Home telehealth improves clinical outcomes at lower cost for home healthcare

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study examined the clinical and economic impact of health care delivered either by telephone or in person for patients receiving skilled nursing care at home after an acute hospitalisation for a long-term condition. The authors concluded that virtual visits for these patients could improve their outcomes at lower costs than face-to-face visits. The study was well presented, but its validity was limited by the small sample and no analysis of uncertainty. Further studies are needed to corroborate these findings.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the clinical and economic impact of health care delivered either by telephone and television or in person, for patients receiving skilled nursing care at home after an acute hospitalisation for a long-term condition.

Interventions
Three interventions were considered. These were the usual skilled nursing care at home by face-to-face home visits, this usual skilled nursing care at home plus two virtual visits each week by videoconferencing, and the usual skilled nursing care at home plus two virtual visits by videoconferencing plus physical monitoring of the chronic condition. The conditions were congestive heart failure, chronic obstructive pulmonary disease, or chronic wound care.

Location/setting
USA/community.

Methods
Analytical approach:
The analysis was based on a single study, with a six-month horizon. The authors did not explicitly state the perspective.

Effectiveness data:
The clinical data came from a prospective, randomised controlled trial of 68 patients, of whom 53 completed the study, with 19 in the usual group, 14 in the video group, and 20 in the monitoring group. The average age of the patients was 74.3 years and the length of follow-up was six months. The key outcomes were mortality, morbidity (measured by the Omaha Assessment Tool), and discharge to a higher level of care (rehospitalisation or transfer to a nursing home). For the analysis of some endpoints, the two videoconferencing groups were combined.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
The health outcomes were reported separately and no summary benefit measure was used. The key outcomes were mortality, morbidity, and discharge to a higher level of care.

Cost data:
The economic analysis included the costs of a traditional face-to-face visit (mileage, travel time, nurse time, and administrative overheads) and a virtual visit (visit time, nurse salary, amortised equipment, technical support, and administrative overheads). The resource use was based on actual data from the clinical trial. The equipment costs were...
amortised over the potential number of virtual visits that could be conducted with the available equipment at the rate of two per week. All costs were in US dollars ($).

Analysis of uncertainty:
Not considered.

Results
The proportion of patients discharged to a higher level of care was 42% in the usual group and 17.6% in the combined telemedicine group (21.4% in the video group and 15% in the monitoring group). This difference approached statistical significance (p=0.055).

The difference in mortality was not statistically significant (26.3% in the usual group and 20.6% in the telemedicine group; p=0.74). No differences were found between groups in their morbidity, except for an increased score for activities of daily living at study discharge in the telemedicine group.

The mean cost per visit was $48.27 for in-person visits, $22.11 for video visits, and $33.11 for video visits with monitoring. The cost differences were primarily due to the additional nursing time required for an actual visit.

Authors' conclusions
The authors concluded that virtual visits at home for chronically ill patients could improve patient outcomes at lower costs than traditional face-to-face home health care visits.

CRD commentary
Interventions:
The interventions were appropriately selected. The usual face-to-face approach was compared with the two new telemedicine strategies and a clear description of these interventions was provided.

Effectiveness/benefits:
A randomised trial is generally considered to be a valid source of evidence, as its design should ensure a high internal validity, but a small sample of patients was enrolled and only those who completed the treatment appear to have been analysed. This reduces the reliability of the clinical analysis and the validity of its results. The reasons for the loss to follow-up were reported, and a clear description of the instruments used to assess the clinical outcomes was provided. Regression analysis was used for some endpoints. Most of the outcomes were specific to the intervention, which will limit their external validity.

Costs:
The perspective was not reported and the costs were restricted to those of the nurse visits. A breakdown of cost items was reported and the unit costs and resource quantities were presented separately for most items. This increases the transparency of the analysis and its reproducibility in other contexts. Limited information on the sources of these unit costs was provided and the price year was not reported. The cost estimates were treated deterministically.

Analysis and results:
The costs and benefits were clearly reported, but were not synthesised, as a cost-consequences analysis was conducted. The issue of uncertainty was not investigated and sensitivity analyses were not carried out. The authors compared their results with those of other published studies, which were generally similar, but these results appear to have been specific to the US context and it is not clear whether they will be transferable to other settings.

Concluding remarks:
The study was well presented, but its validity was limited by the small sample and the lack of analysis of uncertainty. Further studies are needed to corroborate these findings.

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