activities per patient discharge over different time intervals post-discharge.

- **Outpatient Attendance** has the highest mean number of activities post discharge, suggesting that ongoing outpatient care is a significant and important part of post-discharge recovery for some patients.

Figure 16 displays the number of linked activities for each activity pre- and post HaH treatment.

- The data indicate a high level of activity prior to HaH admission, reflecting the healthcare needs of the population and significant demand for emergency and elective services.

	Average number of activities post discharge (per patient discharge)			
	7 days	14 days	28 days	60 days
Calls to 111	0.07	0.13	0.23	0.39
Ambulance incidents	0.08	0.14	0.26	0.49
Ambulance conveyances	0.04	0.08	0.15	0.27
Type 1 ED attendances	0.05	0.09	0.16	0.31
Non elective admissions	0.06	0.1	0.17	0.3
Non-elective admissions (overnight)	0.04	0.07	0.11	0.21
Elective admission	0.02	0.04	0.07	0.12
Outpatient attendance	0.61	1.18	2.06	3.69

Table 8: Average number of linked Healthcare Activities post-discharge per patient discharge

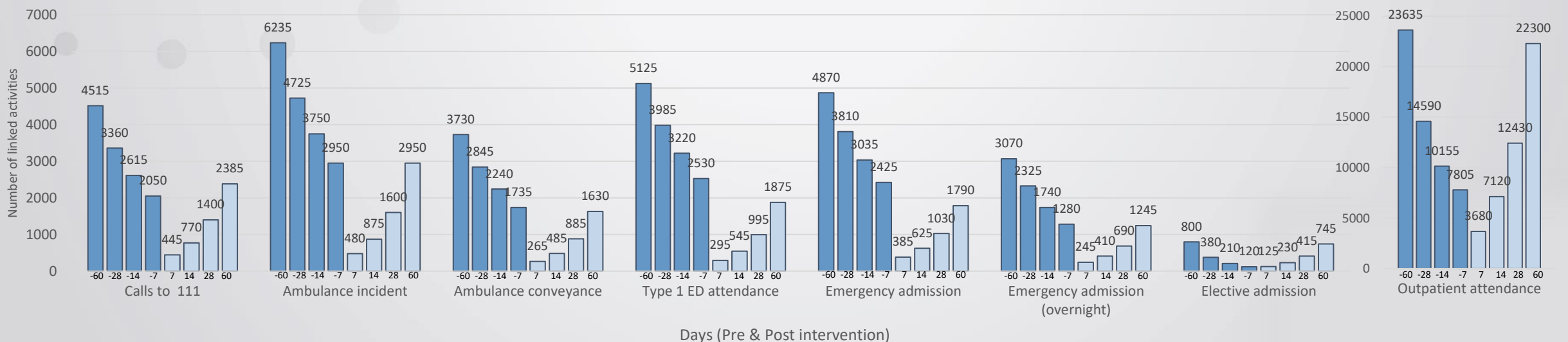


Figure 16: Activities pre & post Hospital at Home Intervention across BOB ICS (adults only).

Activity change rate

The table below provides a comparative analysis of activity change rates by age group over time.

	Adults				Children			
	Activity change rate (Range across BOB ICS)				Activity change rate			
	7 days	14 days	28 days	60 days	7 days	14 days	28 days	60 days
Calls to 111	-78% (-50% to -89%)	-71% (-54% to -83%)	-58% (-39% to -74%)	-47% (-33% to -63%)	-94%	-86%	-85%	-67%
Ambulance incidents	-84% (-73% to -90%)	-77% (-69% to -86%)	-66% (-59% to -76%)	-53% (-46% to -61%)	-96%	-92%	-85%	-80%
Ambulance conveyances	-85% (-71% to 94%)	-78% (-70% to -89%)	-69% (-58% to -81%)	-56% (-45% to -60%)	-97%	-92%	-83%	-77%
Type 1 ED attendances	-88% (-76% to -92%)	-83% (-63% to -88%)	-75% (-65% to -82%)	-63% (-53% to -72%)	-96%	-95%	-88%	-80%
Non elective admissions	-84% (-72% to -93%)	-79% (-68% to -90%)	-73% (-62% to -86%)	-63% (-52% to -79%)	-89%	-87%	-85%	-76%
Non-elective admissions (overnight)	-81% (-64% to -92%)	-76% (-66% to -87%)	-70% (-58% to -83%)	-59% (-51% to -72%)	-94%	-93%	-90%	-82%
Elective admission	+6% (-50% to +29%)	+9% (-33% to +57%)	+9% (-11% to +21%)	-7% (-47% to +7%)	0%	0%	0%	+50%
Outpatient attendance	-53% (-66% to +58%)	-30% (-46% to 69%)	-15% (-33% to +70%)	-6% (-23% to +62%)	-8%	+59%	+23%	+24%

Table 9: Comparative analysis of activity change rates by age group

Multilevel regression models

Intervention effects (adults only)

Key finding: The findings suggest that the HaH intervention is associated with a decrease in activity count for each activity type, and the effects are statistically significant for all but the Elective Admission and Outpatient Attendance models.

The multilevel regression model provides a detailed analysis of the impact of the HaH intervention on various healthcare activities. *Table 10* show the results from the multilevel regression models split by activity type.

Regressions of Hospital at Home Intervention's Effect on Activity Counts								
Multilevel longitudinal regressions (with varying intercepts & slopes) of activity counts pre-admission and post-discharge from Hospital at Home virtual wards.								
	Type 1 ED Attendance	Emergency Admission (Overnight)	Emergency Admission	Ambulance Conveyance	Ambulance Incident	Calls to 111	Elective Admission	Outpatient Attendance
Population-Level (Fixed) Effects								
(Intercept)	0.6841*** [0.5057, 0.8625]	0.5336*** [0.4482, 0.6190]	0.6792*** [0.5521, 0.8063]	0.6787*** [0.5719, 0.7855]	0.8790*** [0.6809, 1.0770]	0.8384*** [0.7229, 0.9540]	0.1781*** [0.0995, 0.2567]	0.9451 [-1.1386, 3.0288]
Intervention	-0.5969*** [-0.7873, -0.4066]	-0.4268*** [-0.5461, -0.3075]	-0.5575*** [-0.7238, -0.3912]	-0.5898*** [-0.7149, -0.4647]	-0.7657*** [-0.9313, -0.6001]	-0.6615*** [-0.7858, -0.5373]	-0.0019 [-0.1026, 0.0987]	-0.6145 [-1.7962, 0.5672]
Time ¹	0.2230*** [0.2140, 0.2320]	0.2277*** [0.2181, 0.2372]	0.2147*** [0.2058, 0.2236]	0.2234*** [0.2131, 0.2337]	0.2757*** [0.2633, 0.2881]	0.2809*** [0.2637, 0.2980]	0.2430*** [0.2152, 0.2708]	0.9249*** [0.8634, 0.9864]
Age ²	-0.0049 [-0.0177, 0.0080]	0.0006 [-0.0106, 0.0118]	-0.0167** [-0.0286, -0.0048]	0.0111 [-0.0052, 0.0273]	0.0354** [0.0117, 0.0591]	0.0114 [-0.0168, 0.0396]	-0.0111 [-0.0529, 0.0308]	-0.0349 [-0.1698, 0.1000]
Length of Stay ²	-0.0189** [-0.0316, -0.0062]	-0.0190*** [-0.0287, -0.0093]	-0.0256*** [-0.0368, -0.0144]	-0.0205** [-0.0346, -0.0064]	-0.0448*** [-0.0662, -0.0235]	-0.0213 [-0.0536, 0.0110]	-0.0150 [-0.0449, 0.0149]	-0.0891 [-0.2019, 0.0237]
IMD Quintile ²	-0.0065 [-0.0182, 0.0051]	0.0055 [-0.0041, 0.0151]	0.0037 [-0.0070, 0.0145]	0.0036 [-0.0089, 0.0160]	-0.0015 [-0.0196, 0.0165]	0.0149 [-0.0105, 0.0402]	0.0533** [0.0155, 0.0911]	-0.0953+ [-0.2078, 0.0172]
Intervention x Time	-0.1155*** [-0.1283, -0.1028]	-0.1306*** [-0.1441, -0.1170]	-0.1142*** [-0.1268, -0.1016]	-0.0979*** [-0.1124, -0.0833]	-0.1009*** [-0.1184, -0.0834]	-0.0745*** [-0.0987, -0.0503]	0.0243 [-0.0150, 0.0636]	0.2683*** [0.1813, 0.3552]
Group (Random) Effects								
Patient: Intercept Variance	0.5782	0.4461	0.5990	0.5451	0.8297	1.0153	0.6315	3.4354
Patient: Slope Variance	0.7266	0.6831	0.7816	0.7501	0.9906	1.2996	0.9567	4.2937
Patient: Intercept/Slope Correlation	-0.8480	-0.9066	-0.8902	-0.8678	-0.8250	-0.8343	-0.7797	-0.3875
Provider: Intercept Variance	0.2195	0.1015	0.1542	0.1280	0.2423	0.1263	0.0485	2.5913
Provider: Slope Variance	0.2330	0.1407	0.2017	0.1478	0.1982	0.1269	0.0344	1.4465
Provider: Intercept/Slope Correlation	-0.9961	-0.9624	-0.9849	-0.9487	-0.9684	-0.6346	1.0000	-0.9524
Residual Variance	0.3691	0.3299	0.3638	0.3698	0.5042	0.5949	0.4637	2.6816
Num.Obs.	19398	13626	19224	14838	19140	13896	3210	21930
R2 Marg.	0.268	0.266	0.252	0.275	0.223	0.134	0.179	0.029
R2 Cond.	0.752	0.706	0.748	0.732	0.749	0.732		0.738
ICC	0.7	0.6	0.7	0.6	0.7	0.7		0.7
RMSE	0.31	0.28	0.31	0.32	0.43	0.50	0.39	2.28

¹ Time represented as absolute time points (time pre-admission or post-discharge) where 0 = 7 days, 1 = 14 days, and 2 = 28 days.

² Variables scaled and centred around grand mean.

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

- The findings suggest that the **HaH intervention is associated with a decrease in activity count for each activity type**, and the effects are statistically significant for all but the Elective Admission and Outpatient Attendance models.
- This effect that is also **consistent across the three time points (7- 14- and 28- days)**.
- The average effect of the HaH intervention for priority activities (all activities other than outpatient appointments and elective admissions) is **estimated to be a decrease in activity counts of almost 0.6 per patient discharge**.
- However, some activities see much larger decreases, such as Ambulance Conveyance, with a reduction of **0.77 per patient discharge**.
- Significant variance in activity counts is primarily due to patient-specific differences, with less variance attributed to provider-specific differences, indicating that the intervention's effects are consistent across different providers

Table 10: Regressions of Hospital at Home's Effect on Activity Counts

Multilevel regression models

Intervention effects (adults only)

Predicted Counts Pre-Admission & Post-Discharge From Hospital at Home

Marginal predicted activity counts pre-admission and post-discharge (at 7, 14, and 28 day intervals) from a Hospital at Home virtual ward intervention. Predictions estimated from multilevel regressions per activity type.

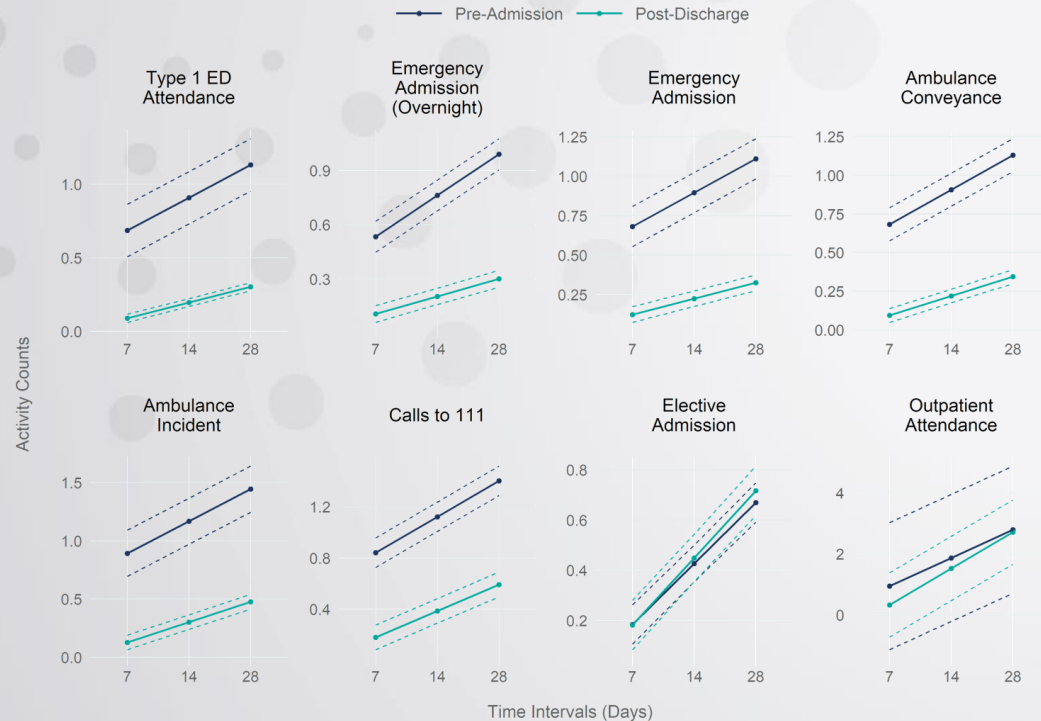


Figure 17: HaH intervention's effect on predicted activity counts

Figure 17 plots the effect of the intervention for each activity type, highlighting the magnitude of the effect across all priority activities while also demonstrating the issues with the non-priority activity models (elective admission and outpatient attendance).

- The intervention's effect on non-priority activities is negligible.
- For elective admissions, the effect is nearly zero, while the outpatient attendance model is highly imprecise.

Multilevel regression models

Control variables (LoS, age and IMD score)

Key finding: Findings suggest that longer lengths of stay decrease activity counts post-discharge.

For adults discharged from the HaH services across BOB ICS:

Length of stay has a statistically significant, negative effect on activity counts for:

- Type 1 ED Attendance
- Emergency Admission
- Emergency Admission (Overnight)
- Ambulance Conveyance
- Ambulance Incidents.

It remains negative in all other models but does not achieve significance.

Optimise length of stay: The data suggests that longer lengths of stay (LoS) decrease activity counts post-discharge, but this observation likely captures some confounding effects not considered in these models.

- There are numerous potential reasons why a greater difference in impact may have been observed for those with a longer LoS (*see slide 23*).
- Further work is required to understand and optimize length of stay to stabilize patients and reduce post-discharge emergency service utilization.

Age: Increasing age was associated with a significant:

- Increase in ambulance incidents
- Reduction in emergency admissions

For all other activities, the effects were inconclusive.

Enhanced preventative care for older adults: For older adults, the data suggests that while their health issues are often managed well at their usual place of residence, avoiding emergency admissions, they still frequently experience acute episodes requiring urgent care from ambulance services.

- Targeted interventions for older adults with enhanced preventive care and improved access to primary and in-home support services may help manage these acute episodes at home and reduce reliance on ambulance services.

IMD score: Increasing deprivation was associated with:

- Fewer elective admissions
- Increased number of outpatient attendances

For all other activities, the effects were inconclusive.

Support for deprived areas: The data also indicates that patients from more deprived areas have fewer elective admissions, possibly due to barriers in accessing planned healthcare services.

- Conversely, these patients have a higher number of outpatient attendances, suggesting a reliance on outpatient services for their healthcare needs. This highlights the necessity for targeted interventions to address healthcare disparities in deprived areas.

Multilevel regression models

Referral reason model (adults only)

Key finding: Step down referrals had a larger moderating effect than step-up referrals. However, high model error and low explained variance suggest significant confounding variables might be biasing results.

Regression of Referral Reason's Moderation of Hospital at Home Intervention	
Multilevel longitudinal regression (with varying intercepts) of activity counts pre-admission and post-discharge from Hospital at Home virtual wards, with referral reason included as moderating effect.	
	Priority Activities
Population-Level (Fixed) Effects	
(Intercept)	0.7727*** [0.6593, 0.8861]
Intervention	-0.7174*** [-0.7342, -0.7005]
Time [†]	0.2400*** [0.2323, 0.2476]
Step Up	-0.0463*** [-0.0693, -0.0234]
Intervention x Time	-0.1074*** [-0.1183, -0.0966]
Intervention x Step Up	0.0953*** [0.0775, 0.1130]
Group (Random) Effects	
Patient: Intercept Variance	0.2806
Provider: Intercept Variance	0.0938
Activity: Intercept Variance	0.1031
Residual Variance	0.6837
Num.Obs.	91566
R2 Marg.	0.237
R2 Cond.	0.369
ICC	0.2
RMSE	0.67

[†] Time represented as absolute time points (time pre-admission or post-discharge) where 0 = 7 days, 1 = 14 days, and 2 = 28 days.
+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 11: Regression of referral reason's effect on priority activity counts

Referral reason (step up/step down): The moderating effect of referral reason was also assessed.

- Unexpectedly, the model showed that step-down referrals had a larger moderating effect than step-up referrals.
- Patients referred via step-up had slightly lower activity counts pre-admission but higher counts post-discharge, contrary to the theorized effect and existing research.
- The model had high error and low explained variance, suggesting possible confounding variables and data quality issues.
- Further investigation is needed to determine if these results are due to data artifacts or model limitations before drawing definitive conclusions.

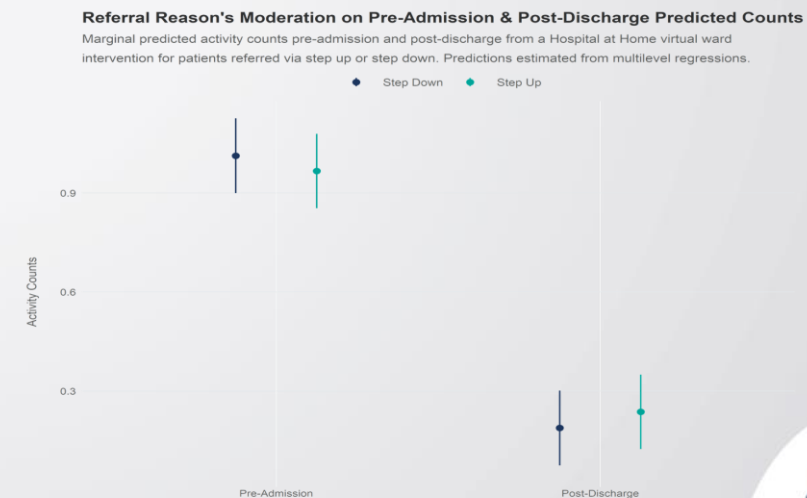


Figure 18: Referral reason's moderation of predicted activity counts

Evaluation question:

How do the hospital at home services impact the system?

We derived some important insights from our analysis of healthcare utilisation for a diverse range of patients.

Firstly, we note the important observation that **HaH patients had a high level of healthcare utilisation in the 60 days prior to HaH admission.**

Multilevel regression models were used to evaluate the impact of the Hospital at Home (HaH) intervention on various activity counts.

Effectiveness of HaH Intervention: The findings suggest that across BOB ICS the HaH intervention effectively reduces the need for emergency services.

A statistically significant reduction in the counts of the following activities was observed within the short term (28 days post discharge):

- Calls to 111
- Ambulance incidents
- Ambulance conveyances
- Type 1 ED attendances
- Emergency admissions

However, the degree to which these activities are reduced varies between providers and pathways. We found no evidence of a statistically significant change in Outpatient attendances or elective admissions.

Several factors may contribute to this finding:

- Patients may have ongoing healthcare needs that require medical care
- Complexity of medical conditions
- Preferences of patients or caregivers
- Incomplete resolution of health issues
- Care coordination challenges
- Systemic factors such as healthcare policies, referral patterns and capacity constraints

Age and Healthcare Utilization: Older patients are more likely to require ambulance services, highlighting the need for targeted interventions to manage acute episodes in this population.

Deprivation: Increasing deprivation was linked to fewer elective admissions and more outpatient attendances, highlighting the need for targeted interventions to address healthcare disparities in deprived areas.

Step up/step down: The impact of step up/step down was unexpected suggesting that step-down referrals have larger moderating effects on the intervention than step-up referrals. This differs from previous literature, but further investigation is needed to understand if this is an artefact of the data or if it is due to limitations with the model.

Overall, the model suggests that the HaH intervention effectively reduces the need for emergency services, particularly for older patients and those with longer hospital stays.

Evaluation Question: How do the hospital at home services impact the workforce?



Understanding workforce impact

Approach and survey respondents

A survey of HaH staff, co-designed with the evaluation subgroup, focused on themes such as health, wellbeing, engagement, clinical risk management, training, development, support, relationships, and culture.

- Questions were designed to capture staff perceptions and experiences using Likert scales, open-ended questions, and demographic inquiries.
- The target population included all staff members involved in HaH services, with a convenience sampling approach aimed at representing each role and experience level within the team.
- Data collection was conducted anonymously electronically, with a two-week collection period in September 2023.

The survey had a response rate of 68 (46% of the workforce) and covered all HaH providers.

The roles, bands and length of time in respective roles are detailed in *Figures 18, 19 and 20*.



Figure 18: Survey respondents by Job role

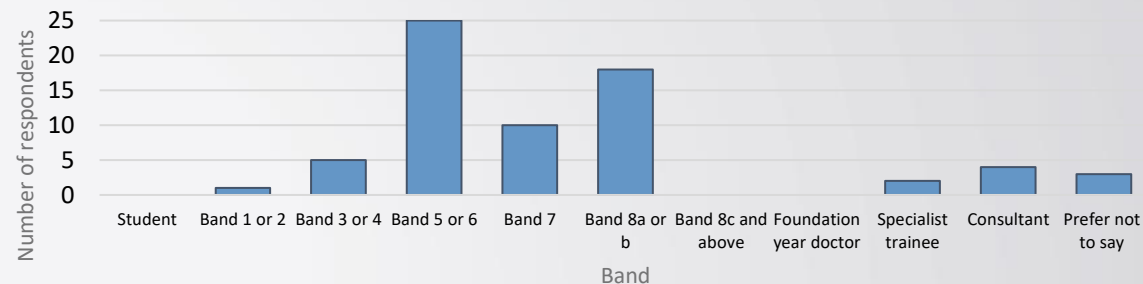


Figure 19: Survey respondents by Band

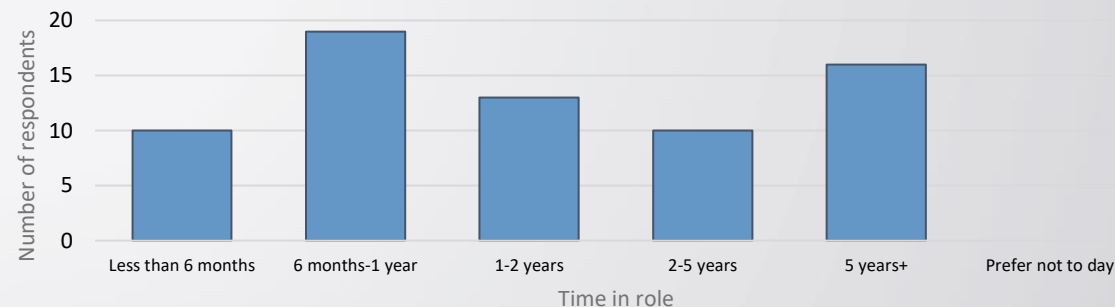


Figure 20: Survey respondents by length of time in role


What do staff like and dislike about their role?



Making a difference	Staff feel fulfilled by making a difference to patients, their families, and the healthcare system.	Increasing workload and expectations	Constant pressure from high expectations and increased workload due to patient complexity and acuity.
Strong teamwork and collaboration	Staff appreciate supportive colleagues and multidisciplinary working, which is crucial for managing complex patients.	Insufficient capacity	Teams struggle with capacity management; they dislike causing frustration to external referrers and staff feel other stakeholders don't understand their capacity well.
Variety and diversity of roles	Staff enjoy the diverse roles and patient referrals, providing continuous learning and challenges.	Difficulties caused by integration of services	Integration across multiple organizations can cause conflicts, duplication, and unclear roles.
Flexibility and independent working	Staff value the autonomy, flexibility, challenge and problem-solving work in the community.	Insufficient staffing resource	Lack of permanent, experienced senior staff and disparities in resources and skills, especially out of hours, due to funding shortages.
Career progression and learning opportunities	Staff have positive views on career progression, study days, and regular teaching sessions available for skill development.	Data collection and reporting demands impacts staffing resource and patient facing time	Pressure to meet targets and provide data to management impacts patient-facing time, with unclear performance assessment uses.
Innovative ways of working	Staff embrace innovative approaches and technology to improve patient care (including point of care testing).	Communication of change	Rapid system and service changes leave staff feeling uninformed and unable to adapt effectively.
		Lack of shared vision across the services hindering collaboration	Unclear communication about the service's future direction and goals hinders collaboration with external organizations.

Health, wellbeing and engagement

Key finding: Most staff feel safe, valued, motivated, and happy at work. However, there is room for improvement in areas such as remote working, workload and work environment and resources.

-  **Good practice:** All services have access to specialty advice and guidance, along with regular board rounds with a senior medical decision maker.
- **97% of staff feel safe** at work always or most of the time.
 - **93% of staff feel motivated** to give their best performance at work always or most of the time.
 - **88% of staff feel happy at work** always or most of the time.
 - **73% of staff achieve a good balance between work life and home life** always or most of the time.
 - **63% of staff feel their role allows them to work flexibly** in a way that suits them always or most of the time. However, 50% of staff never work from home and this is something staff would value.
 - **Only 16% of staff accessed health and wellbeing support** over the previous 12 months. This included online yoga sessions, internal and external support, trust wellbeing team, health and wellness centre and occupational health and support from managers. Overall, those who accessed support found it helpful. However, staff emphasised the need to protect staff's mental wellbeing.



Challenges: *Developing and sharing new ideas.*

- **Only 53% of staff feel they can develop, share and implement new ideas** to improve the service always or most of the time.

Long working hours, high workload and expectations: Staff report long hours, high workload, which can lead to fatigue, low morale, and potential adverse effects on patient safety.

Staff also feel they are expected to offer a high acuity of treatment to patients whilst operating autonomously.

- **31% of staff worked in their free time** to meet work demands in the previous 12 months.
- **35% of staff worry about job-related issues** either always or most of the time.
- **62% said they work to tight deadlines** either always or most of the time.

They also face challenges in remote working that can impact their ability to work effectively and safely that relate to:

- **Unnecessary travel** due to location of equipment.
- **Insufficient storage space** for equipment
- **Unsuitable office space** for virtual work
- **Equipment transport** – staff struggle to carry equipment alone with current setup




Clinical risk management

Key finding: Most staff feel confident managing acutely unwell patients. Challenges in accessing medical support, unclear medical responsibility were identified as factors limiting staff confidence in managing complex patients and accessing escalation routes.

✓ **Good practice: Most staff feel confident in managing the level of risk** associated with HaH, with 72% feeling confident always or most of the time.

- ✓ 78% of staff feel confident managing patients who are acutely unwell and/or have complex needs. However, Staff commented that it takes time and experience to gain confidence.
- ✓ Staff said they had excellent clinical support available to discuss concerns and they feel confident in the decision making for these complex patients.
- ✓ Staff can openly discuss issues and conduct joint visits when needed.
- ✓ There is a team ethos to ask if unsure and they navigate challenging patients well.

 **Challenges:** Only 29% of staff always feel confident accessing escalation routes for deteriorating patients.

Staff commented that accessing medical support for complex and vulnerable patients is hindered by insufficient senior support and unclear lines of clinical responsibility.

- A lack of clarity in this area limits staff confidence, delays treatment, and hampers service development.
- Insufficient medical cover, especially over weekends, causes conflicts between services and slows down patient management at home.
- Paramedics face additional challenges when requiring senior clinical input at the point of referral.

Challenges arise from the absence of an electronic interface across care organizations

- Absence of an electronic interface across care organizations necessitates paper or verbal handovers.
- Paper or verbal handovers pose clinical risks and hinder efficient communication between healthcare professionals.
- Staff struggle with accessing patient information and navigating different systems.
- Difficulties in accessing information impact the ability to provide timely and effective care, potentially leading to errors and misunderstandings.
- Connected Care aids clinical assessments for some providers, but staff access is limited and some Connected Care features, such as population health, case finding, and patient mapping, are inactive.




Training development and support

Key finding: While there is generally high satisfaction with support and access to senior staff, there is room for improvement in areas such as learning from experienced mentors, access to professional supervision, and the amount of protected time for training.

✓ **Good practice:** all HaH services have access to specialty advice and guidance to enable timely clinical decision-making.

Staff appreciate the opportunity for career progression, learning new skills, and professional development within the HaH service.

- ✓ Staff value additional training opportunities, such as study days and regular teaching sessions, to enhance their skills and knowledge.
- **84%** of staff were very satisfied or somewhat satisfied with access to help and **support from colleagues; 83%** with direct and immediate access to **senior staff** and **72%** with their **access to specialist input.**
- **59%** of staff were very satisfied or somewhat satisfied with their opportunities to learn from experienced mentors or by shadowing colleagues and 62% with access to professional supervision and/or peer support.

 **Challenges:** *The amount of protected time for training;* 26% of staff were either very dissatisfied or somewhat dissatisfied.

Inadequate Career progression opportunities: Some staff express concerns about limited opportunities for career advancement (due to limited band 7 roles and ACP roles) and the need for higher-level clinical knowledge and understanding to ease the pressures on doctors and senior staff.

Insufficient staffing resource causing challenges in delivering quality patient care and meeting service demands.

- Insufficient staffing during weekends and out of hours due to lack of funding.
- Shortage of permanent and experienced senior staff to manage complex patients
- Inequalities in resources and skills across teams.
- Programme teams are on fixed-term contracts
- Challenges in delivering quality patient care and meeting service demands.

43% of staff strongly disagree or disagree that their team is sufficiently resourced to deliver quality patient care.

Additional training is needed, and time and supervision are required to gain competence in skills learnt. Priority training requirements include:

1. **Diagnostics:** POCUS (especially ultrasound guided cannula), bloods and ECG review and interpretation,
2. **Formal frailty training**
3. **Advanced history taking and clinical assessment**
4. **Prescribing**
5. **MSc ACP courses**

Relationships and culture

Key finding: Staff appreciate the close partnerships and collaboration with colleagues both within their teams and from different disciplines and organizations. However, there is room for improvement as some staff felt undervalued and had been treated unfairly by colleagues.

✓ **Good practice: Good relationships and multidisciplinary working** were highlighted as positive aspects of their role.

- Staff appreciate the close partnerships and collaboration with colleagues both within their teams and from different disciplines and organizations.
- Staff value the ability to seek help and advice from other teams and expressed a willingness to collaborate more closely and learn from other HaH teams for continuous improvement.
- **70%** of staff either strongly agree or agreed that the team they work in collaborates well with **other services across care settings**.
- **60.3%** of staff agree or strongly agree that their team collaborates well with other **healthcare providers across Bob ICS**.
- **41.2%** of staff agree or strongly agree that their team collaborates well with the **VCSE sector**.

Relationships with HaH colleagues: Most staff feel there are good working relationships within the team:

- Over 75% of staff either strongly agreed or agreed that they are **treated fairly and with respect by their colleagues**. However, 16% strongly disagreed or disagreed with this statement.



Challenges: *Some staff felt undervalued* and had been treated unfairly by colleagues. Also, some felt there was a lack of clarity and communication on the vision and future direction of the service and how it could develop, improve and progress.

- 19% of staff strongly disagree or disagree that they feel valued at work.
- **25%** of staff either disagreed or strongly disagreed that their team has a clear vision.
- **21%** of staff either disagreed or strongly disagreed that their team have effective leadership to implement the future vision.

Limited collaboration with the voluntary sector to deliver patient-centered care.

Other themes identified include:

Technological innovations: Staff recognize the potential of technological advancements to improve patient care and remote working and enhance communication between healthcare professionals and patients.

Challenges: *inconsistent access to technology and equipment for staff and patient including:*

- **POCUS** for tricky cannulas and to assess the presence of excess fluid in the lungs
- **Bladder scanners**
- **Portable CRP machine** to aid decision making around antimicrobial prescribing
- **Portable ECG**
- **Remote monitoring platform** and associated wearables (where appropriate)
- Video conferencing



Evaluation question:

How do the hospital at home services impact the workforce?

The impact on the workforce is characterized by both positive aspects and challenges.

Positive aspects

- The workforce in HaH services varies in terms of roles and numbers, with senior input and a multi-disciplinary team approach being crucial for high-quality delivery.
- The services promote a supportive work environment, provide opportunities for professional development, and foster collaboration and teamwork among healthcare professionals.
- Findings emphasize the importance of workforce development and training to ensure staff members have the necessary skills and competencies.
- Most staff feel safe, valued, motivated, and happy at work, but improvements can be made in areas such as remote working and workload management.
- Staff also appreciate the opportunity to make a difference, work in strong teams, and have diverse roles.

Challenges

- Staff encounter various challenges, including increasing workload, insufficient capacity causing frustration among external referrers, service integration difficulties, staffing shortages, data collection demands, communication issues with change implementation, and a lack of shared vision hindering collaboration.
- Clinical risk management is hindered by difficulties accessing medical support and unclear medical responsibility and exacerbated by the absence of a shared electronic interface.
- Additionally, challenges encompass limited career progression opportunities, inconsistent technology access, restricted collaboration with the voluntary sector, medication administration issues, and the need for improvements in mentoring, professional supervision, and training time.

Conclusions and evaluation caveats



Conclusions

The data highlights some clear benefits of HaH services from a service user, staff and system perspective. Key conclusions from the evaluation are as follows:

1. HaH services established across BOB ICS were all successful at treating a diverse range of adults and children in the place they call home.

• Most patients were able to receive care and remain in their usual place of residence through a combination of home visits, telephone calls, and remote monitoring (despite relatively limited and varied use across the services). The HaH services play a crucial role in providing care for patients with chronic conditions, acute illnesses, and other conditions, including palliative care for patients with advanced illness or life-limiting conditions. The levels of acuity and complexity of patients' needs varied across and within services.

2. The impact and implementation varies between services and pathways.

• The evaluation identified significant variation in the models of care across the HaH services. This variation in implementation can impact the nature of the HaH intervention that patients receive. Accordingly, caution should be exercised when generalizing the findings from this study.

3. The findings suggest that across BOB ICS the HaH intervention is associated with a reduction in healthcare utilisation.

• This was particularly relevant for reducing calls to emergency services, ambulance conveyances, ED attendances and non-elective admissions. Accordingly, the HaH services may provide an important contribution to a wider system effort to reduce hospital admissions and mitigate acute pressures alongside other services i.e. See and treat (SCAS) and UCR etc.

4. HaH staff highlighted positive experiences of working in the HaH services.

• Those were linked to working among multidisciplinary teams, and developing new skills, as well as feeling they are making a difference to patients by delivering holistic care. Developing a comprehensive training offer for HaH staff and professional development were identified as key priorities going forward.

5. Efforts should be made to regularly monitor and improve access to HaH services for specific patient groups.

• This should consider, among others, level of deprivation, ethnic minorities, patients with substance dependence, severe mental illness, dementia, learning disability, and autism. There are significant gaps in ethnicity data recorded and improvement of reporting should be prioritised.

6. Our evaluation has identified challenges, key areas of variation and opportunities for service development

• Services should work to enhance the efficiency, effectiveness, and equity of healthcare services across the ICS by addressing identified challenges and leveraging opportunities for development whilst recognising that the services are at varying levels of maturity.

7. Further evaluation is required

• Further evaluation and research are needed to understand the impact of HaH services on patient-reported outcomes, caregiver burden, and to understand the impact on outcomes compared with patients admitted to hospital i.e. healthcare utilisation, post discharge support required, hospital-acquired infections, complications, length of stay, and functional decline.

Evaluation caveats

This evaluation faced several limitations that impact the interpretation, validity, and generalizability of its findings:

1. **Generalizability:** Findings may not be generalizable to other hospital at home/virtual ward services due to the heterogeneity and evolving nature of the services and interventions. However, there are likely to be some similarities across other services and therefore challenges and opportunities for development identified are likely to be helpful to other providers establishing these types of services.
2. **Confounding Factors:** Other concurrent admission avoidance initiatives and external factors not controlled for could have influenced healthcare utilization, confounding the results.
3. **Use of Pre-Existing Data Collection Tools:** An adapted version of the NHSE Southeast VW Patient Level Dataset (PLDS); a data collection tool used for NHSE's evaluation purposes was used to collect the data. Reliance on this pre-existing data collection tool limited the analysis to certain dimensions.
4. **Lack of Randomization and Control Group:** We had planned to obtain data for clearly defined control groups (non-virtual ward) from the Connected Care Shared Care Record. However, issues with accessing the data and the heterogeneity of patient demographics across the services, prevented us from constructing control group (s) that were sufficiently representative of the patients enrolled to the services.
5. **Gaps in the Evaluation:** The evaluation did not assess economic impacts, patient or carer experiences, PROMs, costs, resource use, clinical outcomes, or the impact on referrers and social care as this was removed from the scope of the evaluation.
6. **Data Quality and Completeness:** Issues with data quality and completeness hindered the analysis. For outcomes assessed via the manual data collection activity, only a subset of HaH patients' data was analysed, and therefore may not reflect the population. Furthermore, some patients couldn't be linked to system impact data, although exclusions were minimal and believed not to bias the results.
7. **Short-Term Follow-Up:** Limited follow-up timescales restricted the ability to assess long-term impacts.
8. **Pooled Analysis:** It is important to note that the pooled analysis at system level may mask different results at the level of individual sites, especially given that a large proportion of patients were discharged from 3 of the 6 providers (OUHFT, BHFT and RBFT).
9. **Double Counting:** Double counting of healthcare activities poses potential problems in data analysis due to some patients being discharged from the service multiple times within the evaluation period. The extent of double counting varies depending on the rate of patient readmissions, affecting certain services more than others (see slide 56). This evaluation therefore highlights the effectiveness of individual HaH episodes rather than individual patients.

Good practice, Enablers, and Recommendations for Service Development

This section highlights effective strategies, key enablers, and actionable recommendations for enhancing healthcare services.

The impact demonstrated in this evaluation forms the basis for recommendations that other systems can adopt to develop their models.

Derived from our findings across BOB ICS, these recommendations have been intentionally formulated to be broadly applicable across different systems.



Areas of good practice identified across the system

The following areas of good practice were identified across all services:

Access

Step-Up and Step-Down Access:

All providers offer both step-up (from community care to HaH) and step-down (from hospital care to HaH) access, with a primary focus on admission avoidance.

Referrals and Patient Identification:

HaH services accept referrals from a wide variety of services and healthcare professionals.

Efforts are being made to streamline referrals through Place-based Single Point of Access (SPA) systems, with initiatives in place to increase referrals and identify patients early in their care pathway.

Mitigation of Health Inequalities

Addressing Health Inequalities:

HaH services are actively working to mitigate health inequalities by:

- providing digital support and training
- collaborating with community organizations
- addressing affordability barriers
- tailoring communication and care delivery
 - using language service
- involving patients in pathway development
- supplying digital equipment to those in need.

Patient Safety and Care Escalation

Symptom Recognition and Escalation:

Services have formalized pathways developed collaboratively to ensure early recognition of deteriorating symptoms and appropriate escalation measures.

Confidence in Risk Management:

A significant majority of staff feel confident in managing the risk associated with HaH, with 72% feeling confident most or all of the time.

Diagnostic and Specialty Support

Access to Diagnostics:

Services are working toward providing urgent and equitable access to hospital-level diagnostics, which is essential for maintaining the quality and comprehensiveness of care in a home setting.

Multidisciplinary Collaboration and Relationships and specialist support

Multidisciplinary Working:

Good relationships and multidisciplinary working were consistently highlighted as positive aspects of the role within HaH services, emphasizing the importance of collaborative approaches to patient care.

Specialty Advice and Guidance:

All HaH services have access to specialty advice and guidance, which is crucial for timely clinical decision-making. Regular board rounds with a senior medical decision-maker are also a standard practice.

Enablers to service expansion

The following enablers to HaH care have been identified to enhance the effectiveness and efficiency of the service, facilitate service development and increase the breadth of patient acuity that providers can accept:

Integrated care coordination	Effective collaboration and strong professional relationships across healthcare services ensures timely, appropriate care and resource sharing.
Support from other services	Collaboration with SDEC, pharmacy, physiotherapy, specialist teams, and VCSE organizations expands HaH service capabilities.
Experience	Over time, both referrers and HaH providers learn about the level of acuity the services can manage in the community and their impact.
Multidisciplinary Care Teams	Diverse skills and roles within HaH teams, including advanced nurse practitioners, physiotherapists, pharmacists, and occupational therapists, improve care. New trainees and physician associates also add workforce capacity.
Effective clinical leadership	Strong leadership supports and drives the HaH model, fostering trust and innovation, and overcoming resistance and ensuring the smooth implementation of new practices.
Comprehensive Care Planning	Personalized care plans addressing specific patient needs, with patient and caregiver involvement, enhance adherence to treatment.
Effective communication	Daily MDT ward rounds ensure team alignment on patient care, with clear communication pathways to streamline coordination and reduce errors.
Data and administrative support	To minimise the administrative burden for clinical staff, manage logistics and coordinate efforts efficiently.
Advanced therapeutic interventions and diagnostics	Access to advanced interventions and point-of-care testing enhances the management of complex conditions and facilitates timely decision-making.
Senior Clinical Support (medical and non-medical)	Experienced senior clinicians facilitate complex case management and provide guidance and mentorship.
Flexibility in care delivery	Offering both face-to-face and remote care using digital tools allows prompt response to changes in patient conditions.
Continuous education and professional development	Ongoing training enhances staff skills, adaptability, and ensures up-to-date best practices and technologies.
Population Health Management Infrastructure	The Connected Care platform integrates healthcare services and systems to support services by enhancing remote monitoring, telehealth, care coordination, patient engagement, and resource allocation, while enabling data-driven decisions and accurate documentation.

Overview of recommendations

In addition to continuing to minimise variation, the following focus areas are suggested to expand and enhance current services and support the development of new pathways:

Evaluation and data monitoring

Further evidence is needed to understand the full impact of HaH services, with prioritized data monitoring to evaluate service differences, cost-effectiveness, post-discharge support, patient population impacts, remote monitoring and telehealth roles, and to implement continuous quality improvement through comprehensive data collection and analysis. These items were out of scope of this evaluation.

Service users

- To enhance patient experience and outcomes, use PROMs and PREMs for standardized data collection, improve discharge and follow-up processes, address disparities through equalities impact assessments, implement proactive case finding for high-risk patients, tailor services to community needs, and enhance engagement with patients and communities through co-design and collaboration.

Workforce

- To improve workforce development and support, provide dedicated training and mentoring in clinical and digital skills, recruit experienced staff or implement mentorship programs, establish career progression opportunities, enhance technology use for efficient care, promote staff well-being and work-life balance, and continuously optimize team composition to meet evolving service needs.

System

- To enhance service delivery, implement data analytics platforms for real-time information access, ensure all providers have access to shared care records, boost referrals and access, simplify referral and care management processes, enhance interdisciplinary collaboration with social care and the voluntary sector, and invest in advanced telehealth infrastructure for improved patient access and satisfaction.

Recommendations to support service development

ICB-driven innovation

The evaluation has identified important initiatives that would support future development of the HaH model. Several recommendations are presented across the following slides.

ICBs should play an active role in promoting collaboration across services to drive innovation, workforce development, impact and improvement of the HaH model:

- **Best practices should be shared across the system, leveraging successful implementation examples to support growth and development.** Understanding the variations in care models across HaH services can inform future efforts and promote the adoption of successful models.
- **Improved collaboration between organizations is needed to streamline connections between trusts, align care pathways, and reduce duplication.** ICBs should facilitate networking and knowledge-sharing among HaH teams, such as through shadowing across Providers, and promote clear, communication of shared visions across the system.
- **Establishing an ICS-wide training system specific to HaH to facilitate regular updates on acute clinical skills, pathologies, treatments, and medications.** Staff would also benefit from access to online learning, CPD courses/conferences, protected education time, shadowing opportunities, clinical supervision, and mentoring. A more robust performance development review process would facilitate career progression and support professional growth.
- **Develop a complex acuity tool to accurately describe the patient population and inform workforce requirements** for adequate capacity and resource allocation. Leverage [pre-existing tools](#) (Guys & St Thomas' @ Home Service), to support this development.
- **Invest in effective data infrastructure** to enable real-time access to patient information, enhance care coordination and communication among healthcare professionals. This will also improve service understanding of patient demographics, support accurate care delivery, and streamline administrative tasks whilst optimising Single Point of Access (SPA) operations and removing system barriers.
- **Invest in telehealth infrastructure** to enable virtual consultations, remote monitoring, and telemedicine services, reducing the need for in-person appointments (where appropriate) and enhancing patient access and satisfaction.

Recommendations to support service development

Standardisation

Standardisation across the system is needed to ensure more equitable service access and outcomes.

- **Standardize admission criteria** to ensure equitable access and use equalities impact assessments to identify and address disparities in access and usage of HaH services.
- **Consistently assess and record the level of support available to patients at point of referral**, including potential carer burden and the suitability of the person's usual place of residence (lack of fixed address or physical space, telephone line, running water, heating, electricity and access to meals), to tailor the care package effectively.
- **Standardize workflows and protocols for patient assessment and care management** to simplify referral, triage, and discharge processes.
- **Ensure robust and consistent medical coverage for all providers** with clear responsibility lines for each patient.
- **Integrate NEWS2 calculation upon admission into HaH services' clinical workflows** (where appropriate) to support timely assessment and decision-making. If feasible, Use technology, such as digital platforms, to calculate and track NEWS2 scores and implement protocols for responding to elevated scores.
- **Systematize frailty assessment by screening all patients ≥ 65 years with the Clinical Frailty Scale (CFS)** during initial assessment. Use the CFS score to guide early intervention and comprehensive geriatric assessment (CGA; if CFS ≥ 5). Provide frailty training to all patient-facing staff.
- **Standardize discharge planning to ensure consistent timing of and access to multidisciplinary reviews (involving medical staff where necessary) and establish uniform post-discharge support.** Focus on:
 - a) Uniform discharge criteria with flexibility for different conditions and demographics (e.g., paediatric patients).
 - b) Enhanced post-discharge follow-up to improve outcomes, satisfaction and continuity of care. This may also minimize healthcare utilisation and reduce readmission risks.

Systematizing collaboration with social care and the voluntary sector and strengthening support for care homes to improve access, resource utilization and care continuity.

Recommendations to support service development

Improving service access and the care & treatment approach

To ensure equitable access and reduce health inequalities, HaH services should proactively identify and address barriers among disadvantaged populations by prioritizing inclusivity, cultural competence, and accessibility.

- **Collaborate with other services to avoid admissions** by developing strategies to increase and sustain referrals over time. Work closely with UCR, care homes, ambulance trusts, primary care, and community organizations to boost step-up referrals and improve system flow.
- **Expand eligibility criteria** (including the paediatric population) to address specific community needs.
- **Improve support for care homes** to enhance access, focusing on vulnerable populations with complex needs. Integrate HaH teams into care home infrastructure and workflows to facilitate communication, coordination, and information sharing.
- **Implement proactive case finding and screen new patients for high-prevalence conditions** using a data driven approach (i.e. population Health Management tools incl. Connected Care).
- **Data-Informed Decision-Making:** Use data and acknowledge social determinants of health to provide culturally responsive services and improve outcomes for underserved communities.
- **Support data-informed decision-making, acknowledging social determinants of health, and provide culturally responsive services** to improve outcomes for underserved communities.

To improve the care and treatment approach and patient outcomes, focus on co-design and collaboration with patients, caregivers, and communities.

- **Identify and implement strategies to reduce length of stay (LoS) as timely patient flow is essential for the efficiency and effectiveness of HaH services.** This involves optimizing care delivery processes, resource use, and ensuring timely discharge and transitions of care while maintaining patient safety and care quality. Suggested strategies include:
 - a) Establishing clear discharge criteria.
 - b) Identifying discharge barriers early.
 - c) Reassessing patients frequently to adjust care plans and expedite discharge.
 - d) Enhancing care coordination among HaH teams, primary care, specialists, and community services.
 - e) Engaging patients and families in care planning.
- **Implement out-of-hours support procedures for 24/7 patient safety, integrating them with existing services.** Review staffing requirements for high-need patients and upskill staff to enhance retention and reduce pressure on senior staff.
- **Invest in a holistic approach** addressing medical, social, psychological, and system-level factors to reduce readmission rates.
- **Adopt a generalist care model to better meet diverse patient needs,** promote continuity, optimize resources, and minimize duplication. Specialist advice and guidance should be available to address patients' medical, social, and psychological needs.
- Foster collaboration with the voluntary sector to improve patient outcomes and service delivery.

Recommendations to support service development

Workforce

The workforce should be shaped to deliver impactful, need-based care through a generalist model whilst enhancing staff satisfaction and performance.

- **Ensure the workforce includes a core generalist multidisciplinary team** with broad skills and knowledge across a wide range of acute and chronic conditions.
- **Regularly assess staffing needs to identify the optimal workforce within HaH teams to meet the developing service needs**, support high-need patients, upskill staff, reduce senior staff pressure, and leverage administrative roles to ease the burden.
- **Enhance staff satisfaction and performance by addressing long hours and high workloads.** Prioritize adequate weekend and out-of-hours staffing while addressing funding and resource gaps. Minimize unnecessary travel, improve storage and office spaces, and ensure adequate equipment for safe working.
- **Promote staff mental well-being and work-life balance** through flexible working options, support programs, and protected time for training and personal development.
- **Invest in experienced staff to match the increasing practice scope and acuity** by recruiting more experienced professionals or implementing mentorship programs to support less experienced staff. A diverse skills mix, robust medical coverage and access to senior clinicians at referral points are crucial.
- **Provide comprehensive training and professional development**, including mentoring opportunities and supervision in clinical, digital and diagnostic skills. Promote networking and shadowing among HaH teams to share best practices, enhance collaboration between organisations, align care pathways, and reduce duplication. Offer opportunities for research and innovation to extend roles and support career progression.
- **Encouraging innovation** with platforms for idea sharing and recognize contributions. Adopt new technologies to enhance patient care, including point-of-care testing.

Recommendations to support service development

Evaluation and data monitoring

Greater use of data is needed to inform service development.

- **HaH services should collect and monitor data** (as a minimum) on admission reasons, discharge destination, readmissions, resource use, patient acuity, demographics, and service user satisfaction to improve care delivery and outcomes. Additionally, there are opportunities for research and evaluation to further enhance service impact.
- **Improving capture of diagnostic coding:** Clinicians and coders should work together to improve capture of diagnostic codes to give services a better understanding of patient demographics. Accurate coding can improve communication with other healthcare providers, facilitating effective management and continuity of care.
- **Consistently record the HaH care setting and level of support available at referral**, including potential carer burden, and the suitability of the patient's residence (e.g., lack of fixed address or physical space, telephone line, running water, heating, electricity and access to meals).
- **Examine HaH services' impact on patient populations and improve ethnicity data capture.** Accurate ethnicity data helps prevent biased decision-making, ensures appropriate care, and supports understanding of population diversity to address disparities and inform equitable healthcare policies.
- **Investigate the impact of advanced remote monitoring and telehealth platforms** on patient outcomes and care coordination.
- **Consistently collect PROMS and PREMs** to assess service users' health, wellbeing, and experience.
- **Evaluate the effectiveness of post-discharge support** and analyse data on the drivers of recurrent readmissions. Conduct weekly and monthly reviews to identify underlying causes and areas for improvement. By evaluating discharge processes or post-discharge support packages, the speed at which patients are returning and whether readmissions are a reoccurrence of previous issues, services can implement targeted interventions to reduce readmissions (where appropriate).
- **Continue to assess the short-term and long-term impacts of HaH services on healthcare utilization**, including primary care, district nursing, social care, and acute bed usage. Compare outcomes between in-hours and out-of-hours services, and also with those who attended hospital instead of HaH.
- **Implement continuous quality improvement and data-driven decision-making** using analytics and performance monitoring. Establish regular feedback and quality assurance processes to identify areas for improvement.
- **Conduct a comprehensive economic evaluation** to understand the cost-effectiveness of HaH services.

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Appendix 1

List of abbreviations

The tables below outlines the abbreviations used in this document.

AA	Admission avoidance
ACP	Advanced clinical practitioner
AHP	Allied health professionals
AHS	Academic Health Science Network
AMU	Acute Medical Unit
APC	Admitted Patient Care
BOB	Buckinghamshire, Oxfordshire, and Berkshire West
BHT	Buckinghamshire Healthcare NHS Trust
BHFT	Berkshire Healthcare Foundation Trust
BIRS	Buckinghamshire Integrated Respiratory Service
CCN	Children's Community Nursing (Oxford Health NHS Trust)
CDU	Clinical Decisions Unit
CFS	Clinical Frailty Scale
CGA	Comprehensive Geriatric Assessment
CPD	Clinical Professional Development
CSU	Commissioning Support Unit
COPD	Chronic Pulmonary Obstructive Disease
DOB	Date of Birth
ECDS	Emergency Care Data Set
ECG	Electrocardiogram
ED	Emergency Department
EHIA	Equality Health Impact Assessment
ESD	Early supported discharge
EMIS	Egton Medical Information Systems
EPR	Electronic Patient Record
FFT	Friends and Family Test
F2F	Face-to-face
GMAWS	Glasgow Modified Alcohol Withdrawal Score
GP	General practitioner
GPCOG	General Practitioner assessment of Cognition
HaH	Hospital at home

ICB/S	Integrated Care Board / System
ICD-10	International Classification of Diseases Tenth Revision
IP	Inpatient
IV	Intravenous
IVAB	Intravenous antibiotic
LoS	Length of stay
MDT	Multidisciplinary Team
NEWS2	National Early Warning Score 2
NHS	National Health Service
NHSE	National Health Service England
OHFT	Oxford Health NHS Foundation Trust
OOH	Out of hours
OPAT	Outpatient parenteral antimicrobial therapy
OUHFT	Oxford University Hospitals NHS Foundation Trust
PAS	Patient Administration System
PCN	Primary Care Network
PEoLC	Palliative and End of Life Care
PLDS	Patient level data set
PML	Principle Medical Limited
POCT	Point of Care Testing
POCUS	Point of care ultrasonography
PPG	Patient Participation Group
PREMs/PROMs	Patient Reported Experience and Outcome Measures
QI	Quality improvement
RBFT	Royal Berkshire Hospitals Foundation Trust
SCAS	South Central Ambulance Service
SCW CSU	South, Central and West Commissioning Support Unit
SD	Standard Deviation
SDEC	Same Day Emergency Care

SDF	Service Development Fund
SE	Southeast
SEM	Standard Extract Mart
SHMI	Summary Hospital-level Mortality Indicator
Sit-rep	Situational report
SOP	Standard Operating Procedure
SPA	Single Point of Access
SUS	Secondary Use Service
UCR	Urgent Care Response
UEC	Urgent and Emergency Care
VACU	Virtual Acute Care Unit
VCSE	Voluntary, Community and Social Enterprise
VW	Virtual ward
W/E	Week ending
WTE	Whole-time equivalent

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