A literature review of cardiovascular disease management programs in managed care populations

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CRD summary
This review assessed the effects of disease management programmes, in managed care settings, for people with congestive heart failure, hypertension, and hyperlipidaemia and/or coronary heart disease. The author concluded that most programmes result in some improvement in measured outcomes. However, the conclusions should be treated with caution because of poorly reported review methodology and the uncertain quality of the included studies.

Authors' objectives
To assess the effects of disease management programmes, in managed care settings, in the treatment of people with cardiovascular disease.

Searching
MEDLINE (1966 to December 2002), HealthSTAR (1975 to December 2002), the Cochrane Database of Systematic Reviews (Issue 4, 2002) and International Pharmaceutical Abstracts (1970 to December 2002) were searched; the search terms were given. Relevant papers were checked for further citations. Studies available only as abstracts were excluded.

Study selection
Study designs of evaluations included in the review
The author stated that all types of study design were eligible for inclusion. Randomised controlled trials (RCTs), controlled studies and before-and-after studies were included in the review. The duration of follow-up in the included studies ranged from 6 months to 2 years.

Specific interventions included in the review
Studies on disease management programmes implemented in managed care settings were eligible for inclusion: i.e. specific health plans, group practices, and health maintenance organisations (HMOs) including Medicare and Medicaid. Although the programme had to originate in a managed care setting, its implementation could be done outside of this (e.g. by primary care providers or contracted vendors). In the included studies, the intervention consisted of multifaceted programmes such as case management, patient and physician education, promotion of drug therapy, lifestyle modifications, self-management and close patient monitoring. Full details of the interventions were given.

Participants included in the review
Studies on people with congestive heart failure (CHF), hypertension, and hyperlipidaemia and/or coronary artery disease (hyperlipidaemia-CAD) were eligible for inclusion. Studies conducted by the Veterans Administration were excluded. In the included studies, CHF patients were either referred to the programme by physicians or were hospitalised patients. For the hypertension studies, details of the degree of hypertension was not generally given. For the hyperlipidaemia-CAD studies, the participants were those with raised cholesterol, hyperlipidaemia, coronary heart disease (with or without CHF) and those hospitalised for acute myocardial infarction.

Outcomes assessed in the review
Primary outcomes of interest were not detailed other than a general statement about impact on disease state. Studies where quantitative results were not reported were excluded. The outcomes in the included studies covered hospital admission rates, emergency room visits, use of services, functional status, medication use and compliance, blood-pressure (BP) control, quality of life, costs, percentages followed up, lifestyle changes, dietary knowledge and changes in blood lipid profiles.

How were decisions on the relevance of primary studies made?

The author did not state how the papers were selected for the review, or how many reviewers performed the selection.

**Assessment of study quality**
The author did not state that they assessed validity.

**Data extraction**
The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Details of the interventions and outcomes were abstracted in tables.

**Methods of synthesis**
How were the studies combined?
A narrative discussion was presented, grouped according to disease and by study design.

How were differences between studies investigated?
Study design was taken into consideration when discussing the outcomes. Other differences between the studies were also discussed.

**Results of the review**
Twenty studies (29,509 participants) were included: 6 RCTs, 3 controlled studies and 11 before-and-after studies. There were 4 RCTs on hypertension (1,734 participants) and two on hyperlipidaemia-CAD (4,469 participants); 2 controlled studies on hypertension (4,482 participants) and one on hyperlipidaemia-CAD (325 participants); and 5 before-and-after studies on CHF (2,078 participants) and three each on hypertension (638 participants) and hyperlipidaemia-CAD (15,783 participants).

CHF.

Five before-and-after studies assessed programmes for CHF. All showed benefits of the intervention: three showed improvements in hospital admission rates, length of stay or health care utilisation; two showed increased use of appropriate medication; and two showed improvements in functional status or clinical outcomes.

Hypertension.

Three RCTs reported benefits in the treatment groups in comparison with the control groups (variously: improvements in BP, lower hospital service utilisation, improved rates of follow-up visits and higher medication compliance).

Of the 2 controlled studies, one reported a benefit with treatment in increased appropriate drug use whilst the other reported no substantive gain in outcomes of BP control.

Of the 3 before-and-after design studies, one reported benefits in achieving BP goals but no differences in lifestyle modifications, although there was some improvement in quality-of-life outcomes; a second reported significant decreases in BP associated with improvements in lifestyle modifications; the third did not report the outcomes clearly.

Hyperlipidaemia-CAD.

One RCT reported little difference in changes in total cholesterol in the treatment and control groups. The second reported greater benefits in changes in cholesterol in the intervention group, although this study was limited to people hospitalised for acute myocardial infarction.

The controlled study showed no improvement in dietary knowledge after the intervention, but did not report on levels of cholesterol or clinical outcomes.

Three before-and-after studies showed improvements in risk factors, with an increase in the achievement of low-density
lipoprotein cholesterol goals with the intervention.

**Cost information**

CHF.

One study estimated net savings of $4,600 per patient with the intervention.

Hypertension.

In one RCT, the cost-effectiveness ratio in the intervention group was $27 per mmHg reduction in systolic BP and $48 per mmHg for diastolic BP, compared with $193 and $151 per mmHg, respectively, in the control group. In a second RCT, the intervention group had significantly lower per capital expenditure relative to the control group ($127.79 for existing hypertensives and $92.97 for new hypertensives). In a third RCT examining three different interventions, the health care costs were significantly less with one intervention (standard care plus mailed reminders and unit-of-use package) (P<0.05) than the control, but there was little difference when the two other interventions were compared with the control.

**Authors' conclusions**

The majority of interventions showed some type of improvement in measured outcomes.

**CRD commentary**

The inclusion criteria for this review were only partly stated, in particular, criteria for participant inclusion and outcomes of interest were limited. Several relevant databases were searched, but studies available only as abstracts were excluded. There was no mention of any language restrictions but all studies appear to have been conducted in the USA. It is possible that studies were missed and this could affect the results of the review. The methods employed for the study selection and data extraction were not described, therefore the likelihood of bias or error being introduced during these processes cannot be assessed. In addition, the validity of the primary studies does not appear to have been assessed. The author gave detailed descriptions of the interventions but little information on the included participants, and this could affect the generalisability of the results. The narrative discussion of the results seemed appropriate given the differences described between the studies. As a consequence of the above comments, the author's conclusions should be treated with caution.

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

Practice: The author did not state any implications for practice.

Research: The author stated that there is a need to identify which components of these multifaceted interventions are most effective. Further research should be targeted at participants stratified by risk, and should include longer follow-up looking at clinical outcomes such as mortality.

**Bibliographic details**


**PubMedID**

15298531

**Indexing Status**

Subject indexing assigned by NLM

**MeSH**
Cardiovascular Diseases /therapy; Disease Management; Heart Failure /therapy; Humans; Hyperlipidemias /therapy; Hypertension /therapy; Managed Care Programs /organization & administration; Outcome Assessment (Health Care); Practice Guidelines as Topic; Randomized Controlled Trials as Topic

**AccessionNumber**
12005004802

**Date bibliographic record published**
28/02/2007

**Date abstract record published**
28/02/2007

**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.