

Non-pharmacological management interventions for COPD: an overview of Cochrane systematic reviews (Protocol)

Disler RT, Inglis SC, Davidson PM



**THE COCHRANE
COLLABORATION®**

This is a reprint of a Cochrane protocol, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2013, Issue 2

<http://www.thecochranelibrary.com>

WILEY

TABLE OF CONTENTS

HEADER	1
ABSTRACT	1
BACKGROUND	1
OBJECTIVES	3
METHODS	3
REFERENCES	5
ADDITIONAL TABLES	6
APPENDICES	7
CONTRIBUTIONS OF AUTHORS	7
DECLARATIONS OF INTEREST	7
SOURCES OF SUPPORT	7
NOTES	8

Non-pharmacological management interventions for COPD: an overview of Cochrane systematic reviews

Rebecca T Disler¹, Sally C Inglis², Patricia M Davidson²

¹Centre for Cardiovascular and Chronic Care, Faculty of Health, University of Technology Sydney, Sydney, Australia. ²Centre for Cardiovascular and Chronic Care, Faculty of Nursing, Midwifery and Health, University of Technology, Sydney, Sydney, Australia

Contact address: Rebecca T Disler, Centre for Cardiovascular and Chronic Care, Faculty of Health, University of Technology Sydney, Building 10, 235 Jones St, Broadway, Sydney, NSW, 2007, Australia. Rebecca.disler@uts.edu.au.

Editorial group: Cochrane Airways Group.

Publication status and date: New, published in Issue 2, 2013.

Citation: Disler RT, Inglis SC, Davidson PM. Non-pharmacological management interventions for COPD: an overview of Cochrane systematic reviews. *Cochrane Database of Systematic Reviews* 2013, Issue 2. Art. No.: CD010384. DOI: 10.1002/14651858.CD010384.

Copyright © 2013 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

This is the protocol for a review and there is no abstract. The objectives are as follows:

To a) summarise the evidence, b) identify gaps in the evidence base and c) describe elements of non-pharmacological, non-surgical and non-device interventions for the management of COPD using a standardised taxonomy for disease management adapted from the American Heart Association ([Krumholz 2006](#)).

BACKGROUND

Description of the condition

Chronic obstructive pulmonary disease (COPD) is the fourth most common cause of death internationally and accounts for 3.5% of total years lost due to disability ([World Health Organisation 2004](#)). This highly burdensome condition impacts on 80 million people and their families globally. It is characterised by non-reversible airflow limitation in conjunction with progressive debilitating symptoms and systemic effects ([Global Initiative for COPD \(GOLD\) 2010](#)). Increases in bio-fuel use and smoking, particularly in developing countries, are set to increase the prevalence of COPD globally by 30% by 2030 ([Buist 2007](#); [Mannino 2002](#); [World Health Organisation 2004](#)).

Despite optimisation of pharmacological treatments such as inhaled medications, a large proportion of individuals with COPD

continue to have inadequately managed symptoms and unmet psychosocial needs ([Bausewein 2008](#); [Disler 2012](#); [Effing 2007](#)). Comprehensive approaches to disease management that engage “multiple therapies into a patient-centred plan of care” ([Make 2003](#)) are necessary to meet these healthcare needs ([Craig 2008](#); [Make 2003](#); [Monninkhof 2003](#)).

Description of the interventions

Key non-pharmacological interventions such as pulmonary rehabilitation and self-management programmes are central to COPD management and are highlighted in international COPD management guidelines ([ATS/ERS 2011](#); [Global Initiative for COPD \(GOLD\) 2010](#); [National Institute for Clinical Excellence 2012](#)). Chronic diseases such as COPD require a comprehensive approach to disease management ([Make 2003](#)), potentially incorporating a range of diverse non-pharmacological, non-device and non-sur-

gical intervention strategies. The intervention strategies discussed in this overview, and defined below are: pulmonary rehabilitation; self-management programs; action plans as an integrated strategy and management guideline; telehealthcare; and outreach programs (ATS/ERS 2011; Bausewein 2008; Effing 2007; Global Initiative for COPD (GOLD) 2010; Kruis 2011; Lacasse 2006; Make 2003; McLean 2011; World Health Organisation 2004).

Pulmonary rehabilitation

Pulmonary rehabilitation focuses on building exercise capacity, disease and nutritional education, and psychological coaching. (ATS/ERS 2011; Celli 2004; Global Initiative for COPD (GOLD) 2010; National Institute for Clinical Excellence 2012; Nici 2006). Pulmonary rehabilitation is defined as “an evidence-based, multidisciplinary, and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased daily life activities. Integrated into the individualized treatment of the patient, pulmonary rehabilitation is designed to reduce symptoms, optimize functional status, increase participation, and reduce health care costs through stabilizing or reversing systemic manifestations of the disease.” (ATS/ERS 2011).

Self-management programs

Self-management programs are defined as “any formalized patient education programme aimed at teaching skills needed to carry out medical regimens specific to the disease, guide health behaviour change, and provide emotional support for patients to control their disease and live functional lives” (Effing 2007). Patients with COPD experience high symptom burden and poor health-related quality of life, and are required to manage their condition over extended periods (Bourbeau 2003). Evidence suggests that self-management education programs that target skills to assist patients in coping are likely to reduce hospital admissions in patients with COPD, but there is heterogeneity in current studies (Effing 2007).

Action plans as part of an integrated strategy and management guideline

Action plans are defined as “the use of guidelines which outline self-initiated interventions (such as changing medication regime or visiting the general practitioner or hospital) which are undertaken appropriately in response to alterations in the state of the patients’ COPD (e.g. increase in breathlessness, increased amount or purulence of sputum) that suggest the commencement of an exacerbation” (Turnock 2005). Patients who receive early intervention for exacerbations of COPD symptoms are shown to recover sooner and experience better quality of life with ongoing optimal management (Wilkinson 2004). Action plans have been

shown to be effective in early intervention in asthma management; however the evidence for their efficacy in COPD has been limited (Gallefoss 1999; Turnock 2005).

Telehealthcare

Telehealthcare is a rapidly expanding field in healthcare and chronic disease management (Inglis 2010; McLean 2011). Telehealthcare in COPD is described by a recent Cochrane Review as “using technology such as telephones, video cameras and the Internet to allow people to stay at home and communicate with a nurse or doctor when they have a period of increased breathlessness” (McLean 2011). Considering the housebound status of people with advanced COPD and the frequency with which patients access acute health services as the disease progresses, telehealthcare has particular applicability in this population (McLean 2011). Telehealthcare has great potential in the resource-limited future of modern health care.

Outreach programs

Outreach programs are those interventions that “comprise home visits by a respiratory nurse or similar respiratory health worker, to facilitate health care, provide education, provide social support, identify respiratory deteriorations promptly and reinforce correct technique with inhaler therapy” (Wong 2012). Delivery of care in the community targets those patients who are housebound or frequently reliant on acute services in the advanced stages of COPD. Outreach programs strive to maintain optimal management of disease and assist patients in self-management behaviours, as well as regular monitoring and early intervention in condition deterioration. A recent Cochrane systematic review found that this type of intervention does improve health-related quality of life; however the current studies are heterogeneous in their approach (Wong 2012).

Why it is important to do this overview

Chronic diseases such as COPD require a comprehensive and multi-dimensional approach to disease management that incorporates a range of integrated intervention components, for example exercise rehabilitation with self-management education (Global Initiative for COPD (GOLD) 2010; Make 2003; World Health Organisation 2004).

Many of these discrete interventions are complex in both design and delivery, and require distillation of essential elements: e.g. the type, frequency and level of intervention intensity, as well as description of the workforce type and scope. Using a pre-specified and standardised taxonomy may assist in providing information to health providers and consumers in design of effective and appropriate interventions for COPD management (Krumholz 2006;

Make 2003). Understanding the most efficacious organisation, timing and sequencing of these interventions within a disease management approach, as well as resource requirements for these approaches, are of high interest internationally and will inform policy, healthcare decisions and future research (Disler 2012; Effing 2007; Krumholz 2006; Make 2003).

This overview will summarise evidence for non-pharmacological, non-surgical, non-device programs for the management of COPD, highlight the current gaps in knowledge, provide recommendations for how best to report outcomes for these complex interventions and inform future program improvement and design. Specifically, we will investigate the evidence for pulmonary rehabilitation, self-management programs, action plans as part of an integrated strategy and management guideline, telehealthcare and outreach programs.

OBJECTIVES

To a) summarise the evidence, b) identify gaps in the evidence base and c) describe elements of non-pharmacological, non-surgical and non-device interventions for the management of COPD using a standardised taxonomy for disease management adapted from the American Heart Association (Krumholz 2006).

METHODS

Criteria for considering reviews for inclusion

Types of reviews

We will include reviews published in the *Cochrane Database of Systematic Reviews* (CDSR) that examine non-pharmacological, non-surgical, or non-device strategies for the management of COPD. This overview seeks to assess the evidence published in the original Cochrane systematic reviews and will not seek to update these reviews. However, specific information about intervention components may be sought from trial reports and individual researchers.

Types of participants

People with a clinical diagnosis of COPD according to the definitions in the original reviews.

Types of interventions

We will include non-pharmacological, non-surgical, non-device intervention strategies for the management of COPD within

a comprehensive and multifaceted approach, specifically: pulmonary rehabilitation; self-management programs; action plans as an integrated strategy and management guideline; telehealthcare; and outreach programs. We will exclude reviews of surgical treatments and treatment devices as outside of the scope of this overview, for example non-invasive ventilation, continuous positive airway pressure and lung volume reduction surgery will not be included.

Types of outcome

The following outcomes will be discussed and reported if present within the included Cochrane systematic reviews:

Primary outcomes

- Health-related quality of life (any validated measure)
- All cause hospital admissions
- All cause emergency department presentations

Secondary outcomes

- Patient-reported breathlessness (any validated measure)
- Functional capacity (any validated measure)

Search methods for identification of reviews

We will search the *Cochrane Database of Systematic Reviews* on *The Cochrane Library* (latest issue) using the search strategy in [Appendix 1](#). We will not apply date or language restrictions. All protocols for ongoing reviews will be noted in the 'Studies awaiting assessment' section for possible inclusion in future updates of this overview.

Data collection and analysis

Selection of reviews

Two authors (RTD, PMD) independently will assess Cochrane systematic reviews as being 'for exclusion', 'for inclusion', or 'potentially eligible' on the basis of title and abstract. We will locate full texts for Cochrane reviews judged as 'eligible' or 'potentially eligible' and two independent authors (RTD, PMD) will judge their suitability for inclusion against the inclusion criteria. In the instance of disagreement a third review author will adjudicate.

Data extraction and management

Two review authors (RTD, PMD) will independently extract data from included Cochrane reviews and a third author will check all extracted data for accuracy and consistency. We will collect extracted data using a customised electronic data extraction form. The data extracted will include review objectives, participant information, primary outcome measurements and limitations noted in the review. Quality of included reviews (using AMSTAR) and quality of evidence in included reviews (using GRADE and risk of bias) data will be extracted for assessment of overall methodological quality. In addition, we will extract details of the following elements for discussion: intervention content; delivery personnel; method of communication; intensity and complexity of intervention; setting and environment; and outcome measures (Krumholz 2006; Ryan 2011).

Dealing with missing data

Outcomes will be discussed and reported if present within the included original Cochrane Systematic reviews. If any information from the reviews is unclear or missing, we will access the published reports of the individual trials and contact individual researchers.

Assessment of methodological quality of included reviews

Quality of included reviews

Two review authors (RTD, PMD) will assess the methodological quality of the included reviews independently using the 'assessment of multiple systematic reviews' (AMSTAR) measurement tool (Shea 2009). Disagreements will be resolved by a third author. We will not exclude Cochrane reviews on the basis of methodological quality.

Quality of evidence in included reviews

Two review authors (RTD, PMD) will assess the quality of evidence presented in the included reviews using the GRADE assessment tool and through assessment of risk of bias of the included evidence. We will retrospectively apply the risk of bias tool and GRADE the evidence from trials in individual systematic review where this was not done previously (Higgins 2011).

'Summary of findings' tables

We plan to prepare several summary tables. Summary tables will present data extracted on the characteristics of included reviews; the methodological quality of included reviews (AMSTAR ratings); the quality of evidence in included reviews (GRADE and risk of bias); and a summary of primary outcomes reported in included reviews - by intervention (pulmonary rehabilitation, self-management programs, action plans as part of an integrated approach, telehealthcare, and outreach programs). We will summarise information on the multi-component interventions used in COPD disease management using an adapted standardised disease management taxonomy. This 'elements of multi-component interventions' table will include the following content: intervention content, delivery personnel, method of communication, intensity and complexity of intervention, setting and environment, and outcome measures (Krumholz 2006).

Data synthesis

We do not anticipate that we will be able to perform quantitative data analyses. Therefore we will present a narrative summary of results for the individual reviews and primary outcomes. For future updates of this overview we may perform quantitative data analysis of interventions across reviews for the primary outcomes if data permit.

We will present narrative descriptions of the evidence for non-pharmacological, non-surgical, non-device interventions for COPD using two comparisons: intervention versus placebo, and intervention A versus intervention B (e.g. self-management versus standard care or self-management versus action plans). This descriptive approach to summarising evidence is similar to the successful approaches seen in the Cochrane overviews of pain management for women in labour (Jones 2012) and of consumer-oriented interventions for evidence-based prescribing and medicines use (Ryan 2011).

We plan to adapt and apply a standardised disease management taxonomy to organise the discussion (Table 1). We hope that the use of such a framework will guide discussion and increase the utility of the review for decision-makers by promoting increased understanding of intervention intensity and duration and workforce requirements (Krumholz 2006).

REFERENCES

Additional references

ATS/ERS 2011

American Thoracic Society/European Respiratory Society. Diagnosis and management of stable Chronic Obstructive Pulmonary Disease: a clinical practice guideline update from the American College of Physicians, American College of Chest Physicians, American Thoracic Society, and European Respiratory Society. *Annals of Internal Medicine* 2011;**155**:179–91.

Bausewein 2008

Bausewein C, Booth S, Gysels M, Higginson IJ. Non-pharmacological interventions for breathlessness in advanced stages of malignant and non-malignant diseases. *Cochrane Database of Systematic Reviews* 2008, Issue 2. [DOI: 10.1002/14651858.CD005623.pub2]

Bourbeau 2003

Bourbeau J, Julien M, Maltais F, Rouleau M, Beupre A, Begin R. Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: a disease-specific self-management intervention. *Archives of Internal Medicine*. 2003;**163**(5):585–91.

Buist 2007

Buist AS, McBurnie MA, Vollmer WM. International variation in the prevalence of COPD (the BOLD Study). A population-based prevalence study. *Lancet* 2007;**370**: 741–50.

Celli 2004

Celli BR, Cote CG, Marin JM, Casanova C, Montes de Oca M, Mendez RA. The body-mass index airflow obstruction dyspnea and exercise capacity index in chronic obstructive pulmonary disease. *New England Journal of Medicine* 2004;**350**(10):1005–12.

Craig 2008

Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ* 2008;**337**:a1655.

Disler 2012

Disler RT, Currow DC, Phillips JL, Smith T, Johnson M, Davidson PM. Interventions to support a palliative care approach in patients with chronic obstructive pulmonary disease: an integrative review. *International Journal of Nursing Studies* 2012 Nov;**49**(11):1443–58. [DOI: 10.1016/j.ijnurstu.2012.02.004]

Effing 2007

Effing T, Monninkhof EEM, van der Valk PP, Zielhuis GGA, Walters EH, van der Palen JJ. Self-management education for patients with chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews* 2007, Issue 4. [DOI: 10.1002/14651858.CD002990.pub2]

Gallefoss 1999

Gallefoss F, Bakke PS. How does patient education and self-management among asthmatics and patients with chronic

obstructive pulmonary disease affect medication?. *American Journal of Respiratory and Critical Care Medicine* 1999;**160** (6):2000–5.

Global Initiative for COPD (GOLD) 2010

Global Initiative for Chronic Obstructive Pulmonary Disease. Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease: 2010 Update. <http://www.goldcopd.com> 2010.

Higgins 2011

Higgins JPT, Green S, editors. *Cochrane Handbook for Systematic Reviews of Interventions Version 5.0.1 [updated March 2011]*. The Cochrane Collaboration, Available from www.cochrane-handbook.org, 2011.

Inglis 2010

Inglis SC, Clark RA, McAlister FA, Ball J, Lewinter C, Cullington D. Structured telephone support or telemonitoring programmes for patients with chronic heart failure. *Cochrane Database of Systematic Reviews* 2010, Issue 8. [DOI: 10.1002/14651858.CD007228.pub2]

Jones 2012

Jones L, Othman M, Dowswell T, Alfirevic Z, Gates S, Newburn M. Pain management for women in labour: an overview of systematic reviews. *Cochrane Database of Systematic Reviews* 2012, Issue 3. [DOI: 10.1002/14651858.CD009234.pub2]

Kruis 2011

Kruis AL, Smidt N, Assendelft WJJ, Gussekloo J, Boland MRS, Rutten-van Mölken M. Integrated disease management interventions for patients with chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews* 2011, Issue 11. [DOI: 10.1002/14651858.CD009437]

Krumholz 2006

Krumholz HM, Currie PM, Riegel B, Phillips CO, Peterson ED, Smith R. A taxonomy for disease management: a scientific statement from the American Heart Association Disease Management Taxonomy Writing Group. *Circulation* 2006;**114**:1432–45.

Lacasse 2006

Lacasse Y, Goldstein R, Lasserson TJ, Martin S. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews* 2006, Issue 4. [DOI: 10.1002/14651858.CD003793.pub2]

Make 2003

Make BJ. Chronic obstructive pulmonary disease: developing comprehensive management. *Respiratory Care* 2003;**48**(12):1225–37.

Mannino 2002

Mannino DM, Homa DM, Akinbami LJ, Ford ES, Redd SC. Chronic obstructive pulmonary disease surveillance—United States 1971–2000. *Respiratory Care* 2002;**47**(10): 1184–99.

McLean 2011

McLean S, Nurmatov U, Liu JLY, Pagliari C, Car J, Sheikh A. Telehealthcare for chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews* 2011, Issue 7. [DOI: 10.1002/14651858.CD007718.pub2]

Monninkhof 2003

Monninkhof E, van der Valk P, van der Palen J, van Herwaarden C, Zielhuis G. Effects of a comprehensive self-management program in patients with chronic obstructive pulmonary disease. *European Respiratory Journal* 2003;**22**: 815–20.

National Institute for Clinical Excellence 2012

National Institute for Health and Clinical Excellence. Chronic Obstructive Pulmonary Disease (COPD) Quality Standard National Institute for Health and Clinical Excellence. www.nice.org.uk/guidance/qualitystandards/chronicobstructivepulmonarydisease/cpdqualitystandardjsp 2012:(accessed 12 December 2012).

Nici 2006

Nici L, Donner C, Wouters EF. American Thoracic Society/ European Respiratory Society statement on pulmonary rehabilitation. *American Journal of Critical Care Medicine* 2006;**173**:1390–413.

Ryan 2011

Ryan R, Santesso N, Hill S, Lowe D, Kaufman C, Grimshaw J. Consumer-oriented interventions for evidence-based prescribing and medicines use: an overview of systematic

reviews. *Cochrane Database of Systematic Reviews* 2011, Issue 5. [DOI: 10.1002/14651858.CD007768.pub2]

Shea 2009

Shea BJ, Hamel C, Wells GA, Bouter LM, Kristjansson E, Grimshaw J. AMSTAR is a reliable and valid measurement tool to assess the methodological quality of systematic reviews. *Journal of Clinical Epidemiology* 2009;**62**:1013–20.

Turnock 2005

Turnock AC, Walters EH, Walters JAE, Wood-Baker R. Action plans for chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews* 2005, Issue 4. [DOI: 10.1002/14651858.CD005074.pub2]

Wilkinson 2004

Wilkinson TM, Donaldson GC, Hurst JR, Seemungal TA, Wedzicha JA. Early therapy improves outcomes of exacerbations of chronic obstructive pulmonary disease. *American Journal of Respiratory & Critical Care Medicine* 2004;**169**:1298–303.

Wong 2012

Wong CX, Carson KV, Smith BJ. Home care by outreach nursing for chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews* 2012, Issue 4. [DOI: 10.1002/14651858.CD000994.pub3]

World Health Organisation 2004

World Health Organisation. The Global Burden of Disease: 2004 Update. World Health Organisation, Geneva 2004.

* Indicates the major publication for the study

ADDITIONAL TABLES**Table 1. Taxonomy of COPD Disease Management (Adapted from the American Heart Association (Krumholz, et al., 2006))**

Patient Population	Recipient	Intervention content	Delivery Personnel	Method of Communication	Intensity	Complexity	Environment	Outcome measures
<ul style="list-style-type: none"> Disease severity Co-morbid conditions Non-clinical characteristics 	<ul style="list-style-type: none"> Patient 	<ul style="list-style-type: none"> Patient education Medication management Prescribed exercise Peer Support Counselling 	<ul style="list-style-type: none"> Nurses Physicians Physical therapists Dieticians Psychologists Social workers Pharmacists Care 	<ul style="list-style-type: none"> Face to face: Individual Face to face: Group Telephone: In person Telephone: Mechanised Internet: Telemonitoring 	<ul style="list-style-type: none"> Duration Frequency and periodicity Follow-up 	<ul style="list-style-type: none"> Program components Sequencing of components Delivery personnel 	<ul style="list-style-type: none"> Hospital: Inpatient Hospital: Outpatient Community based Home based Telehealthcare 	<ul style="list-style-type: none"> Clinical measures Process measures Quality of life measures Healthcare utilisation

Table 1. Taxonomy of COPD Disease Management (Adapted from the American Heart Association (Krumholz, et al., 2006))
(Continued)

			managers					
			• Care coordinators	• Internet: Telehealth-care				

APPENDICES

Appendix I. Search strategy: *The Cochrane Library*

#1 MeSH descriptor Pulmonary Disease, Chronic Obstructive explode all trees

#2 MeSH descriptor Lung Diseases, Obstructive, this term only

#3 COPD:ti

#4 (obstruct*) near/3 (pulmonary or lung* or airway* or airflow* or bronch* or respirat*):ti

#5 (#1 OR #2 OR #3 OR #4)

[Limited to Cochrane Database of Systematic Reviews]

CONTRIBUTIONS OF AUTHORS

All authors contributed to the development of the title registration, overview of methods, development of selection criteria, decisions on the organising framework and development and writing of the protocol.

DECLARATIONS OF INTEREST

None known

SOURCES OF SUPPORT

Internal sources

- University of Technology, Sydney, Australia.

RD is a doctoral student supported by the University of Technology, Sydney.

- National Health and Medical Research Council, Australia.

SCI is a post-doctoral research fellow supported by the National Health and Medical Research Council of Australia (NHMRC Grant ID 472 699).

- National Heart Foundation, Australia.

SCI is a post-doctoral research fellow supported by the National Heart Foundation of Australia.

External sources

- No sources of support supplied

NOTES

None.