Healthcare Improvement Scotland

Hospital at Home

Guiding principles for service development

January 2020

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Executive Summary

This resource is a source of information and evidence for Integration Authorities and NHS Boards in Scotland on the provision of "Hospital at Home" services.

This document brings together and reviews the published evidence on the effectiveness and safety of Hospital at Home initiatives for older people with frailty and shares learning from existing services across Scotland. It is intended to assist in local and regional planning for acute and specialist services to support people, who would ordinarily require admission to acute hospital, to receive treatment at their home.

A review of the evidence base for Hospital at Home identified potential benefits and also that areas of uncertainty remain. The strength and certainty of the evidence is likely to be enhanced with the forthcoming publication of a large UK randomised controlled trial, expected in spring 2020. Healthcare Improvement Scotland will review this new evidence when it becomes available.

Key points to highlight from this document are:

- Hospital at Home has been in existence in a number of countries across the world for 25 years. The first Hospital at Home service was introduced in Scotland in 2011.
- Older people with frailty are at particular risk of being affected by institutionalisation and delirium. Some 30% to 56% have been shown to experience a reduction in their functional ability between admission to hospital and discharge.
- Hospital at Home is a short-term, targeted intervention that provides a level of acute hospital care in an individual's own home that is equivalent to that provided within a hospital.
- The severity of the condition managed (such as sepsis, pulmonary embolism) differentiates Hospital at Home from other community service provision as well as the specialist nature of the senior decision makers.
- Evidence and experience points to various drivers for developing a Hospital at Home service for older people. Key is the provision of a better person-centred care experience which avoids the risks of healthcare acquired infection, and/or institutionalisation.
- Hospital at Home works best when it is part of an integrated acute and community-based service model to meet local population need.
- Clear criteria to identify patients suitable for admission to Hospital at Home is key to its success. This supports safe and effective diagnosis and management of an individual's condition.

- Creating the environment to support Integration Authorities, NHS Boards and Local Authorities to effect transformation and introduce services such as Hospital at Home will require close collaboration and robust strategic planning and commissioning across sectors.
- A key area for consideration in the development of any Hospital at Home service is the recognition of unpaid carers as equal partners in the planning and delivery of care and support.
- The specialist and acute nature of the work requires a workforce with the skills, competencies and confidence to manage acutely unwell patients safely at home.
- A range of tools and resources to support implementation of Hospital at Home will be made available on Healthcare Improvement Scotland's website by spring 2020.

1.0 Purpose of the guiding principles

This resource is a source of information and evidence for Integration Authorities and NHS Boards in Scotland on the provision of Hospital at Home services.

It is intended to assist in local and regional planning for acute and specialist services to support people, who would ordinarily require admission to acute hospital, to receive treatment in their home.

2.0 Hospital at Home: definition, rationale and context

2.1 What is Hospital at Home?

2.1.1 Definition

Hospital at Home is a service that provides acute, hospital-level care by healthcare professionals in a home context for a condition that would otherwise require acute hospital inpatient care.

The Information Services Division (ISD) of NHS National Services Scotland add more detail to this definition so that they can ensure consistency in data collection[a].

2.1.2 Key features of Hospital at Home

There are a variety of different models and approaches through which such a service can be delivered, but all share certain key features.

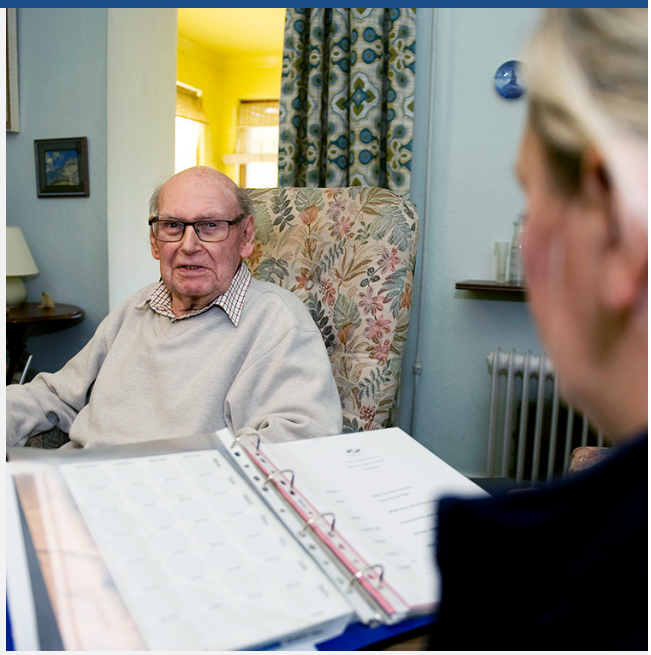
- The severity of the condition managed (such as sepsis or pulmonary embolism) differentiates Hospital at Home from other community service provision.
- A hospital specialist acts as senior decision maker and responsible medical officer, sometimes with the help of other grades of medical staff.
- It covers short, time-limited acute episodes of care and is not intended to prevent access to specialist acute care. Patients are treated as though admitted to hospital, but managed within their own home.
- It provides urgent access to hospital-level diagnostics, such as endoscopy, radiology or cardiology where necessary.
- It provides a different level of interventions, such as access to intravenous fluids and oxygen.
- Care is delivered by multidisciplinary teams of healthcare professionals complying with current acute standards of care.
- It complements other community-based health and care initiatives which support patients to remain in their own homes.

The following example describes a real patient's experience and his alternative pathway.

[a] Full definition available at: https://www.ndc.scot.nhs.uk/Dictionary-A-Z/Definitions/index.asp?Search=H&ID=960&Title=Hospital%20at%20Home

Hugh's experience of Hospital at Home: a case study

Hugh is an 81-year-old man who has experienced a number of illnesses, including heart failure.
He lives at home with his wife Nancy. Their bedroom and bathroom are upstairs. Hugh is experiencing breathlessness and is struggling to walk more than a few steps. He has acute atrial fibrillation with an uncontrolled heart rate triggered by a chest infection. His wife is concerned and contacts their GP surgery. The GP comes out to assess Hugh, concludes that he needs to be admitted, and at 10am calls the Emergency Response Centre. Hugh expresses a wish to stay at home, having had previous admissions to hospitals.



Option one: – Admission to an acute hospital bed

10am -12:00pm - Hugh is not considered to be a priority one triage category and waits two to four hours for an ambulance.

12:00pm - Hugh arrives in the Emergency Department (ED) Assessment Unit and sees a triage nurse for an initial assessment. His wife Nancy has to wait in the waiting room.

1:00pm - Hugh sees a junior doctor, who does an initial assessment and orders routine tests such as bloods, a chest x-ray (CXR) and a cardiograph. During this time Hugh waits on a trolley in a bay.

3:00pm - Hugh is reviewed by a more senior medic, who confirms his diagnosis and an initial management plan to stabilise his heart rate. His other results are reviewed and he is transferred to a bedded area. Nancy is able to see him at this point.

Option two – Admission to Hospital at Home

10:30am - Following the referrals, a healthcare support worker arrives at Hugh's house and performs a cardiograph, takes bloods and completes a National Early Warning Score (NEWS) assessment. They discuss Hugh's heart rate with the nurse practitioner, who arrives 30 minutes later. The nurse practitioner undertakes a full assessment using hospital proformas, with Nancy present to add in relevant information.

12:00pm - The Hospital at Home consultant arrives and takes a handover from the nurse practitioner. They review the clinical history, physical examination, and electrocardiogram (ECG), decide that a CXR is not required. Together with Hugh and Nancy they agree on an initial management plan. Hugh and Nancy are very keen for him to stay at home if possible. Hugh is started on medication to control his heart rate and treat his infection.

4:00pm - Hugh sees a consultant who reviews his results and develops a management plan. Hugh's heart rate is not yet controlled, and he is not considered safe to send home. He is unable to walk or climb stairs, and therefore considered unable to return home. At this time of day he will not get an occupational therapy review, and is transferred to a medical ward.

5:00pm - Hugh is transferred to an inpatient bed.

Day 2-8 - Hugh is reviewed daily by the medical team who concentrate on getting his heart rate under control. When this stabilises after a few days, he is assessed by the physiotherapist and occupational therapist. His case is discussed at the multidisciplinary team meetings (MDTs) and the team start discharge planning. They contact Nancy to discuss Hugh's progress and needs at home.

Day 8 - Hugh is discharged from the hospital to primary care and is relieved to get home.

2:00pm - A commode is delivered for Hugh to use at night.

4:00pm - All Hugh's blood results are reviewed and management plans revised.

Day 2-5 - Over the next two days Hugh is seen by the team to monitor his heart rate and response to treatment. As his breathing improves he is helped by the therapist initially to go to the bathroom and as he improves to mobilise downstairs. His details are discussed every day at the 'virtual ward round' and his blood results and cardiograph are reviewed.

Day 5 - When Hugh reaches a stable point where his condition has improved and he has returned to his previous function, he is discharged from the service. A letter is sent to his GP that day. Hugh and Nancy are delighted to have been able to stay at home.

2.2 Why introduce Hospital at Home?

Hospital at Home has been in existence in a number of countries across the world for 25 years. Evidence points to various drivers for developing a Hospital at Home service for older people. Key amongst them is the drive to provide a more person-centred care experience for individuals, avoiding the risks of healthcare acquired infection, and/or institutionalisation. This is particularly relevant for people for whom a hospital admission commonly leads to an unnecessary loss of independence and functionality: increased dependence can potentially result in subsequent requirement for care at home services or a long-term care home admission. The Hospital at Home model reduces the disruption to a person's existing formal and informal care and support arrangements through the addition of acute-level care in their home.

System factors such as increasing pressure on acute care beds may also influence the development of Hospital at Home services. Whilst potentially helpful, Hospital at Home services alone are unlikely to provide the solution to these pressures, and should be considered as part of a wider approach to system transformation.

While Hospital at Home can be provided in a variety of contexts for different patient groups and indications, the particular interest within Scotland, and the focus of this guidance, lies in the provision of services for older people with frailty.

2.2.1 Frailty and the role for Hospital at Home

Frailty is a complex, multi-dimensional syndrome that increases with age and leads to the inability to withstand illness without loss of function[1].

Older people with frailty are the single biggest users of hospital beds and the fastest growing demographic. Across the UK the population of over-85s is predicted to double between 2018 and 2043[2]. Older people in the acute setting:

- present greater levels of complexity
- have greater numbers of conditions
- require more medications
- are more likely to breach the four hour waiting time target in Accident and Emergency, and
- have greater numbers of agencies involved in their care and more caregiving issues than any other group[3].

The data shown in table 1 explores the current use of acute and primary care services by older people with frailty. This data has been estimated from a detailed analysis undertaken in Midlothian Health and Social Care Partnership (HSCP) through the

application of the electronic frailty index (eFI)[b]. The outputs of the Midlothian analysis were then extrapolated to a national level.

This analysis provides an indicative figure for the potential amount of health resource that is currently being spent to support people with frailty who are 65 and over.[c] It was not possible to expand this analysis to cover social care due to a lack of data.

Table 1: Projected indicative cost of frailty for people 65 and over in Scotland for October 2017- October 2018.

	All frailty groups	mild	moderate	severe
Unplanned bed days	£1,172m	£396m	£482m	£293m
Community prescribing	£430m	£231m	£137m	£62m
Outpatient appointments	£412m	£240m	£118m	£54m
GP appointments	£394m	£212m	£127m	£55m
Community Nursing	£138m	£84m	£44m	£10m
Total	**£2,546m**	**£1,163m**	**£908m**	**£474m**

It is worth highlighting that older people with frailty are at particular risk of being affected by institutionalisation and delirium. Some 30% to 56% have been shown to experience a reduction in their functional ability between admission to hospital and discharge[4, 5]. Such acquired disability increases the pressure on social care provision and must be minimised if such services are going to be sustainable in the future.

Safe and effective alternatives to hospital bed-based acute care are needed to manage demographic pressures, and provide a better experience for individuals. Hospital at Home is one example of a short-term, targeted intervention that provides a level of acute hospital care within an individual's own home.

2.3 Health and Social Care Landscape

Creating the environment to support Integration Authorities, NHS Boards and Local Authorities to effect transformation and introduce services such as Hospital at Home will require close collaboration and robust strategic planning and commissioning across sectors. A range of policy imperatives and guidance provide a framework to support the design and delivery of community-based services, including:

[b] Information on the Electronic Frailty Index can be found in https://bmjopenquality.bmj.com/content/8/3/e000682.full

[c] Sourced from www.ihub.scot. Applies to 2019.

2.3.1 Public Bodies Act

The Public Bodies (Joint working) Scotland Act 2014[6] identified four key objectives:

- Health and social care services should be firmly integrated around the needs of individuals, their carers and other family members.
- Health and social care services should be characterised by strong and consistent clinical care and professional leadership.
- The providers of services should be held to account jointly and effectively for improved delivery.
- Services should be underpinned by flexible, sustainable financial mechanisms that give priority to the needs of the people they serve, rather than the organisations through which they are delivered.

2.3.2 Framework for Community Health and Social Care Integrated Services

Work continues to be taken forward to support Health and Social Care Integration across Scotland. The Community Health and Social Care Integration Framework[7] was developed following the Scottish Government review of progress with integration in February 2019. The framework, summarised in Figure 1 below, describes good practice in terms of provision of effective, integrated community-based assessment, treatment, care and support. It provides a basis from which good practice can be systematically adapted and adopted to improve outcomes at a local level. Work to support operationalisaton of the framework across Scotland is underway.

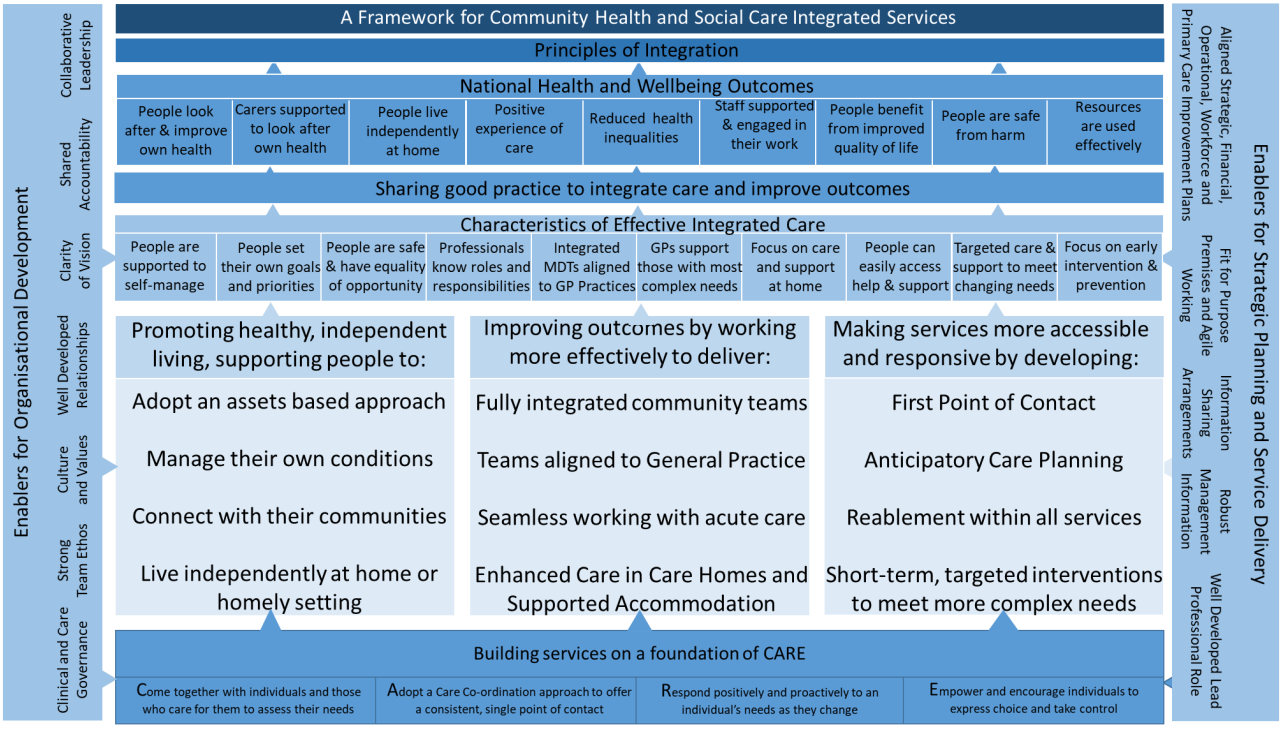


Figure 1: A Framework for Community Health and Social Care Integrated Services

2.3.3 Programme for Government for Scotland 2019/20

The Programme for Government for Scotland 2019/20 sets out the Scottish Government's priorities for 2019/20[8]. It recognises the work to integrate health and social care and changes that are being made to the way in which key services are delivered. This places greater emphasis on supporting people in their own homes and communities and reducing inappropriate use of hospitals and care homes. Hospital at Home is highlighted as an example of a service to be developed in support of the Framework for Community Health and Social Care Integration.

2.3.4 Unscheduled Care 6 Essential Actions

Essential Action 6, of the national unscheduled care collaborative's six essential actions, includes the following as a priority area: – ensuring patients are optimally cared for in their own homes or a homely setting[9]. This essential action is concerned with ensuring that someone who has an episode of unscheduled care can be optimally cared for in their own home to prevent an admission, or discharged to their own home, as soon as possible. This includes supporting the individual to live well and die well at home. There are many partners in the whole system supporting this outcome and Hospital at Home forms one element of this framework.

2.3.5 Realistic Medicine

Realistic medicine puts the person receiving health and social care and their priorities at the centre of decisions made about their care, recognising that a one size does not fit all[10]. It advocates shared decision making about treatment in line with the person's stated wishes, and encourages a move away from a "doctor knows best" culture. It takes a healthy approach to risk and is open with patients and families, allowing them to decide what is best for them. It also aims to reduce overtreatment and over-medicalisation of care. It encourages innovation and improvement, whilst recognising that excessive variation in the outcomes of care can be service-driven and be potentially harmful.

These principles should thread through all healthcare and fit with the idea of care delivered in the most appropriate setting for the patient, with tailored investigations and treatment plans centred on their goals of care and involving them as key stakeholders in their decisions.

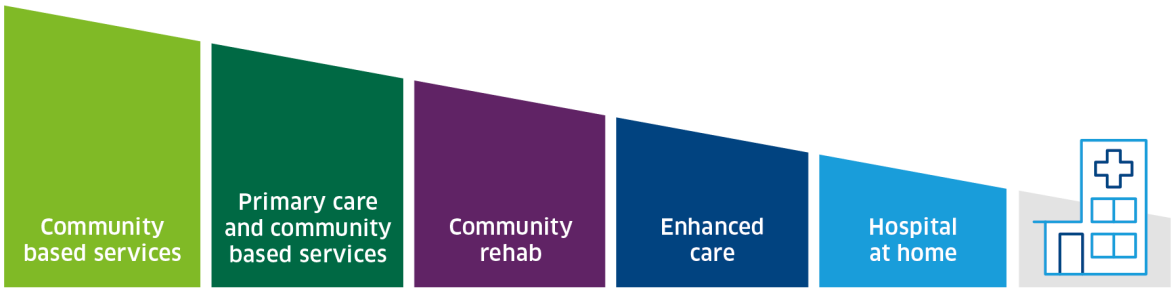
2.4 Where does Hospital at Home fit within the landscape

Hospital at Home is an intervention that must interface with existing services in a manner that is sensitive to the local context and some variation in approach is appropriate. However, it is important that services achieve similar outcomes and that the most cost-effective approaches are adopted. This is achieved by reducing unnecessary variation in approach, which has been shown to be a key driver in delivering high quality and cost-effective care[11].

The results from a survey of NHS Boards in July 2019 on the provision of Hospital at Home services across Scotland[d] highlighted that coverage across Scotland is currently limited, uneven and that services vary. The survey also identified a range of alternative services that are providing community-based care and support to enable people to live well at home.

While provision of Hospital at Home is led by acute care specialists within NHS Boards, commissioning of the service and its links to other health and social care provision within an area is undertaken by the Integration Authorities. There is a need, therefore, for coordination and collaboration between NHS Boards, Integration Authorities and Local Authorities to achieve the transformation required.

There is already a range of well-developed services in the community providing support to older people with the intention of preventing admission and facilitating early supported discharge. Many of them are multidisciplinary in nature and provide targeted and time-limited support to vulnerable individuals. When specialist acute care is necessary, Hospital at Home provides an alternative to admission to an acute hospital bed.



[d] Full survey included in supporting appendices available at: www.ihub.scot/hospital-at-home.

Key to success is clear criteria for admission to Hospital at Home. This ensures that individuals can access the type of service most suited to their acute episode of need and supports safe and effective diagnosis and treatment. There also needs to be clear referral pathways into other services to ensure seamless transition and clear communication.

Examples of existing services that need to dovetail appropriately with Hospital at Homes include the following:

2.4.1 Virtual Community Wards

These are relatively new developments in which integrated health and social care teams identify high-risk patients at risk of destabilising due to exacerbations of chronic diseases such as chronic obstructive pulmonary disease, and/or challenging social circumstances. The staff teams providing care comprise professionals working in primary and community care. The benefits include limiting disruption to the individual, and in many instances avoiding unnecessary hospital or care home admission.

2.4.2 Discharge to assess

This is a form of discharge support that seeks to determine a person's long-term care needs once they are discharged from hospital and are in their own environment (in contrast to assessment in a hospital setting for discharge).

2.4.3 Community-Based Teams, Rehabilitation Teams, District Nursing and GP linked Advanced Nurse Practitioners

Community-based teams will have a range of roles and responsibilities, but typically include therapy specialties (physiotherapy, occupational therapy) working alongside nursing colleagues and homecare providers. These teams provide multidisciplinary care and rehabilitation in a person's own home, either to step them down from hospital care or to prevent escalation to hospital or care admission. There may be significant overlap with reablement teams, many of whom provide short-term care at home to aid recovery after an admission to hospital.

Community-based options also include District Nursing services that provide complex and expert care to vulnerable individuals at home and Advanced Nurse Practitioners to assess patients who are acutely unwell to support clinical decision making for General Practitioners.

2.5 Role of carers

A key area for consideration in the development of any Hospital at Home service is the recognition of unpaid carers as equal partners in the planning and delivery of care and support. It is important that staff identify carers and take the opportunity to discuss their concerns and needs. Through the Carers Act[12], all carers are now entitled to an Adult Carer Support Plan that will identify their needs and the advice/support to be provided to support their wellbeing. Depending on the local area this is either accessed through a referral to social work or to the local carers centre. When a carer's needs are identified they need to be referred to the relevant agencies.

3.0 What does published research and local experience tell us about Hospital at Home?

3.1 Review of published research

A literature review of the published evidence on the overall effectiveness and safety of Hospital at Home initiatives for older people with frailty was undertaken to discover any lessons that can be learned on what works, for whom and why. The key points from the review and the supporting evidence are summarised below. The full literature review is included in the supporting appendices available at www.ihub.scot/hospital-at-home.

The emerging evidence on effectiveness and safety suggests that compared with usual hospital care:

Hospital at Home can be delivered safely without increased rates of death or re-admission to acute care.

A Cochrane systematic review[13], including a meta-analysis of randomised controlled trials (RCTs), found that admission avoidance Hospital at Home had similar rates of mortality at six months (six trials, n=912) and similar re-admission rates (seven trials, n=834) when compared with inpatient care. These findings are considered to be of moderate certainty. A UK RCT[14] (n=118), published subsequently to the Cochrane review, reported similar findings.

Hospital at Home may reduce the likelihood that patients will be living in residential care in the months after the acute episode.

A Cochrane systematic review[13], including a meta-analysis of RCTs (five trials, n=727) found that Hospital at Home reduced the likelihood of patients living in residential care. Heterogeneity among studies means that this finding is considered to be of low certainty.

Patients generally express high levels of satisfaction with the service.

Five trials within the Cochrane review[13] assessed patient satisfaction. Patients receiving Hospital at Home care expressed greater or similar satisfaction with their care. In a UK RCT[14] published subsequently to the Cochrane review, 90% of all study participants expressed a preference for Hospital at Home care.

A qualitative study included exploration of patient perceptions of Hospital at Home. These were generally positive, although some anxieties were expressed, too[15]. Evaluations of services in South London[16], Fife and in West Lothian[17] also gathered patient views and these were supportive of Hospital at Home.

Costs of Hospital at Home are generally lower than inpatient care, but there can be considerable variation in costs between services. Hospital at Home services have the potential to be a cost-effective option.

Three studies included within a Cochrane review[13] examined cost data. In all three, costs were lower for the Hospital at Home patients, but the costs included varied among studies. Lower costs were also reported in a subsequently published UK RCT[14] and a small pilot RCT conducted in the US[18]. A retrospective study examining three sites in Scotland found costs, at six months follow up ranged from 18% lower than admission to hospital to 15% higher[19].

Three studies examining the cost-effectiveness of Hospital at Home were identified within a review undertaken to inform a NICE guideline[20]. Hospital at Home offered greater benefits for lower costs compared with hospital care in each study. However, confidence in these findings was considered low due to methodological limitations and limited applicability to a UK setting. A subsequently conducted UK RCT (population limited to patients with COPD[14]), found it highly likely that Hospital at Home would be cost effective at a commonly accepted UK threshold.

The impact of Hospital at Home on informal carers is not yet understood.

Only a small number of studies examined the impact of Hospital at Home on informal carers and these had methodological limitations[13]. Whilst there is no indication from these preliminary studies of a detrimental effect on informal carers, a forthcoming UK RCT will include evidence on caregivers' perceptions of positive and negative aspects of the healthcare experience and how effectively they perceived the patient's and their own needs to have been addressed.

The review identified that the evidence base for Hospital at Home is still developing and areas of uncertainty remain. However, the strength and certainty of the evidence is likely to be enhanced with the forthcoming publication of a large multi-centre UK randomised controlled trial conducted across a range of settings including mixed, urban, semi-rural and rural. This is expected in spring 2020. Healthcare Improvement Scotland will review this new evidence when it becomes available.

3.2 Experience of delivering Hospital at Home in Scotland

In Scotland there is already a number of Hospital at Home services. These have developed in response to local need and there is not one standard model of operation.

The Information Services Division (ISD) of NHS National Services Scotland have conducted preliminary analyses on the Hospital at Home data. It should be noted that this does not provide the complete picture of activity in Scotland, as it is based only upon data that has been supplied to them and meets the ISD definition of Hospital at Home. However, it does help to illustrate current levels of activity[e].

Table 2 shows that there were approximately 34,000 episodes of care provided by Hospital at Home services over the last six years.

[e] Further information on this data is included in the supporting appendices available at www.ihubscot/hospital-at-home

Table 2: Hospital at Home admissions by Year of Discharge*

NHS Board	2014	2015	2016	2017	2018	2019^	Total
NHS Fife	177	1839	2138	1980	1714	1447	9295
NHS Grampian	0	0	0	0	95	301	396
NHS Lanarkshire	278	1990	2864	3004	3072	2829	14037
NHS Lothian	0	1295	1859	2196	2476	2407	10233
Total	**455**	**5124**	**6861**	**7180**	**7357**	**6984**	**33961**

*Not all services cover whole Health Board areas. Data collection for Boards meeting ISD definition started in 2014. One additional board is in discussion with ISD for data capture.

^2019 data is provisional and may not be complete

Source: ISD, Hospital@Home data (Developmental Data Set)

Respiratory system diseases were the most frequently recorded reason for admission to Hospital at Home (approximately 25% of all admissions). Other common reasons for admission were diseases of the circulatory system and the genitourinary system (both approximately 10% of patients). Mental and behavioural disorders accounted for some 6% of admissions[f].

3.2.1 Case studies: NHS Fife, NHS Lanarkshire and NHS Lothian (West Lothian only)

NHS Lanarkshire was one of the early developers of a Hospital at Home service in the UK and its service is currently the largest in Scotland. NHS Fife and West Lothian have also considerable experience of running Hospital at Home services. Details of their approaches are presented to illustrate how such services can operate in NHS Scotland. The information provided is based on data gathered for inclusion in a mixed methods study[17] for NHS Fife and West Lothian, updated by lead clinicians in these areas, and for NHS Lanarkshire, directly from the lead clinician. Details of published service evaluations conducted in NHS Fife and NHS Lothian are included within the literature review[g].

[f] *Source:* ISD, Hospital@Home data (Developmental Data Set)

[g] Full literature review is included in the supporting appendices available at www.ihub.scot/hospital-at-home

3.2.2 Interview data illustrating NHS Fife, NHS Lanarkshire, NHS Lothian (West Lothian only) Hospital at Home services

How long has the Hospital at Home service been established?	
Fife	Since April 2012
West Lothian	Since May 2013
Lanarkshire	Since December 2011

Can you describe the Hospital at Home service?	
Fife	Consultant-led Hospital at Home service that avoids admissions and also provides a step down from hospital. This would include the Emergency Department. **Referral route** - Nurse practitioners assess and admit patient to the virtual ward; patients referred from GP or from acute setting step down. **Staff** - Consultant, Advanced Nurse practitioner/trainee Advanced Nurse Practitioner, nurse, band 5 nurses, health-care support workers, administrative staff and GPs; three teams in Fife.
West Lothian	Consultant-led Hospital at Home service as alternative to hospital admissions. **Referral route** - Referrals accepted from medical assessment unit, general medical wards, frailty screening nurse, primary care and accident and emergency services. **Staff** - Consultant physician, Clinical Fellows and specialty doctor, ANP, Band 6 nurses, Band 5 nurses, physiotherapists, occupational therapists, Community pharmacist and administrator.
Lanarkshire	Consultant-led admission avoidance Hospital at Home. **Referral route** - Referral made by GP or SAS through central bed bureau. Referrals also from ED, Medical Receiving units and wards where appropriate. **Staff** - Spread across three geographical hubs. Consultant physicians, advanced practitioners, team leads (Band 7), Band 6 nurse and therapy practitioners, paramedics, Band 5s and assistant practitioners for rehab and one GP Trainee (GPST2).

What type of patient does your service best serve?	
Fife	Primarily those aged ≥ 65 years (but frail patients aged < 65 years also admitted), frail older patients, multiple comorbidities, functional problems, best managed in usual environment (home/care home).
West Lothian	Primarily those aged ≥ 75 years (but will see younger patients with multiple comorbidities and would be better managed in own home). Patients include those with infections, delirium, exacerbations of chronic conditions such as COPD and heart failure. Exclusion criteria: patients with chest pain, possible myocardial infarction, acute stroke, surgical problems and suspected neck and femur fracture.
Lanarkshire	Primarily patients ≥ 65 years with some selected cases under 65 years. Nursing home patients of any age. Majority are older people with multi-morbidity and functional or cognitive impairment. Patients excluded include stroke, acute coronary syndrome, lower limb orthopaedic problem, and acute surgical presentations.

How do you follow up the implementation of care?	
Fife	Consultant/GP-led daily ward round to assess patients and individualised pathway; social and health-care referrals.
West Lothian	Daily safety pause and MDT ward round, robust handover to primary care and other services. Central role of nurse co-ordinator to ensure implementation of plans.
Lanarkshire	Daily consultant-led multidisciplinary 'ward round'. Daily contact with patient or carer as appropriate to assess needs, therapy or psychiatric assessments where indicated.

What are the successes of the Hospital at Home service you provide?	
Fife	• Ability to deliver intensive treatment at home. • Patients with delirium/dementia do not need to go into hospital. • Keep relatives/caregivers up to date easily. • Relatives/caregivers feel supported. • Successful model for frail, older patients. • Patients can access lots of services. • Patient access to GP – easier than in hospital. Direct access to allied health professional (AHP) when required. Reduced delirium and falls despite seeing significant acutely unwell frail patients with Hospital at Home.

What are the successes of the Hospital at Home service you provide?	
West Lothian	• Assessments and interventions delivered tailored to patients own needs and goals, with close working of the multidisciplinary team. • Individualised anticipatory care discussions with good handover to primary care.
Lanarkshire	• Patient and carer feedback is very positive. • Safety outcomes, including mortality and readmissions are comparable with acute care. • Length of stay is shorter than acute. • Low levels of homecare requested. Nursing Home admissions have been avoided. Patients are supported to die in their preferred place of care. • It has contributed to hospital bed closures.

What were the barriers to implementing the Hospital at Home service you provide?	
Fife	• There were anxieties about the potential impact on community services. These fears seem to have been allayed over time. • Capacity in services (such as homecare) can be challenging. • Integrating the service into the existing community networks.
West Lothian	• We are sometimes challenged with capacity to access care at home to facilitate safe management of patients at home.
Lanarkshire	• Initial perceptions around the role and potential unintended consequences of the service on community. • Integrating and dovetailing with existing services

What are the threats to sustainability of the Hospital at Home service you provide?	
Fife	• Staffing - shortage of doctors and GPs (latter often called back into their practice). • Nursing staff need to be highly specialised practitioners (some will leave).
West Lothian	• Staffing – need to ensure core staff able to progress to help recruitment and retention. • Volume of referrals increasing without corresponding increase in staffing.
Lanarkshire	• Staffing – the recruitment and retention of highly skilled staff in a workforce market that offers many opportunities for advanced practice clinicians.

Additional examples from published literature illustrating models of Hospital at Home internationally and within the rest of the UK are provided in the full literature review[h].

[h] Literature review is included in the supporting appendices available at www.ihub.scot/hospital-at-home

4.0 Features of a Hospital at Home service

This section expands on the key features of Hospital at Home services and draws from expert opinion of clinicians and managers from different contexts across Scotland. This is information that health and care professionals believe is crucial to the safe and effective development of a service.

4.1 Which conditions can be managed by Hospital at Home?

Hospital at Home services treat people with a wide range of conditions and this will very much depend on local services, staffing and skill mix. Typical examples might include, but are not limited to:

Pneumonia	Acute Atrial fibrillation
Congestive cardiac failure	Gastroenteritis
Hyponatreamia and unstable metabolic conditions	Neurological disorders including Parkinson's Disease
Pulmonary embolism and deep vein thrombosis	Infected skin conditions such as cellulitis and infected ulcers
Urinary sepsis	Dementia and related complications
Complex falls	Anaemia
Acute functional decline due to underlying medical conditions	Upper limb fractures after initial assessment
Acute delirium	Influenza
Exacerbations of COPD and Asthma	Acutely unwell nursing home patients
Acute Kidney Injury	

Conditions which might exclude people from Hospital at Home services

Some conditions are not appropriate to be managed at home. This might be because the evidence is that inpatient hospital-based care for these conditions will deliver better outcomes, or simply because the interventions are not possible at home. Examples include:

Stroke
Acute coronary syndromes
Orthopaedic admissions with lower limb fractures
Surgical presentations
Unstable patients (for example with Haemorrhage, High National Early Warning Score (NEWS))

4.2 What care does Hospital at Home provide?

Existing Hospital at Home services vary in what they are able to offer. For example, adaptations in remote and rural contexts should take into account local resources and infrastructure.

The following examples of services provided by Hospital at Home are taken from the literature[17] and services across Scotland. The list is intended to be illustrative

4.2.1 Standardised acute assessment

Matching acute care standards will involve replicating many of the acute assessments ordinarily conducted in a hospital setting. These will include some or all of the following:

a clinical history,	
physical examination,	
medicines reconciliation,	
functional assessment,	
assessment of family support and social environment, and	
assessment screening, including as necessary:	National Early Warning Score (NEWS)
	Malnutrition Universal Screening Tool (MUST)
	4AT Delirium assessment tool
	Geriatric Depression Scale (GDS)
	Glasgow Coma Scale (GCS)
	Falls risk assessment.

4.2.2 Diagnostics

Patients managed through Hospital at Home require access to diagnostics with the same priority as if they were a hospital inpatient. Examples include:

urgent bloods
12 lead Electrocardiogram (ECG)
cardiology investigations, including 24 hour ECG, Echo,
ultrasound bladder
endoscopy, and
radiological tests, including plain x-ray, ultrasound and CT scanning.

4.2.3 Processes that support effective decision making and care planning

Routine processes of care can be captured in standard operating procedures and clinical guidelines for staff. They should cover:

Processes for capturing and acting on the person's wishes around 'what matters to you?'
Triage risks assessment of patient acuity: Can they be managed at home? Do they need Hospital admission/respite care?
Daily consultant-level discussion and virtual ward rounds by the team, with tailored management plans.
Consent and a clear plan for the management of escalating needs. Clinical decision making will identify that some patients may require hospital admission. If a patient requires admission, a clear pathway and robust communication with acute hospital colleagues is necessary so that their care is not compromised.
Ensuring clearly defined plans are available to all involved in a patient's care detailing what should happen in an emergency situation, or for the Out of Hours period.
Simple and clear information leaflets that explain the service and contact details for patients and families are essential.
The development and use of anticipatory care planning where appropriate.
Immediate discharge communication to GPs to avoid any confusion over when care is handed back, what changes have been made to medication and any outstanding issues needing dealt with.

4.2.4 Key interfaces

Hospital at Home complements other community teams and needs clear plans for communication and referral pathways. Examples could include:

4.2.5 Interventions and point of care support for managing people at home

Hospital at Home services do not use large amounts of hospital equipment but will access the following as required depending on service structure and context:

Oxygen – Portable oxygen concentrators can be crucial in the management of acute or chronic respiratory problems and can be carried by hand.

Equipment to support activities of daily living such as commodes and zimmer frames. These should be available for immediate delivery where possible.

Medicines – the service could have minimal stock in place for emergency use, such as immediate IV fluids, IV antibiotics or oral antibiotics. Keeping small stocks avoids the overheads related to the purchase, storage and governance of medicines.

Point of care blood testing can be undertaken using portable diagnostic machines that can be carried into the patient's house. These use a drop of blood to run a limited analysis. They can allow immediate treatment decisions to give IV fluids or antibiotics and avoid further visits or delays to treatment.

Point of care ultrasound can allow on the spot diagnoses following appropriate training.

Blood transfusion can sometimes be delivered at home in stable patients who have had previous transfusions and are not able to access this as a day case.

Nebulisers for inhaled therapy for acute exacerbation of asthma or COPD can be potentially delivered urgently and reused.

Early AHP therapy intervention can be crucial to intervene and prevent admission due to functional decline or changing care needs.

Specialist referral (such as respiratory, dermatology as appropriate).

4.3 IT and digital infrastructure requirements

Patients receiving Hospital at Home care should have access to a range of healthcare technology that would be available in a hospital setting. The requirements need to be defined and the service should be supported by a robust IT infrastructure. The following technology should be considered to support the operation of the service:

Patient admission episodes need to be recorded on patient management systems in order to be visible and capture patient data for ISD recording.

IT hardware solutions that would be usable in a patient's house or clinical setting and provide access to hospital systems, as well as the potential for electronic record keeping in the future.

Software solutions that allow management of staff, electronic record keeping and task or workflow management.

Video conferencing is worth considering to enable remote consultations (such as Attend Anywhere or NHS Near Me) with patients, discussions with families and staff. This can also be a strategy for multidisciplinary meetings.

Remote monitoring using devices that remotely monitor pulse, temperature, oxygen saturations, blood pressure, movement, and posture continuously and relay the information wirelessly to a central monitoring system. This would allow close supervision of high-risk patients and free up valuable clinician time.

4.4 Workforce requirements for Hospital at Home

The design and delivery of health and social care services is context specific and requires detailed planning and commissioning to ensure that the workforce:

meets regulatory and service requirements
is flexible and adaptable across seven days to deliver safe, effective care to ensure that a patient receives the right care from the right person at the right time, and
works collaboratively with the full range of primary and community care services to maximize the efficient use of local expertise to meet local population need.

It is crucial that there are arrangements in place for timely communication between the Hospital at Home team and existing primary and community care workers.

The specialist and acute nature of the Hospital at Home work requires a workforce with the skills, competencies and confidence to manage acutely unwell patients safely at home. This requires comprehensive geriatric assessment by a member of the multidisciplinary team, as fits with specialist geriatric medicine in an inpatient setting. To meet these standards, care needs to be specialist led, with a workforce including nurse/allied health professionals (AHPs)/paramedic practitioners with extended clinical and decision-making skills.

To meet these standards AHP/nursing/paramedic staff, in a Hospital at Home team, will be required to develop extended clinical and decision making, including the ability to undertake:

medical assessment
non-medical prescribing
assessment screening including as necessary: bloods, ECG, cognitive screening as indicated
medicines reconciliation
functional/mobility assessment
assessment of family support and social environment, and
define an initial diagnosis and management plan.

The development of staff to deliver this model of care requires a career framework to plan, develop and grow these skills and behaviors to enable a competent, capable workforce. This framework should address the development of staff from health care practitioners, to advanced practitioner and consultant-level posts. Standards of clinical knowledge and skill require to match those of acute inpatient care for medical and non-medical practitioners alike and will require formal accreditation of advanced practitioner, consultant posts.

Competencies to support acute older people's care have been developed across the Hospital at Home teams and provide an educational and training framework. Higher education institutions in Scotland now provide this educational component as part of their advanced practice courses.

Examples of advanced practice in Hospital at Home: Isla's story

Isla's GP refers her to Hospital at Home, concerned that she is losing weight and becoming more breathless despite a number of approaches the GP has taken to try to address this. When the call comes in, a physiotherapy advanced practitioner (the practitioner) responds as part of the Hospital at Home team. Isla is known to have Chronic Obstructive Pulmonary Disease (COPD) and is very frail. The practitioner conducts a clinical history and physical examination, which reveals abnormal signs in the chest and some wheeze. They complete a National Early Warning Score (NEWS) and take blood for analysis. At the same time the practitioner identifies functional concerns, including increasing mobility problems and equipment needs. They prescribe antibiotics and steroids and organise equipment delivery. The practitioner suggests simple exercises and organises a nebuliser to be delivered, and offers advice on withholding some medications that can be affected by the antibiotics.

Because Isla is very frail and had expressed a strong wish to be at home the practitioner has a 'What Matters to You?' conversation and discusses an Anticipatory Care Plan (ACP) with her.

The practitioner discusses the care with the Hospital at Home consultant, who agrees with the treatment plan.

The practitioner and Hospital at Home consultant review the results and agree that an updated chest x-ray would be useful. The practitioner arranges this and Isla attends for an x-ray at the hospital the following day and returns home after the test. The x-ray shows evidence of an advanced lung cancer. The team discuss the results at the virtual ward round, and it is agreed that the consultant visits Isla and her daughter to discuss the investigation and treatment options. Having previously discussed her anticipatory

care plans, Isla decides that she would like to stay at home but does not wish further investigations or treatment.

The following day the practitioner examines Isla and is pleased to see progress in her symptoms. They revisit the diagnosis and discuss her wishes again. Isla would like to go to her grand-daughter's wedding in a fortnight, but she has some mobility challenges. The practitioner assesses her mobility and, having agreed a plan, liaises with the assistant rehab practitioner to do some follow up work, with strength and balance exercises and to fit equipment, such as a bed lever and raised toilet seat. The practitioner discusses her case with the GP and district nurse. The district nurse visits Isla to discuss her potential future care needs. They explain how they can support her at home and together they start to put some plans in place.

Over the following days the practitioner discusses the case at the daily virtual ward round and liaises with Isla and her district nurse. When Isla is stable, the practitioner explains the discharge to community services. He lets the GP know about Isla's ACP conversation and completes a discharge letter.

4.5 The role of leadership

A key role for senior leaders is to create the conditions for transformational change, including collective leadership across sectors to establish a culture of collaboration focused on local population need.

There is strong evidence that the behaviour of leaders plays a key role in either enabling or hindering organisational change[21, 22]. Hospital at Home thrives when there is strong collective leadership with mature trusting relationships within the team and across sectors. Furthermore, the role of clinical leaders in enabling effective clinical engagement is essential.

The medical workforce needs to be flexible to respond to the context and the available staff. There needs to be clear lines of responsibility with a named consultant acting as responsible medical officer, as fits with the General Medical Council requirements for acute hospital care. Examples vary from consultant-only delivered care to blended medical teams, with the consultant acting as responsible medical officer.

Organisational development support for the creation of new ways of working and the promotion of human factors and non-technical skills can be a key enabler.

4.6 Governance arrangements

Developing and implementing Hospital at Home services requires a governance structure at Integration Joint Board and NHS Board level that provides assurance around new way of working and extends support for front line decision making. In addition, there needs to be managerial support for financial governance, service sustainability, staff governance and service planning. In order to run a safe and effective Hospital at Home service the following should be in place:

Service protocols or standard operating procedures ensure safe and consistent working. These should cover triage, clinical assessment and patient clerking, senior medical review, diagnostics and prescribing, care and support and review including the daily ward round or multi-disciplinary team meeting.
Clear accountability for preventing and responding to risks, adverse events and performance reporting.
A supportive culture for innovation that allows testing, adaptation and development.
An embedded culture of reflection and learning, for example the use of Morbidity and Mortality meetings or Schwartz rounds, to learn from things that have gone well as well as those that have not.
Clear links to local governance reporting structures.
A realistic medicine approach that puts person-centered care and shared decision-making at the heart of care planning from the outset.

4.7 Measuring Impact and Outcome

The performance of Hospital at Home services must be measurable, visible and accountable. Data capture should be standardised across Scotland to facilitate quality improvement and provide assurance that the service is providing highly reliable, safe, effective care. Some suggested standardised measures are as follows:

Performance metrics	
Essential	Number of patients referred per month
	Proportion admitted of total referrals
	Number of patients managed at home
	Length of stay
	Mortality during admission
	30-day outcomes (Death, re-admissions)

Performance metrics	
Optional metrics to consider recording could include referrals to:	Community rehab teams
	District nursing
	Homecare
	Social work
	Mental health
	Third sector
	Falls teams
	Outpatients
	Day hospital
	Palliative care

Operational metrics	
Essential	Financial governance
	Training/education/core/extended competency
	Staff governance workforce (recruitment, retention/development, sickness)

Clinical governance metrics	
Essential	Clinical Risk/Significant Adverse Event Reviews
	Quality – Excellence in care
	Complaints/Compliments Datix's
	Prescribing audits

The Information Services Division of NHS National Services Scotland is working towards a suite of outcomes to allow benchmarking of services across Scotland. This will be available in summer 2020.

5.0. Support moving forward

Healthcare Improvement Scotland will liaise with the Scottish Government, NHS Education for Scotland, Integration Authorities, NHS Board, and Local Authorities to identify and agree any further implementation support.

Healthcare Improvement Scotland have produced a Framework for Good Strategic Planning[i], which supports Integration Authorities to develop their approach to strategic planning and commissioning. This framework could be applied to the development of local Hospital at Home services.

NHS Education for Scotland will liaise with the Scottish Government to identify and agree any workforce or educational developments that will be required to support the spread of Hospital at Home

Information Services Division of NHS National Services Scotland will develop ways of reporting on the SMR01, Hospital at Home data which is being returned by Boards during 2020.

The **Digital Health and Care Institute (DHI)** has been asked by NHS Lanarkshire Hospital at Home service to use a design-led approach to identify digital technology that can help meet future need. DHI will use its combined industry and academic expertise and health and social care experience, to support the development of transformative digital innovations for Hospital at Home services. The DHI Design Team will undertake observation, interviews and workshops with NHS Lanarkshire staff and people receiving care to:

- map the current Hospital at Home service, and
- identify challenges and opportunities related to diversification and scaling up the service, digital opportunities for innovation, and focus areas for future work.

5.1 Tools and resources

Healthcare Improvement Scotland is developing a web-based resource to support the implementation of Hospital at Home. This will be available in spring 2020.

A UK-wide Hospital at Home Society will be launched on 5 March 2020. The Society will support the development of specialist acute care through Hospital at Home, share best practice and contribute to the emerging evidence base. Their website is available at www.hospitalathomeuk.org.uk.

[i] Good Strategic Planning Framework available at https://ihub.scot/media/6879/good-practice-framework-for-strategic-planning.pdf

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