Yorkshire & the Humber Telehealth Hub

Project Evaluation
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Airedale NHS Foundation Trust

University of Hull

Telehealth HUB

Barnsley NHS

NHS Yorkshire and the Humber

Yorkshire & Humber HIEC
Turning best practice into common practice

Hull and East Yorkshire Hospitals NHS Trust

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Foreword by Dr Shahid Ali
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The NHS is good at looking after people. People are living longer and developing multiple complex long-term conditions (LTCs) with increasing demands on the NHS. Seventy billion pounds are spent on managing LTCs in the NHS on a yearly basis and this will continue to rise. There needs to be a new way to manage the rising demand and deliver high quality care. Self supported care using Telehealth is a way of using technology to enable better, more efficient and high quality care in the NHS, to meet these challenges.

As a clinician, I have implemented self-supported care with Telehealth, to introduce a more proactive personalised service and immediacy to address the needs of the person before they develop a crisis, end up in casualty or be admitted into hospital. Supporting the management of care in the person's natural environment as much as possible has clear benefits for the person, clinical teams and the NHS and is the goal for the future.

Being able to scale up deployment at a time when there is indecision is a challenge but this can be achieved where we can see clear benefits to all and not doing so would be a disservice to people and the NHS. Clinical leadership has a crucial role in this transformation to achieve greater quality with less cost in line with the QIPP agenda. The Regional Innovation Funds have been pivotal in supporting innovation with Telehealth programmes. The Regional Telehealth Hub was established with Regional Innovation Funds and aspired to tackle the challenge of achieving scale and pace deployment of Telehealth services. This has resulted in some very rich learning.

This report helps the reader to get a 'feel' of what it is like to implement a Telehealth programme and certainly gives clear pointers to avoid pitfalls, problems and gives a picture of what success looks like. Innovation needs to be at the heart of Clinical Commissioning Group thinking as they commission high quality services to address the needs of their respective populations. Telehealth is without doubt an innovative and high quality service that is being commissioned by some now, but will be commissioned by all in the future. I would encourage commissioners and providers alike to read this report from 2020health and act upon the lessons and key findings.

Foreword by Professor Stephen Singleton
Interim Chief Executive, NHS North of England

The challenge of supporting an ageing population with an ever growing prevalence of Long Term Conditions is one which requires innovative thinking and leadership. The answer is just not to do more of the same but also to think and to act differently. Embracing the possibilities that the adoption of technology can bring needs to be at the forefront of any service redesign. Technology is an enabler of change and has the ability to improve the patient experience at many points in the patient journey.

The Yorkshire and the Humber Regional Telehealth Hub aimed to test the concept of providing a range of telehealth services across a region and demonstrate the benefits for patients living with long term conditions. Regional Innovation Funding supported the project and several organisations from across the region worked together to establish and manage the Hub. This project is a demonstration of innovative thinking and collaborative working that is essential as we face the challenge of supporting patients whilst continuing to improve quality.

1. Executive Summary

This report presents the results of a qualitative evaluation of the Yorkshire and the Humber Telehealth Hub by 2020health. The University of Hull separately evaluated the quantitative results, which are also attached to this publication.

Conceived in 2010, the Hub aimed to demonstrate the benefits from delivering telehealth at scale to patients with chronic conditions. NHS Yorkshire and Humber (the SHA) invested £900,000 from its regional innovation funds to create and fund the Hub. In this way localities around the region could take advantage of a comprehensive, integrated programme of tele-technologies on a subsidised basis during 2011–12 provided from three partner organisations (see table 1.1 below).

The aim for the Hub was to support care closer to home and deliver services to 2,100 patients, leading to fewer unnecessary admissions to hospital, healthier outcomes and lifestyles, and cost savings. At a high level, this aim was achieved with all three services demonstrating some reduction in secondary care usage.

In retrospect, while considered and forward-thinking with clear patient and system benefits, the aims of the Hub were overly ambitious, evidenced by a relatively low uptake of the services beyond the partners' home communities. Part of this reflected the substantial NHS organisational flux, making it hard to engage with decision makers around the region. With the exception of one small deployment in NHS East Riding and Yorkshire which embraced all three elements of the Hub offering, all other deployments were for a single service – i.e. telemedicine, telecoaching or telemonitoring.

The services offered were from three selected partners who each had a track record of service delivery in the relevant field. Our evaluation has considered the successes and challenges faced by each of the Hub partners, as well as the overall impact and lessons learnt from the Hub. At the individual partner level, the key findings are shown in Table 1.1 on next page.

Table 1.1 – Summary of services provided and key findings

Partner Organisation	Service	Key Findings
Airedale NHS Foundation Trust	Telemedicine – video consultation (VC) between patient and Airedale clinician	Innovative, unique and secure video-conference based service with NHS clinical response; Systems mainly deployed into patient and nursing and residential care homes; Generally high levels of patient and clinician satisfaction; Use cases and evidence base still emerging but show benefits from avoided admissions and care closer to home; Centre's capacity can handle many times more call volume; on current volumes, service is not yet viable.
University of Hull	Telemonitoring - clinical triage service to heart failure patients	Well established service based at the University, in conjunction with the acute trust; The RoI is well established and improved with the additional Hub funding through averted all-cause admissions; Small scale – the funds doubled the nurse triage capability from 1 to 2 FTEs; Available to other projects needing centralised triage.
South West Yorkshire Partnership Foundation Trust (SWYPFT)	Telecoaching – telephone based health coaching	Well established service, part of Telehealthcare Centre; Nurse care navigators deliver health signposting and coaching over the telephone; New service added for post-crisis support (post discharge); Early outcome data shows a reduction in secondary care usage but evidence base still emerging; Firm commitment across Barnsley, with ambitious targets – now in 35/40 local GP practices; Three other communities chose to take the service, but these were only small scale.

Turning to the Hub as a whole, Table 1.2 below summarises the main outcomes achieved against the original four aims identified at the outset. The table highlights both positive results and areas that could have gone better, which are addressed in the recommendations that follow.

Table 1.2 – Key outcomes

Original Aim	Key outcomes
1. Enable scale and pace deployments of Telehealth in the region	⊕ Across the three partners, patient volumes exceeded the total Hub target numbers of 2,100; ⊕ The Hub increased the profile of telehealth and introduced new services to areas not previously using telehealth in the region; ? While there was good interest outside the partner communities, uptake was limited, tending to be small scale or pilots. Organisations seemed reluctant to try the services offered, even when they were free of charge or heavily subsidised.
2. Promote and evaluate innovative thinking and VFM telehealth solutions	⊕ The Hub successfully brought innovative telehealth services to the market, securing customers in the region and beyond, and successfully delivering services; ⊕ A range of practical deliverables exist for others to use, including the HIEC toolkits; ? Take-up may have improved if services were offered to commissioners as evidence-based health interventions to well defined patient cohorts.
3. Evaluate the contribution to the QIPP targets	⊕ The University of Hull telemonitoring service demonstrates a clear and improving return on investment; the other services are starting to show reduced hospital admissions; ? Data are still emerging to show clear evidence of benefits and so prove the return on investment of telemedicine and telecoaching services (both outcomes and cost savings).
4. Provide a regional Telehealth infrastructure	⊕ The three Telehealth Hub centres are fully established and available to be commissioned by others in the region or beyond; ⊕ The Hub enabled a good understanding to be gained across the region of the attitudes and plans towards telehealth – including knowing where key sources of expertise are; ? The distinct service delivery models meant that an integrated step-up / step-down model for patients, according to their need, proved inappropriate; ? The intent to have single contracts across all three services proved too complex in practice due to legal constraints.

1. Executive Summary

In the main report, we draw out the key lessons learnt and summarise these against four of the key workstreams in the 3 Million Lives national campaign, which seeks to speed up the adoption of telehealth. Table 1.3 summarises the key recommendations:

Table 1.3 – Key recommendations

For the SHA – while it remains in existence: • Drive engagement with CCGs to encourage them to see the value of telehealth; • Influence the NHS Commissioning Board to create ways in the system to cluster and share experience and avoid a purely local approach to innovative services such as telehealth; • Continue to co-ordinate sharing of best practice.
For the Hub or its successors • Build on the excellent cooperation in place to learn from each other and, where appropriate, offer services together, recognising the perceived barriers that organisations face when considering widespread telehealth adoption.
For Airedale NHS Foundation Trust • Continue to work hard on gathering robust evidence for the interventions (in line with Hull guidelines), and to offer services through imaginative tariff approaches, in order to increase throughput; • Define a series of gateways needed to confirm the business viability of services, with appropriate contingency plans ready; • Explore rigorously the offering of flexible pick and mix models, including an option for an infrastructure-only service to GPs and other providers without nursing or clinical triage.
For the University of Hull • Assess the potential to offer the clinical triage service – and other related services such as risk stratification – to augment the offerings of commercial telehealth providers.
For SWYPFT • Continue to work on gathering robust evidence and RoI data for the interventions, in order to increase throughput; • Firm up the service offering and package in readiness for interest from other health communities, including on a solution and training basis only.
For CCGs • Be open minded about the potential that telehealth-enabled services can bring, particularly in the context of the developing evidence base; • Drive providers to deliver benefits to patients by offering innovative services that relieve pressure on hospitals– focusing on the 'why', 'what' and 'to whom' rather than the 'how'.
For providers • Evaluate and pursue opportunities to benefit from these technologies, to support a shift to care closer to home and to negate impact of the emergency tariff structure; • Consider a range of suitable technologies to support patients' pathways rather than trying to get all patient cohorts onto one solution, driven by risk stratification.
For DH / NHS Commissioning Board • Tie together telehealth adoption with the QIPP LTC policy and targets; • Assess why the uptake of telehealth-enabled services has been slow, even without up-front capital costs as with the Hub, and consider which levers will best drive engagement; • Encourage an appropriate balance in the evaluation of new innovative digital technologies (e.g. telemedicine and telecoaching) – between robust academic evidence and the need to get on with initiatives pragmatically.

2. Introduction

2.1 Background

The NHS Yorkshire and Humber (Y&tH) Regional Innovation Fund (RIF) supports and promotes the adoption of innovation and the spread of best practice across the region by investing in projects that demonstrate pioneering approaches to patient care. Given the high proportion of elderly patients and patients with Long Term Conditions (LTCs) in the region, in 2010 the Chief Executives' Forum agreed to use RIF funding to develop a Regional Telehealth Hub[1] to support new LTC care pathways incorporating assistive technology.

The aim was to accelerate the adoption of telehealth and related technologies across the region, by providing a single point of access service for a range of telehealth services. After a selection exercise, the SHA decided to base the Hub around services provided by three regional organisations with a proven track record in the provision of telehealth: Airedale NHS Foundation Trust, South West Yorkshire Partnership Foundation Trust (SWYPFT), and a partnership of Hull and East Yorkshire NHS Trust and the University of Hull. The original intent was for these three organisations ('partners') to share governance arrangements and collaborate as one virtual body.

The Hub ran for one year throughout 2011/12 and following on from this, in April 2012 the SHA invited 2020health to conduct a qualitative evaluation of the project, with the intent of a formal publication of achievements, issues and lessons learnt. Of particular interest was the impact that the Hub had in delivering services to Yorkshire communities beyond the localities of the three partners. The evaluation study was funded by an unrestricted educational grant from the SHA.

In the context of the '3 Million Lives' campaign, which is working to encourage the adoption of telehealth and telecare on a broad basis across England, this report aims to draw out relevant lessons learnt and make key recommendations for the future of telehealth in the region.

In parallel to our work, the University of Hull was asked to assess the quantitative achievements against the original business case. The results of their analysis have been included as appendices to this report and a summary is provided in the main text.

To support the deployment of the Telehealth Hub, the RIF also funded the Y&tH Health Innovation and Education Cluster (HIEC) to deliver a regional telehealth toolkit. The toolkit is now widely available and in use along with a set of workbooks. The HIEC were also funded by RIF to deliver two telehealth projects in the region running alongside the Hub. The HIEC reported to the RIF Panel directly on these elements and their work was outside the scope of the 2020health evaluation.

1. http://www.telehealthhub.com

2.2 Definitions

For the purpose of this report, we have applied consistent definitions to terms used in this project. Namely, that 'telehealth' is an encompassing term that includes telemonitoring, telemedicine and telecoaching, where these terms are defined as:

- Telemonitoring – The use of devices to remotely collect and send data from the patient home to a central monitoring service. Alerts are managed, triage (clinical and technical) is carried out and where necessary referrals are made.

- Telemedicine – The provision of remote video consultations (in patients' own home, nursing homes or other community settings) between clinicians and patients to enable clinical review and interventions to minimise the severity of the condition and its potential deterioration.

- Telecoaching – A telephone based health coaching service, delivered by nurse care navigators who have had additional training in motivational interviewing and behaviour change techniques.

This definition of telehealth differs from that of the Department of Health which follows (www.3millionlives.co.uk):

"Telehealth - often referred to as remote patient monitoring - refers to services that use various point-of-care technologies to monitor a patient's physiological status and health conditions. When combined with personalised health education within a chronic disease management programme, it can significantly improve an individual's health and quality of life. Typically, it involves electronic sensors or equipment that monitor vital health signs remotely from home or while on the move. Readings are automatically transmitted to an appropriately trained person who can monitor the health vital signs and make decisions about potential interventions in real time, without the patient needing to attend a clinic."

2.3 Process adopted

In preparation for this report, each of the three participating organisations had already responded to a comprehensive 'lessons learnt' questionnaire in January 2012. These and other key project documents including the SHA's Project Closure Report dated April 2012 were made available to the 2020health team. A full list is provided in Appendix A.

It was agreed that the richness of the Hub experiences needed drawing out through one-to-one interviews with key players from the partners, commissioners and clinicians, together with the project sponsors at the SHA. These interviews were conducted in May 2012, and a list of the interviewees is included in Appendix B. A report glossary is at Appendix C.

A follow-up workshop was also held involving the key project stakeholders on 19 June 2012 to test out initial conclusions and lessons learnt.

2.4 Report Structure

This report is structured as follows:

- **Chapter 3 – Overview of the Hub** sets the background and aims of the Yorkshire Telehealth Hub and describes how the Hub developed in the light of changing circumstances.

- **Chapters 4, 5 and 6** describe the projects, their quantitative and qualitative achievements as well as lessons learnt for the **Airedale, Hull** and **SWYPFT** projects respectively.

- **Chapter 7 – Hub Achievements and Lessons Learnt** summarises the overall conclusions and presents recommendations for action.

3. Overview of the Hub

This chapter sets out more background of the Yorkshire Telehealth Hub and its original aims, and describes how the Hub developed in the light of changing circumstances.

3.1 Original Aims

The aim of the Telehealth Hub was to offer a menu of clinical services to commissioners and providers within the Y&tH region to support patients with long term conditions. The Hub had the general objectives of:[2]

- Supporting patient care closer to home to avoid unnecessary hospitalisations and outpatient visits;
- Achieving better outcomes through motivational care planning and improved engagement with patients;
- Promoting self-care and support via information prescriptions, supporting behaviour change;
- Delivering cost efficiencies and return on investment.

The project initiation document stated that the Telehealth Hub would operate as a *"single virtual body to deliver seamless remote telehealth care throughout the patient pathway"*. This would be achieved through shared governance arrangements, performance standards, interoperability and consistent care processes across the spectrum of Telehealth services. It was hoped that this cooperation would also aid with development of minimum technical standards, the vision to 'connect all' and the strategy of a shared patient record.

At the outset it was agreed that the Telehealth Hub would offer three care services delivered remotely. The aims of each service are described below in Table 3.1.

Table 3.1 – Summary of the Services[3]

Telemonitoring : The locality will procure the telehealth products they want to deploy to patients in their locality. The Hub will then provide an end to end service supporting patient deployment, consent, set health parameters and provide clinical staff to monitor incoming patients' vital signs. The Hub telemonitoring triage service will enable 'intelligent dispatch', ensuring that the appropriate frontline practitioner is informed of important changes in their patient's condition.
Telemedicine: The Telehealth Hub will use existing clinicians to provide planned care for patients with telemedicine – the Hub will merely provide a technical platform. Out of hours the Hub will provide clinical support for unplanned episodes of care. The service will support care closer to home and avoid unnecessary admissions to hospital.
Telecoaching: This is provided by specialist Care Navigators trained in motivational interviewing techniques. The Care Navigators will work with patients to develop a detailed care plan with agreed goals. They will support patient self-care and risk reduction through modifying behaviours damaging to health. They will also signpost patients to local care professionals.

2. "Yorkshire - Telehealth Hub Brochure v3" April 2011
3. "Yorkshire - Telehealth Hub Brochure v3" April 2011

3. Overview of the Hub

The overall aim was to *"establish and run a Regional Telehealth Hub to prove the concept of the Hub model and demonstrate the Quality, Innovation, Productivity and Prevention (QIPP) benefits to be realised from enabling technologies for patients with LTCs"*.

Table 3.2 below lists out key goals of the project and describes our perception of the specific objectives within each goal.

Table 3.2 – Key project goals and objectives

Goal	Key outcomes
1. Enable scale and pace deployments of Telehealth in the region	Build on existing operational services to deliver something quickly and make it available outside the home communities; Prove the case for delivering telehealth at scale; Overcome 'pilot-itis' through the use of subsidies to encourage uptake; Avoid the 'grow your own' philosophy by creating the telehealth capability once and not many times.
2. Promote and evaluate innovative thinking and value for money solutions using Telehealth	Get the three partner communities to work together and share best practice; Prove whether the step-up / step-down model for patients is viable; Test out the HIEC toolkits.
3. Evaluate the contribution to the QIPP targets	Test out value of three types of distinct services on the telehealth spectrum; Help inform what contribution telehealth may make to NHS of future.
4. Provide a regional Telehealth infrastructure	Aim for an end-to-end service of tele-technologies, recognising that change management would be a local responsibility; Intend to have a single point of contact – for marketing, contracts, technology etc. Each partner would provide a body of expertise in relation to their particular technology modality; SHA taking active role in coordination and promotion of Hub with potential commissioners.

3.2 Funding Support and Governance

The RIF provided £910,000 to this project, distributed between the three Hub partners to enhance existing capabilities and to provide some services for a fixed period at a subsidised rate. Specifically, the funding was used for project set up and management, collaborative working, shared project resources (e.g. the HIEC telehealth toolkit) and the establishment of a 24/7 clinical support service.

A Telehealth Hub Project Board was established which in turn reported into the Yorkshire and Humber LTC/Telehealth Programme Board who provided overall governance. This Board oversees a range of projects that were focused on helping people with LTCs. SHA staff actively coordinated the project to ensure there were no loose threads, both in terms of the investment, and people's time and energy. Through this coordination, it was intended that all best practice and knowledge could be captured and shared, and made available for use around the region.

Even with the establishment of new commissioning arrangements brought in by the NHS Reforms, and associated organisational flux, the Board agreed that there was adequate governance in place to continue with the project.

To encourage take-up, it was intended that services will be available at a reduced cost for an introductory period, with an expectation that commissioners would be able to procure telehealth services with relative ease. It was intended that this would benefit:[4]

- Existing telemonitoring projects / services that wish to take advantage of the provision of the Telehealth Hub clinical triage service;
- Commissioners who wish to establish new telehealth services;
- Commissioners with patients already engaged with care-planning and e-consultation (identified cohort);
- Trusts looking at early supported discharge (mindful of 30 day readmission penalties).

The basis of the fund distribution is shown in Table 3.3 on next page.

4. "Yorkshire Telehealth Hub – Project Brief"Y&tH SHA March 2011

Table 3.3 – RIF funds distribution

2011 set up costs (infrastructure and service)			Pump primed and part subsidised service levels			Funding allocation
Organisation	**Set up Element/ staffing**	**Sub total**	**Target Number of patients**	**Basis of funding calculation**	**Sub total**	**Total**
Airedale NHS Foundation Trust	Technical Staff Emergency Care Practitioner Acute Physician Out of Hours On Call Consultant Rota	NA	500 patients	Subsidised to £134 per patient per month (pppm) for clinical support	NA	**£500,000**
South West Yorkshire Partnership Foundation Trust	Data analyst Info Support Officer Project facilitator Admin Support Officer	£142,000	1000 patients	6 month period @ £18 pppm	£108,000	**£250,000**
Hull and East Yorkshire NHS Trust/ University of Hull	Project lead Infrastructure costs	£74,800	600 patients	4 months @ £18 pppm	£43,200	**£132,000**
	East Riding of Yorkshire	NA	NA	2 Nursing Homes, with telemedicine for 6 months	£14,000	
All	Fund Generation within EU	NA	NA	NA	NA	**£30,000**
					Total Funding	**£912,000**

3.3 How the Hub model developed

From the time the Hub concept was first formed in 2010 to today, much has changed within the NHS and telehealth field, both locally and on a broader national scale. The following sections consider the changes and the impact these have had on the Hub project.

Organisational turbulence

The flux associated with the health reforms, particularly in the area of commissioning, significantly affected the project in terms of organisational drive and stakeholder engagement.

Initially the Chief Executive's Forum was fully supportive of the Hub idea. However, some of these CEs moved on from their positions during the programme and new people came in, which meant that membership of the programme boards changed.

The changes in commissioning structure (from PCTs, to PCT clusters, and now to shadow CCGs) meant that it was often difficult to identify the decision makers, as key people changed organisation. Particularly in the latter stages of the project, the impression we formed was that telehealth was far down the list of priorities as newly-formed CCGs were focusing on gaining authorisation. At the start of 2010/11, one of the three original regional partners, NHS Barnsley, transferred responsibility for the project to SWYPFT, as part of the transfer of community provider functions under Transforming Community Services (TCS).

This meant that a different set of leaders assumed responsibility for the project from those who had bid for and conceived the work.

Initially the SHA top leadership were strongly supportive of the Hub. However, that support appeared to wane as SHA responsibilities were transitioned into the SHA cluster in October 2011, and the ability of the SHA to actively manage the system became harder. This was especially so with the departure of the then SHA CEO who was an enthusiast for the project.

DH policy and telehealth

At the time of creating and operating the Hub there was a perceived lack of joined-up national policy straddling the QIPP LTC programme and telehealth. Although the QIPP LTC programme had as one of its explicit aims the promotion of improved self-care, this did not specifically extend to the use of telehealth, which was addressed separately.

The potential widespread adoption of telehealth was predicated on expected, positive results from the DH's Whole System Demonstrator projects. Headline results were finally announced in December 2011 (although the first full academic paper was not published until June 2012). This led to the Government announcing a 3 Million Lives campaign to speed up telehealth adoption, which raised the profile of telehealth significantly – although in practice it is taking time to build up momentum and traction. Even with the release of formal academic papers in support of it, scepticism still remained to work against interest and uptake both locally and nationally.

With the release of the 'NHS Operating Framework for 2012/13', and the 'Innovation Health and Wealth strategy, from 2012/13 and beyond', DH announced a series of measures designed to improve the uptake of telehealth. This included specific Commissioning for Quality and Innovation Payment Framework (CQUIN) payments and the development of a year of care tariff. These enabling factors were not present during the year of the Hub's operation in 2011/12 and in that sense, the Hub was perhaps a year or more ahead of its time.

Creating a virtual Hub

As stated in section 3.1 above, the original objective of this scheme was to create a virtual, integrated hub, with the intention that *"the Telehealth Hub project will support transformational change across Health and Social Care, allowing [the partners] to work in a truly integrated way to support reablement, improve patient outcomes and realise substantial whole system savings."*

After initial engagement between the partners, it became evident that this objective was too ambitious. In part, this was because the suite of services offered did not include change management, which was assumed to be a customer responsibility. The intent then became one of a step-up or step-down approach, enabling patients to seamlessly move from one service to another as their needs change. This would be helped by an assessment and referral process for the patient (which could be reviewed over time). There would be one point of contact – and contract – for the service, but services could be delivered by more than one partner.

At the outset, there was only a general picture of which types of patients would benefit from which services, with what outcomes. The development of a shared vision between the partners of the menu of possible patient interventions was constrained by the limited time available; perhaps also by an element of competition between the partners, who were each trying to use the Hub funding as a means to make their services commercially viable.

One of the partners commented: *"When I look at the aims expressed, what strikes me is the "tele" not the condition. We would write these aims differently now – whether because of learning or the fact that the environment changes.*

"The risk now is that local CCGs only think in terms of local pathways and not the wider patient needs."

Unforeseen operational complexities

In retrospect, the one-year lifespan of the pilot was simply too short to enable the Hub to make the intended impact. Such a timeframe does not allow sufficient time for the all-important culture change. Moreover, while the University of Hull and SWYPFT were building on existing services, Airedale's service to patients at home and in nursing and residential care homes was brand new. Although Airedale had a long established telemedicine capability with prisons, their 'at home' service had to be built from scratch, requiring a completely new infrastructure – technically, operationally and clinically. As a result, set-up required more time and in recognition of this the SHA agreed to give the Airedale project a six month extension, to October 2012.

It had been hoped that interoperability would be achieved between the three services through the development of minimum technical standards, the vision to 'connect all' and the strategy of a shared patient record. In practice, while individual partners worked to build a robust, locally interoperable service, it was a stretch too far to implement any form of technical linkage across the three services.

Similarly, during the creation of the Hub, it became evident that having a single contracting mechanism was too complex and so separate contracts would be required. The ambition of having a common point of commissioning through SHA was explored but was again found to be unrealistic.

Procurement processes and cycles added more complexity and delay than expected. Each of the three providers had to set up their own legal and procurement service as they were fundamentally responsible for commercial liabilities. In Airedale's case, this was eased because they were on the Buying Solutions Framework. Nevertheless, they found that the procurement process from initial interest to approved business case is currently averaging out at six months – 130 working days per contract.

For all three partners, the relatively short opportunity window led to difficulties in recruiting patients, even when the contracts with commissioners were agreed. The operational complexities of obtaining patient lists, running software to help select the right patients, gaining agreement with GPs on appropriate patients for the services and dealing with patient consent on either an opt-in or opt-out basis all took considerable time and effort. Patient numbers outside the local partner areas were therefore quite small in some cases. In Sheffield, for example, having approached four GP practices, and after completing patient consent processes, only eight patients were recruited for the SWYPFT telecoaching service.

Marketing the Hub

Throughout the 12 months a significant effort was spent promoting telehealth at a variety of conferences, exhibitions and in one-to-one meetings with senior management teams. These were mainly CEOs, LTC leads, or people who had combined roles, often involving telehealth or LTCs. The SHA Telehealth Programme and partners also offered procurement support and business case development skills to people considering wide scale deployment.

The SHA acted as coordinators for the effort and were helpful in securing many of the meetings. Although significant interest was expressed and a number of meetings were held, the response was fairly slow to start with. This in part reflected the organisational flux mentioned earlier. Nevertheless, there was an overriding perceived difficulty in breaking through the localism attitudes, and "why do we need you here?" views.

In some cases, the subsidy was attractive in winning new customers, for example from Sheffield and the East Riding of Yorkshire.

As one partner said, *"Barely anyone said yes quickly. That was characteristic of the timing: organisational restructuring, with uncertainty about who will be doing what in the new world"*.

With no marketing fund allocated, marketing was undertaken through the goodwill efforts of both the partners and the SHA team. However, the Hub did allocate £30,000 to 'fund generation', in order to enable the exploration of further funding opportunities from the EU. Airedale on behalf of all the partners contracted with a consultancy to take this forward. As a result, the Hub partners along with other organisations from across the region worked together to produce a submission for Y&tH to become a reference site within the European Innovation Partnership for Active and Healthy Aging. This would be *"a location that provides a comprehensive, innovation-based approach to active and healthy ageing"*. Based on this collaborative working, the region is now actively participating in European action groups that focus on large scale change and delivery of telehealth technologies.

3.4 Conclusion

The core aim for the Hub was to support care closer to home and deliver services to 2,100 patients, leading to fewer unnecessary admissions to hospital, healthier outcomes and lifestyles, and cost savings. At a high level, this aim was successfully achieved, as the following three chapters describe.

With the significant headwind during the period in question, due to organisational turbulence, it was a considerable feat that the Hub partners accomplished what they did. However in other respects, other aims of the project were not realised, particularly in creating a single virtual Hub and generating high levels of take-up beyond the home communities.

4. Airedale Telemedicine Service

As referenced in 2020health's 2010 report 'Healthcare without Walls', Airedale NHS Foundation Trust has a well-established pedigree and commitment to the delivery of healthcare remotely through video conferencing technology. In particular, over the last six years, the Trust has delivered a telemedicine service to over 20 UK Prisons, providing a range of outpatient and emergency care services across 21 specialities.

On the back of this work, Airedale decided to develop community and 'at home' telemedicine services for patients with LTCs, and with the support of the RIF, the Trust created a new dedicated Telemedicine Centre in the hospital in 2011.

(Source: Airedale)

This chapter describes the Airedale project, draws out qualitative and quantitative achievements, summarises key lessons learnt, and comments on the future of the service.

4.1 Service Overview and key achievements

The 'Airedale Hospital at home' service enables telemedicine between elderly patients with LTCs in their own homes, or nursing/residential homes, and the Centre. The aim is to provide patients with an immediate clinical decision via the video-link, sparing patients (and carers) the inconvenience of leaving their home. In order to be able to deliver such an early specialist opinion, the Centre provides a dedicated, consultant-led, 24/7 service.

According to Airedale's own lessons learnt report,[5] the service *"reduces unnecessary admissions, provides early detection of clinical deterioration and access to immediate clinical decision makers"*. It has also *"supported the development of links between primary and secondary care and between other care providers such as Nursing Homes."*

The RIF funding of £470,000 represented a significant element of the Centre's annual running costs, now that it is established, and was originally designed to enable Airedale to meet a target of 500 patients in its

5. "Airedale – Telehealth Hub Project Lessons Learned Questionnaire" January 2012

first year. The business model also required investment from the local health communities in Yorkshire and Humber and Airedale have secured some of this, even in a time of budget cuts. They have also secured a range of customer contracts with NHS and social care organisations.

Creating the new Telemedicine Centre involved building work, the development of new technical infrastructure and a staffing model needed to deliver a 24/7 clinical service. A new area on the hospital premises was created which included installation of relevant video consultation technology and installation of an N3 line dedicated to telemedicine calls.

In terms of process, the patient (when at home) or a nurse (in a care home) places a video call which is directed to an acute care nurse. This acute care nurse in on 24/7 duty in the Centre and is supported by another nurse in the main hospital. There is also a physician rota, ensuring one on-call consultant around the clock. Some teleconsultations may only be five minutes in duration; others last much longer, depending on the patient's problem. There may then be follow-up calls, to check how the patient is feeling, or offering further advice and support. The service is run under the hospital's existing clinical governance arrangements.

At the outset it was expected that the main customers would be patients with LTCs (principally COPD) living at home, who would use the service for both scheduled outpatient appointments and emergency calls. Over time, Airedale has found that that demand for the service is greater from nursing/care homes and hospices, where carers or nurses can contact and consult with the Airedale Centre to deal with patient events. Most of the use and interest in these environments lie with out-of-hours support, since in-hours support is typically well provided by the local GP, who receives an enhanced payment for visits.

(Source: Airedale)

4. Airedale Telemedicine Service

The successful setup and delivery of a technical and clinical 24 hour telemedicine facility is an achievement that Airedale can justifiably be proud of. Unsurprisingly, the project displays many of the attributes of a relatively early stage innovation:

- Enthusiasm and drive from a small group of clinical and business leaders;
- Reasonable support from both the consultant and nursing workforce;
- Considerable interest in the concept outside the Trust;
- Difficulties in convincing commissioners of the business value of the service;
- Challenges in developing and presenting an extensive evidence base;
- Delays in getting it up and running (it eventually opened in September 2011);
- Relatively high costs, particularly with low levels of transactions, until it reaches at scale deployment.

At the time of our visit to the Centre in May 2012, the Centre was experiencing little traffic: sometimes only one or two calls per day. This lack of scale affects both the viability of the service and the job satisfaction of the clinicians involved, and is an issue we return to later.

4.2 Quantitative Analysis

The material in this section is a summary of the Airedale quantitative analysis by the University of Hull, which is provided in full at the end of this publication. Given the delayed start of Airedale's service, data for activity and outcomes are restricted to a seven-and-a-half-month period, to the end of April 2012, although some further data from the end of August are available.

The Appendix highlights the generally high levels of user satisfaction: 95% of patients and 90% of clinicians described themselves as being "very satisfied" or "satisfied" with the 'at home' service.

Hub activity

In signing up for participation in the Hub, Airedale contracted to deliver telemedicine services to 500 patients. At the project outset, it was envisaged that these would be in patients' homes. However, during the course of the project, the use cases developed and there became significant interest in their use in nursing and care homes. In these homes, one video consultation unit was available and shared for all residents. This meant that specific tracking of progress against the original target number of patients became blurred.

During the period, the Airedale Centre deployed 81 systems into patients' own homes and 13 systems into care homes. A further five systems were installed within Manorland's Hospice, two within GP surgeries, and seven were provided for paediatric diabetes patients. By April 2012 Airedale had given 404 people access to telemedicine.

Over the seven and a half months the Centre received 307 clinical calls: 66% were unplanned, made by patients requiring assistance or advice; 31% were planned video-enabled clinical consultations; and 3% were consultations between the Centre and Manorland's Hospice.

Over the period to the end of August, 32% of the unplanned calls were from care homes or hospices and the remaining 68% by patients from their own homes.

4. Airedale Telemedicine Service

Types of clinical consultations

Airedale provided a breakdown on the range of clinical specialities covered by their planned telemedicine consultations to April 2012: out of a total of 94 calls, 36% related to occupational health; 34% were with diabetic adults; 16% with COPD patients; 8% with heart failure patients; and 1% related to paediatric diabetes.

Temporal data

Temporal data across the life of the Centre generally shows approximately 30 unplanned calls per month. The most recent data from August 2012 shows a doubling of this call volume.

Reduction in emergency admissions

Data are also available on the impact of the telemedicine service on the overall number of Emergency Department (ED) attendances and hospital admissions via ED from care homes in and around Airedale. Comparing the level of secondary care activity from residents in care homes between 2011 and 2012 shows *"substantially larger decreases in ED attendances (49% vs. 27%) and hospital admissions via ED (47% vs. 33%) in those homes with telemedicine installed".* The University of Hull analysis highlights some limitations associated with the data analysis.

Cost Savings

The University of Hull analysis reports the following:
"To identify net costs, it is important to consider the price of operating the service. At current levels of activity, gross savings from averted hospital attendance and admission is substantially less than the service running costs. However, this loss-making period is expected in the context of a service being built from scratch. As scale increases, so the service will approach break-even and then profit-making status.

Based on current tariff data, the Airedale service would need to avert approximately 28 admissions per month to reach a break-even point. Activity should therefore be tracked to identify progress towards this goal.

On the basis that 33% of unplanned calls to date appeared to avert an admission, the Centre needs to reach an activity level of approximately 85 calls per month to reach break-even point.

The temporal activity data suggest that the Centre is still operating at levels of activity below which net savings can be realised."

Conclusion

The University of Hull analysis concludes as follows:
"Despite becoming operational later than other elements of the telehealth hub, the Airedale telemedicine service is now demonstrating the ability to reduce secondary care utilisation.

In the first eleven months of operation, the hub has averted up to 124 admissions, yielding over £330k of gross savings. In addition, the need for face-to-face clinic appointments has been avoided on 94 occasions.

Data specifically related to use in care homes suggest that the service can reduce the level of secondary care usage from residents in these settings.

From a user satisfaction perspective, feedback is generally very positive, though some specific technical issues have been raised.

In the early stages of the project, the level of deployment has been too small to provide return on investment. However, as deployment scale increases – ideally to a point at which approximately 28 admissions are averted per month (≈85 calls per month) – so potential benefits will begin to be realised."

4.3 Challenges and lessons learnt

Evidence and the Business Case

As a brand new service with low patient numbers, Airedale has been caught in a catch-22 situation. Commissioners want to see the evidence of its benefits before committing to it, but patient numbers have been too small to assess this accurately. And *"as the evidence base in this country is so sparse, there are few financial models to draw on in order to produce risk based business cases."* [6]

There has been, and remains, an iterative process to identify the best-use cases for the service. Airedale now believes that this lies with nursing and care homes.

Airedale's attractive modeling of *"one avoided admission per year covers the cost of the service for that person"* and *"the potential saving for just 20 nursing homes could be £1.3m"* demand robust evidence.

The cost savings figures, presented in section 4.2 above, are based on running costs, rather than on costs to commissioners, and so Airedale is only providing a rough estimate of return on investment (RoI). A more accurate RoI would be established with data that accounts for admissions averted per commissioned deployment over a longer period of time, comparing historical admission rates among specific disease groups with actual admission rates among the same groups receiving telemedicine. Further robustness to the process would be afforded by an analysis of the admission history of each patient brought into the programme.

To that end, work has started with York Health Economics Consortium (YHEC) on a service evaluation to inform commissioners. Local commissioners also requested TRIPLAB[7] to undertake an evidence briefing on telemedicine. They reported that there is *"little robust evidence for the effectiveness and cost-effectiveness of teleconsultation as delivered by the Airedale Trust"*. This conclusion was perhaps not surprising, given its early stage on a typical innovation cycle. They also reported that *"while various NHS organisations have implemented telemedicine interventions on a small scale, there appear to be substantial barriers to large-scale implementation"*. They suggested further evaluation of the service as it developed *"in the context of an appropriately designed programme of evidence development"*.

In the absence of this evidence, some clinicians have questioned whether the service offers much beyond what well organised primary care already delivers, and at a much cheaper price. They argue that PCTs already pay for locally enhanced services for GPs to visit nursing homes and so see the telemedicine service as duplicating this. The other side of the argument is that hospitals like Airedale are full of vulnerable elderly patients who could have been better supported in their nursing home using telemedicine. The work to gather evidence and evaluate the service will need to look closely at this question.

In concept, one can envisage how the service would be much more scalable and a better use of resource intensive than a traditional face-to-face service, and this is the premise on which Airedale have centred their plans. It has had to move on rapidly from a pricing model of one patient, one home, one cost to a risk-based model.

Commercial viability

In the context of the business case issues highlighted, the long term commercial viability remains uncertain in its current form. While we understand there are non-recurring funds in place to support the 2012/13 year's needs, recurrent funding for future years is a challenge.

6. Airedale – Telehealth Hub Project Lessons Learned Questionnaire" January 2012
7. TRiP-LaB is a research partnership between NHS Airedale Bradford and Leeds, Leeds Partnerships NHS Foundation Trust and the University of York. TRiP-LaB is one of five research themes of the NIHR CLAHRC for Leeds,York and Bradford.

As the University of Hull have concluded, further growth in call volumes is needed before viability can be assured. It will also be needed to demonstrate that Airedale have met the 500 patient target committed to in the RIF bid.

Part of the longer term solution will involve finding effective tariff structures that work for different use cases and patient cohorts, which resonate with commissioners and can genuinely align incentives. As Airedale commented in a submission to DH around future tariffs:[8]

"Currently there is no driving imperative to make a health economy implement at scale this technology even though the potential efficiency benefits are extensive and the benefit to patient experience and outcomes positive...Current system levers incentivise Trusts to keep admitting patients, and do not incentivise commissioners to commission services to prevent admissions. [DH need to] set future commissioning targets / outcome measures around reducing non-elective submissions."

In time, the new DH Year of Care tariff should help here (see section 7.3). Meanwhile, Airedale is, by necessity, having to be quite imaginative with locally agreed tariffs for different settings, such as at-home, nursing home, and hospice/end of life tariffs. This may also include offering an infrastructure only service, in cases where GPs wish to continue providing clinical triage themselves to nursing homes.

Equally on the supply side, the Centre needs to achieve scale through much higher patient throughput, so that the unit cost of service can fall and full use can be made of the capacity available. In the long term, this would enable the Centre to be better integrated within the Trust's operating environment. In the meantime, *"running the old pathways whilst developing the new has proved challenging in capacity terms"*.[9]

Procurement and contracting

As Airedale's own lessons learnt report states, the *"time taken to convert interest into contractual commitment, and then from contract to deployment, was more time consuming than anticipated"*. In retrospect, given the time limitations of the Hub, the process might have worked better if commissioners had been allocated funding for an agreed cohort of patients for a 12-month period.

Going forward, Airedale will need to address how commissioner intent can more systematically and swiftly be translated into delivery plans.

Views amongst the GP community

While some contracts have been secured directly with GPs (notably in East Lancashire), other GPs have expressed reservations about the fact that the clinical burden still lies with them.

Over time, Airedale hope to convince sceptical GPs that their 24/7 service, linking to a clinical response for most specialties, is in the best interests of the patient; it enables patients in many instances to be managed before they become acute and also prevents many admissions. The evidence reviews referred to above will be helpful here.

Clinical engagement and culture change inside the Trust

The Airedale 'lessons learnt' report highlights the significant culture change involved in designing and deploying the service. For example, within the Trust itself, the report made the following comments:

"The telemedicine technology and new way of working has brought about a significant and real culture change in the way clinicians and physicians believe medical consultations can be delivered. Clinically led employee/ stakeholder engagement and training have been critical in driving this change through the organisation and developing a model which is institutionalized across the whole organisation and not hobbyist activities of a few.

8. "Telemedicine – Transforming the System" Airedale submission to DH, August 2011
9. "Airedale – Telehealth Hub Project Lessons Learned Questionnaire" January 2012

4. Airedale Telemedicine Service

"The experience of clinical staff is that the consultation appears 'natural' in that people seem very comfortable consulting with their clinical carers; it is possible to detect changes in a person's tone of speech, body language and general demeanour in a similar way to that which happens in face to face meetings.

"Significant organisational change within the Trust has occurred to allow delivery of this service in terms of consultant buy in, job planning and clinic management. The clinicians who had initial reservations have seen how successful the system is by observing their colleagues treating patients.

"It has taken some time to persuade some clinical colleagues of the benefits and appropriateness of this new way of working. We have successfully negotiated telemedicine sessions into all consultant job plans and it now forms part of all new clinical job descriptions."

(Source: Airedale)

The report also highlights that lessons were learnt in terms of recruiting senior clinical staff:

"It became clear we needed to change roles and rotate staff through the Centre to ensure varied work patterns and ensure they maintain professional registration and currency of clinical practice."

Clinical governance

The current clinical governance arrangements are based around conventional face-to-face services. Staff follow Trust clinical guidance and use National Institute for Health and Clinical Excellence (NICE) guidance and ambulatory care algorithms for LTC patients.

4. Airedale Telemedicine Service

When we asked if specific clinical algorithms are used, as in say NHS Direct, we were assured that

"the Centre's nursing team are senior staff with advanced assessment skills and draw on these skills when making an assessment over telemedicine. The staff use their own interpretation and assessment as they would a patient on a ward, as they have visibility of the patient over the link. The team have access to community nursing where they require further support and clinical information; similarly there is also access to a secondary care consultant within the Trust at all times". [10]

As the service scales up, and the use cases become more embedded, so the Trust may need to consider alternative arrangements which are more guideline based, using defined scripts or algorithms. In the meantime, it will be important to ensure clinical audit arrangements are appropriate to the nature of the service provided.

Technology

Both the 'at home' and residential home services use secure infrastructure behind the N3 firewall. In the case of the 'at home' service, the patient uses a TV set-top box from Red Embedded (developed in conjunction with Airedale) to communicate with the Centre. In the care/nursing home environment, mobile-based video-consultation technology from Cisco is used.

Either way, the video consultation service is designed to be high quality and flexible so that Airedale can patch the system as needed around to different points, depending on where relevant specialists are located.

A range of other technology partners are involved to provide an end-to-end service. These include TPP, whose SystmOne application provides the underlying patient record technology and who had to develop a hybrid (out-of-hours and Community) application. Airedale also has a range of agreements in place with other technology service providers to help market the service.

Lessons have also been learnt around operational matters concerning the installation of technology. For example, the design of some nursing home buildings has made it difficult to enable wireless and mobile connectivity. These challenges have had to be overcome and resolved.

Deployment

Other practical issues have been addressed leading to valuable learning. For example, around:

- Patient selection and the time taken to identify patients at risk with multiple co-morbidities;
- Gaining GP/patient consent, especially with power of attorney needs for nursing and care home residents;
- Some care home staff are fluent with technology and quickly grasp the potential of the technology and start to exploit the benefits; others take longer, and Airedale staff have had to visit these homes to talk to them about making most of the service.

10. Source: email to 2020health dated 14 June 2012 from Telemedicine centre manager.

4.4 The future

The Airedale 'lessons learnt' report stated: *"The development of telemedicine and expansion at scale has the full support of the Board of Directors who see the patient and system benefits to be obtained from this new way of working. This has formed a key plank of the Trust's five-year business plan".*

In our opinion, the following will be needed for the service to achieve its full scale and potential:

- Develop a clear and realistic path towards commercial sustainability and viability for the Centre in the short-medium term, based on demonstrating a robust RoI to commissioners.

- Influence at a national level the development of tariff structures that can reduce unplanned hospital admissions, enabled by telemedicine. For example this could be as part of the Year of Care tariff work by DH to drive aligned behaviours between commissioner and provider.

- Ensure that the energy and vision of the leaders involved in the promotion of the service is supported by smooth and rigorous approaches to deployment and service delivery.

- Integrate telemedicine into the day to day working across the Trust, whether in clinic or beyond.

- Assess the practicality of offering an installation and support service only, enabling GPs and other providers to provide the telemedicine service to their patients while relying on Airedale's secure and supported infrastructure.

5. Hull Telemonitoring Service

For several years, heart failure patients in Hull have had access to a nurse-led telemonitoring service provided by the University of Hull. This delivers remote monitoring and clinical triage for over 150 heart failure (HF) patients in the city.

The University believed that its model for remote care, in particular the clinical triage service, would be suitable for wider implementation. (By 'clinical triage' is meant the receiving of calls from patients, providing expert assessment and referring back to local community nursing support where appropriate). It was on this basis that Hull was invited to join the Yorkshire Telehealth Hub.

Given that the project explicitly involved building on a mature existing service, the challenges and lessons learnt from the project were different and generally not as complex as those of Airedale. Accordingly, this chapter is reasonably brief but follows broadly the same structure as Chapter 4. However, we also have to acknowledge that there is a long standing debate about the merits of a centralised clinical triage service. This and other issues are considered under section 5.3.

5.1 Service overview and achievements

The objective of the Hull element of the Telehealth Service was to scale up and provide the existing Hull-based clinical triage capability to other telemonitoring projects around the east of the region. A further aim was to offer the triage service to other disease groups. This would augment existing telemonitoring services where there was a need to provide outsourced clinical triage.

(Source: Philips)

The RIF funds were therefore used to scale up the existing clinical triage service within and beyond Hull. In practice, this meant that staffing numbers were doubled from one to two FTEs.

5. Hull Telemonitoring Service

The only contract secured beyond Hull was with the East Riding of Yorkshire (ERY), which had an existing telemonitoring service but was facing resourcing constraints. East Riding decided to use Hull's service in part to avoid having to hire a nurse specialising in clinical triage for five months. As a result, the Hub helped nurture, protect and expand existing ERY services and avoided them ceasing their telemonitoring service through a lack of triage and support. The implementation of the Hull service was felt to have gone well and they commented favourably to us on the quality of service provided.

(Source: Tunstall)

There was an agreement in place within the Hub to the effect that Hull would offer triage services in north and east Yorkshire, and that SWYPFT would provide them in south and west Yorkshire. In practice, there was no substantive interest in the service beyond east Yorkshire and for that reason, only Hull's service was used in the Hub.

5.2 Quantitative Analysis

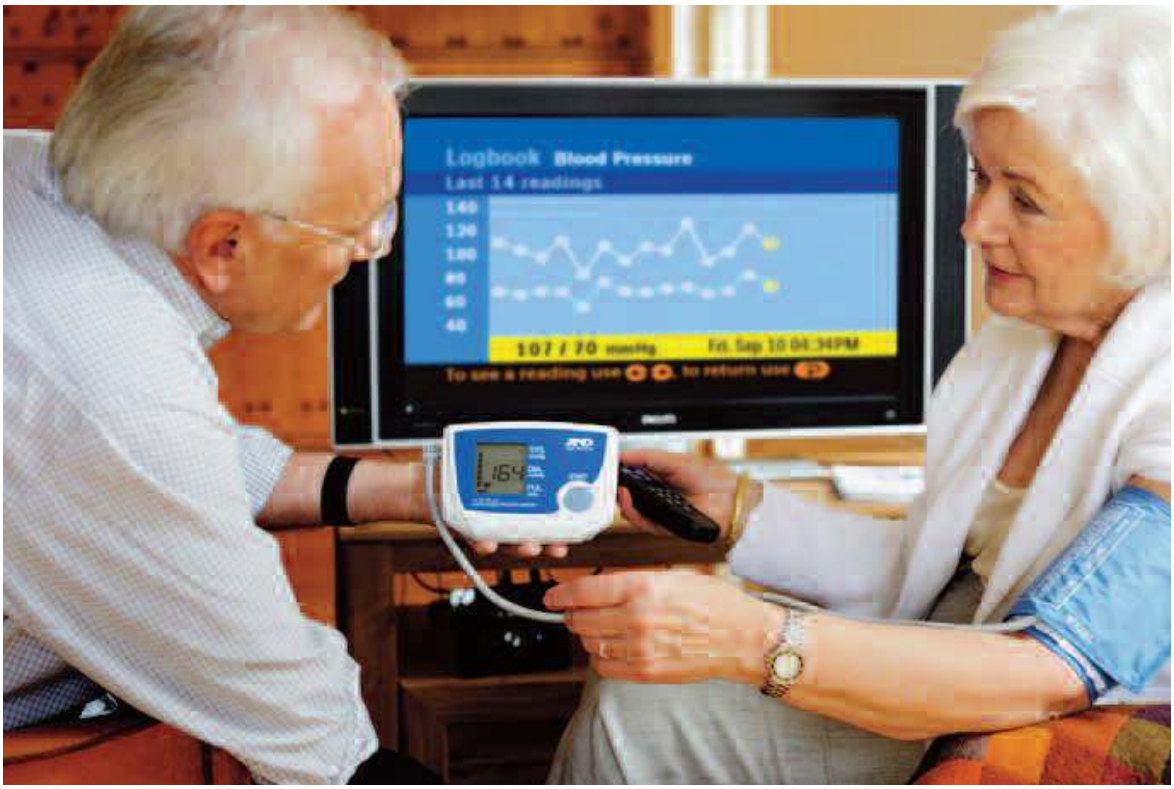
Hull and East Yorkshire (HEY) NHS Trust in partnership with the University of Hull had the advantage of being able to build on a pre-existing HF telehealth service. The partners evaluate their service annually and the material at the end of this publication presents their data analysis (version 1 dated June 2012) for the 'Hub year' ending April 2012. It covers both the activity in the city of Hull and with NHS East Riding of Yorkshire.

5. Hull Telemonitoring Service

Activity and outcomes in Hull

To calculate financial savings estimates, the University of Hull compares expected hospital admission rates for HF patients (based upon published historical data), against actual admission rates among the telemonitored group. They also estimate an average hospitalisation cost (all-cause admissions among HF patients) to establish approximate monthly cost savings. Subtracting operational costs from this figure yields the return on investment (RoI).

In total, Hull managed 283 deployments during the year. Of these, 137 were existing patients at the start of the Hub project; 99 new patients joined the telemonitoring service, and 47 had telemonitoring re-deployed beyond the initial three-month period. The total number of patients being monitored per month increased from 137 at the start of the year, up to 177 at the end.



(Source: Philips)

The University of Hull reported the following in terms of avoided admissions and RoI:
"Over the course of the 12 months, the data suggest that approximately 0.1 all-cause admissions are averted for every monitoring month (the monitoring of one patient for one month). This figure is consistent with findings from previous years and suggests that for every 100 patients being telemonitored, 10 all-cause admissions are averted each month.

"Based on a savings assumption of £2,000 per averted admission, and (taking account of total service costs) this represents a Return on Investment (RoI) of 48%. This is a substantial improvement on the RoI of 39% yielded in 2010/11 and demonstrates how increasing scale, supported by the regional Hub, can bring additional economies, even when gross savings per monitoring month remain unchanged."

5. Hull Telemonitoring Service

East Riding of Yorkshire: activity and outcomes

NHS East Riding of Yorkshire (ERY) has been running a mainstream telemonitoring service for various types of LTC patients since 2010. In the second quarter of 2011/12, NHS ERY was offered support from the Hull element of the regional hub to provide clinical triage to users of their service.

In total, the University of Hull reported that the Hub has supported 278 three-month telemonitoring deployments (a small proportion of which were re-deployments) in NHS ERY.

User satisfaction with Hull's telemonitoring service was reported as being generally high, although 17% of ERY deployments were ended early – often as a result of user request. NHS ERY has been reviewing methods for enhancing user acceptance.

The University of Hull analysis reported that:
"Hull's calculations for RoI in ERY have been made on the basis of service delivery from September 2010 until October 2011, encompassing some time before the regional Hub became involved. However, findings from this broad evaluation can be extrapolated to estimate Hub benefits.

"The most recent NHS ERY savings report[11] *found that the telemonitoring service yielded approximate net savings of £103 per monitoring month, with an estimated RoI of 61%. These savings were as the result of reduced hospital admissions and A&E attendances following deployment."*

Summary

The University of Hull conclusions were as follows:
"Across the two localities, Hub-supported clinical triage service has supported telemonitoring services for approximately 620 users over the past 12 months. The largest deployments – the Hull heart failure service and ERY mainstream telemonitoring – have both been evaluated and found to yield very positive user experience and financial return on investment. Though real-world evaluations have limitations, estimated net cost savings from these two deployments during 11/12 total over £200k."

5.3 Challenges and lessons learnt

The value of a dedicated clinical triage service

There is a long standing debate about the merits of a centralised clinical triage service. Even within Hull itself, differing approaches are taken to clinical triage. For example, in the COPD service commissioned by NHS Hull, but run by City Health Care Partnership, it is the community nurses themselves that respond to the clinical alerts, while NHS Direct provides a technical triage service. More evidence is needed on the case for one triage approach versus the other.

Our report 'Healthcare without Walls'[12] summarised some of the experience both with the WSD sites and other localities, and the arguments for and against centralised clinical triage. On the one hand,
"some projects such as North Yorkshire and York sought to embed the clinical triage process within the day to day duties of the responsible clinician, often the community nurse who owns the case load... It is they who know their patients best and can judge best the severity of a clinical alert; they can use the daily telehealth readings as a means to prioritise visits to the patients most in need and there is no dispute about the clinical governance responsibilities".

11. Barrett D (2012) Telehealth in the East Riding of Yorkshire. September 2010-October 2011. Economic benefits update. Available from: http://www2.hull.ac.uk/administration/business/centrefortelehealth/evaluations.aspx
12. "Healthcare without Walls – a framework for delivering telehealth at scale" 2002health November 2010

On the other hand, the argument for a centralised clinical triage service, such as Hull offers, revolves around scalability:

"Nearly all those involved in telehealth call centre management had come to the conclusion that as the usage of telehealth increases, nurses and doctors would be unable to respond to the number of escalated issues and therefore clinical triage processes would become inevitable... In the largest telehealth installations in the US VA, the term used is 'care coordinators', who provide a centrally run clinical triage service supported by a shared detailed care record. This model was adopted in most of the WSD sites, partly because of resource limitations with community nursing in the field".

What impact does the introduction of telemonitoring have on staffing levels?

Another hotly debated issue in telehealth circles concerns the impact on existing community services. The Hull business case analysis does not include any costs or impact associated with additional 'wrap-up around' community services when telemonitoring is implemented. Different projects have different experiences. Anecdotally we were told that:

- In NHS Stoke there was an increase of 1/3 in the number of Community Matron visits in the period following telemonitoring deployment.

- The SWYPFT experience is that while there may be a short term spike in the level of community nursing, in the long term this settles down.

- The North Yorkshire and York experience is that over time, the community matron caseload was able to increase significantly, rising from 80 to 120 to 200 patients because of the better targeting that telemonitoring brings.

5.4 The future

The University of Hull intend to continue to develop their telemonitoring service, particularly focusing on heart failure. Support for the NHS ERY will be continuing beyond the end of March as some spending efficiencies were made early in the project. It is expected that these services will remain fully subsidised until approximately July 2012.

Beyond this, the University of Hull will need to consider how best the service might be developed on a long term basis, as the 3 Million Lives campaign gathers momentum. For example:

- Since the service is largely technology agnostic, is there potential to offer it to other (commercial) telehealth providers as a supporting service?

- Could the service be extended in scope, to include such important areas as risk stratification / patient selection, technical triage, change management, training and deployment support?

- Given the relatively small scale of the current triage service (2 nurse FTEs), how might this develop if properly scaled up? Could it be combined with technical triage services, such that a fully comprehensive triage service can be offered?

6. SWYPFT Telecoaching Service

Barnsley's 'People in Control' personalisation strategy encourages people with chronic conditions to take more control of their health and well-being. Responding to this strategy, Barnsley District Council and NHS Barnsley have collaborated for several years in the application of assistive living technologies and have developed a well-resourced Telehealthcare Centre.

As well as providing a telecare call centre, it delivers a telecoaching service (described below) and also continues to provide technical and clinical triage for the SWYPFT telemonitoring service (delivered to approx. 250 Barnsley patients). The latter service was outside the scope of this evaluation.

As pointed out in Chapter 3, as a result of the local implementation of the TCS initiative, in May 2011 NHS Barnsley transferred the Centre and team to the new community services provider, SWYPFT, covering Barnsley and South West Yorkshire. At that point, NHS Barnsley became the commissioner of the service. The impact of this transfer is considered in Section 6.3.

For ease of reading and reference, this chapter follows a similar structure to Chapters 4 and 5.

6.1 Service overview

The SWYPFT telecoaching service is a telephone-based health coaching service delivered by nurse care navigators, with additional training in motivational interviewing and behaviour change techniques. This enables self-care and improved condition management.

The Hub Project Initiation Document[13] summarises the aims of telecoaching:

"Telecoaching helps people to understand and manage their medical condition by providing health coaching over the telephone. It is well documented that factors associated with health status are largely behavioural. Therefore helping people understand how lifestyle choices impact on health and well-being is critical in promoting positive health. The model of health coaching supports people by:

- *Building a relationship;*
- *Guiding people to make a personal plan;*
- *Overcoming obstacles and barriers to achieve self-identified goals."*

At the start of the involvement with the Hub, there were two elements within the service: care navigation (approx. 70% of calls); and telecoaching (30%). From August 2011, SWYPFT added 'post-crisis support' as a further element to the service. This has taken time to bed in and patient numbers remain relatively small.

All three services are telephone-based and provided by the team of care navigators. Table 6.1 summarises the attributes of each service.

13. "Yorkshire Telehealth Hub ; Project Initiation Document"Y&tH SHA, 17 May 2011

6. SWYPFT Telecoaching Service

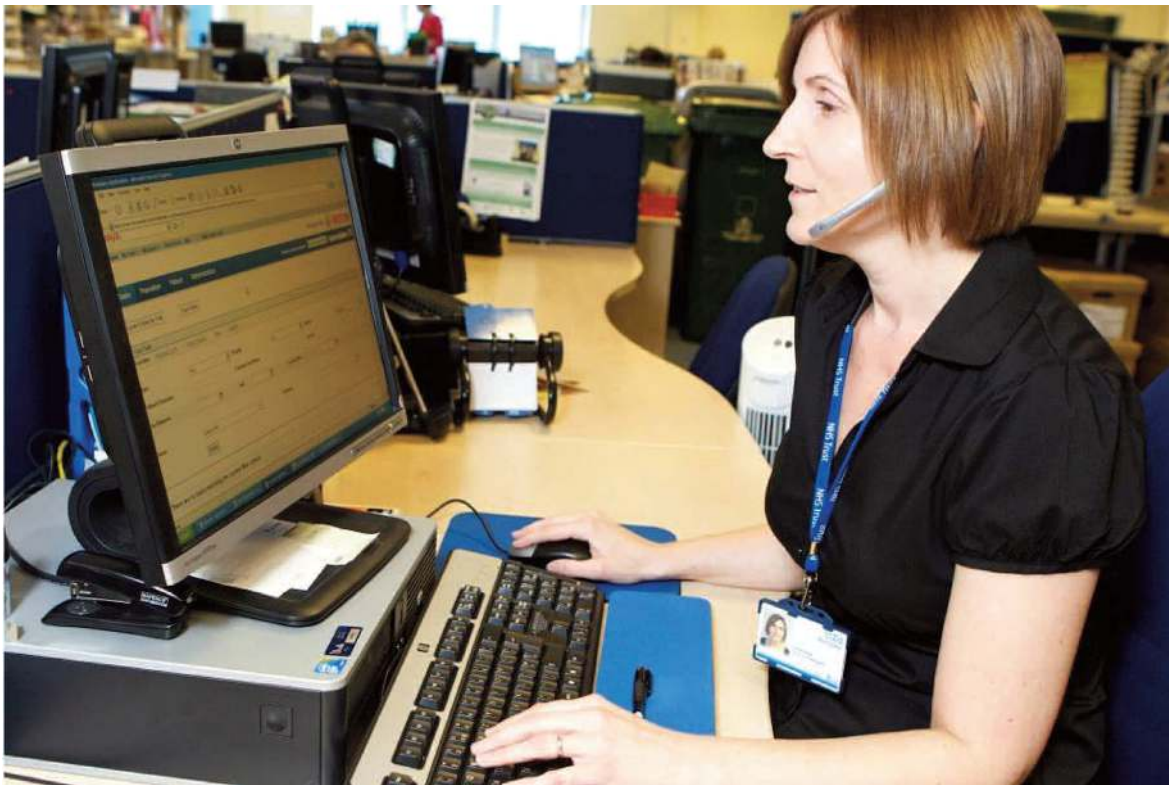
All three services are telephone-based and provided by the team of care navigators. Table 6.1 summarises the attributes of each service.

Table 6.1 – Overview of the services provided

Service	Care Navigation	Telecoaching	Post-Crisis Support
Aim	A signposting service, to help patients best determine what services they need and where to find them.	A coaching service, to help people make positive changes to their health and lifestyles. Individuals set their own goals, assisted by the service, and learn how to manage their conditions better.	A service to prevent further medical crises by coaching patients who have just been discharged from hospital.
Referral source / Patient cohort	Patients are identified through the Barnsley Risk Stratification Tool, run on the GP practice data. Patients are generally at level 3 of the Kaiser Permanente (KP) Health Needs Pyramid.	Patients are identified through the Barnsley Risk Stratification Tool, run on the GP practice data. Patients are generally at the mid-point (level 2) of the Kaiser Permanente Health Needs Pyramid – not necessarily high-end, high intensity users.	This service is for patients with or without LTCs. It could be used for any patient with a medical condition who might benefit from it. Generally, referrals are received direct from ward staff.
Typical process	On an initial call with the patient, the navigator runs through a Barnsley Health Checker questionnaire to understand what goals the individual may have. If the patient does not identify any goals, they are offered navigation services, such as information, advice and signposting. They may be offered assistance to access services. This may include clinical services, as well as volunteer help, say to do the shopping. At the end of the intervention period, the patient is taken through the Health Checker again, to analyse whether there has been any difference in the patient's perception of their health, from the beginning to end of the pathway.	On an initial call with the patient, the navigator runs through a Barnsley Health Checker questionnaire to understand what goals the individual may have. If they do identify goals, they follow health coaching route. The tele-coaching service is designed to help patients achieve those goals. If someone transfers from navigation to coaching, they start at the beginning of the process. If someone takes coaching for one goal, at the end they could then take up another pathway to obtain another target. A patient could do a series of pathway cycles if they wanted to. However, if they have done two or three cycles, the hope is that they would be equipped to set and achieve their own goals independently.	During an initial call, the navigator attempts to identify any needs the patient might have. Most patients say they no longer require the service after the first call. If a patient is deemed to be in crisis, with a potential for readmission, a series of follow-up calls are made. Others may need signposting help, in which case they are referred to a care navigation pathway.
Timescale	The support typically lasts up to 12 weeks.	The health coaching service lasts 3-5 months on average, involving 6 to 8 calls for each pathway. The coaching calls are spread out to enable the patient to work towards the goals in between time.	The first call is made within 24 hours of discharge from hospital. If needed, the programme of calls could last up to a fortnight.
Patient Example	A patient suffers from COPD but has no specific goals – perhaps simply feels socially isolated or unable to get out the house. The navigation service might help connect them to a health trainer or local gym.	A COPD patient has a relative's wedding to attend in 6 months' time and wants to be able to walk unaided down the aisle, but is worried that she cannot manage it. A coach will work through the obstacles and discuss solutions.	A newly-discharged patient needs reassurance. Contact is made with community nursing to make them aware of specific concerns raised.
Expected outcome	For patients or service users to have better understanding of where to go for services.	Designed to helped people to take greater responsibility for their health, make positive changes to their health behaviours, and reduce dependency on services.	To help improve a patient's recovery from hospital, and reduce anxiety. Also designed to avert readmission to hospital within 30 days (Trusts do not get reimbursed for this).

6. SWYPFT Telecoaching Service

As mentioned in Table 6.1, the SWYPFT risk stratification tool is used to identify potential patients for referral into telemonitoring and telecoaching. The tool is used to identify potential patients appropriate for a particular service, generally patients with LTCs with modifiable risk factors, such as being overweight, not exercising, or being a smoker.



(Source : SWYPFT)

After an initial list is produced, the Centre holds a discussion with the practice and the relevant community matron to confirm which patients are appropriate for the service, based on their knowledge and perception of the patient.

The Centre then writes to patient, giving them seven days to opt out. After seven days, the Centre's administration team contacts the patient by phone to explain more about the service. About 50% accept from this point. Some decline because they do not really understand the service, or the timing is wrong, or they feel they already have adequate support.

The first clinical call takes place about five days after the agreement is made, giving Care Navigators time to obtain the GP's clinical summary. As the table notes, this involves running the 'Barnsley Health Checker', a tool (questionnaire) that helps navigators determine which pathway of the service the patient should follow: navigation or coaching. The questionnaire involves asking the patient about their condition, their utilisation of health and social care services, and then their goals.

The service is delivered by the team of nurse care navigators in place at the Centre, supported by some non-clinical support workers. Generally, the nurses triage the Barnsley telemonitoring service in the morning, and then focus on post-crisis and telecoaching calls in the afternoon. A nurse usually has an allocated set of patients for continuity and relationship building.

6. SWYPFT Telecoaching Service

To meet the NHS Barnsley commissioner targets for the end of 2012/13, the Centre has been planned to provide capacity for 9,000 patients per year. Of these, 4,000 are intended as post crisis contacts, 4,000 for navigation or telecoaching, and the remaining 1,000 for telemonitoring.

6.2 Achievements

Barnsley's aim in joining the Hub was to scale up services within the Barnsley area and also deliver them outside the locality. When responsibility was transferred to SWYPFT, this aim was carried forward.

As a result of the £250,000 Hub contribution, the Centre was able to increase the staffing complement of nurse care navigators from 11 to 14 FTEs, and to offer a fully subsidised service to other health communities in Yorkshire.

Within Barnsley, the service has now been successfully rolled out to 35 of the 40 practices and we understand there is a good level of local commitment and support.

Through the extensive efforts of both SWYPFT and the SHA, agreements were reached to deliver telecoaching services to three other NHS communities, namely Wakefield, Sheffield and ERY. Services were then successfully delivered to these communities in care navigation and telecoaching, but not for post-crisis support.

This result was in part during the lifetime of this project which meant that in the early stages interventions may have taken place, but these were not recorded centrally.

However, the number of non-Barnsley patients using the services was disappointing - only about 100 patients - and the reasons for this are explored below in Section 6.4.

6.3 Quantitative Analysis

The material in this section is a summary of the SWYPFT quantitative analysis by University of Hull (version 6 dated 10/9/2012), provided in full at the end of this publication. They reported that substantial improvements made to the recording of patient activity data in January 2012 (due to changes in the information system) limited the extent of analysis possible:

"In the four months from January to April 2012, a total of 999 patients received clinical services through the telecoaching service. Of these…85% were referred from Barnsley Primary Care Trust (PCT), 7% from Wakefield, and <2% each from Sheffield and the East Riding of Yorkshire. Other PCTs who referred patients into the service included Leeds, Rotherham and Kirklees.

"In terms of previous years, the January-April 2012 activity supported by the hub demonstrates… approximately a four-fold increase of the previous year's activity.

"Some data were available on the utilisation of secondary care services by recipients of telecoaching within the Barnsley area…(showing) a 22% reduction in mean monthly admission costs and a 17% reduction in mean monthly bed days after telecoaching was commenced". Some limitations in the approach and available data were however noted.

The University of Hull concluded that:
"The data available suggest that SWYFT hub services are providing a range of individualised advice and referral services for patients across a number of localities. In particular, it seems that the service is signposting users to follow-on services that may support beneficial changes in lifestyle (such as smoking cessation and weight loss). In addition, early outcome data from Barnsley suggests that telecoaching is associated with reductions in secondary care usage."

6. SWYPFT Telecoaching Service

"Some issues require addressing as the service continues to develop. In particular, it will be important to monitor specific activity and service offerings now that the necessary data collection processes are in place. The biggest gap in the data is the inability to calculate any real health or cost benefits resulting from the service. Though early – and promising - outcome data are reported here, greater insight into the impact of telecoaching will only become available in the fullness of time, as the service runs for long enough to provide a detailed longitudinal dataset."

6.4 Challenges and Lessons Learnt

Impact of organisational restructuring

As mentioned above, responsibility for the Hub service transferred from NHS Barnsley to SWYPFT in May 2011.

At that point, the NHS Barnsley leadership (notably the Directors of Intelligence, Innovation & Quality and Nursing) who were most responsible for driving the development of the service, and who made the agreement with the SHA for the Hub project, ceased being responsible for the Hub. Their involvement diminished as they took wider roles within the PCT Cluster.

The leadership of the service then fell under the new SWYPFT Service Improvement and Development team. In time, the new SWYPFT team became equally convinced by, and committed to, the concept. The passion and enthusiasm they had for the service was evident from our meeting in May 2012.

Inevitably this change of leadership affected the continuity of strategic thinking and project delivery. The impact of this is difficult to quantify but may have delayed the project by some weeks.

Care coordination and self-management

NHS Barnsley has been a pioneer in the design of patient-focused services, basing its telehealthcare service design on the highly respected model of the US Veteran Health Affairs (VA). The relevance to the NHS of the VA's care coordination model and its use of telehealth was considered in 2020health's recent report.[14]

Since 2009 NHS Barnsley, and now SWYPFT, have created a dedicated team of nurse 'care navigators' within the telehealthcare team to improve the levels of self-care.

At a national level, efforts are getting underway to create a more formalised programme of learning and exchange of ideas between the NHS and the VA. Through their experience, Barnsley's profile is likely to be enhanced at a national level. For example, the workforce and training implications from the care navigation model will be of interest to others in the NHS.

Evidence base – cost displacement or not?

The SWYPFT telecoaching service is almost unique in the NHS, enabling the intelligent dispatch of services to help people connect to the appropriate pathway of care. As with the Airedale telemedicine service, the evidence base available is quite limited.

One other comparable service is the OwnHealth service that has been deployed in NE Birmingham and Nottingham. This was featured in an earlier 2020health report and the evidence referenced around the service.[15]

14. "Telehealth: what can the NHS learn from experience at the US Veteran's Health Administration?" 2020health January 2012
15. "Healthcare without Walls – a framework for developing telehealth at scale" 2020health November 2010

6. SWYPFT Telecoaching Service

In the original PID,[16] the following evidence was quoted, based on research from Barnsley PCT:

- Increased number of people living independently;
- Improved patient satisfaction;
- 20% fewer hospital admissions;
- Increased patient compliance;
- 30% reduction in LOS;
- Evidence of existing service delivering overall 32% cost reduction;
- Average saving of £1,000 per patient per annum.

One key question about the telecoaching service is whether it avoids costs which would otherwise be incurred in the system, or simply displaces them. For example, with a person who wants to give up smoking, does the service simply signpost the patient to an NHS smoking cessation service or help the person to actually give up smoking?

Portability of the service

As discussed above, the telecoaching service was driven and built to meet Barnsley's needs and has been relatively difficult to sell to other customers.

Part of the challenge here is overcoming the localism attitude described in Chapter 3.

Turning to specific issues, we now draw from our discussions with commissioners at ERY and Sheffield, from which some common themes emerged. Like others, both were offered the service free of charge due to the subsidy available through the Hub. Both commented that the evidence base to support the business and clinical case for the service was seen as relatively weak, and that it was hard to persuade or excite GPs about the service.

Another common comment was that the process of reaching agreement on the service scope and procedure, together with patient recruitment, was quite time consuming.

Specific comments included:

East Riding of Yorkshire:

- The service was offered to all GP practices, however only three chose to take it up.
- The process of enrolment seemed quite time consuming. While the agreement covered up to 200 patients, only 50 were enrolled.
- The feedback on the quality of the service was good.

Sheffield:

- The agreement was for up to 250 patients, in up to four practices. In the end only 10 were referred and five recruited. The service ran for three months.
- The process to reach agreement and sort through practicalities was protracted, leaving only a short window to recruit patients.

16. "Yorkshire Telehealth Hub – Project Initiation Document" Y&tH SHA May 2011

- One significant factor was that the service was only available in English, limiting its potential use with the Asian and other populations in the city.

- The decision was also made that patients would only join the service on an opt-in basis, which added time and complexity compared to what was the norm in Barnsley.

- There was considerable interest in the post-crisis support service, but after careful consideration it was decided to run the service from within Sheffield using existing resources.

These experiences demonstrate some of the practical issues of engagement affecting uptake in communities that have not deployed these kinds of services before. Future projects should take heed of these.

6.5 The future

We understand that SWYPFT intend to continue to develop and enhance their telecoaching service both locally for Barnsley (to meet local commissioner targets) and for the region. This will include building on the post-crisis support service and will include an evaluation of the outcomes to date.

In our opinion, in seeking to increase uptake beyond the Barnsley locality, SWYPFT will need to undertake the following to present a more convincing offer to others:

- Develop the evidence base more robustly to demonstrate specific outcomes and RoI.

- Assess the practicality of packaging the service in a different way to some customers – for example, rather than proposing solely an end-end service, buyers could be offered a more limited and lower cost package covering solution and training only. This might, for example, cover the intellectual property, software tools and training. This could allow the local NHS to adapt as required and use in-house nurse or call centre resources.

- Reassess how best to engage key stakeholders such as GP Practices to improve interest and uptake within the participating areas.

7. The Hub – Impact and Lessons Learnt

This summarises the overall Hub's achievements, conclusions and lessons learnt.

7.1 Impact

Against the original project aims set out in Chapter 3, Table 7.1 summarises the key qualitative outcomes (both achievements and challenges) at the Hub level.

Table 7.1 – Summary of key outcomes

Aim	Key outcomes
1. Enable scale and pace deployments of Telehealth in the region	⊕ Across the three partners, patient volumes exceeded the total Hub target numbers of 2,100; ⊕ The Hub increased the profile of telehealth around the region, raising it on CEOs' agendas; ⊕ The Hub introduced new services to areas not previously using telehealth in the region; ⊕ All three services were delivered to the East Riding of Yorkshire. The Hull service avoided ERY ceasing their existing telemonitoring service through a lack of triage and support; ⊕ All three communities valued the sharing and working together, and had complementary perspectives and skills; ⊕ Building on the collaboration established, the region is actively participating in European Action Groups that focus on large scale change and delivery of Telehealth technologies. ? While there was good interest outside the partner communities, uptake was limited, tending to be small scale or pilots. Organisations seemed reluctant to try the services offered, even when they were free of charge or heavily subsidised.
2. Promote and evaluate innovative thinking and VFM telehealth solutions	⊕ The Hub successfully brought innovative telehealth services to the market, securing customers in Yorkshire, the Humber and beyond, and successfully delivering services; ⊕ The subsidised services were appreciated and taken up by some communities; ⊕ A range of practical deliverables exist for others to use, including the HIEC toolkits. ? Take-up may have improved if services were offered to commissioners as evidence-based health interventions to well defined patient cohorts; ? Telemedicine use cases are still emerging; ? It is taking longer than hoped to demonstrate robust business cases to commissioners for telemedicine and telecoaching services.

Table 7.1 – Summary of key outcomes (continued)

Aim	Key outcomes
3. Evaluate the contribution to the QIPP targets	⊕ The University of Hull telemonitoring service demonstrates a clear and improving RoI; ? Data are still emerging to show clear evidence of benefits and so prove the RoI of telemedicine and telecoaching services (both outcomes and cost savings) as well as support commissioners' decisions on whether to continue with the services; ? Limited benefits management was undertaken or completed to tangibly show the benefits of the tripartite approach.
4. Provide a regional Telehealth infrastructure	⊕ The three Telehealth Hub centres are fully established and available to be commissioned in the region or beyond; ⊕ The SHA role in coordinating the project and sharing of ideas was highly effective; ⊕ The Hub enabled a good understanding to be gained across the region of the attitudes and plans towards telehealth – including knowing where key sources of expertise are; ⊕ Through the Hub, the profile of Y&tH was raised nationally as a leader in innovative telehealth. ? The distinct service delivery models meant that an integrated step-up / step-down model for patients according to their need proved inappropriate; ? The intent to have single contracts across all three services proved too complex in practice due to legal constraints; ? With the difficulties in marketing the centralised Hub concept, partners over time focused more on marketing their own services, albeit in collaboration with others; ? East Riding of Yorkshire is the one example of a commissioner taking all three services. However, with separate patient cohorts, localities and timing, they are not integrated. *"The Hub felt a little disjointed…still feels a little fragmented. It did not have the feel of an end-to-end service. It was a menu of options"*; ? It was infeasible to drive forward interoperability between the Hub solutions in the time available.

7.2 Key Lessons Learnt

Learning lessons from the Hub project are of relevance on a wider basis, in particular with the 3 Million Lives campaign gathering momentum. The 3ML programme is in the process of agreeing a national work programme and many of the lessons learnt are relevant.

Based on 2020health's help in drawing up its draft work programme, there are four work streams of relevance (more detail is available at www.3millionlives.co.uk). The Hub lessons learnt are categorised into the relevant 3ML workstreams in the table 7.2 below.

Table 7.2 – Key lessons learnt

3ML Workstream	Key learning from the Hub
3ML Segmentation Break down 3ML aim into priority segments and target outcomes	• Clarify which tele-solutions fall within the scope of 3ML, based on best available evidence of benefits to patients and to the NHS; • Define a menu of appropriate interventions to meet different patient conditions and needs; • In planning and delivering a comprehensive telehealth service, the operational complexities need time to address, including assessing which technologies best support what needs; • Proving the evidence base around innovative new services such as telemedicine and telecoaching requires a rigorous but realistic up-front approach to study design, data collection and evaluation.
Empower Commissioning Enable ready commissioning of telehealth & telecare services	• Commissioners will only take telehealth seriously when it is mandated nationally – e.g. CQUIN or NHS Operating Framework – and standards are driven through appropriate NICE guidelines; • Providers will only embrace telehealth to commissioner requirements where system incentives are aligned to prevent unnecessary hospital admissions; • The engagement and commitment of key stakeholders from across the local health communities is critical – clinicians, Clinical Senates, Health & Wellbeing Boards, perhaps Clinical Support Services (CSS). This is especially so as projects are formed, change management planned, expected outcomes defined, requirements clarified and business cases developed; • Business-based Senior Responsible Officers are needed to drive innovative telehealth-based services that straddle organisational boundaries; • Many services are best procured on a pay-as-you-go basis, rather than a capital spend basis, but this should not be a universal approach. Others, like telemedicine, may involve substantial up-front investment (such as into nursing homes) which would need dealing with on a separate basis; • There is a need for clarity in the system around the boundaries of responsibilities between NHS commissioners and providers in defining the specificity and delivery approach. For example, in regards to collaboration on business cases for telehealth-enabled services.

Table 7.2 – Key lessons learnt (continued)

3ML Workstream	Key learning from the Hub
Build Market Capacity Fashion collaboration models and confidence for industry to grow, at the pace and scale needed by the market	• Delivering an NHS-based managed telehealth service across three organisations is feasible in concept but very hard to deliver in practice: this is a long-term project requiring more than the 12–18 months given to the Hub project; • As NHS providers increasingly compete and are driven by commercial priorities, realism and honesty are needed in terms of what a collaborative venture can achieve. Some common point of reference and coordination is needed to facilitate collaboration; • Future collaborative turn-key approaches to telehealth need to include change management; • Where services/solutions are at a relatively early stage in their innovation evolution, enough time and space needs to be allowed to let them reach maturity and be sustainable – more than the one year available through RIF funds; • In these cases, there is a need to remain flexible throughout; the business model, costs and technology provider may need to evolve as the proposition develops.
Enable Implementation Create basis for rapid, scalable rollout, adopting best practice	• Do not focus on the technology; it is change management that drives adoption of best practice care pathways and methods; adequate technology solutions are necessary but not sufficient; • Projects are best started on a small basis but with a clear commitment to, and plan for, up-scaling. This up-scaling needs to be demand-led, avoiding building more capacity unnecessarily; • Realism is needed about the time to achieve deployment at scale, including risk stratification, patient recruitment, securing patient consent, and infrastructure management issues. These can take many months.

7.3 Recommendations

The following is a list of key recommendations for different organisations with an interest in the outcome of this study.

For the SHA – while it remains in existence:

a) Drive engagement with CCGs to get them to see the value of telehealth, consistent with the evidence base;

b) Influence the NHS Commissioning Board / DH to create ways in the system to cluster and share experience, and avoid a purely local approach to innovative services such as telehealth;

c) Continue to co-ordinate sharing of best practice and collaboration in overcoming some of the known and identified barriers to implementing telehealth at scale.

For the Hub or its successors

d) Build on the excellent cooperation in place to learn from each other and where appropriate offer services together, recognising the perceived barriers facing organisations in engaging with telehealth.

For Airedale NHS Foundation Trust

e) Continue to work hard on gathering robust evidence for the interventions, and to offer services through imaginative tariff approaches, in order to increase throughput;

f) Ensure a consistent approach is taken (in line with the University of Hull analysis) to record hospitalisation of entire patient cohorts with access to telemedicine, not just noting the number admitted after a teleconsultation;

g) Define a series of gateways needed to confirm the business viability of services, with appropriate contingency plans ready;

h) Rigorously explore the offering of flexible pick and mix models, including an option for an infrastructure-only service to GPs and other providers. Staging points could also be offered, with a step-up, step-down of clinical or nurse triage arrangements as needs dictate;

i) Review clinical audit arrangements around the telemedicine services.

For the University of Hull

j) Assess the potential to offer the clinical triage service, in order to augment the offerings of commercial telehealth providers;

k) Consider the potential to broaden the range of services provided, for example risk stratification, technical triage, change management etc;

l) Contribute actively to the debate around centralised versus non-centralised clinical triage.

For SWYPFT

m) Continue to work on gathering robust evidence and RoI data for the interventions, in order to increase throughput;

n) Assess the practicality of packaging the service on a ‘solution and training’ only basis;

o) Firm up the service offering in readiness for interest from other health communities.

For CCGs

p) Be pro-active in engaging with the system change required to support LTC patients closer to home. In particular, planning how they, as commissioners, could address this;

q) Be open minded about the potential that telehealth-enabled services can bring, particularly in the context of the developing evidence base with 'tele-' solutions at an early stage in their innovation life cycle;

r) Seek engagement and commitment of key stakeholders from across the local health community as projects are formed, change management planned, expected outcomes defined, requirements clarified and business cases developed, under the leadership of a business-based Senior Responsible Officer;

s) Drive providers to deliver benefits to patients through offering innovative services that relieve pressure on hospitals, so fulfilling the CQUIN high impact targets for telehealth – focusing on the ' why', 'what' and 'to whom' rather than the 'how';

t) Be realistic about how long it takes to get to scale and sustainability with telehealth-enabled services, being flexible as the solutions develop and needs evolve.

For providers

u) Evaluate and pursue opportunities to benefit from telehealth technologies, to support a shift of care closer to home and to negate the impact of the emergency tariff structure;

v) Consider a range of suitable technologies to support patients' pathways, rather than trying to get all patient cohorts onto one solution, driven by risk stratification;

w) Be open-minded on working in consortia with suppliers to deliver an end-end telehealth service.

For DH / NHS Commissioning Board

x) Tie together the initiatives covering both telehealth adoption (driven by the 3 Million Lives campaign) and 'digital health by default' with the QIPP LTC policy and targets;

y) Assess why the uptake of telehealth-enabled services has been slow, even without up-front capital costs as with the Hub; and consider which levers will best drive engagement and encourage organisations to work and think differently;

z) Encourage an appropriate balance in the evaluation of new innovative tele-technologies – between robust academic evidence and the need to get on with initiatives pragmatically.

A. Appendix: List of Documents Reviewed

Documents Reviewed

Yorkshire & Humber SHA

"Yorkshire Telehealth Hub - Project Initiation Document" 17 May 2011
"Yorkshire Telehealth Hub – Project Brief v1.8" March 2011
"Yorkshire Telehealth Hub – Project Closure Report" April 2012
"Yorkshire Telehealth Hub – Brochure v3" May 2011
"Yorkshire Telehealth Hub – Opportunity Pipeline" v 0 16 November 2011

Airedale

"Airedale – Telehealth Hub Project Lessons Learned Questionnaire" January 2012
"Telemedicine – Transforming the System" Submission to DH, August 2011
"Patient Satisfaction Survey" – March 2012
Various presentations to prospective commissioners

The University of Hull

"Telehealth Hub Project Lessons Learned Questionnaire" January 2012
"Hull Hub Summary" June 2012
"Airedale Activities and outcomes v5" September 2012
"SWYPFT Activities and outcomes v6" September 2012

SWYPFT

"SWYPFT – Telehealth Hub Project Lessons Learned Questionnaire" January 2012

York Health Economics Consortium

"Estimating the benefits of telehealth", John Hutton, January 2010

B. Appendix: List of Interviewees

The following table lists the individuals who were interviewed in May 2012 (I/V) and/or attended the workshop on 19th June 2012 (W/S).

Organisation	Name	I/V	W/S	Role
Yorkshire & Humber SHA	Keith Ramsay	✓		(Formerly) NED and RIF Panel Chair
	Julia Coletta	✓		Programme Lead, LTCs
	Phil Molyneux	✓	✓	CIO
	Samantha Robinson	✓	✓	Programme Lead, Telehealth
	Jenny Jackson	✓	✓	Project Manager, Telehealth
Yorks & Humber HIEC	Paul Rice	✓	✓	Director Long Term Conditions Theme, Telehealth Lead
Airedale NHS FT	Ann Wagner	✓		Director, Strategy & Business Development
	Marie Buchan	✓		Telemedicine Centre Manager
	Dr Richard Pope	✓		Consultant / Director of Innovation
	Bridget Fletcher	✓		CEO
	Rebecca Malin		✓	Business Development Manager
	Paul Stevenson		✓	Information Manager
NHS Barnsley	Brian Hughes	✓		Director of Performance & Accountability
	Margaret Kitching		✓	Director of Nursing
SWYPFT	Sue Barton	✓	✓	Deputy Director of Service Improvement and Development
	Matt Sandford	✓		Business Development Manager
	Paul Hughes	✓		Service Lead – Telehealthcare Service
University of Hull	David Barrett	✓	✓	Nurse Lecturer in Telehealth
NHS East Riding of Yorkshire	Karen Richardson	✓		Clinical Services Programme Manager
NHS Sheffield	Sally Soady	✓		IT Director
Bradford GP	Dr Shahid Ali	✓		GP and NHS Commissioning Board

C. Appendix: Glossary

3ML	Three Million Lives Campaign – for widespread adoption of telehealth and telecare
A&E	Accident & Emergency
ALIP	Assisted Living Innovation Platform
CCG	Clinical Commissioning Group
CIO	Chief Information Officer
COPD	Chronic Obstructive Pulmonary Disease
CQUIN	Commissioning for Quality and Innovation Payment Framework
CSS	Clinical Support Service (to CCGs)
DH	Department of Health
EC	European Commission
ERY	East Riding of Yorkshire
EU	European Union
FT	Foundation Trust
FTE	Full-Time Equivalent
GP	General Practitioner
HIEC	Health Innovation and Education Cluster
ICT	Information Communications Technology
KP	Kaiser Permanente
LTC	Long Term Condition
N3 NHS	National broadband Network
NICE	National Institute for Health and Clinical Excellence
NHS	National Health Service
OOH	Out of hours
PCT	Primary Care Trust
PID	Project Initiation Document
QIPP	Quality, Innovation, Productivity and Prevention
RIF	Regional Innovation Fund
RoI	Return on Investment
SHA	Strategic Health Authority
SRO	Senior Responsible Officer
SWYPFT	South West Yorkshire Partnership Foundation Trust
TCS	Transforming Community Services
WSD	Whole Systems Demonstrator
VHA	US Veteran Health Administration
Y&tH	Yorkshire and the Humber
YHEC	York Health Economics Consortium

Yorkshire & the Humber Telehealth Hub

Quantitative Evaluation by the University of Hull

David Barrett

Yorkshire and the Humber telehealth hub activity summary
Hull Telemonitoring Service

Introduction
Since April 2011, the telemonitoring clinical triage service, delivered by a partnership of the University of Hull and Hull and East Yorkshire (HEY) NHS Trust, has supported the regional hub project. The activity has been based in two localities – Hull and the East Riding of Yorkshire – and has provided services to over 600 users. In addition to this summary of activity and outcomes, more detailed evaluation reports of the different services can be found on the University of Hull website at http://www2.hull.ac.uk/pgmi/centre_for_telehealth/evaluations.aspx

Activity and outcomes – Hull Heart Failure service
Methodology
The HF telemonitoring service has been supported by NHS Hull since July 2009. Since April 2011, the clinical triage that makes up an important part of the service has also been supported as part of the regional hub project.

The service is evaluated annually, reporting on activity, averted admissions and Return on Investment (RoI). For the purposes of this report, information from the 11-12 evaluation (which encompasses the period of hub support) has been summarised.

This savings estimate compares expected hospital admission rates for heart failure patients (based upon published historical data), against actual admission rates in the telemonitored group. The savings estimate is for the 12 months from April 2011 until March 2012.

The activity data collected through the telemonitoring service includes information on the total number of patients receiving the service at any one time (n) and the number of actual all-cause hospital admissions from this cohort of patients per month (Ha).

Cost savings from reduced hospital admissions can therefore be estimated if it is also possible to quantify predicted all-cause hospital admissions per month (Hp) and cost per hospital admission (C).
With these data available, it is possible to make a month-by-month calculation of gross cost savings, using the formula;

(Hp-Ha) x C = Monthly cost savings

For example, if the predicted number of monthly hospitalisations based on historical data was 14, and the actual number of hospitalisations was eight, with an average cost per hospitalisation of £2000, then total monthly savings are;

(14-8) x 2000 = £12 000

Costs per hospital admission (C) are difficult to quantify accurately, as tariff costs range from a few hundred pounds up to many thousands. It should be recognised that only a minority of hospital admissions in heart failure patients are as a direct result of worsening heart failure. Within the Hull service, reasons for admission amongst the heart failure telemonitoring cohort range from shingles through to Coronary Artery Bypass Graft. Simply applying the heart failure tariff for averted admissions would therefore be inappropriate and may exaggerate savings. For the purposes of demonstration, the average cost of admission has been estimated (rather conservatively) at £2000 – a figure well below the current tariff costs for heart failure admissions.

Aranda and colleagues[1] examined trends in readmission rates for patients following an initial heart failure hospitalisation. The patients in the study therefore broadly matched the Hull HF telemonitoring cohort in terms of clinical status. Aranda et al explored all-cause hospitalisation in the first six to nine months following diagnosis, and found that 60% of patients had one or more readmissions in this period and - of this group - there was an average of 2.2 readmissions per patient. If we use the longest follow-up period (nine months) as the standard, we can calculate Hp using the formula;

Hp = ((n x 0.6) x 2.2)/9

With a cohort of 100 patients, the calculation is;

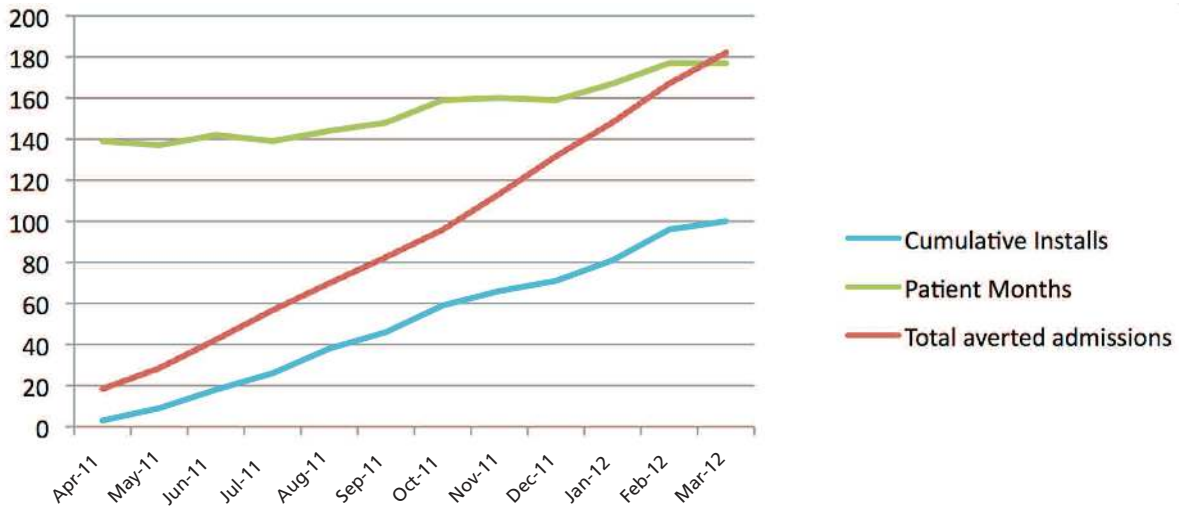
Hp = ((100 x 0.6) x 2.2)/9 = 14.67

In summary, with a cohort of 100 heart failure patients, we would usually expect just fewer than 15 admissions per month.

Findings

In 2011/12 – the year of hub support – there were a total of 283 deployments supported by the Hull telemonitoring triage service. 137 of these were existing patients at the start of the hub project, 99 new patients joined the telemonitoring service, and 47 had telemonitoring re-deployed beyond the initial three-month period. The total number of patients being monitored per month increased from 137 at the start of the year, up to 177 at the end. The total number of averted admissions in 2011/12 – based on the assumptions above – is estimated to be 182 (figure 1).

Figure 1: Installations and averted admissions in 2011/12 – Hull telemonitoring service



Over the course of the 12 months, the data suggest that approximately 0.1 all-cause admissions are averted for every monitoring month (the monitoring of one patient for one month). This figure is consistent with findings from previous years and suggests that for every 100 patients being telemonitored, 10 all-cause admissions are averted each month.

1. Aranda J, Johnson J, Conti J. Current trends in heart failure readmission rates: Analysis of Medicare data. Clin Cardiol. 2009: 32(1); 47-52

Based on the savings assumption of £2000 per averted admission, this represents a saving in hospital admissions alone of £364,080 in 2011/12. To provide an accurate assessment of net savings, it is important to deduct the cost of providing the service (technology costs; user support; triage costs) from the estimated savings.

In 2011/12, the total service costs were approximately £245 000, suggesting net savings – based on averted all-cause hospital admissions alone – of £118,608 (figure 2). With a service cost of £245 000, this represents a Return on Investment (RoI) of 48%. This is a substantial improvement on the RoI of 39% yielded in 2010/11 and demonstrates how increasing scale, supported by the regional hub, can bring additional economies, even when gross savings per monitoring month remain unchanged.

Figure 2: Estimated financial savings 2011/12 – Hull Heart Failure telemonitoring

The estimated cost savings are only one element of the potential benefits of telemonitoring. A recent systematic review and meta-analysis of previous studies suggested significant clinical benefits (in terms of mortality and hospitalisation) related to heart failure telemonitoring.[2] However, it should be recognised that a number of neutral studies have reported since this review and the scale of clinical benefit remains uncertain.

In addition to delivering cost and clinical benefits, the service remains popular with users and carers, as demonstrated in a recent survey by Hull Churches Home from Hospital.[3] This survey found that over 90% of telemonitoring users felt in greater control of their long-term condition, less anxious and more informed. In addition, 78% of respondents felt that they needed to see their GP less often, and over half reported that their number of hospital re-admissions had reduced. It should be noted that this survey was carried out before the telemonitoring service came under the umbrella of the regional hub, but there is no indication that user satisfaction has altered since this report.

2. Inglis, SC, Clark, RA, McAlister, FA, Ball, J, Stewart S, Cleland, JFG. (2011) Which components of heart failure programmes are effective? A systematic review and meta-analysis of the outcomes of structured telephone support or telemonitoring as the primary component of chronic heart failure management in 8323 patients: Abridged Cochrane Review European Journal of Heart Failure 13:1028-1040
3. Hull Churches Home from Hospital (2011) The reassurance of back-up. Available from: http://hchfh.wordpress.com/telehealth-2/

Other Hull activity

In addition to the mainstream heart failure telemonitoring service, regional hub support has also allowed clinical triage to be provided to participants in the 'INDEPENDENT' project. This project is designed to explore the benefits of technology in enhancing the links between health, social and third sector care. The specific element of the project where hub support has been utilised is in the deployment of multi-user health monitoring devices in housing complexes. This has allowed residents to monitor vital signs and answer health questions, with the hub clinical triage allowing for registered nurse overview of the data. To date, 40 users have been recruited, though no information is yet available on any outcomes, benefits or user feedback (this will be included in the final INDEPENDENT evaluation, due for publication in 2013).

Further information on the INDEPENDENT project can be found at:
http://www.independent-project.eu/home/.

Activity and outcomes - East Riding of Yorkshire telemonitoring service

NHS East Riding of Yorkshire (ERY) has been running a mainstream telemonitoring service for patients with long-term conditions since 2010. In quarter two of 2011/12, NHS ERY was offered support from the Hull element of the regional hub to provide clinical triage to users of their service. In the first instance, rather than clinical triage being directly delivered from the Hull telemonitoring team, NHS ERY opted for a 'satellite' hub model, where a member of their own staff was supported financially by the Hull hub funding to act as a 'telehealth co-ordinator', providing clinical triage to users within five of the eight localities in ERY. Subsequently, in Q4 of 11/12, the Hull telemonitoring team were asked to directly provide clinical triage for users in the remaining three localities. In total, it is estimated that the hub has supported 278 three-month telemonitoring deployments (a small proportion of which were re-deployments) in the East Riding of Yorkshire.

The ERY service has been evaluated by the University of Hull, with a particular focus on financial return on investment and user feedback. As with the Hull service, user feedback is very positive. However, one finding of the evaluation is that 17% of deployments are ended early – often as a result of user request. As a result of this, NHS ERY has been reviewing methods for enhancing user acceptance.

In relation to financial RoI, calculations have been made on the basis of service delivery from September 2010 until October 2011 – i.e. encompassing some time before the regional hub became involved. However, findings from this broad evaluation will be extrapolated to estimate hub benefits.

The most recent NHS ERY savings report[4] found that the telemonitoring service yielded net savings of £103 per monitoring month, with a RoI of 61%. These savings were the result of reduced hospital admissions and A&E attendances following deployment. Though the methodology has some weaknesses (for example, no control group), it is suggested that this provides a pragmatic, real-world estimate of service effectiveness. Extrapolating the figure of £103 savings per monitoring month to the activity supported by the hub (278 deployments, each of three months' duration), equates to potential net savings of £85,902 resulting from the hub-supported telemonitoring service.

Other ERY activity

In addition to the mainstream telemonitoring work in the ERY, the hub has also supported – at a small scale – clinical triage for two specific projects. Up until April 2012, eight patients in the ERY had been recruited to the 'HeartCycle' project (http://www.heartcycle.eu/), utilising enhanced telemonitoring technology for people with heart failure. In addition, a Yorkshire and the Humber Health Innovation Education Cluster (HIEC) project to trial telemonitoring technologies for people with cognitive impairment has recruited 11 users, with the hub providing support for clinical triage. No outcomes or user feedback data on these two deployments are available yet, but both projects are being evaluated independently.

4. Barrett D (2012) Telehealth in the East Riding of Yorkshire. September 2010-October 2011. Economic benefits update. Available from: http://www2.hull.ac.uk/pgmi/centre_for_telehealth/evaluations.aspx

Yorkshire and the Humber telehealth hub activity summary
Hull Telemonitoring Service

Summary
Across the two localities, hub-supported clinical triage service has supported telemonitoring services for approximately 620 users over the past 12 months. The largest deployments – the Hull heart failure service and ERY mainstream telemonitoring – have both been evaluated and found to yield very positive user experience and financial return on investment. Though real-world evaluations have limitations, estimated net cost savings from these two deployments during 11/12 total over £200,000.

Yorkshire and the Humber telehealth hub activity summary:
Airedale NHS Foundation Trust

Introduction

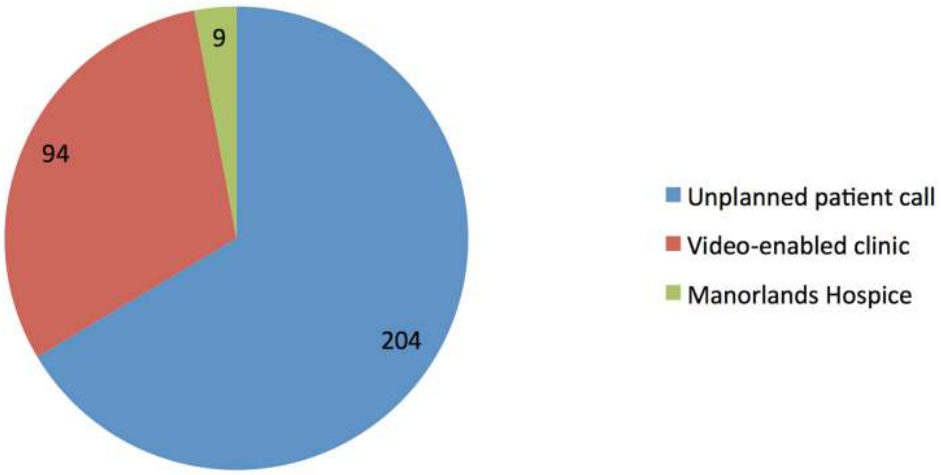
As part of the regional telehealth hub project, Airedale NHS Foundation Trust provided tele-medicine/teleconsultation services for people with long-term conditions. Though the Telehealth Hub project commenced in May 2011, the need for substantial infrastructure work meant that the Airedale element of the project only went live in mid-September. Some of the information contained within this report therefore relates to a period from 19th September 2011 to the end of April 2012 (a period of seven and a half months). However, an extension in project length was agreed in acknowledgement of the infrastructure work required, and some of the additional activity until the end of August is also reported.

Activity and outcomes

As of the end of April 2012, a total of 81 systems were deployed into patients' own homes and 13 systems were installed in care homes. Five systems were installed within Manorlands Hospice, and two within GP surgeries. In addition, seven systems were deployed for paediatric diabetes patients. In total, by April 2012, 404 people had access to telemedicine services.

In the initial seven and a half month period, there were a total of 307 clinical calls dealt with by the Airedale Hub. These are a combination of incoming calls from patients requiring assistance, video-enabled clinic consultations, and consultations between the hub and Manorlands hospice (figure 1).

Figure 1: Number of calls per category: September 2011 to April 2012



Yorkshire and the Humber telehealth hub activity summary: Airedale NHS Foundation Trust

Categories of Telemedicine activity

Category 1: Unplanned patient calls to the Airedale hub

Data are available on the number of unplanned calls for the full period from September 2011 until end of August 2012. In this period, a total of 379 unplanned calls were made to the Airedale Hub by patients requiring assistance or advice. Of these, 121 were from communal settings (e.g. care homes or hospices) with the remainder (n=258) from patients in their own homes. Geographically, calls were predominantly from deployments within West Yorkshire and East Lancashire.

Call handlers were asked to assess the outcome of the consultation in relation to whether or not a potential hospital admission was averted. In 39 cases (10% of the total), the call resulted in a hospital admission. However, it is likely that without the availability of a video consultation an admission would have occurred anyway. In six cases (2%), the call handler felt that an admission may have potentially been averted – given the lack of certainty, these calls have not been included in any estimate of benefits. Call handlers reported that hospital admissions were averted on 124 occasions (representing 33% of all calls). Previous work by York Health Economics Consortium suggested that savings to primary care commissioners per hospital admission averted was £2569.[5]

Using this cost as a benchmark price, the estimated savings from 124 averted admissions is £318,556. In addition, it is likely that these admissions would have been via the Emergency Department (ED), at a cost of £97 per attendance.[6] Avoiding these attendances therefore saved an additional £12,028, providing total gross savings of £330,584.

To identify net costs, it is important to consider the price of operating the service. At current levels of activity, gross savings from averted hospital attendance and admission is substantially less than the service running costs. However, this loss-making period is expected in the context of a service being built from scratch. As scale increases, so the service will approach break-even and then profit-making status. Based on the figures above where an averted admission saves £2666 (£2569 admission tariff; £97 ED attendance cost), the Airedale service would need to avert approximately 28 admissions per month to reach a break-even point. Activity should therefore be tracked to identify progress towards this goal.

5. Hutton J (2010) J (2010) Estimating the benefits of investing in Telehealth: Position paper for the Yorkshire and Humber SHA. York Health Economics Consortium.
6. Department of Health (2011) NHS Reference Costs 2009-2010. Available from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_123459

Yorkshire and the Humber telehealth hub activity summary: Airedale NHS Foundation Trust

On the basis that 33% of unplanned calls appeared to avert an admission, the Hub needs to reach an activity level of approximately 85 calls per month to reach break-even point. Temporal data from the first eleven and a half months of Hub activity shows a substantial increase in calls in month three (November 2011), followed by a plateau at approximately 30 calls per month prior to sharp increases in July and August (figure 2). However, the data suggest that the Hub is still operating at levels of activity below which net savings can be realised.

Figure 2: Unplanned call activity by month

It should be noted that all calculations are based on running costs rather than costs to commissioners – they therefore only provide a crude estimate of return on investment. For a true calculation of actual or potential return on investment, data on service costs and admissions averted per commissioned deployment will be required. In addition, return on investment in this report is only being calculated in relation to averted admissions - additional benefits from planned consultations (e.g. reduced travel time) are also being realised but are not quantified here.

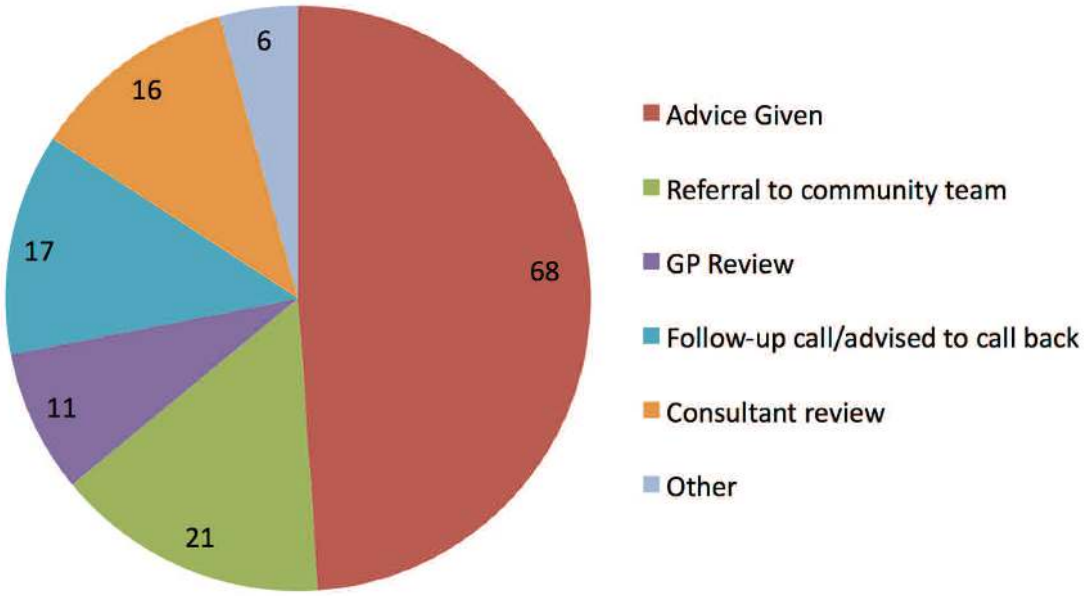
Two other caveats should be considered when evaluating these cost calculations. First, it is possible that assessment and management within the ED would have been sufficient to have addressed the presenting problem and that the patient could have been discharged directly home, thereby avoiding an admission (and only incurring the £97 A&E attendance cost). However, given that most Airedale Hub patients have complex, long-standing conditions, it seems safe to assume that most (if not all) ED attendances would result in admission.

Second, there is some danger in basing findings on staff-reported outcomes. Given that the primary purpose of the Hub is to avert admissions, there may be a tendency to over-estimate the number of consultations that achieve this goal. However, given the expertise of the Hub staff, it is safe to assume that the estimate of 124 averted admissions is broadly representative of the service's success.

Some information was available on the types of interventions that had contributed towards averting admissions, though these data were only provided for the period up to April 2012. Advice and reassurance was the most common intervention, with other support provided through GP/consultant review or referral to the community care team (figure 3).

Yorkshire and the Humber telehealth hub activity summary:
Airedale NHS Foundation Trust

Figure 3: Interventions delivered to avert admissions –
Sep 11-Apr 12 (first-time calls; some calls included more than one intervention)



Data are also available on the impact of the telemedicine service on the overall number of ED attendances and hospital admissions via ED from care homes in and around Airedale. These data provide details of attendances and admissions from residents of each home for the six months between April and September 2011 and the six months between April and September 2012, allowing calculation of monthly means and a year-on-year comparison of changes in activity. Of the 81 care homes for which data are available, 13 had telemedicine installed by the start of the second audit period (i.e. before April 2012). These data are summarised in table 1 (below).

Table 1: Summary of ED attendance and admission profile in care homes with and without telemedicine installed in 2012

	2011*	2012*	Difference
ED attendances (mean per home, per month) – care homes with telemedicine in 2012 (n=14)	2.69	1.38	-49%
ED attendances (mean per home, per month) – care homes without telemedicine in 2012 (n=67)	1.31	0.96	-27%
Hospital admissions via ED (mean per home, per month) – care homes with telemedicine in 2012 (n=14)	1.51	0.81	-47%
Hospital admissions via ED (mean per home, per month) – care homes without telemedicine in 2012 (n=67)	0.70	0.47	-33%

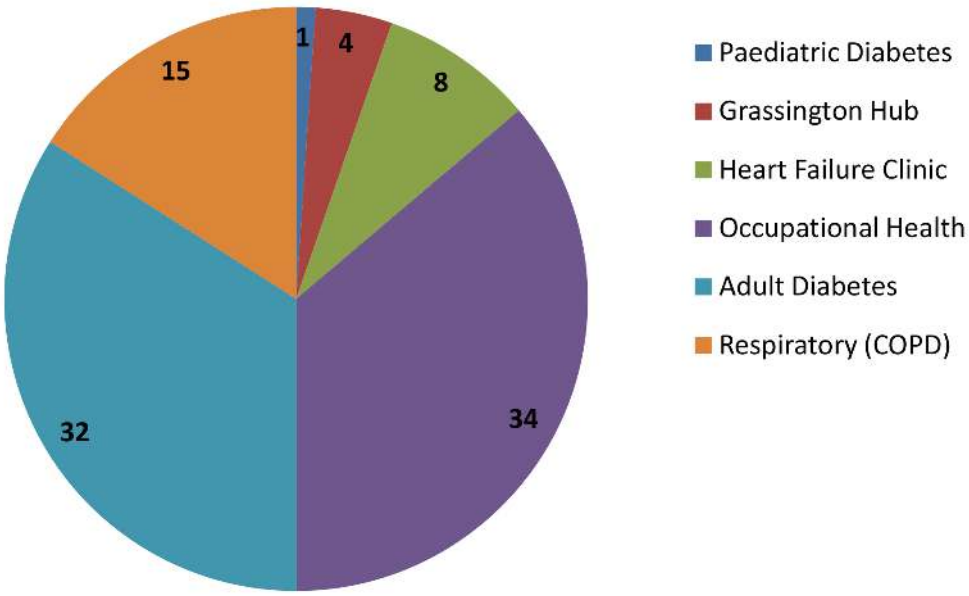
*Figures are rounded to two decimal points; percentage difference is calculated using unrounded figures and rounded to the nearest whole number

Yorkshire and the Humber telehealth hub activity summary:
Airedale NHS Foundation Trust

Table 1 demonstrates falls in secondary care activity from residents in both groups of care homes between 2011 and 2012, due in part to on-going work to enhance and transform the work of community teams across the patch. However, there were substantially larger decreases in ED attendances (49% vs. 27%) and hospital admissions via ED (47% vs. 33%) in those homes with telemedicine installed. It is not possible to directly attribute all of this impact to telemedicine, as other factors may be at work – for example, the care homes provided with telemedicine had a much higher baseline level of secondary care use, arguably making them more susceptible to improvements from the broader transformation work. In addition, the data only address hospital admissions via the ED at this stage – further work is required to collect and analyse data on all hospital admissions. Despite these limitations, the data certainly suggest that implementation of a telemedicine service in care homes is associated with a decrease in secondary care use above and beyond that seen in other settings.

Category 2: Clinic consultations
A total of 94 telemedicine enabled clinic consultations took place between September 2011 and April 2012 across a range of clinical specialties (figure 4).

Figure 4: Clinic consultation by specialty



Though there are no data on exact figures, it is likely that these video consultations had a substantial impact on the amount of time spent travelling by patients. Assuming that patients live an average of 20 miles from the hospital (i.e. a 40-mile round trip taking a total of one hour), the provision of 94 video clinics reduced distance travelled by 3760 miles and travelling time by 94 hours.

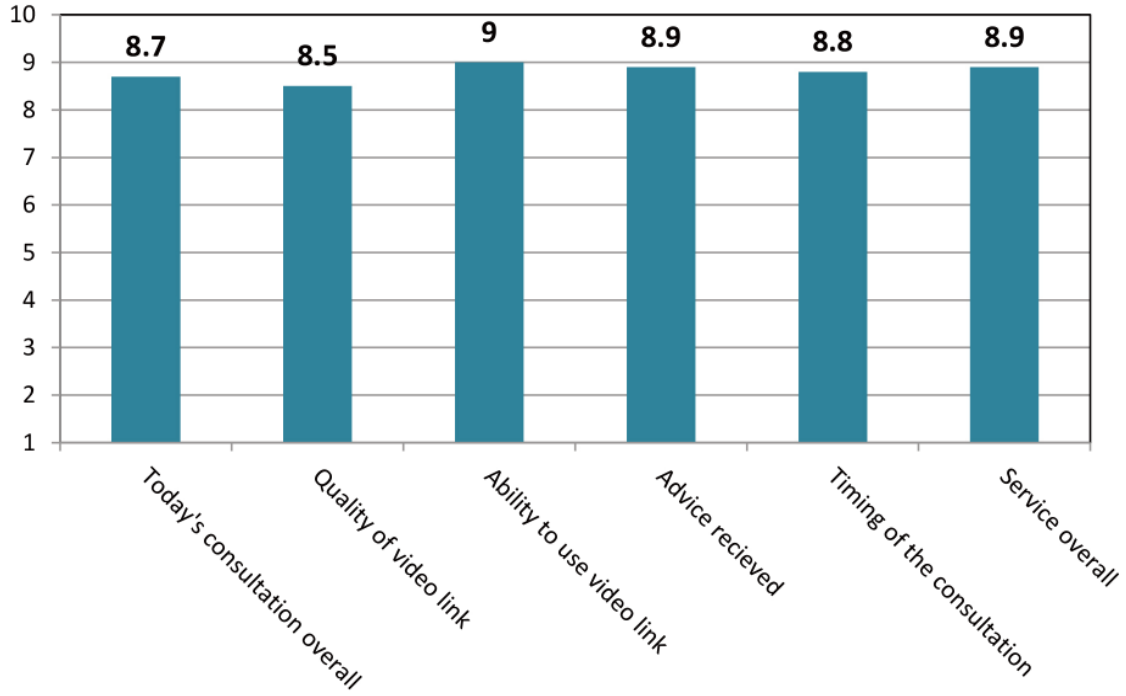
Category 3: Activity related to Manorlands hospice
There were a total of nine consultations involving patients from Manorlands hospice. Two-thirds of these consultations (n=9) were unplanned with the remaining third being planned. No data are available on reasons for consultations or the subsequent outcomes.

Yorkshire and the Humber telehealth hub activity summary:
Airedale NHS Foundation Trust

User feedback

In March 2012, a survey of 34 Telemedicine hub users was carried out to establish feedback on the acceptability and quality of the service. Feedback on each question (scored 1-10, with 10 being the most positive) is summarised in figure 5.

Figure 5: Satisfaction with different elements of Airedale service (n=34)



Qualitative feedback from users reflected this broadly positive view. Some comments reflected their general satisfaction with the service:

"Delighted with the service.... it is a life-saver for me."

"Telehealth has been a godsend to me."

"A wonderful service."

Others contained more specific descriptions of the benefits:

"...when I'm feeling poorly, it is nice to just have reassurance that you will feel better..."

"...this service takes the pressure off [care home staff] as we have access to a health professional who can advise us the best route to follow."

Some users did highlight specific technical issues that impacted on their experience of using the hub and will require consideration for future service development:

"...couldn't use the camera because I was upstairs in bed and the camera is downstairs in the lounge."

"The picture is faint but the sound is awful and keeps coming and going."

Yorkshire and the Humber telehealth hub activity summary: Airedale NHS Foundation Trust

Summary

Despite becoming operational later than other elements of the telehealth hub, the Airedale telemedicine service is now demonstrating the ability to reduce secondary care utilisation. In the first eleven months of operation, the hub has averted up to 124 admissions, yielding over £330 000 of gross savings. In addition, the need for face-to-face clinic appointments has been avoided on 94 occasions. Data specifically related to use in care homes suggests that the service can reduce the level of secondary care usage from residents in these settings. From a user satisfaction perspective, feedback is generally very positive, though some specific technical issues have been raised.

In the early stages of the project, the level of deployment has been too small to provide return on investment. However, as deployment scale increases – ideally to a point at which approximately 28 admissions are averted per month (≈85 calls per month) – potential benefits will begin to be realised.

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Yorkshire and the Humber Telehealth Hub activity summary:
South West Yorkshire Partnership NHS Foundation Trust

Introduction
As part of the regional hub project, the South West Yorkshire Partnership NHS Foundation Trust (SWYFT) provided telecoaching (structured telephone support) primarily to people within Barnsley, Sheffield, Wakefield and the East Riding of Yorkshire (ERY). These telecoaching services are designed to support people with long-term conditions in enhancing their ability to self-care and,where appropriate,to modify behaviour.

Activity and outcomes
The project has run since April 2011. However, it should be noted that although Barnsley patients were accessing services during the whole of this period, activity in other localities only commenced in November 2011. In addition, it is important to note that there were substantial changes made to the recording of patient activity data in January 2012. As a result, data are only included on patients who accessed services between January and April 2012.

Some high-level information does exist for the pre-January users. An audit of activity in November 2011 confirmed that since April 2011, a total of 531 patients had received clinical services as part the Hub project. This suggests that total activity prior to the data reported below would be at least 600 patients.

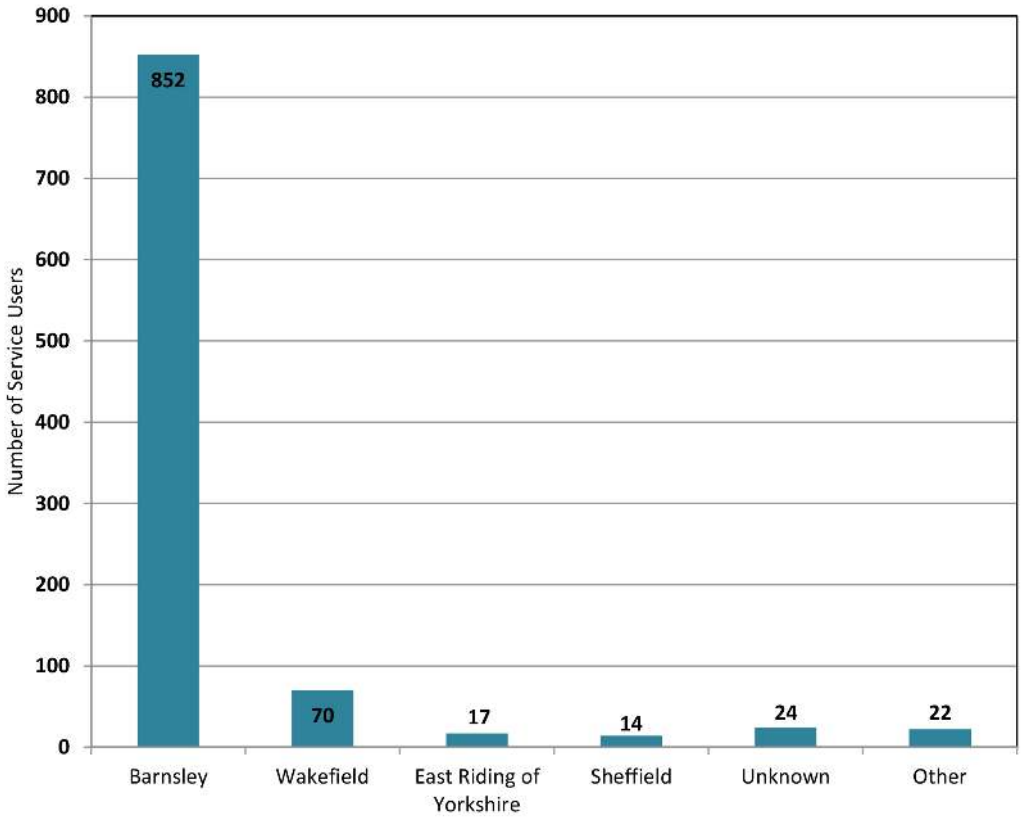
Data on referral patterns and activity were available for the period January-April 2012 for patients within Barnsley, Wakefield, Sheffield, ERY and a small number of other localities. Data were also available on baseline health self-reporting by service users. However, these health profile data offer little insight into activity or outcomes from the service, so are not included within this summary.

In the four months from January to April 2012, a total of 999 patients received clinical services through the telecoaching service (figure 1). Of these 999 patients for whom data are available, 85% were referred from Barnsley Primary Care Trust (PCT), 7% from Wakefield, and <2% each from Sheffield and the East Riding of Yorkshire. Other PCTs who referred patients into the service included Leeds, Rotherham and Kirklees.

In terms of previous years, the January-April 2012 activity supported by the Hub demonstrates a substantial increase. In 2010/11, there were a report 694 users of telecoaching services from Barnsley (an average of 58/month). In the first nine months of hub-supported activity (April-December 2011), there was average activity of 67 patients per month, assuming a total throughput of 600. In the period reported here, 999 patients were provided with services over four months. This represents a throughput of 250 patients per month – approximately a four-fold increase of the previous year's activity.

Yorkshire and the Humber Telehealth Hub activity summary:
South West Yorkshire Partnership NHS Foundation Trust

Figure 1: Referrals to the SWYFT Hub service (January-April 2012). n=999



Patients recruited to the service were offered a range of services, such as initial assessment, care navigation, telehealth and health coaching. The breakdown of services offered can be found in figure 2 (p3). Note that some patients were offered more than one service, so the total number of service offers was 1353.

In addition to broad service offers, specific interventions were also provided for some users. These were a mixture of referrals to follow-on services (such as smoking cessation or weight management support) and bespoke health and well-being advice (such as information regarding local services). A breakdown of this specific activity can be found in figure 3. It should be noted that for some patients, no recorded interventions took place, whereas for others, multiple pieces of advice or onward referrals were documented. In total, 379 interventions were recorded, representing activity in 127 patients. Overall, 260 interventions were advice-based and the remaining 119 were referrals onto other services.

Yorkshire and the Humber Telehealth Hub activity summary:
South West Yorkshire Partnership NHS Foundation Trust

Figure 2: Services offered to users of SWYFT hub services (number of patients=999; number of services offered=1353)

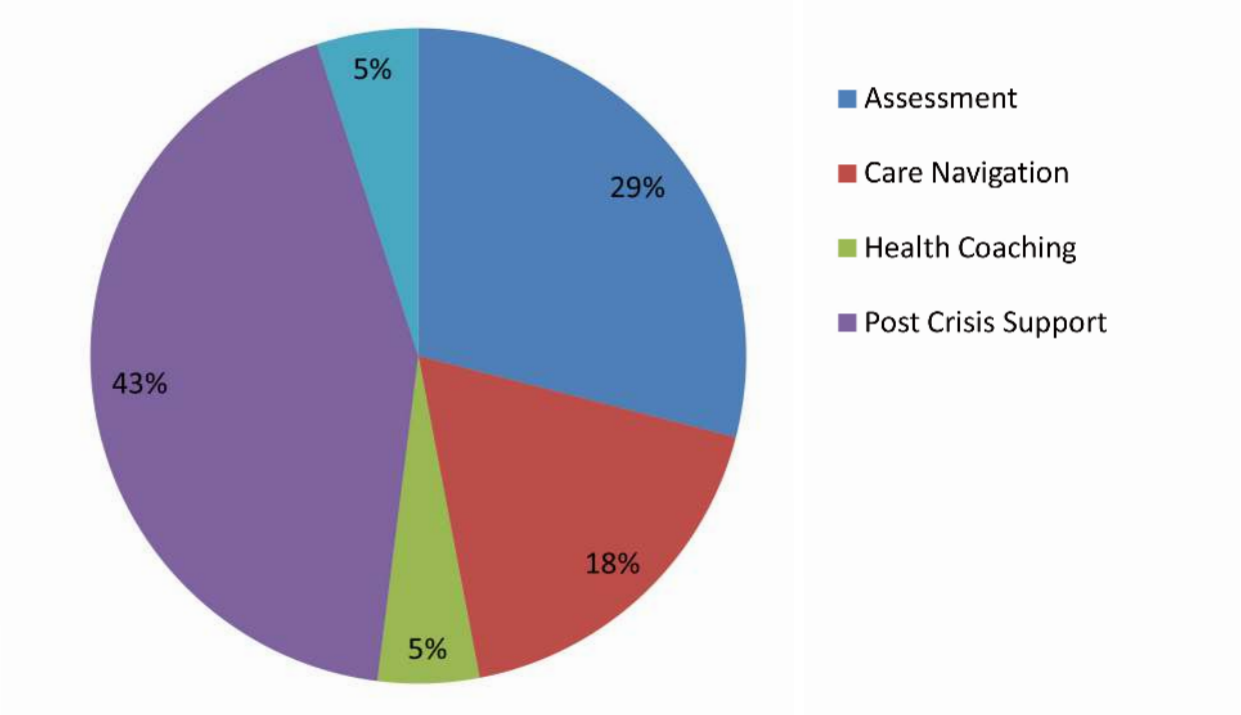
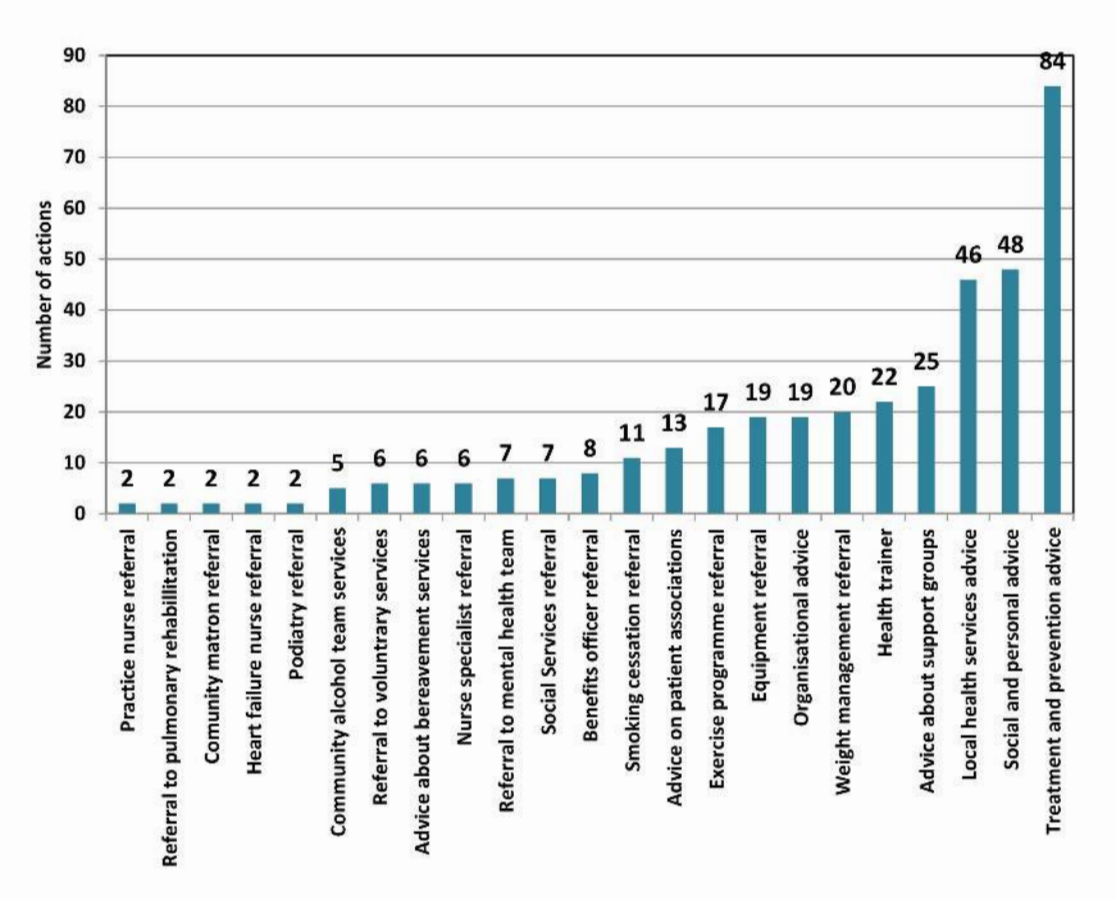


Figure 3: Specific advice and referrals resulting from hub services (n=379; 127 patients)



Yorkshire and the Humber Telehealth Hub activity summary: South West Yorkshire Partnership NHS Foundation Trust

Some data were available on the utilisation of secondary care services by recipients of telecoaching within the Barnsley area. Using Secondary Uses Service (SUS) data, hospital admission costs in the 12 months prior to telecoaching have been ascertained and a monthly mean calculated. A mean monthly cost in the period after commencement of telecoaching has then been calculated using SUS data, and the two figures compared. A similar methodology was utilised to explore changes in the number of secondary care bed days. Data were available for 872 users of services in whom telecoaching commenced between 1st January and 30th April 2012. The findings are summarised below.

Figure 4: Mean monthly admission costs for patients before and after telecoaching intervention (n=872)

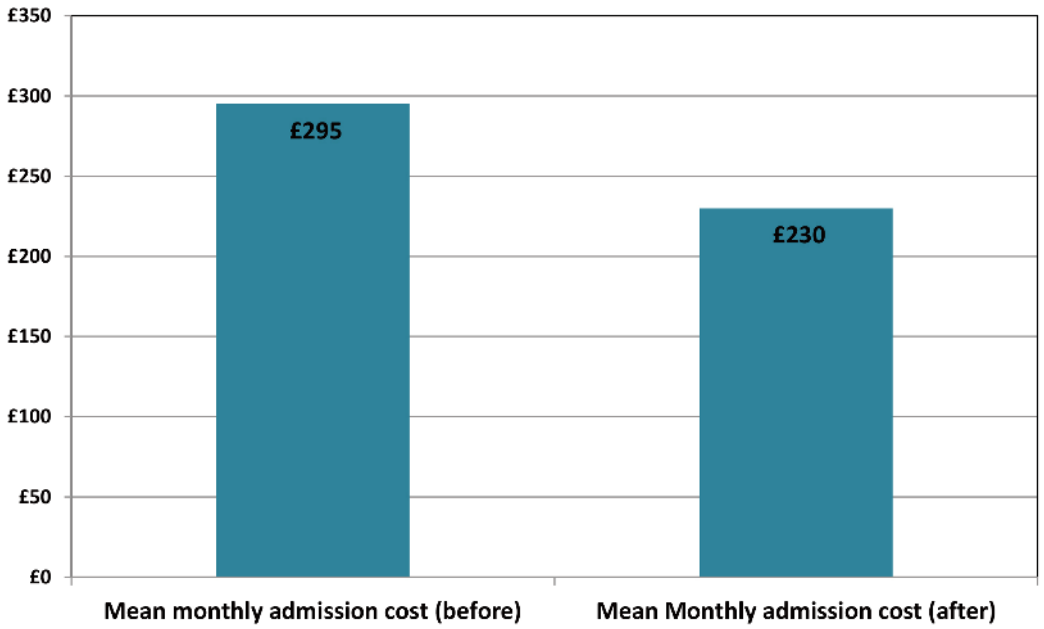
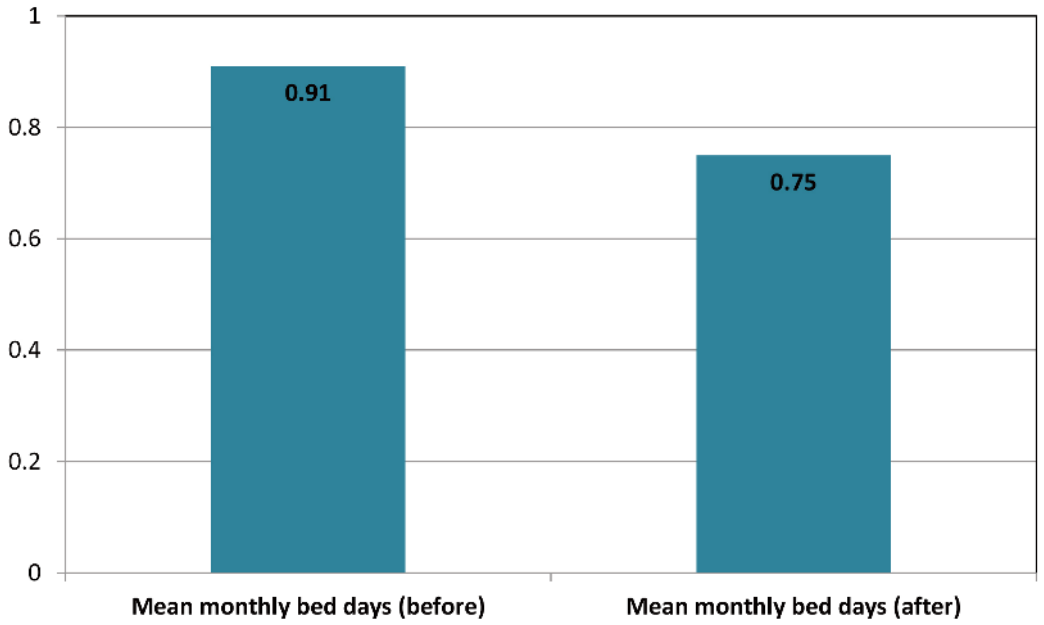


Figure 5: Mean monthly bed days for patients before and after telecoaching intervention (n=872)



Yorkshire and the Humber Telehealth Hub activity summary: South West Yorkshire Partnership NHS Foundation Trust

Figures 4 and 5 demonstrate a 22% reduction in mean monthly admission costs and a 17% reduction in mean monthly bed days after telecoaching was commenced. Given the lack of a control group, there is no way to be certain that telecoaching was the cause of these decreases in secondary care usage – the changes could equally be due to other treatment changes or simply a chance finding. It should also be acknowledged that the cost savings associated with telecoaching (£65 per patient, per month), do not account for the costs of providing the telemonitoring service. However, the data certainly suggest that telecoaching might be having an important and beneficial impact on the secondary care usage of patients.

Conclusion

The data available suggest that SWYFT hub services are providing a range of individualised advice and referral services for patients across a number of localities. In particular, it seems that the service is signposting users to follow-on services that may support beneficial changes in lifestyle (such as smoking cessation and weight loss). In addition, early outcome data from Barnsley suggests that telecoaching is associated with reductions in secondary care usage.

Some issues require addressing as the service continues to develop. In particular, it will be important to monitor specific activity and service offerings now that the necessary data collection processes are in place. Though early – and promising - outcome data are reported here, greater insight into the impact of telecoaching will only become available in the fullness of time, as the service runs for long enough to provide a detailed longitudinal dataset.

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Evaluations by 2020health

2020health are an independent think tank whose vision is to create a healthy society. Our aim is to enable 'the grassroots' to develop and influence policy based on their knowledge and expertise. Capturing front line experience as a primary source of ideas remains the core means by which we aim to improve healthcare in the UK.

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John is a Consultant Director at 2020health and an independent expert in NHS IT and telehealth, operating at the complex interface between government, NHS and industry. Since 2010, he has authored a series of influential and authoritative reports published by 2020health on how the NHS needs to make better use of technology, covering a spectrum of significant issues across IT, telehealth and electronic health records. The publications include:

- 'Fixing NHS IT: A plan of action for a new government';
- 'Healthcare without walls – a framework for delivering telehealth at scale';
- 'Telehealth – what can the NHS learn from experience at the US Veterans Health Administration?';
- 'Personal Health Records – putting patients in control?'.

His 30-year career has included leadership roles in the healthcare practices of major systems integrators and consultancies. In addition to his work with 2020health, he advises public and private sector organisations committed to the strategic use of information and telehealth technologies in healthcare. John is a graduate in economics and management science from St John's College, Cambridge.

Jon Paxman
Jon joined 2020health as a copy-editor and senior fellow in late 2011, transferring his writing, editing and research skills from the worlds of film, television and classical music. Jon has partnered health IT expert John Cruickshank in this evaluation and is Project Lead on 2020health's report on Personal Health Budgets.

David Barrett
David is a Nurse Lecturer in the Faculty of Health and Social Care at the University of Hull. After qualifying as a Registered Nurse in 1994, he embarked on a career in cardiac care. The bulk of his NHS career was spent in Coventry, where he became Head of Nursing for Cardiac Services at University Hospitals Coventry and Warwickshire NHS Trust. He left in 2002, to commence an academic nursing career.

His current role involves the development and delivery of education, research and service improvement related to telehealth and telecare. He has carried out service evaluations for a number of public sector organisations, has developed a suite of educational resources, written a number of articles and regularly speaks at events on topics related to technology-enhanced care.

Yorkshire & the Humber Telehealth Hub

2020health Evaluation

2020health's mission
Creating a healthy society

2020health is an independent, grass roots think tank whose purpose is to both improve individual health and create the conditions for a healthy society, through research, evaluation, campaigning and relationships.

2020health research and activity includes the following workstreams

Fit-for-school:
To create a holistic picture of wellbeing and what children need in order to thrive at school, and identify ways of enabling more children to flourish and break the cycle of failure.

Fit-for-work:
To continue looking at the importance of work for health and health for work, and ensure that those who experience illness receive timely and appropriate support, understanding that worklessness impacts on economies and society as a whole.

Fit-for-later life:
To look from active retirement, to increasing dependency and end-of-life care and consider new models of provision, raise the status of caring, embed respect for ageing and ensure inclusion.

Forgotten conditions:
To ensure that people with rare or unusual health conditions have their needs met by the NHS.

Integration:
To promote integrated care that uses technology to empower people and enable management of their healthcare and wellbeing.

International:
To ensure that we continue to share our knowledge of healthcare and learn from those countries that care for people better than we do.

Innovation:
To ensure that people have access to innovation in all its forms and keep the UK at the forefront of R&D.

Social Care:
To find sustainable solutions to ensure people's vulnerable or final years are the best they can be.

"2020health provides an invaluable forum for those who are interested in development and reform of the health service. Its meetings are always stimulating and thought provoking."

Rt. Hon. Stephen Dorrell MP,
Chair of the Health Select Committee

"2020health are unique in understanding the potential of technological innovation and marrying it to the real world challenge of NHS adoption. They truly understand the importance of patient advocacy."

Steve Bates, CEO of BioIndustry Association

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