ORIGINAL RESEARCH

Why are some evidence-based care recommendations in chronic obstructive pulmonary disease better implemented than others? Perspectives of medical practitioners

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Background: Clinical guidelines for management of patients with chronic obstructive pulmonary disease (COPD) include recommendations based on high levels of evidence, but gaps exist in their implementation. The aim of this study was to examine the perspectives of medical practitioners regarding implementation of six high-evidence recommendations for the management of people with COPD.

Methods: Semi-structured interviews were conducted with medical practitioners involved with care of COPD patients in hospital and general practice. Interviews sought medical practitioners' experience regarding implementation of smoking cessation, influenza vaccination, pulmonary rehabilitation, guideline-based medications, long-term oxygen therapy for hypoxemia and plan and advice for future exacerbations. Interviews were audiotaped, transcribed verbatim and analyzed using content analysis.

Results: Nine hospital-based medical practitioners and seven general practitioners participated. Four major categories were identified which impacted on implementation of the target recommendations in the care of patients with COPD: (1) role clarity of the medical practitioner; (2) persuasive communication with the patient; (3) complexity of behavioral change required; (4) awareness and support available at multiple levels. For some recommendations, strength in all four categories provided significant enablers supporting implementation. However, with regard to pulmonary rehabilitation and plans and advice for future exacerbations, all identified categories that presented barriers to implementation.

Conclusion: This study of medical practitioner perspectives has indicated areas where significant barriers to the implementation of key evidence-based recommendations in COPD management persist. Developing strategies to target the identified categories provides an opportunity to achieve greater implementation of those high-evidence recommendations in the care of people with COPD.

Keywords: chronic obstructive pulmonary disease, guideline implementation, barriers, enablers, medical practitioners, qualitative research

Background

Chronic obstructive pulmonary disease (COPD) is a common chronic condition with a high personal and public health cost.[1] International and national guidelines for the management of COPD patients have made care recommendations based on high levels of research evidence.[2,3] Recommendations for smoking cessation, influenza vaccination, pulmonary rehabilitation, guideline-based medications, and long-term oxygen therapy for hypoxemia, are all supported by systematic reviews of randomized controlled trials[2,3]

(or "Level 1"[4] evidence). The use of an "action plan" to plan for and help patients to manage exacerbations is supported by "Level 2"[4] research evidence (one or two high quality randomized controlled trials).[2,3]

Despite high levels of evidence, implementation of these six recommendations in COPD care is reported to be low–moderate.[5–9] While there is room for improvement in the implementation of all six of these key treatment recommendations, pulmonary rehabilitation (PR) and the use of action plans appear the most underutilized. A systematic review of international surveys reported that between 3% and 16% of suitable patients with COPD may be referred for PR, and as few as 1%–2% may receive this intervention.[10] In a prospective study of patients with COPD admitted to hospital for management of an exacerbation, action plans were reported in 24.4% of cases.[11]

In the substantial body of evidence around knowledge translation, determining barriers and enablers to evidence implementation is a necessary step in developing strategies to improve translation of evidence into practice.[12,13] Barriers to the implementation of clinical guidelines in general amongst medical practitioners have been examined previously. A meta-synthesis of qualitative research on general practitioners' (GPs) attitudes to clinical practice guidelines found a key theme was GP concern with applying research findings to individuals, where these were felt to conflict with individual patients' needs.[14] Another systematic meta-review identified four factors influencing the implementation of clinical guidelines in general amongst health professionals: characteristics of the guideline (eg, low resource requirement), characteristics of professionals (eg, awareness and familiarity), patient characteristics (eg, comorbidities) and environmental characteristics (eg, lack of peer or colleague support).[15]

Barriers to high evidence care recommendations have been examined specifically in relation to COPD management. Focus groups and a questionnaire were used to investigate barriers to the implementation of an evidence-based guideline for COPD patient care, identifying "social" barriers (eg, need for a greater sense of ownership over guidelines) and practical barriers such as workload and limited time.[16]

However, these studies have all examined barriers to guidelines as a whole. No information regarding medical practitioners' perspectives on implementing different care recommendations of equally high evidence within the guidelines is available. Therefore, the aim of this study was to examine the perspectives of medical practitioners regarding implementation of six high-evidence recommendations

for the management of people with COPD. The experiences, perceived barriers to, and enablers of implementation could highlight issues associated with lower implementation of specific recommendations where these exist. Examining strategies and attitudes of medical practitioners regarding COPD care recommendations that are being well implemented could inform development of interventions to better address those that are not.

This study sought to examine two questions: (1) What are medical practitioners' experiences of implementing six key COPD guideline recommendations in their patients, and (2) What do medical practitioners experience as barriers to, and enablers of, implementation of these recommendations?

Methods

A descriptive qualitative study design was used to explore the implementation of COPD guideline recommendations amongst hospital-based medical practitioners and GPs. Ethical approval to conduct this study was obtained from the University of South Australia Human Research and Ethics Committee and the Royal Adelaide Hospital Human Ethics Committee prior to commencement.

Participants

This study formed part of an evaluation of all patients admitted to a tertiary hospital with a primary diagnosis of COPD exacerbation during a 2 month period. For all recruited patients, telephone contact was made with their hospital-based medical practitioner (general medicine medical registrars or interns) during admission, inviting them to join the study. One month after each patient had been discharged from hospital, contact was made with the patients' GPs, inviting them to also participate in the study. In this way, a homogeneous purposive sample of medical practitioners actively involved in the care of COPD patients, from both tertiary and primary care settings, was obtained. Informed consent to participate in the study was gained from all medical practitioners involved.

Data collection

Short semi-structured interviews were conducted with medical practitioners regarding their perspectives on implementation of target COPD recommendations, and barriers and facilitators to this process. Interviews were conducted face-to-face in a private setting and audiotaped. A single researcher (post-doctoral research fellow with qualitative research experience and clinical practice in COPD management) conducted

all interviews. The interview guide asked questions about (1) medical practitioners' experiences of implementing each guideline recommendation (ie, smoking cessation, influenza vaccination, pulmonary rehabilitation, guideline-based medications, long-term oxygen therapy for hypoxemia, plan and advice for future exacerbations); (2) barriers to, and enablers of, implementation of each guideline recommendation (further detail supplied in Appendix). These recommendations were selected as they were supported by high levels of evidence in local[3] and international[2] guidelines.

Data analysis

Audio recordings of interviews with participants were transcribed verbatim, and the transcripts were content analysed[17,18] to identify and classify categories within the data in relation to the research questions. Content analysis has been described as a method of "subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns."[18] In this study, the systematic classification process specifically involved:

1. Identifying excerpts which related to the research questions.
2. Organization of groups of excerpts into categories.
3. Comparing excerpts and categories with existing analyses of barriers and enablers to evidence-based health care implementation. To avoid being restricted to any one behavior change theory, a consensus based model of theoretical domains for investigating evidence-based practice was used.[19]
4. Re-reading transcripts for further relevant data, with ongoing adjustment and final sorting into major categories (formed by groupings of minor categories).[17]

Study rigor was maintained by adherence to standardized data collection protocol including use of a semi-structured interview guide developed a priori, transcription by an independent typist, and subsequent validation by the interviewer. An independent analyst experienced in qualitative research reviewed a random selection of 20% of the transcripts to identify themes from the data. Differences were contested through discussion and consensus reached.

Results

Nine hospital based medical practitioners (five registrars, four interns) were invited to participate in the study and all agreed. Fifteen GPs were contacted, of whom seven joined the study.

Analysis led to the identification of four major categories which impacted on implementation of the target recommendations in the care of patients with COPD. Major categories identified across all COPD care recommendations were (1) role clarity of the medical practitioner; (2) persuasive communication with the patient; (3) complexity of behavioral change required of the patient and medical practitioner; (4) awareness and support available at multiple levels (Table 1). In the case of smoking cessation, long-term oxygen use if hypoxemic, influenza vaccination and guideline-based medication use, strategies and beliefs that enabled implementation were predominant in the interview data. Barriers to implementation were predominant regarding PR and plan and advice for future exacerbations.

Role clarity

Medical practitioners used confident language to describe their participation in implementation of guideline recommendations where a high level of role clarity existed. Smoking cessation and influenza vaccinations were discussed with patients "all the time", "always", "usually" or "definitely". Smoking cessation advice was perceived by both groups of doctors to be most effective when implemented by the GP rather than the hospital-based medical practitioner.

Prescription of guideline-based medication was clearly described as "standard issue" and part of the role for both hospital-based medical practitioners and GPs. Responsibility for prescription of long-term oxygen use for hypoxemia was perceived as outside the roles of both general medicine registrars and GPs, falling to the respiratory specialist. However, the delineation was clear, as was the perceived role of the interviewed medical practitioners in the process.

In contrast, our data indicated a low degree of clarity about the role of the medical practitioners in referring COPD patients to PR. Hospital-based medical practitioners were unclear on patient eligibility for rehabilitation, and some GPs had not considered PR in the management of their COPD patients as in this excerpt:

> Not much awareness. I don't know what it is to be honest. I've got some people who have had this, but it was always initiated from the hospital, never initiated from me. (GP03)

Persuasive communication

Almost all GPs were actively engaged in strong persuasive communication regarding smoking cessation with their COPD patients who were current smokers, even where

Table I Categories derived from data analysis for the six COPD recommendations

Major categories*	Minor categories#	Smoking cessation	Long term oxygen	Influenza vaccination	Guideline based medications	Pulmonary rehabilitation (PR)	Plan and advice for future exacerbations
	Role clarity	Identified as role (in GP > hospital) Efficacy of role (in GP > hospital setting)	Delegation (to respiratory specialist)	Identified as role (GP and hospital)	Identified as role (GP and hospital)	Infrequently identified as part of regular role	Identified as role (GP and hospital) but nature of involvement varied
	Persuasive communication	Use of persistence Non blaming of patient Tailoring advice Make use of opportunities Frequently addressed Perceived health benefit		Frequently addressed Perceived health benefit		Infrequently addressed	Variable belief in health benefit Variable instructions to patients
	Complexity of behavior change		Well established process Clear eligibility criteria			High level organization required of patient (cognitive ability, time, money) Difficult to find referral information Access difficult for patients	Highly complex set of behaviors required by patient (decision-making, self-management, symptom recognition)
	Awareness and support	Established organizational support Established clinician resources Multiple treatment options Supported by other health professionals	Clinician awareness of health benefit	High public and clinician awareness Established organizational support	Established organizational support (hospital pharmacists hospital and GP practice nurses) High clinician awareness and support	Low awareness of eligibility and referral process	Lack of follow-up community based support

Notes: *Major categories derived from data analysis were (1) role clarity of the medical practitioner; (2) persuasive communication with the patient; (3) complexity of behavioral change required of the patient and medical practitioner; (4) awareness and support available at multiple levels; #minor categories reflect subunits of data contributing to the major category and consist of barriers to, or enablers of, recommendation implementation.
Abbreviations: COPD, chronic obstructive pulmonary disease; GP, general practitioner.

medical practitioners expressed concern about their ability to effect change:

> I really push it hard. With my computer it tells me if they smoke or don't smoke. I always discuss with them "What about giving up?" But the thing is they've got to want to give it up. There's no good me telling them it's bad for them. If they don't want to do it, it won't happen. But I try to plant the seed, yes. (GP08)

> If I need more persuasive arguments, I will say "Are you going to wait til you've had your first stroke?" and that sometimes rings a bell, and I will talk to them about switching on their brain to quit. (GP05)

Medical practitioners used a number of different approaches and arguments to tailor smoking cessation discussions to the perceived needs and motivations of their patients and in some cases took care not to condemn or blame the patient. The extent of efforts to communicate regarding this recommendation was underpinned by high clinician belief in the health benefits of smoking cessation for their patients. Similarly, medical practitioners described they frequently checked the vaccination status of COPD patients, and expressed a high level of belief in the health benefits of influenza vaccination for this group.

In contrast, medical practitioners reported a spectrum of experience and attitudes regarding giving patient advice on use of medication for self-management of exacerbations. Decisions about whether or not to recommend an action plan took into consideration patients' perceived decision-making ability and symptom recognition. While a few instances of persuasive communication with patients regarding participation in PR were identified, in most cases interview data reflected low awareness and support for PR, for example:

> I think it is something that is not out there openly that we forget to be able to refer, so I think if it was more publicized and we had more awareness of these things being around we would probably refer more people. (HD3)

Complexity of behavior change

The ease of implementation of COPD care recommendations by medical practitioners was associated with the complexity of behavior change required (Figure 1). For example, annual influenza vaccinations, or institution of long-term oxygen in hypoxemic patients were described as simple, well-established processes:

> That one is quite well established. So we'll ring up the thoracic consultant to approve it and we'll ring up the oxygen nurse. So that line is very established. (HD1)

However, care recommendations which required a high degree of behavior change, such as attendance at PR, were recognized as more difficult for patients to adopt. While some medical practitioners appreciated the health benefits achievable through PR, many were aware of the time, travel and effort required for patients to attend a PR program, and in many instances the costs were judged to outweigh the perceived benefits.
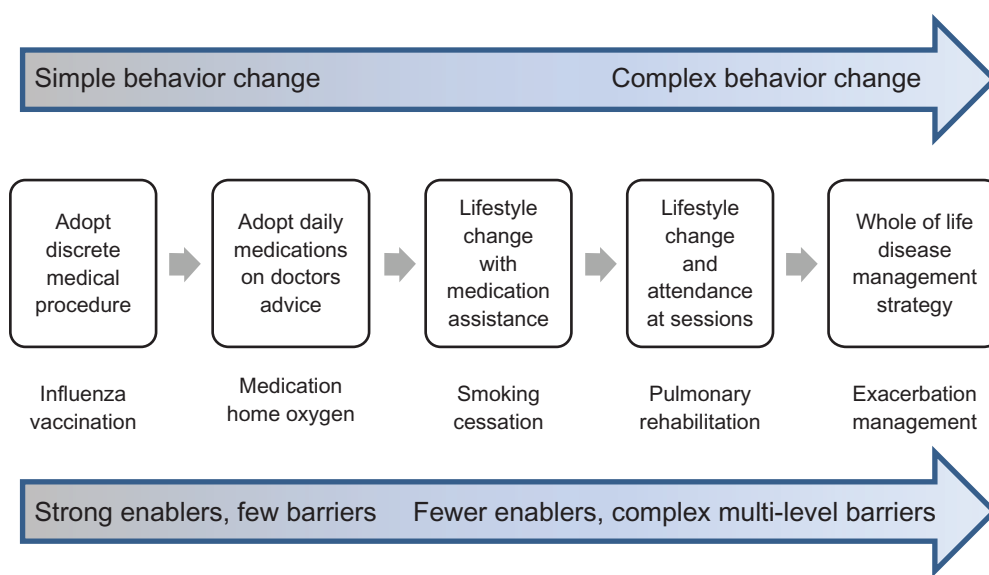

Figure 1 Relationship between complexity of behavior change and ease of implementation for COPD care recommendations.
Abbreviation: COPD, chronic obstructive pulmonary disease.

Well they've got to be motivated. And they've got to have the intellectual ability and the organizational skills to get there. And the time available to attend … They have to be physically able to get there. They have to be able to have transport. (GP11)

Similarly, provision of a plan and advice for management of future exacerbations required complex self-management behaviors from the patients, including cognitive skills, symptom recognition, decision making, anxiety regulation, and changes to lifestyle. Here medical practitioners appeared concerned that patients did not often have these health literacy and translational skills or self-confidence to enact agreed self-treatment actions, but medical practitioners lacked means or time to teach the skills required for self-management.

Awareness and support

Well-implemented COPD care recommendations were facilitated by high levels of community, organizational, clinician and patient support. For example, medical practitioners described implementation of influenza vaccinations as supported by a visible public health campaign and high community awareness. Within their organizations implementation was facilitated by computerized decision support systems and nurse-run clinics to administer the vaccine. Similarly, guideline-based medication in COPD patients was supported organizationally by continuing education and seminars, and implementation by ward-based pharmacists and general practice nurses. Implementation of smoking cessation in COPD patients, already supported by public health campaigns and legislative change, had moderate support available through a telephone counselling service.

However, low levels of clinician awareness of PR reflected less support at all levels for implementation of this therapy in COPD patients. Structurally, medical practitioners mentioned the difficult or unclear referral process, and long waiting periods, which presented barriers to implementation. Medical practitioners raised broader issues of ongoing chronic disease management in patients with COPD in relation to the use of action plans. The lack of service after hospital discharge for patients with COPD who are anxious and require reassurance and advice regarding exacerbation was indicated by one hospital doctor. A number of GPs described COPD patients who frequently called the GP for reassurance and advice regarding symptom interpretation and the need to commence additional medication.

Discussion

This study explored the views of medical practitioners in hospital and general practice related to implementation of six high-evidence care recommendations for patients with COPD. The analysis of medical practitioner interviews identified four main issues that impacted on implementation: clarity of the doctor's role; use of persuasive communication; nature of the behavior change required; and awareness and support strategies available at multiple levels. We have highlighted how for some well implemented COPD care recommendations, all four areas were strong; but for other recommendations, a number of these areas were less well developed.

Barriers and enablers to guideline implementation in COPD[16,20] and other conditions[14,15,21,22] have been previously studied, looking at the guideline as a whole. However previous studies have not examined the reasons why some high-evidence recommendations within a guideline are well implemented and others are not. Low implementation of evidence-based care recommendations in people with COPD translates into poorer outcomes for patients, and greater cost to the health care system.[23] Of particular concern are recommendations that have high evidence for their efficacy but low implementation levels; in the case of our study, referral to PR. Our data indicated this care recommendation was not clearly adopted as part of medical practitioners' role in the care of people with COPD either in primary or tertiary settings. It was associated with a high level of required behavior change, and community, organizational or clinical factors were seen to be unsupportive.

Identifying the overarching themes which supported implementation of high-evidence COPD care recommendations in this sample provides an opportunity for translating the effective strategies that enable highly implemented recommendations to be adopted and modifying these for recommendations with low implementation. For example, improving implementation for PR or action plans could involve strategies which have been successful for other interventions, such as the use of computerized decision support, and attention to structural and organizational change (eg, greater involvement of GP practice nurses).

Categories identified in this study have resonance with established frameworks describing barriers and enablers to implementation. Compatibility of guideline implementation with the clinician's professional role has previously been described as a key factor,[19] and is also highly specific to the sample. For example, in this study the prescription of oxygen for hypoxemic patients was seen as a "well-established"

process from the perspective of the GP and general medicine registrar, which masks the documented problems with criteria-based oxygen prescription including variability in service provision[24] and inappropriate prescription.[25] The use of persuasive communication by medical practitioners in this study included sub-categories of awareness and familiarity with recommendations, belief in health benefits, motivation and prioritization, all frequently described as influential in whether or not clinicians implement evidence-based practice.[14,19,21] These sub-categories were all low with regard to PR. Lack of persuasive health professional communication appears to be a central issue associated with low referral to PR in COPD,[26] and has been identified in a systematic review of patient reasons for non-attendance as a major barrier.[27] Further strategies to enhance medical practitioners' awareness and familiarity with PR, belief in both the health benefits and cost-effectiveness of PR, motivation to consider referral of appropriate patients, and prioritization of the implementation of PR in COPD by health administrations warrant specific development and careful evaluation.

While the complex nature of change required for implementation of PR, or planning for management of future exacerbations, in itself may not be modifiable, recognition and greater support for the degree of behavior change required must be acknowledged and extra targeted support made available if these guidelines are to be successfully implemented. This may include greater assistance with patient access, greater flexibility in service delivery, assisting patients to gain skills in self-management, and opportunities for case-management where COPD is complicated by comorbidities (particularly mental illness or cognitive decline) or social disadvantage. While some care recommendations are supported by layers of public awareness, legislative and financial support, and organizational processes (eg, influenza vaccination), others of high-evidence (eg, PR, plan and advice for future exacerbations) lack funding, organizational or procedural support and have low community awareness.

By purposively recruiting specific medical practitioners from both hospital and general practice settings, our sample reflected clinicians from both tertiary and primary care who were involved in current management of people with COPD. Further research could investigate the perspectives of other clinicians closely involved with care of people with COPD including respiratory physicians, general practice nurses and allied health professionals. More studies seeking to determine incidence of the implementation of PR or action plans as a percentage of suitable COPD patients attending either primary or tertiary health services, would help document the extent of the evidence-practice gaps in these areas. The findings of this qualitative study explored perceptions of a defined number of hospital-based and general medical practitioners in one local area, and there is no intention to generalize the findings to other settings. However, given the international issues regarding implementation of COPD guidelines, perspectives of medical practitioners identified in this study may prompt further investigation, especially where interventions are being designed to improve care.

In conclusion, this study of doctor perspectives on the implementation of high-evidence treatment recommendations in COPD has indicated areas where role clarity, persuasive communication, and multi-level support for the recommendations are strong, and the nature of behavior change required is not complex. However in other aspects of high-evidence care, enablers in many or most of these areas are lacking. Greater implementation is unlikely to be achieved unless these issues are addressed in systematic, targeted ways. Data and analysis from this study point the way to development of interventions which address the identified factors, moving toward the desired result of improving implementation of high-evidence recommendations in the care of people with COPD.

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Disclosure

The authors report no conflicts of interest in this work.

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Appendix

Overview of semi-structured interview guide: medical practitioners

Information was sought regarding (1) medical practitioners' experiences of implementing each guideline recommendation (ie, smoking cessation, influenza vaccination, pulmonary rehabilitation, guideline-based medications, long-term oxygen therapy for hypoxemia, plan and advice for future exacerbations); (2) barriers to, and enablers of, implementation of each guideline recommendation.

Starter questions as below were used to seek this information. Follow-up questions depended on individual participant responses, and prompts were used to gather more detailed information about barriers and facilitators to the implementation of recommendations in relation to each intervention strategy.

Smoking cessation

For COPD patients who are current smokers, would you in general initiate smoking cessation therapy if this hasn't been done? What would this involve?

What are the barriers to you using these sorts of strategies?

Are there things that facilitate you implementing smoking cessation therapy?

Pulmonary rehabilitation

Pulmonary rehabilitation (PR) may benefit a subgroup of patients with COPD.

Have you been involved with recommending pulmonary rehabilitation for any patients with COPD?

In general what would indicate you to refer a patient for PR?

What do you see as the barriers with getting suitable COPD patients you see into pulmonary rehab?

What strategies or structures are in place to help you get suitable COPD patients to PR?

Influenza vaccination

Hospital-based medical practitioners: Would you generally check with COPD inpatients about whether they have had an influenza vaccination? Would you take any action if they hadn't had one?

General practitioners: Are you involved with providing influenza vaccinations to COPD patients?

Both: What factors help the implementation of influenza vaccinations in COPD patients?

Oxygen use if hypoxemic

If a patient needs home oxygen, how does this treatment get implemented? What strategies are in place to facilitate assessment and implementation of oxygen for chronically hypoxemic patients? Are there barriers to this process?

Medication use

Clearly medication is an important part of management for patients with COPD; what do you generally prescribe? Are there things that influence you in making decisions about prescription for COPD patients?

Are there ways you find useful to help patients get access to and effectively take the prescribed medication (prompts: use of devices, checking of adherence and device use)?

Are there factors that make it difficult for patients to get access to and effectively take the required medication?

Plan and advice for management of COPD exacerbations

Do you discuss with COPD patients how to recognize and what to do in the event of a future exacerbation? What advice do you give? Do you write this down or make use of other resources to communicate this to the patient? Why does/doesn't this get implemented?