Effect of telehealth on secondary and emergency care

A large scale trial examines the benefits and effectiveness of telehealth and telecare services in helping patients avoid the need for emergency hospital care.

**Overview:** Telehealth uses a range of technologies to help people with health problems live more independently at home. Examples include equipment for people to self-measure blood pressure or blood glucose levels, which can reduce GP and unplanned hospital visits. Measurements are then electronically transmitted to a health professional.

**Current advice:** Telehealth is a new development and may not be available on the NHS in all parts of the UK. However, one of the key ambitions of the Department of Health's information strategy is the widespread use of modern technology to make health and care services more convenient, accessible and efficient.

To evaluate the benefits and effectiveness of telehealth and telecare services the Whole System Demonstrator programme was established, including a large-scale RCT involving more than 6000 people across 3 sites in England (Cornwall, Kent and Newham), with the aim of providing a fully evaluated evidence base for telehealth and telecare. It focused on 3 conditions, diabetes, COPD and coronary heart disease.

**New evidence:** The first of 5 analyses to be published from the Department of Health-commissioned Whole System Demonstrator programme assessed the impact of telehealth on hospital use for 3230 patients with long-term conditions (diabetes, chronic obstructive pulmonary disease or heart failure) between May 2008 and November 2009 (Steventon et al. 2012).

Patients were randomly split into 2 groups – an intervention group of 1570 people, who were given devices and taught how to monitor their condition at home and transmit the data to health care professionals, and a control group of 1584 people, who received usual care, reflecting the range of services available, excluding telehealth.

The results showed that 43% of people in the intervention group were admitted to hospital during the study period compared with 48% of control patients (odds ratio 0.82, 95% CI 0.70 to 0.97, p=0.017). Of the intervention group, 5% died compared with 8% of controls (odds ratio 0.54, CI 0.39 to 0.75, p<0.001).

There were also statistically significant differences in the mean number of emergency hospital admissions per head (0.54 for intervention patients compared with 0.68 for controls) and the mean hospital stay per head (4.87 days for intervention patients compared with 5.68 days for controls). These differences remained significant after adjusting for several factors that could have influenced the results. However, these effects appear to be associated with short-term increases in hospital use among control patients that may have been affected by recruitment processes during the trial.

Other measures of hospital use (elective admissions, outpatient attendances, and emergency department visits) were not significantly different between the groups, neither were the differences in...
notional hospital costs (£188 per head over 12 months, not accounting for costs of the telehealth intervention).

The researchers concluded that the reduced mortality observed in the intervention group is an important motivator to invest in telehealth interventions. They added that it will be important for local practitioners to assess whether benefits of telehealth are greater in particular patient types.

Further analyses from the Whole System Demonstrator programme should enable wider discussion about how telehealth affects quality of life and cost effectiveness, as well as the patient, professional, and organisation factors related to implementation.

Commentary: "This is an interesting and useful study as it evaluates the effect of telehealth on the use of secondary care and mortality based on a Whole System Demonstrator cluster randomised trial in England. While the impact of telehealth is associated with lower mortality and emergency admission rates as found in this trial, it should be noted that the chosen telehealth devices and monitoring systems varied and its analysis was restricted to comparative use of inpatient, outpatient and emergency department hospital use and mortality. Where selection bias is concerned the blinding of recruiters could not be guaranteed. The 1-year follow-up might raise a question of its adequacy to measure the impact of this sort of intervention. Nonetheless the main message from this study is about how the need for emergency hospital care could be avoided through the use of telehealth. As the researchers indicated, 'the mechanism for this is not yet clear'; further analyses will be required to provide a better understanding.

"Given that new ideas and technology are emerging, such intervention is a reminder that healthcare professionals and service providers have to think beyond traditional approaches to care in order to help people with health problems live more independently at home, so that services, acute and secondary, can be utilised more efficiently."

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