Models of chronic disease management in primary care for patients with mild-to-moderate asthma or COPD: a narrative review

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ABSTRACT

Objective: To review the literature for any promising strategies for the primary care management of mild-to-moderate asthma and chronic obstructive pulmonary disease (COPD) in adults.

Methods: Using "MeSH" terms for COPD, asthma and primary health care, we conducted an extensive literature search for relevant meta-analyses, systematic reviews, narrative reviews, reports and individual studies. Grey literature was also included. We chose a narrative review approach because of substantial heterogeneity of study designs in the literature.

Results: 1119 articles of potential relevance were retained, of which 246 were included in our review. There was insufficient evidence to determine whether general practitioners with a special interest (GPwSI) in respiratory care improved the diagnosis and management of mild-to-moderate COPD. An asthma service involving GPwSI increased respiratory drug costs but reduced the costs for less specific drugs. No clear benefit has been shown for practice nurse-run asthma clinics in primary care compared with usual care in altering asthma morbidity, quality of life, lung function or medication use. Evidence to determine the effectiveness of practice nurse-run COPD clinics could not be found. Self-management education, GP review and action plans may produce short-term benefits for asthma patients, particularly those with moderate-to-severe disease, but the evidence for a similar approach to patients with mild-to-moderate COPD is equivocal. There has been poor uptake of respiratory clinical guidelines relevant to primary care — partly because most guidelines are based on moderate-to-severe disease. Spirometry programs in primary care are useful for differential diagnosis of asthma and COPD. Spirometry may alter the management of mild asthma, but there is a lack of evidence that it alters the management of COPD in primary care.

Conclusion: The role of primary health care in management of mild-to-moderate asthma and COPD requires further investigation using randomised controlled trials.

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We report summary information from a narrative review of models of chronic disease management for mild-to-moderate asthma and chronic obstructive pulmonary disease (COPD) in adults in primary care. We chose a narrative review approach because the substantial heterogeneity of study designs in the literature precluded a meta-analysis. A narrative review is a process of synthesising primary studies to explore heterogeneity descriptively rather than statistically.[1]

Mild-to-moderate asthma and COPD are significant health problems that require the development of interventions aimed at moderating their progress into seriously disabling conditions. Primary health care, with general practice providing a central role, is the first and often only point of contact for patients with these conditions within the Australian health system.[2,3] Thus, primary care is where the best current opportunity exists to modify the natural history of the disease process before serious ill health and disability become established. In addition, health care programs and initiatives designed to detect and manage mild-to-moderate chronic illness can be recognised and evaluated to determine their uptake, effectiveness and cost, and provide an evidence base for future health care.

We focused on the disease-specific level, although some of the programs studied have been used more widely in the community for the management of other chronic illnesses. As we wished to focus on Australian general practice in its current organisational form, we have not included a discussion of large integrated health care and Health Maintenance Organizations such as Evercare or Kaiser Permanente in the United States.[4-6] We also excluded hospital-centred generic models of care, as we wanted to highlight the mild-to-moderate end of the disease spectrum and its early identification and management.[7] Interventions relevant to severe lung disease, such as home oxygen therapy, discharge planning, hospital-at-home or mechanical ventilation, are provided predominantly by secondary and tertiary health care facilities, and so were not considered. A review of Australian national and state/territory level initiatives in primary health care with critical issues identified has previously been performed.[8]

Our aim was to assess whether models of chronic disease management, when applied in primary care, can lead to the recognition of risk factors and the early detection, diagnosis and management of asthma and COPD, enabling the implementation of evidence-based strategies that may potentially alter the future disease burden.

Methods

We developed a broad literature search strategy based on exploded "MeSH" terms for COPD, asthma and primary health care. We conducted an extensive search of the literature, including grey literature. Models of chronic disease management were identified and the literature pertaining to the various models of care was considered for possible inclusion in the review. Because of the heterogeneity of the studies identified, we employed a narrative approach to critically appraise and summarise the literature, in the same way as did other studies conducted by the Australian Primary Health Care Research Institute (APHCRI).[1] Using our best judgement, we analysed conclusions of meta-analyses, systematic reviews, narrative reviews, reports and individual studies in order to support or refute the proposition expressed in the aim of our study. Secondary research questions were subsequently developed under the four domains of organisation, implementation/evaluation, funding/costs and service delivery to form a framework for the review. For the purpose of the current brief overview, we extracted the most salient findings from our in-depth review.[2]

Literature search results

Type of study	Number retained ($n = 246$)
Meta-analyses	14
Randomised controlled trials	25
Reviews	25
Surveys, audits	53
Observational/qualitative studies	32
Guidelines, instructions, schedules	29
Reports of programs	18
Economic evaluations, cost studies	13
Opinion, editorial, letter, comment	28
Web pages	9

Results

The following topics were recognised as current areas of debate in primary care and hence were given priority in our review:

1. General practitioners with a special interest (GPwSI) in respiratory care;
2. Practice nurses involved in asthma and/or COPD management;
3. Respiratory clinical guidelines relevant to primary care; and
4. Spirometry programs in primary care.

From 2762 citations, 1119 citations of potential relevance were retained and subjected to secondary searches to identify evidence relevant to the topics reviewed. After the second culling process, 246 articles remained for inclusion in our review (Box). (A full list of the articles can be accessed on the APHCRI website[2]).

1. GPs with a special respiratory interest

GPwSI services aim to upskill generic general practices. There was a lack of evidence to support or refute the hypothesis that respiratory GPwSI services improved the diagnosis and management of mild-to-moderate COPD. A GPwSI asthma service increased respiratory drug costs but reduced the costs for other, less specific drugs such as cough medicines.[9-11] Overall costs and cost-effectiveness of a respiratory GPwSI service, clinical outcomes, acceptability by patients and physicians and standards of care remain topics for future research.

2. Practice nurses

Current studies have not demonstrated a clear benefit of nurse-run asthma clinics in primary care compared with usual care[12] in altering asthma morbidity, quality of life, lung function or medication use. Patients attending asthma clinics may have increased ownership of peak flow meters.[13,14] Patients demonstrated poor compliance with asthma clinic appointments.[15] We could not identify evidence to determine the effectiveness of COPD clinics run by practice nurses.

Self-management education, GP review and an action plan may produce short-term benefits for asthma patients, particularly with moderate-to-severe disease. The evidence for self-management education for mild-to-moderate COPD is equivocal, with results possibly confounded by the fact that some studies include patients with asthma.

Practice nurses may not be adequately trained to provide respiratory care. Nurse-led interventions may be associated with increased costs and referrals to other health care providers.

3. Clinical guidelines

There has been a poor uptake of respiratory clinical practice guidelines in primary care. This is possibly due to:

- poor implementation of respiratory guidelines in the primary care setting;[16,17]
- under-diagnosis or under-recognition of respiratory disease;[18]
- a lack of effective therapies of proven benefit for patients with mild-to-moderate COPD;[19]
- the fact that the majority of guidelines are based on moderate-to-severe disease (the area in which the major costs of treatment are incurred) and are thus considered not relevant to the management of mild-to-moderate disease;
- physicians' preference for using clinical judgement for patient disease management rather than collections of clinical guidelines that they may perceive to be insufficiently user-friendly; and
- dissimilarity between patients presenting to primary care and those included in the randomised controlled trials on which the evidence for guideline development is based.

4. Spirometry in primary care

Spirometry was found to be useful for the differential diagnosis of asthma and COPD, providing a consensus is reached on the definition of these diseases. By some spirometric criteria, this form of screening could result in considerable over-diagnosis of chronic lung disease, particularly in older people, leading to prescription of medications for asymptomatic mild disease or for incorrectly diagnosed patients.[18,19]

There is a lack of evidence that spirometry alters management of COPD in primary care, but it may alter the management of mild asthma: early intervention with an inhaled corticosteroid may slightly reduce the loss of lung function over 3 years.

Conclusion

We found little high-quality evidence to support or refute the question of whether chronic disease management models, when applied in primary care, can lead to recognition of risk factors and early detection, diagnosis and management of asthma and COPD. A paucity of studies, variation in study design, short follow-up periods and the fact that very few studies included patients with mild-to-moderate disease made it difficult to reach clear conclusions.

As mild-to-moderate asthma and COPD are such important health problems in the community and can progress into disabling conditions, there is a pressing need to conduct well designed primary care-based randomised controlled trials of sufficient statistical power — and an even more pressing need to clarify what is likely to be the most fruitful primary care approach to these conditions.

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Competing interests

None identified.

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