Nurse-led case management for ambulatory complex patients in general health care: a systematic review


CRD summary
The review assessed whether nurse-led case management was beneficial for complex patients with multiple comorbidities. The interventions improved patient satisfaction, had no effect on emergency department visits and there was insufficient evidence regarding the effect on readmission rates or other outcomes. The review was limited by heterogeneity between studies, but the results are likely to be reliable.

Authors' objectives
To determine the effectiveness of post-discharge nurse-led case management of patients with multiple health needs.

Searching
An electronic search of MEDLINE (1966 to June 2005) and EMBASE (1983 to June 2005), Cochrane Controlled Trials Register (The Cochrane Library Issue 2005) and CINAHL (1982 to June 2005) was performed. The search terms were reported in the review. Handsearches of bibliographies of identified reviews and trials were made. No language restrictions were applied.

Study selection
Randomised controlled trials (RCTs), controlled clinical trials, controlled before/after studies and time series studies were eligible for inclusion.

Studies of adult ambulatory patients with complex needs were eligible for inclusion. Complex patients were defined as patients with more than one acute or chronic condition who additionally had symptoms with psychiatric and/or social comorbidities and more than one health care worker involved in their care. Studies that focused on only one disease or solely on mental health care were not eligible for inclusion. Where stated, included studies involved patients over the age of 60 (one study involved patients of all ages). The participants had a range of conditions, including heart failure, cancer, diabetes, chronic obstructive pulmonary disease and other unspecified chronic diseases.

Included studies had nurse-led care of each of the following steps: assessment of the patient's needs; development of a comprehensive service plan; arrangement of service delivery; and monitoring and assessment of services, evaluation and follow-up. Studies in which care followed a specific disease-management protocol or guideline, or those in which the case manager was in an administrative role (such as an insurance manager) were not eligible for inclusion. Interventions in the included studies were varied; many included home visits and/or ongoing telephone support. Control interventions were generally usual care.

Outcome inclusion criteria were reporting on one or more of the following: readmission, duration of hospital readmission, emergency department visits, functional status, quality of life and patient satisfaction. Follow-up ranged from three months to 18 months.

Two reviewers independently assessed the identified studies for relevance. Disagreements were resolved by consensus.

Assessment of study quality
Two reviewers independently assessed the validity of in the included studies. Disagreements were resolved by discussion. The validity criteria used were based on a modified version of the Effective Practice and Organisation of Care quality assessment criteria and covered each of the following: concealment of allocation; baseline comparability; blinded assessment of primary outcomes; follow up of patients or episode of care; follow up of professionals; and protection against contamination. Studies that met at least four of these six criteria were considered high quality.

Data extraction
Two reviewers independently extracted the data for the review. Disagreements were resolved by discussion. The authors stated that relative risks for readmission rates were calculated, although in the review it appeared that in some trials a mean change in readmission rate or an odds ratio were reported. For continuous outcomes, mean differences were extracted.

**Methods of synthesis**
Studies were combined in a narrative synthesis grouped by outcome; each outcome was rated (on a five point scale) for level of evidence. Level of evidence was assessed using a hierarchical model based on consistency of results (defined as statistically significant results in favour of case management in at least 75% of studies) and study quality. A meta-analysis was not performed because of the heterogeneity between studies.

**Results of the review**
Ten studies (5,092 participants) were included in the review: eight RCTs (1,673 participants) and two controlled before/after studies (3,419 participants). Five studies were considered to be of high quality and five of low quality.

**Readmission rates (nine studies):** There was conflicting evidence on whether case management had a positive effect on readmission rates. The relative risk for readmission ranged from 0.55 (lower rates in the intervention group) to 1.11 (higher rates in the intervention group).

**Hospital stay (six studies):** There was conflicting evidence on whether case management had a positive effect on length of hospital stay. The mean difference ranged from -5 days (lower stay in the intervention group) to 1.4 days (longer stay in the intervention group).

**Emergency department visits (four studies):** There was no evidence to suggest that case management had a positive effect on number of emergency department visits.

**Functional status (four studies):** There was no evidence to suggest that case management had a positive effect on functional status.

**Quality of life (four studies):** There was conflicting evidence on whether case management had a positive effect on quality of life.

**Patient satisfaction (three studies):** There was moderate evidence on whether case management had a positive effect on patient satisfaction.

**Authors’ conclusions**
The review found moderate evidence that case management had a positive effect on patient satisfaction and no effect on emergency department visits. No firm conclusions on the other outcomes could be drawn.

**CRD commentary**
This review addressed a clearly defined research question with stated study design, patient, intervention and outcome inclusion criteria. The criteria were quite broad, as reflected in the included studies, which partly explained the heterogeneity between studies. Given this heterogeneity, the narrative synthesis used was appropriate.

The search strategy was comprehensive, but the authors acknowledged that their search was limited to published papers, therefore, publication bias could not be ruled out. The authors made efforts to minimise bias and error during the identification of trials, quality assessment and data extraction. Although the review was limited by the heterogeneity between studies, the results are likely to be reliable.

**Implications of the review for practice and research**
**Research:** The authors stated that there was a need for further research including the following: high-quality RCTs for clearly defined measures of complexity or frailty for more homogeneous populations; well-defined interventions; long-term outcome assessment; and settings other than health maintenance organisations in USA were needed. Also, complex patients should be identified and cost-effectiveness of case management should be evaluated.
Practice: The authors did not state any implications for practice.

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