Telehealth may offer opportunities for nurses to manage COPD, but how effective is it?

**Can telehealth help patients with COPD?**

**In this article...**

- Differences between telecare, telehealth and telemonitoring
- Benefits of telehealth
- Patients’ and providers’ views on telehealth

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Chronic obstructive pulmonary disease (COPD) is a growing challenge for the NHS. New technologies, such as telehealth, offer opportunities for health and social care providers to look at innovative ways to manage the condition. Studies show telehealth services can reduce admissions and bed days, and boost patient satisfaction, but more research is needed to establish whether these technologies are safe, efficient and economical.

Terms including “telecare”, “telehealth” and “telemonitoring” are sometimes used interchangeably and can be confusing. There are defined in Box 1.

**Theoretical benefits of telemonitoring**

Timely transfer of clinical data will alert monitoring staff that patients with COPD are starting to deteriorate. Symptoms worsen for 3-5 days before an exacerbation needs treatment so this window of opportunity can lead to earlier interventions by health teams (Seemungal et al, 2000). The aim is to improve symptoms, avoiding hospital admissions or reducing length of stay. Telemonitoring may lessen the need for home visits, allowing better use of limited staff time and resources without compromising care. It can also be used to improve patients’ knowledge and motivate them to change behaviours that will help them manage their illness.

We have learnt that several inter-related factors are vital to achieve these benefits. These are listed in Box 2.

**What is the evidence that telehealth/telemonitoring works?**

The evidence must show telehealth/telemonitoring is safe, user friendly, efficient and cost effective. Real-time telemonitoring and remote interventions were shown to be possible in two patients with advanced respiratory failure (Koizumi et al, 2005). Vontetsianos et al (2005) used telemonitoring via a visiting nurse in 18 “well-motivated” patients with advanced COPD with previous admissions. They reported a decrease in health service use and better patient knowledge and self-management; however, the real-time video
link was set up during the nurse home visits, which, combined with the intensive initial education, may have made the difference.

A Danish study reported significant reductions in COPD readmissions to hospital (Sorknaes et al, 2010). However, it also acknowledged a lack of randomisation and that the control group had no access to home nurses or remote monitoring so it is important to question whether it was the telemonitoring or the home nursing input that reduced readmissions.

In our first randomised control trial (RCT) of telemonitoring in COPD, patients were highly motivated and all had to have completed at least 12-18 sessions of pulmonary rehabilitation. They were prescribed optimal medication and known to our home care COPD team (Lewis et al, 2003b). This pilot was designed to assess whether telemonitoring was safe and feasible. It completed ahead of schedule with no adverse events and excellent use of monitors (97% compliance of twice daily uploads with patients taking readings and answering questions twice a day).

We found hospital admissions were roughly halved and contact with GPs was significantly reduced. There was no increased workload on clinics or home care teams but also no difference in generic or disease-specific “quality of life” scores. This was a small pilot of only 40 patients over 12 months, and was not designed for an economic costing.

The patient perspective
Patients have reported high levels of satisfaction in “before and after” studies but this may be influenced by patient selection. In an attempted RCT, Mair et al (2006) found 80% of patients with COPD declined telemonitoring – the main reason being fear of having a nurse visit replaced by a telemonitor.

Our RCT refusal rate was much lower, probably because we only recruited from patients who had participated in pulmonary rehabilitation and we offered telemonitoring in addition to home care (Lewis et al, 2003a). However, 15% still refused because of worries about using technology and others declined or dropped out as they were reluctant to use the machine every day. Jaana et al’s (2009) review concluded patients were less likely to use the equipment if it was not user friendly or did not include some type of prompt.

The provider perspective
Respiratory nurses have reported concerns that telehealth could replace them; in addition, many believed telemonitoring was unhelpful in building the patient–nurse relationship and undermined some of the core values of nursing care (Hibbert et al, 2004). Detailed interviews with 12 COPD nurses found they sometimes saw the technology as unhelpful in establishing effective relationships with patients. According to Hibbert et al (2004): “Considerable work by all participants, over a period of months, was required to develop the technology in ways that minimised the risk to the stability of the specialist service and existing nurse–patient relationships ... [The] interplay of new technology with existing professional practices and relationships go[sic] beyond simple issues of training.”

May et al (2003) attempted to identify barriers to implementing telehealth into routine care, and checklists based on surveys of healthcare providers and literature reviews are rapidly being developed to guide purchasers (Joseph et al, 2011). With so many studies reporting positive outcomes over the last decade, why is it not recommended for all patients? The main reason could be the lack of robust evidence. A systematic review of benefits in home telemonitoring in COPD concluded the number of sufficient quality studies was
small (n=6), at risk of bias (small sample size, no power calculations, no randomisation, no control groups, short-term follow up, access to additional healthcare support) and lacking full economical evaluations (Bolton et al, 2010). Although each study was reported positively, the review found the benefits of telemonitoring in COPD were not yet proven and could not support large-scale implementation. This conclusion has been supported by other systematic reviews (Polsena et al, 2010; Smith et al, 2009).

Larger-scale and better designed research into telehealth and telemonitoring is required. Our pilot enabled us to learn from staff concerns, training issues, work patterns, installation difficulties and patient recruitment. We used the data to power a larger ongoing RCT designed to detect differences in hospital admission rates, in less optimised patients (www.controlled-trials.com/ISRCTN8443546). Other well-designed RCTs are also examining telemonitoring in COPD in the UK (Fitzsimmons et al, 2011; Pinnock et al, 2009; www.controlled-trials.com/ISRCTN856013). Fitzsimmons et al (2009) also reported: “implementation of this service demanded significant changes to established working patterns and has been a challenging process requiring considerable planning.”

The DH has invested £3m into the Whole System Demonstrator pilot programme (www.wsdactionnetwork.org.uk). This large RCT of three chronic diseases in a range of clinical settings includes nearly 1,600 patients with COPD and measures a range of outcomes including cost effectiveness and patient care experiences.

Conclusion
There is a lack of robust evidence to support routine telemonitoring for patients with COPD. The impact on the nurse-patient relationship and nursing’s professional identity are also areas about which little is known. However, due to population demographic changes, the reduction in health professionals and huge financial constraints, our current models of care – particularly for chronic conditions – are untenable. Changes must occur, and soon.


References

Healthcare factors
Health professionals need to feel confident about working differently to their usual face-to-face assessments and not feel threatened that the technology may replace them. Adequate training and staff levels are vital. Good collaboration between local authority (social care) and healthcare partners – especially for installation and technical problems – is also crucial. Health professionals need to be able to respond to patients in a timely way and with effective treatments.

Technology factors
Monitors need to be acceptable to patients and health professionals. They should also be reliable, accurate and cost effective.

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