Effectiveness of innovations in nurse led chronic disease management for patients with chronic obstructive pulmonary disease: systematic review of evidence

CRD summary
This well-conducted review determined the effectiveness of programmes in nurse-led management for patients with chronic obstructive pulmonary disease. The authors appropriately concluded that the available evidence was insufficient to determine whether there was any clinical benefit or harm arising from such interventions.

Authors' objectives
To determine the effectiveness of nurse-led management programmes for patients with chronic obstructive pulmonary disease (COPD).

Searching
AMED, the British Nursing Index, CINAHL, the Cochrane Database of Systematic Reviews, DARE, the Cochrane CENTRAL Register, EMBASE, HMIC, the National Research Register, SIGLE, PsycINFO, the Science Citation Index, the Social Sciences Citation Index and eight Dutch bibliographic citation databases were searched from January 1980, or inception, to January 2005; ASSIA was also searched from inception to February 2003. The search terms were reported. In addition, conference proceedings from several relevant journals were searched from January 1993 to September 1993.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
The studies had to evaluate clinical service interventions or care packages aimed at improving the management of patients with COPD in the community. In-patient, out-patient and community-based interventions were eligible, but had to have been nurse led, nurse coordinated or nurse delivered. Drug trials, hospital at home, or early discharge care plans for patients with acute exacerbations were excluded, as were education interventions directed only at other health care providers. The included interventions could be divided into brief (1 month) interventions after hospital admission, and longer term (1 year) or more intense interventions. The included interventions were largely based on a case management approach, and most included home visits.

Participants included in the review
Most of the included participants had moderate or severe COPD, as defined by the British Thoracic Society. Studies in which the majority of patients did not have COPD were excluded.

Outcomes assessed in the review
The primary outcomes of interest included survival, the use of health care resources, activities of daily life, health-related quality of life (QOL) and the carers' QOL. Several additional outcomes were also reported: social support, satisfaction of care, patient knowledge, health-related behaviours, pulmonary function and acute exacerbations.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed citations for inclusion in the review. Any disagreements were resolved by discussion amongst the steering group.

Assessment of study quality
Jadad criteria and the Delphi list were used to assess the methodological quality of the primary studies. These results, coupled with the data extraction, were used to allocate an evidence score using the levels of evidence from the Oxford Centre for Evidence-based Medicine. One reviewer assessed the quality of the included studies, while a second reviewer checked the assessment. Any disagreements were resolved by discussion amongst the steering group.

Data extraction
One reviewer extracted the data from the primary studies using pre-designed forms, which were checked by a second reviewer. Any disagreements were resolved by discussion amongst the steering group.

Methods of synthesis
How were the studies combined?
Each outcome was synthesised separately, grouped by intervention type or duration. Where appropriate, a fixed-effect meta-analysis was performed. Peto odds ratios (ORs) or Cohen's d standardised differences were presented.

How were differences between studies investigated?
Differences between the individual studies were described in the text. The Q-test was used to test for statistical differences between the studies in the meta-analysis.

Results of the review
Nine RCTs (n=1,428) were included in the review.

The majority of the included studies were graded as evidence level 1b (individual RCT with a wide confidence interval, or where no confidence interval was supplied) or evidence level 2b (low-quality randomised trials).

The authors reported that 2 RCTs of brief interventions found no evidence of a reduction in readmission to hospital (no further details provided).

The meta-analysis of longer term or more intense interventions (7 studies) failed to find any effect on mortality at 9 to 12 months' follow-up (OR 0.85, 95% confidence interval, CI: 0.58, 1.26).

Long-term or more intense interventions found equivocal evidence for a reduction in all-cause readmissions at 12 months' follow-up. Two studies demonstrated a significant reduction, while 3 studies found no statistically significant effect on hospital admissions.

Two studies reported respiratory readmissions at 12 months, with differing results.

The evidence for the number of days spent in hospital was also found to be equivocal.

The authors reported that there was some evidence to suggest that fewer visits to the emergency department were found for participants receiving nurse-led schemes for the management of patients with COPD.

In terms of health-related QOL (meta-analysis of 3 studies), there were insufficient data available to assess outcomes relating to patient satisfaction, self-management skills, adherence with treatment, and effect of the intervention on carers.

Authors’ conclusions
There was little evidence to support the widespread implementation of nurse-led management interventions for COPD. There were insufficient data to exclude any clinical benefit or harm arising from such interventions.

CRD commentary
The review addressed a clear research question. The inclusion criteria were broad and resulted in a set of studies that
assessed a wide range of interventions, making interpretation of the review more difficult. An extensive literature search was performed and unpublished material was sought. However, the inclusion of only papers in English or Dutch might have led to the incomplete retrieval of available data. The authors reported a clear methodology, which limited possible reviewer bias and error. The quality of the primary studies was assessed using published grading systems, and the results were reported. The authors discussed the potential impact of the methodological quality on the results. The authors’ conclusions appear to follow from the results presented.

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

**Practice:** Nurse-led hospital at home or early discharge schemes for patients with COPD should be prioritised over the type of nurse-led models of chronic disease management described in this review.

**Research:** Existing services delivering the type of nurse-led model of chronic disease management described in this review should be robustly evaluated against the aims of that service. Long-term and intensive case management and hospital readmission require further study. In addition, schemes for chronic disease management of patients with COPD who are receiving long-term oxygen therapy should be explored further. Other outcomes that should be further evaluated include patient satisfaction, self-management, smoking cessation, effect on carers, coping and treatment adherence.

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**Other publications of related interest**

This additional published commentary may also be of interest. Leonard B. Review: existing evidence does not support nurse led interventions in chronic obstructive pulmonary disease. Evid Based Nurs 2006;9:56.

**Indexing Status**

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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.