A meta-analysis of "hospital in the home"

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CRD summary
The review concluded that "hospital in the home" was associated with reductions in mortality, readmission rates and cost, and increases in patient and carer satisfaction, but no change in carer burden. The reliability of these conclusions is unclear due to the limited information provided in the report.

Authors' objectives
To compare "hospital in the home" care with in-hospital care with respect to patient outcomes, carer outcomes and costs.

Searching
MEDLINE, EMBASE, Social Sciences Citation Index, CINAHL, EconLit, PsycINFO and The Cochrane Library were searched to February 2012. A search strategy was available as an appendix. Reference lists were checked, and researchers in the field were contacted, to identify further studies.

Study selection
Randomised controlled trials (RCTs) that compared "hospital in the home" care with in-hospital care for patients aged over 16 years were eligible. Significant substitution for in-hospital care was required and defined as the intervention group who spent significantly less time in hospital - the duration of out-of-hospital care being either seven or more days, or 25% or more of the average length of stay for control hospital admissions. Outcomes of interest were mortality, readmission rates, patient and carer satisfaction and costs. Studies were excluded if they were of long-term care, out-patient care without any care provided at home, elaborate home care services in which patients in the control group were also at home, paediatric care and obstetric care.

It appeared that most studies were of patients from medical, surgical, rehabilitation or psychiatric departments. Some studies included use of hospital-based outreach teams or community-based teams; the number of staff involved in "hospital in the home" care ranged from one person, to full multidisciplinary teams.

Two reviewers independently selected studies for inclusion; disagreements were resolved by discussion or by a third reviewer.

Assessment of study quality
Bias was evaluated by assessing methods of allocation concealment, measurement of baseline data, blinding of outcome assessors, use of reliable outcome methods, and protection against contamination (such as likelihood of the control group receiving the intervention).

The authors did not state how many reviewers performed the bias assessment.

Data extraction
Data were extracted in order to calculate Peto odds ratios or mean differences with 95% confidence intervals. Where possible, intention-to-treat data were extracted for the last follow up time point. Additional information was obtained from authors when possible.

The authors did not state how many reviewers extracted data.

Methods of synthesis
Meta-analyses were performed to calculate pooled Peto odds ratios or mean differences with 95% confidence intervals, using a random-effects model for readmission data and a fixed-effect model for mortality data. Heterogeneity was assessed using $I^2$ and $X^2$. Subgroup analyses examined the impact of specialty, age of participants, and date of publication. Publication bias was assessed using a funnel plot. Sensitivity analyses were performed to examine the effect of removing studies with the strongest results.
When meta-analysis was not deemed appropriate a narrative synthesis was presented.

**Results of the review**

Sixty-one RCTs met the inclusion criteria. The total number of participants was not reported. Only the following bias assessment result detail was reported: almost all studies were not blinded, but many studies used blinded initial assessments before randomisation. Some outcome assessment was blinded.

"Hospital in the home" care led to significantly reduced mortality (Peto OR 0.81, 95% CI 0.69 to 0.95; 42 RCTs, 6,992 patients; $I^2=0\%$), and readmission rates (Peto OR 0.75, 95% CI 0.59 to 0.95; 41 RCTs, 5,372 patients; $I^2=45\%$). For both outcomes, analyses by setting showed the effect remained significant in medical settings, but not in surgical, rehabilitation, or psychiatric settings. For mortality, further analyses revealed a significant effect only in studies with patients with a mean age between 70-73 years (13 RCTs). The number-needed-to-treat at home to prevent one death was 50. A funnel plot (for mortality) indicated publication bias was unlikely.

Patient satisfaction was higher following "hospital in the home" care in 21 of 22 studies. Carer satisfaction was higher in six of eight studies. There was no difference between groups in carer burden (meta-analysis of seven studies).

**Cost information**

Of 34 studies that reported costs, 32 concluded that "hospital in the home" was cheaper and two concluded it was more expensive. Overall, the "hospital in the home“ cost was 73.5% of the average for the control groups.

**Authors' conclusions**

"Hospital in the home” was associated with reductions in mortality, readmission rates and cost, and increases in patient and carer satisfaction, but no change in carer burden.

**CRD commentary**

The review addressed a clear question and was supported by reproducible eligibility criteria. Efforts to identify studies were undertaken using several methods - including attempts to identify unpublished studies - but it was unclear whether there were any language restrictions. Duplicate processes were employed to reduce the risks of reviewer error and bias during study selection, but the authors did not report on whether such methods were used to extract data or assess study quality.

Very limited quality assessment result detail was reported, so it was not possible to fully evaluate the reliability of the trial evidence. Appropriate methods were used to pool data and to assess and investigate heterogeneity. No rationale was reported on use of the different meta-analysis models. An evaluation of the impact of study quality was not presented. Details of individual trials were often not fully reported, which sometimes made it difficult to interpret review results. For example, it was unclear whether or not results described as being favourable equated to being statistically significant (for outcomes synthesised narratively).

Although the authors stated they reported their study according to the PRISMA statement, much important detail was missing (particularly in relation to study details and study quality). With this in mind the reliability of the authors’ conclusions is unclear.

**Implications of the review for practice and research**

**Practice:** The authors stated that their data support greater use of "hospital in the home” to improve patient outcomes, as measured by mortality, readmission rates and patient and carer satisfaction. Where suitable care can be provided at home as an alternative to hospitalisation, they believed that it should be recommended.

**Research:** The authors stated that their study supported further investigation of differences between the two care models so that the quality of in-patient care could be improved.

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