Comprehensive discharge planning with postdischarge support for older patients with congestive heart failure: a meta-analysis

Phillips C O, Wright S M, Kern D E, Singa R M, Shepperd S, Rubin H R

CRD summary
This review looked at the effect, on clinical outcomes, of comprehensive discharge planning with discharge support for people with congestive heart failure. The authors found that these programmes reduced readmission rates to hospital. The programmes may reduce mortality and improve quality of life, but the available evidence was difficult to interpret given the variety of interventions in the included studies.

Authors' objectives
To evaluate comprehensive discharge planning plus discharge support on the rate of readmission, all-cause mortality, length of stay and quality of life in older people with congestive heart failure (CHF).

Searching
MEDLINE (1966 to October 2003), the Cochrane Controlled Trials Register, Current Contents, a bioethics database (1985 to October 2003), PsycLIT (1974 to October 2003), CINAHL (1982 to October 2003) and the Social Science Citation Index (1992 to October 2003) were searched; the search terms were given. In addition, the reference lists of articles were checked. Only English language papers were eligible for inclusion.

Study selection
Study designs of evaluations included in the review
Only randomised controlled trials (RCTs) were eligible for inclusion. The duration of follow-up in the included studies ranged from 3 to 12 months.

Specific interventions included in the review
Only studies that gave detailed descriptions of interventions intended to modify hospital discharge (i.e. described components for in-patient care plus postdischarge support) were eligible for inclusion. The comparator group had to be usual care, but this was not defined. The interventions in the included studies were aimed at improving communications between providers, optimising medication, and patient education and support. A variety of interventions were studied: geriatric discharge protocols, medication counselling and review, dietary counselling, information cards concerning salt and fluid intake, weight monitoring, exercise training, psychosocial support, home visits, telephone follow-up, pre-scheduled clinic appointments. The personnel involved included pharmacists, nurses, social workers and geriatric cardiologists. The intensity of the interventions ranged from a single home visit to frequent contact, extended home care and day hospital services. Approximately 70% of the participants were taking angiotensin-converting enzyme (ACE) inhibitors. No other details of medications were given.

Participants included in the review
Studies on older people with CHF were eligible for inclusion. Older age was defined as a mean age of 55 years or older. In the included studies, 62% of the participants were men and 14% were non-white. The mean age ranged from 56 to 78 years, and in only two studies was the mean age below 70 years. Where given, the mean left ventricular ejection fraction (LVEF) ranged from 29 to 43. Where used, the New York Heart Association classification was II to IV. Some of the included participants had coronary artery disease.

Outcomes assessed in the review
Studies were only included if they reported the primary outcome of interest, readmission rates. The secondary outcomes of interest were all-cause mortality, initial length of hospital stay, and quality of life scores. Quality of life scores were measured using the Minnesota Living with Heart Failure Questionnaire, Nottingham Health Profile, Heart Failure Self Behaviour Scale, Chronic Heart Failure Questionnaire and the SF-36.
How were decisions on the relevance of primary studies made?
Two authors independently assessed studies for inclusion in the review.

Assessment of study quality
The validity of the studies was assessed by looking at factors such as randomisation generation, allocation concealment, double-blinding and loss to follow-up. Scores on the Jadad scale were described. Two authors independently assessed the validity of the studies.

Data extraction
The authors did not state how many reviewers performed the data extraction. Data on patient characteristics, study design and outcomes were extracted into tables. The numbers of events for each outcome, for each study, were tabulated and the absolute risk reductions and relative risk reductions were calculated. The change in quality of life scores were standardised to percentage improvement (or decline) compared with baseline scores for each group within individual studies.

Methods of synthesis
How were the studies combined?
For hospital admissions and mortality, the pooled relative risk (RR) and 95% confidence intervals (CIs) were calculated using the random-effects and fixed-effect models of DerSimonian and Laird. Analyses were conducted on an intention-to-treat basis. For continuous outcomes, differences in means were compared using the t-test.

How were differences between studies investigated?
Heterogeneity was assessed using the chi-squared test. Sensitivity analyses and trial level subgroup analyses were used to assess differences. These were grouped by LVEF (<40% and >=40%), age group (below 70 years, 70 to 74 years, and 75 or older), ACE inhibitor use and duration of follow-up (3, 6, or 12 months). The results were also stratified by country of origin (US-based versus non-US-based) to assess any potential effects of local health care systems.

Results of the review
Eighteen RCTs (3,304 participants) were included.

Hospital readmission rates: compared with usual care, fewer people in the intervention groups experienced readmission to hospital (RR 0.75, 95% CI: 0.64, 0.88; heterogeneity, P<0.001). Heterogeneity was substantially reduced when one large study was removed from the analysis, but this had little effect on the overall RR. The results for studies grouped by sample size were similar, as were subgroups defined by patient demographics, methodological quality and country of study.

All-cause mortality (14 studies): treatment showed a trend towards a lower risk of all-cause mortality (RR 0.87, 95% CI: 0.73, 1.03).

Length of stay (10 studies): there was some difference favouring the intervention for length of stay, but this was not statistically significant (mean difference -0.37, 95% CI: -0.15, 0.60).

Quality of life (6 studies): quality of life scores improved significantly more in the treatment group when compared with usual care, 25.7% versus 13.5% (P=0.01).

There was evidence of publication bias (P<0.001) as the Begg plot showed that small studies with negative results were missing.

Cost information
Medical costs were assessed (11 studies). The reported average cost was $80.75 per patient per month for studies.
conducted in the USA and $55.76 per patient per month for studies conducted elsewhere. Stratified by country of origin, the pooled cost-differences showed a financial benefit with treatment. The pooled mean differences in charges per patient per month were -US$359 (95% CI: -763, 45, P=0.10) for non-US-based studies and -US$536 (95% CI: -956, -115, P=0.03) for US-based studies.

Authors' conclusions
Comprehensive discharge planning plus postdischarge support significantly reduced readmission rates for older people with CHF. It may improve health outcomes such as survival and quality of life.

CRD commentary
This was a clearly written and full review with defined aims. However, because of the ill-defined nature of the interventions, the inclusion criteria concerning these were broad. In addition, as the authors pointed out, there was little information available on the comparator 'usual care' in the individual studies. The search appeared comprehensive as it covered a number of databases but, since it was restricted to English language papers, it is possible that studies were missed. The methods of the review were described. Some details of the included participants were given, but information on co-morbidities and treatment programmes were missing; this could affect the generalisability of the review. The results presented support the authors' conclusions.

Implications of the review for practice and research
Practice: The authors stated that the evidence supports the routine use of comprehensive discharge planning plus postdischarge support for older people with CHF.

Research: The authors did not state any implications for further research.

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Other publications of related interest
This additional published commentary may also be of interest. Review: comprehensive discharge planning plus postdischarge support reduces total readmissions in older patients with congestive heart failure. Evid Based Nurs 2004;7:115.

Indexing Status
Subject indexing assigned by NLM

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.