

case study



Sector: Health
Client: NHS Leeds

Application: Telehealth Management of COPD

the challenge

In the UK nearly 900,000 people have been diagnosed with Chronic Obstructive Pulmonary Disease (COPD). It is estimated that another three million people in the UK have the condition but are undiagnosed. It is the fifth biggest killer, causing 30,000 deaths a year in England and Wales alone¹.



The estimated cost of a non elective acute episode (exacerbation) for a person with severe COPD ranges from £1,700 to £2,300. COPD patients account for 1 in 8 medical admissions.

Leeds is the 4th largest city in England with a population of 715,404 inhabitants, of which 12,500 are registered COPD patients, just above the national average. Presently the city wide community specialist respiratory team covers around 10% of registered COPD patients in Leeds and have already achieved reductions in hospital admissions prior to telehealth deployment.

By using telehealth technologies and interventions to monitor patient health this proactive approach will help minimise COPD hospital admissions and maximise the number of patients the respiratory nurses can see.

A key commissioning objective for NHS Leeds aims to help COPD patients manage their own healthcare plans.

(1) NHS Direct Health Encyclopedia - Feb 2008



All the reassurance you need



“We found that telehealth monitoring increased productivity whereby the specialist nurses experienced an average reduction of 20-25% in home visits, with peak periods of up to 50%.”

Gary Heywood, Telehealth Programme Manager

the project

The initial target area was East Leeds due to its lower socio-economic population. In 2007/8 NHS Leeds sourced additional Tunstall telehealth solutions to assist with COPD patients case load management across the city.

The 18 month pilot reviewed the use of healthcare provision before, during and after deployment of telehealth interventions as part of the respiratory nursing's care package.

The government's Preventative Technology Grant (PTG) was used in partnership with NHS Leeds and the Local Authority's telecare board.

Evaluation Criteria

In order to ensure the success of the telehealth project a principal metrics model was decided upon to ensure the correct data was collected by the project team which included:

- Patient evaluation questionnaires to gain the patient's compliance and their true perspective into the usability, usefulness and acceptability of telehealth interventions. This included independent patient experience interviews conducted by a modern matron
- The number of home visits undertaken by the specialist community respiratory nursing team
- The number of GP appointments for COPD/respiratory conditions
- The length of stay in hospital for COPD/respiratory conditions
- The number of hospital admissions for COPD/respiratory conditions
- Monitoring A&E visits for COPD/respiratory conditions
- A log of all telehealth interventions from
 - Number and type of alert
 - Number of telephone calls made
- A project board steered by a telehealth programme manager

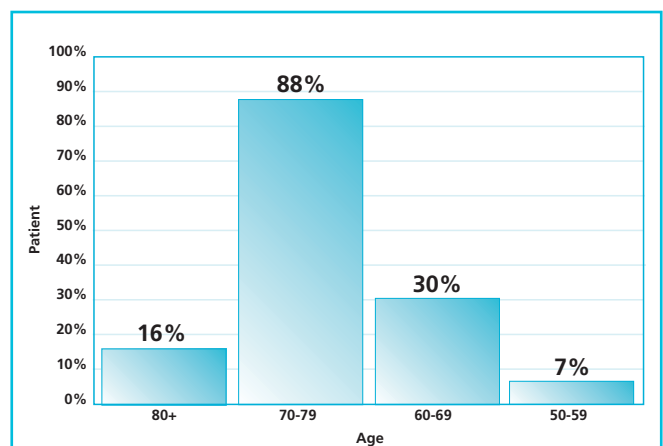
Tunstall provided support to all parties to assist with the integration of telehealth into existing healthcare plans. The specialist respiratory nurses all received tailored training on how to use the telehealth equipment as well as how to triage patient's vital signs and setting well-being questions.

To ensure all of the project team were involved clear project aims and objectives were set out from the beginning.

The telehealth project aims and objectives:

- Improve quality of life for patients and their carers with long-term conditions
- Reduce health inequalities
- Reduce unplanned hospital activity
- Reduce A&E visits
- Reduce unnecessary GP appointments
- Reduce the length of stay in hospital for COPD patients
- Improve efficiency of the respiratory nurses so that they can care for more COPD patients
- Reduce unnecessary home visits, thereby permitting the nurses to focus more of their time on patients with complex needs
- Improved intelligence gained from regular health surveillance led to proactive case management resulting in more timely services for patients.

Telehealth project patient demographics



"I felt reassured knowing the respiratory team were monitoring me daily. Telehealth is a good idea and it should be expanded to more patients." COPD Patient

the process for roll-out

NHS Leeds designed a 3 step process for rolling out their telehealth equipment:

- **Step 1** of the process formed the basis of an initial **patient selection and assessment evaluation**. This helped avoid procrastination of appropriate patient selection and used initial patient selection criteria of a wide range of diagnosed patients. This step also built up experience and confidence of the specialist nursing team in the use of telehealth interventions.
- **Step 2** was **assessing and formulating** patient groups who had benefited from telehealth interventions, along with appropriate durations for deployment on telehealth. An interim report was generated with recommendations to steer the final step, along with a caseload review, which also identified future scalability needs.
- **Step 3** was deployment using identified patient groups and **evaluating and collecting** robust local evidence to populate a cost model and business case for potential rollout.

Patient groups

Initially 43 COPD patients were selected; at the first stage, on average, they had the telehealth monitors for **2 months**, the second stage of the pilot utilised monitors for a more prolonged period of **6 months** and the 2 groups of patients were generally high intensity users of healthcare resources.

The COPD patients were able to use the monitors easily to take their vital sign readings, the peripherals used in this case were blood pressure cuffs, weighing scales, pulse oximeter and an optional thermometer.

Well-being questions were tailored at the start of the project for the 2 groups of patients.

Once measured, the data is transmitted to a central server which is accessed by the respiratory nurses to enable them to carry out daily patient triaging of the vital signs and well-being questions. The respiratory nurses followed up each case with the appropriate intervention required, dependent on the patient's data, this could be:

- a telephone call
- scheduling a nurse or GP visit
- arranging for an ambulance in extreme cases

Once discharged from the project, patients were asked to complete a feedback form to allow the team to gain valuable insight into the patients' experience of the telehealth monitors.

Evaluation results

The evaluation results from the pilot have been immensely positive on all fronts.

Chart explanation

Looked at 6 months before and 6 months during telehealth

Based on 43 patients using 8 monitors

There were two groups of patients on telehealth monitoring

1. maximum 2 months usage
2. 6 months usage

Average length of hospital stay reduced by 16%

	Before telehealth	During telehealth	Normalised effect accounting for actual patient periods monitored to 6-month baseline*
Total bed days	255	122	16%
A&E attendances	49	37	8%
Hospital admissions	103	31	10%
Nurse home visits	98	49	20-25%

*% difference before and during telehealth, accounting for different patient periods being monitored

"I have to say the patients think it is fantastic - they have amazed me with how much they appreciate the equipment. They even dust it"
Vicky Walker - Clinical & Managerial Head for Respiratory Services

efficiency gains

Benefits to the patient

Patient compliance was high at **98%**, they fed back outstanding comments. They found the telehealth monitors simple to use and very easy to understand. Communication between patient and nurse was greatly improved, as patients were more involved in their care this helped them become more reassured about the management of their condition, reducing anxieties for patient and carer.

Benefits to the nursing team

The nursing team were initially sceptical, however, after training and deployment they could see the full benefits to patients, realised that the technology was there to assist them and not replace them.

The team welcome the full mainstreaming of the telehealth project as it is forecasted that they could **increase overall city-wide capacity by 13.5% from the deployment of 50 units. This translates into an increased number of patients benefiting from their specialist care, with the knock on effect of benefits to the overall local health economy.**

The nurses found that appointments to visit patients ran more efficiently. The time spent with patients was used for diagnosis and problem solving rather than information gathering, which improved efficiencies greatly.

Cost saving benefits for the NHS

(Based on normalised figures)

- The use of telehealth increased productivity whereby the nurses experienced an average (sustainable) **reduction of 20-25%** in home visits, with peak periods of **up to 50%**.
- With only eight monitors it was calculated that 172 home visits per annum would be saved. With **50 telehealth monitors** this would increase to **1078 saved visits** saving £61.4k¹
- Hospital admissions were reduced in total by **10% saving £22,500 per annum.** With 50 units a predicted £74,500 would be saved
- During the trial, **67% of patients** receiving telehealth interventions did not access hospital and of those who did, most were out of hours.
- Bed days were **reduced by 16%**

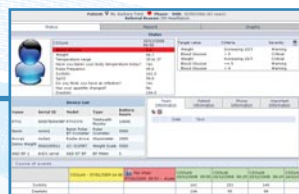
The project data demonstrated that these figures could potentially be further improved by offering telehealth for longer periods of time to some patients.

¹Based on mid point band specialist nurse

How does telehealth work?



Patient takes vital signs readings and answers health related questions in their own home.



The information is sent from the telehealth monitor via the telephone line or wireless GPRS to the patients clinician.



Doctor, clinician or nurse reads the information received on a pc in the surgery.



The doctor, clinician or nurse performs proactive prioritised case management based upon identified patient need.

It is predicted that telehealth would increase the city-wide capacity by 13.5% from the deployment of 50 units

"In order to drive efficiency we often have to consider investment to save money in the longer term"

Gary Heywood, Telehealth Programme Manager



Blood pressure

case study

Telehealth enabled Mr T to avoid multiple emergency hospital admissions



Mr T is a 79 year old with moderate COPD, who had a previous pneumonectomy for TB.

He was referred to the COPD team in August 2008 by a respiratory consultant for chronic disease management. It became apparent that

he had adopted his own coping strategy whereby when he felt more breathless than normal he would panic and call 999. Although he denied having any issues with anxiety his anxiety score was raised.

After extensive training on chronic disease management he still didn't know how to deal with the breathlessness and often had panic attacks during the night.

Once telehealth was installed he went from **8 emergency admissions to just one** in a 6 months period, although communication over the phone with the nurses increased.

At the beginning he would transmit his vital signs data 2-3 times daily, but as he became more confident that his breathlessness was not necessarily related to low oxygen saturations his transmission rate decreased to daily monitoring.

His anxiety scores over six months also decreased from 22 to 12.

Mr T is very positive about telehealth, he states that it is *"a good bit of kit"*. He also adds that it is *"good to know I'm alright especially if I have an episode in the middle of the night"* and that *"my wife sleeps better now she knows I have my gadget"*.

moving forward

The telehealth project clearly demonstrated the acceptability, effectiveness, and usability that both patients and clinicians involved in the telehealth project found when using the monitors.

The Leeds pilot scheme has demonstrated

- Improved community service
- Improved care pathways
- Cost effectiveness
- Reduced inappropriate home visits
- Reduced unscheduled hospital appointments
- Empowered patients to manage their own condition
- Achieved efficiency gains

As a next step, NHS Leeds are now considering further investment into the number of telehealth monitors for COPD services. Any further roll-out will be subject to an evaluation carried out to determine the effectiveness and the need for any additional units thereafter. It is also suggested that the telehealth services can be rolled out to other specialist areas in addition to COPD such as CHF and Diabetes.



For further information
please call 01977 660206



Tunstall's Telehealthcare Support Group (TSG)

Telehealth is increasingly playing an integral role in the management of long-term conditions. The growing evidence base demonstrates how telehealth promotes proactive case management, empowers patients, reduces costs and focuses resources in the right areas.

As healthcare professionals establish their telehealth service or move from pilot to mainstream provision, it is vital that your telehealth partner helps you through the transition every step of the way. These services are provided when you commence a Tunstall telehealth project.

For more information on telehealth please call 01977 660543 or visit www.tunstallhealth.com



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Tunstall Healthcare (UK) Ltd, Whitley Lodge, Whitley Bridge, Yorkshire DN14 0HR
Tel: 01977 661234 Fax: 01977 662450 Email: enquiries@tunstall.co.uk

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