How telehealth can increase the effectiveness of chronic heart failure management

Hospital admissions for chronic heart failure present significant costs for the health service. Using telehealth led to a significant reduction in admissions

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Telehealth offers a way of providing tailored care for patients in their own homes. This project, based at a GP practice, found that new technology improved patient care and medication concordance and reduced use of healthcare services.

The initiative is being run along similar lines as the Department of Health’s whole system demonstrator programme, and shows telehealth also works on a smaller scale in an individual practice.

INTRODUCTION

Long term conditions have a significant impact on both individuals and the health service. It is estimated that the treatment and care of this group accounts for 69% of the primary and acute care budget in England (Department of Health, 2010).

Chronic heart failure (CHF) has a substantial impact on healthcare resources (see Background box). Since hospital inpatient care accounts for 60% of the total cost (British Heart Foundation, 2004), managing the condition in patients’ homes will lead to significant cost savings.

While the cost to the NHS is high, the effect of CHF on individuals is also dramatic, resulting in marked impairment in quality of life and frequent visits to hospital for check ups.

Telehealth offers a way of delivering tailored care for patients with long term conditions at home, helping to improve quality of life and prevent avoidable hospital admissions. It also provides support for community matrons, helping them to better manage large caseloads in patients’ homes and other community settings. This enables them to extend their capacity to act as a single point of contact for care, support and advice.

HOME CARE CARDIOLOGY

The Orchard Medical Centre is a GP practice on the outskirts of Bristol. It serves 13,500 patients, 110 of whom are living with CHF. In March 2007, the practice started a project designed to understand how telehealth could support people with significant heart failure and to assess the potential for using the equipment in a primary care setting.

The centre’s main aim was to demonstrate that telehealth is a practical technology and to test its acceptability to patients, while measuring its impact on healthcare resources. As people with CHF have high hospital admission rates, a main purpose was to explore ways of supporting patients at home and avoiding admission.

Research has shown that providing intensive support can improve clinical outcomes. Stromberg et al (2003) found that follow up after hospital admission at a nurse led heart failure clinic can improve survival and self care behaviour in patients with heart failure as well as reduce the number of events, readmissions and days in hospital.

The project aimed to evaluate how telehealth could enable practices to provide more preventive support for people with CHF in a community setting, and assess the practicalities and benefits of doing so by analysing data 12 months before the project started and for 12 months using telehealth.

BACKGROUND

- The total direct medical cost of treating heart failure in the UK is just over £625m each year (British Heart Foundation, 2004).
- The UK’s ageing population and improving medical care means that patients are surviving longer following myocardial damage and the prevalence of chronic heart failure is rising.

The practice set up a partnership with Tunstall Healthcare (www.tunstall.co.uk) to use telehealth with 18 patients, initially selected by doctors who identified them as having a more severe or advanced form of illness.

Patients are supplied with a monitoring unit supplied by Tunstall, which enables them to monitor vital signs at home, reducing anxiety levels and giving them a better understanding of their condition, which, in turn, reduces the number of acute exacerbations.

Those returning home from hospital are trained to use the monitor to undertake observations including temperature, pulse oximetry, weight and non-invasive blood pressure. These are done on a daily basis, giving nurses and clinicians updated access to their vital signs.

The telehealth unit records the results and automatically sends them to the telephone line to secure clinical software for review by the clinician, community matron or project nurse.

Before monitoring starts, a nurse enters clinical information, instructions and escalation process into the patient’s monitoring plan, using a web browser and an intranet connection.

If patients fail to send data, or if any of the information sent falls outside preset parameters, the system provides clear alerts on the clinical software screen for immediate investigation by the clinical team.

PRACTICE POINTS

- Telehealth enables community matrons to provide support to people with long term conditions in their own homes.
- This project showed it reduced hospital admissions and visits to the accident and emergency department and the GP surgery.
- Patients gave positive feedback on using telehealth and they all found the equipment easy to use. The technology also reduced patient anxiety and improved medication concordance.
Funding and training
The project is a joint venture between NHS South Gloucestershire and South Gloucestershire Council’s community care and housing department, with the council funding the equipment via a technology grant and Takeda UK providing the financial support to implement the pilot.

As it was the first of its kind for the team, there was a steep learning curve to understand the capability and applications of the telehealth service. The practice team had to establish robust processes for deploying the monitoring units and capturing and responding to the information received.

Partnering with Tunstall gave the practice access to comprehensive support services to help set up the telehealth service including: a dedicated clinical implementation team; project management support; expert training; dedicated IT support; and a 24-hour technical helpline.

The team responded enthusiastically to the challenge and soon introduced flow charts to provide a structure for the project and ensure the nursing team was clear about the most appropriate response to alarms, for example when to alert the on-call doctor.

The main difficulties involved integrating a small project affecting a small number of patients into our daily routines.

**POSITIVE OUTCOMES**
The practice found that proactive telehealth monitoring enables healthcare professionals to manage CHF more effectively and support patients in their own homes.

Home monitoring enables nursing teams and clinicians to detect changes in patients’ health at an early stage, and therefore to make early diagnoses and more timely interventions. This helps to prevent deterioration in patients’ conditions and thus reduce the need for hospital stays, GP visits and medication.

A key benefit of telehealth is that it can be tailored to meet individual patients’ specific needs. This approach provides nursing and other clinical staff with more accurate information about patients’ conditions, allowing them to focus their time so those experiencing a change in health receive treatment as soon as it is needed.

District/community nurses reported that the project enabled them to be much more involved in the running of the practice and with individual patient care, as well as giving them a better understanding about the management of long-term conditions.

**CASE STUDY: “THE EQUIPMENT HAS MADE ME FEEL MUCH MORE POSITIVE”**
Margaret Thomas (not her real name) is 60 and has severe heart failure.

Before taking part in the telehealth trial she often forgot to take medication and also missed appointments at the surgery, which exacerbated her condition and led to regular visits to the accident and emergency department.

Telehealth has resulted in a dramatic improvement. Mrs Thomas has found the equipment easy to use and a source of great reassurance. As she can see for herself each day the effect of taking medication on her health, her concordance has greatly improved and her condition has stabilised as a result. She has not used out of hours health services in the 18 months since she received her monitoring unit.

She said: “The equipment has made me feel much more positive, it reduces anxiety, and therefore I need less doctor and hospital visits. I would feel lost without it now.”

Community matrons are likely to see the biggest benefit, as telehealth enables them to carry a larger caseload, with monitoring increasing their ability to manage patients by telephone instead of having to travel to their homes. This helps them to reduce the number of visits they make substantially and enables them to prioritise their workload and focus on patients who need their attention more urgently rather than those who need routine follow up.

As some patients prefer regular contact with healthcare professionals while others enjoy the autonomy and self-care confidence that remote monitoring gives, telehealth allows care to be delivered in different ways to different people.

The main findings included:

- Hospital admissions decreased by 46%;
- Accident and emergency attendances were reduced by 67%;
- The number of visits to the GP surgery decreased by 16%.

The project has been well received by patients and clinicians alike. Healthcare professionals found that the effects of any changes made to medication are easy to monitor using the system, and trends such as changes in body weight are more easily and quickly identified, enabling early intervention and avoiding crisis management.

Telehealth has proved particularly valuable for supporting patients who are reluctant or find it difficult to visit the surgery; their health can still be monitored and advice given over the telephone. Clinicians reported that they feel patients have benefited from increased knowledge and confidence to manage their own condition.

**Patient experience**
Clinical staff soon noticed that patients actively enjoyed being involved in their care, becoming increasingly aware of their readings and how they were feeling.

During the telehealth evaluation, patients reported that they were highly satisfied with the monitoring unit and found it straightforward to use. Since anxiety plays a large part in many illnesses, they found it provided reassurance for them and their families and carers, improving overall wellbeing.

Telehealth also resulted in increased concordance with medication regimens, as patients understood that the monitor would detect the results of this over time. After some time, they could tell when readings showed unusual results and would retest before nurses contacted them about a potential alert.

Overall, telehealth appears to be acceptable to patients. This pilot appears consistent with others across the country, showing that telehealth monitoring reduces hospital admissions.

The case study above shows the impact on one patient.

**NEXT STEPS**
The telehealth project has now undergone a full evaluation that already shows extremely positive results for patients, clinicians and cost savings.

It is now entering its second stage and it is hoped that, in the future, telehealth monitoring units will be rolled out on a wider scale.

**REFERENCES**
British Heart Foundation (2004) Total Cost of Heart Failure to the NHS. London: BHF. tinyurl.com/heart-failure-stats
