Non-pharmacological interventions for post-discharge care in heart failure
Raman G, DeVine D, Lau J

CRD summary
This review assessed the effectiveness of non-pharmacological interventions for post-discharge care in heart failure patients and concluded that interventions that used increased clinic visits, home visits and multidisciplinary care with or without other components reduced the risk of readmission. Potential for bias in the review means that the authors’ conclusions should be interpreted with some caution.

Authors' objectives
To assess the effectiveness of non-pharmacological interventions for post-discharge care in heart failure patients.

Searching
MEDLINE In-Process and Other Non-Indexed Citations, CINAHL, HealthSTAR and The Cochrane Library were searched between 1990 and July 2007 for publications in English. Abstracts were not included in the review. Search terms were reported. Reference lists of relevant articles and reviews were searched manually. ClinicalTrials.gov was searched for unpublished studies. Authors of registered but not yet published trials were contacted.

Study selection
Randomised controlled trials (RCTs) that compared non-pharmacological interventions with usual post-discharge care or another intervention for treatment of heart failure patients aged 50 years or more were eligible for inclusion. Eligible studies were required to include at least 10 patients in each treatment arm. There were no restrictions on treatment duration. The main outcome of interest was readmission (all causes). Other outcomes of interest included: mortality (all causes), length of hospital stay, quality of life and other outcomes such as costs. Results published in abstracts only were not eligible for inclusion.

Included studies were of patients with a mean age that ranged between 57 and 81 years. Some of the included patients had coexisting conditions such as hypertension. Severity of heart failure varied across studies. Interventions were conducted in hospitals, out-patient settings or in patients' homes. Interventions that consisted of increased access to providers (telephone support, clinic visits, home visits, home telemonitor and multidisciplinary discharge care) were classed as interventions of interest. Interventions that consisted of education on symptoms and disease management, instruction on self management, dietary advice, medication review, exercise recommendations and weight monitoring were classed as usual care. Some interventions included secondary components (mostly telephone follow-up). Intervention durations, where reported, ranged from one to three years (between 1988 and 2004).

The authors did not state how many reviewers screened studies for inclusion.

Assessment of study quality
Methodological quality was assessed with criteria of randomisation, allocation concealment, blinding, intention-to-treat analysis and drop-out rates. Studies were categorised as grade A (good quality, least bias), B (fair, susceptible to some bias) and C (poor, potentially significant bias). Applicability (relevance) of the studies to the target population of interest was assessed and categorised as wide, moderate or narrow.

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

Data extraction
Baseline, follow-up and change from baseline data were extracted to calculate relative risks (RRs) and 95% confidence intervals (CIs) for dichotomous data and mean difference and standard error for continuous outcomes.

The authors did not state how many reviewers performed data extraction.
Methods of synthesis
A random-effects model was used to pool relative risks and their 95% CIs and mean differences (standard errors). Statistical heterogeneity was assessed using Cochran's Q and the I² statistic. Subgroup analyses were undertaken by recruitment setting (in-patient, post-discharge or out-patient clinic). Studies were assessed to determine the influence of study quality, follow-up duration, setting of intervention initiation (in-patient versus out-patient), duration of intervention (less than three months, three to six months and more than six months), study country (USA versus elsewhere) and severity of heart failure on the rate of readmission.

Results of the review
Forty-nine RCTs (n=10,970) were included in the review. Sample sizes ranged between 25 and 1,518. Validity assessment indicated that 12 RCTs were categorised as good quality, 22 as fair quality and 15 as poor quality. Sixteen RCTs were reported to be of wide applicability, 30 moderate and three narrow. Where reported, follow-up duration ranged from three months to two years.

Readmission (37 RCTs): Readmission rates were statistically significantly reduced in patients who received clinic visits (RR 0.78, 95% CI 0.64 to 0.95; five RCTs), clinic visits plus home visits (RR 0.51, 95% CI 0.29 to 0.91; one RCT), home visits (RR 0.82, 95% CI 0.69 to 0.97; four RCTs) and multidisciplinary care (RR 0.63, 95% CI 0.44 to 0.90; four RCTs) compared with controls. There was no statistically significant difference in readmission rates among patients who received telephone follow-up (12 RCTs), a home telemonitor (one RCT) or self-care (two RCTs) compared with controls.

There was evidence of statistical heterogeneity among studies that involved clinic visits (I²=57.1%) or multidisciplinary care (I²=69.1%). Subgroup analyses showed that follow-up (>6 to <12 months and ≥12 months), recruitment setting (in-patient), age (≥75 years) and quality (fair/B and poor/C) statistically significantly influenced all-cause readmission. Further details on subgroup analyses and findings for secondary outcomes were reported in the review.

Cost information
Costs for individual studies were reported in the review in the relevant country's currency. Two of 12 RCTs undertaken in an inpatient recruitment setting and two of seven RCTs in a post-discharge recruitment setting reported statistically significant lower total costs in the intervention compared with control group. One RCT in an outpatient clinic setting reported lower costs in the intervention group (-$2,960 per patient) compared with usual care.

Authors' conclusions
Interventions that used increased clinic visits, home visits and multidisciplinary care with or without other components reduced the risk of readmission. Intermediate- to long-term follow-up, interventions initiated in the in-patient setting and inclusion of patients 75 years or older also reduced readmission risk. There was no distinct combination of intervention components that were associated with improved clinical outcomes and there was only limited evidence for interventions that recruited patients in out-patient clinics.

CRD commentary
The review question was clear and supported by appropriate inclusion criteria. A comprehensive literature search was undertaken and included a search for unpublished studies. The search was restricted by language, so it was possible that language bias was introduced. The quality of the included studies was assessed and was reported to be fair or good in most studies. As processes for study selection, validity assessment and data extraction were not reported, reviewer error and bias could not be ruled out. There was some evidence of statistical heterogeneity among studies that reported significant reductions with interventions. Appropriate statistical methods were used to further explore the data. The authors acknowledged evidence of methodological and clinical heterogeneity and limitations with small sample sizes and short follow-up durations. Some comparisons included only a small number of studies and confidence intervals were wide for some comparisons, which affected the robustness of the results. Given the potential for bias in the review, the authors' conclusions should be interpreted with some caution.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that future research should include long-term follow-up to identify patients who would clinically benefit the most and determine the most beneficial individual intervention components, settings and circumstances.

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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.