

Does education in energy conservation improve function in people with chronic obstructive pulmonary disease?

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Clinical Question

My initial question was 'Does short-term (2-3 weeks) education in energy conservation improve function in people with chronic obstructive pulmonary disease (COPD)?'. There was no evidence for this specific question, so the search was broadened to 'Is education in energy conservation effective in improving function in people with COPD?'

Clinical Scenario

COPD is a major contributor to the burden of disease in Australia and globally. In 1990, COPD was ranked 12th in the Global Burden of Disease, but by 2020, it is estimated to be ranked 5th in prevalence worldwide (Murray & Lopez, 1996). Occupational therapists will be seeing clients with this condition as a primary diagnosis or as a co-morbidity, in acute care, post-acute care and community settings, in increasing numbers. This is especially relevant with regards to chronic and complex care initiatives from the NSW government. This paper will look at the evidence for a well-identified component of occupational therapy treatment for this client group (Rashbaum & Whyte, 1996)

Summary of Key Findings

- There is limited evidence for the effectiveness of education alone to improve self-management skills.
- Education in energy conservation techniques is recommended for patients with COPD. The focus of education in energy conservation for patients with mild-moderate COPD should be strategies to minimise dyspnoea, while education in energy conservation for patients with severe COPD should be directed at task optimisation.

Clinical Bottom Line

Any education in energy conservation needs to be tailored to the patient's needs and environment – this will ideally involve functional reinforcement together with written information, as education alone has limited evidence of effectiveness.

Limitation of Critically Appraised Topic

This summary of evidence has been individually prepared and has not undergone a process of peer review.

Methodology

Search Strategy

Using the levels of evidence as defined by the National Health and Medical Research Council (NHMRC) (2000), the search strategy aimed to locate the following study designs:

- Clinical Guidelines
- Systematic Reviews and Meta-analyses;
- Randomised Controlled Trials;
- Controlled trials, cohort or case-control analytic studies;
- Case series: Post – test only, Pre - test/Post – test;
- Expert opinion including literature/narrative reviews, consensus statements, descriptive studies and individual case studies.

Search Terms

Patient/Client: Chronic obstructive pulmonary disease, chronic obstructive airways disease, dyspnoea, 'Pulmonary Disease, Chronic Obstructive'

Intervention: Education, pulmonary rehabilitation, respiratory rehabilitation, energy conservation, energy expenditure

Comparison: Nil

Outcome: Exercise tolerance, activity tolerance, quality of life

Sites/Resources Searched

- New Zealand Guidelines Group
- National Guidelines Clearinghouse
- Scottish Intercollegiate Guidelines Network (SIGN)
- Healthbase
- Effective Health Care Bulletins
- Centre for Clinical Effectiveness (Monash University) – Evidence Reports
- HTA Health Technology Assessments
- Joanna Briggs Institute
- PubMed
- CIAP (Clinical Information Access Project) – includes Cochrane Library, Database of Abstracts of Reviews of Effectiveness (DARE), PEDro – The Physiotherapy Evidence Database, Journals@Ovid, Medline, Pre-Medline, CINAHL, Embase

Inclusion/Exclusion Criteria

Inclusion Criteria

- Treatment programs with education
- Have a functional measure as an outcome
- Non-pharmacological interventions
- Studies published in English

Exclusion Criteria

- Assessment strategies
- Pharmacological devices training
- Smoking cessation education
- Exercise training only

Results

Results of Search

8 relevant studies were located and categorised in the following table. As there was deemed higher levels of evidence, case series and expert opinion research was not explored.

Table 1. Study designs of articles retrieved by search

Methodology of Studies Retrieved	Number Located	Source of Evidence
Clinical Practice Guidelines (Evidence Based)	2	• Both of these were found from the links in Healthbase and National Guidelines Clearinghouse
Systematic Reviews or Meta – analyses (COCHRANE REVIEW)	4	• 4 x Cochrane Library
Randomised Controlled Trials	1	• 1 x CIAP (in Medline and Embase)
Controlled trials, cohort or case-control analytic studies	1	• 1 x CIAP (in Medline and CINAHL)
Case series: Post – test only, Pre - test/Post – test	Unknown	Not investigated due to higher levels of evidence
Expert opinion including literature/narrative reviews, consensus statements, descriptive studies and individual case studies	Unknown	Not investigated due to higher levels of evidence

Specific Results

The guidelines were the only studies critically appraised for this summary, as they represent higher levels of evidence. The studies and appraisal findings are summarised in Tables 2 and 3.

Table 2. Description and Appraisal of Guideline by the Thoracic Society of Australia and New Zealand (TSANZ) and The Australian Lung Foundation (ALF)

<p>Objective of Guideline Written for primary care teams and anyone closely involved in the management of COPD patients (p. 2) as part of COPD-X management plan from the Global Strategy for Diagnosis, Management and Prevention of Chronic Obstructive Pulmonary Disease (National Heart, Lung and Blood Institute (NHLBI)/ World Health Organisation (WHO) workshop report, 2001)</p> <p>Summary of findings</p> <ul style="list-style-type: none"> • Exercise programs alone show benefits to function, while the benefits if education or psychosocial support are less well documented (p.39) • There is limited evidence that education alone can improve self-management skills, mood and health-related quality of life in patients with COPD (p. 40) • Provision of information and tools to enhance self-management is more effective than didactic teaching (p. 40) • Education requires tailoring to the needs and environment of the patient; be interactive; directed at improving quality of life; simple to follow; practical; and appropriate to the intellectual and social skills of the patient and care givers (p. 64) • Health professionals should discuss patients' fears and apprehensions and issues affecting adherence, focus on educational goals, tailor treatment regimens to each individual patient, anticipate the effects of functional decline and optimise the patient's practical skills (p. 64-65) • Education in strategies for minimising dyspnoea are recommended for patients with mild-moderate COPD (p. 65) • Education in task optimisation is recommended for patients with severe COPD (p. 65) <p>Conclusions</p> <p>There is no evidence specifically addressing the effectiveness of education in energy conservation for patients with COPD, but rather looks at best management of patients with COPD. Energy conservation is useful for patients with mild to moderate COPD but even more so for patients with severe COPD. Education in energy conservation should always be part of exercise training, if not involved as part of pulmonary rehabilitation. Education requires targeting to the person and to the severity of COPD.</p> <p>Reviewer Appraisal Comments</p> <p>This is the first version of this document, released in November 2002. The authors acknowledge that this document will be updated regularly, as new evidence is presented. This is a growing health problem, and it is anticipated that</p>

these guidelines will be developed further, but there is no documented review date.

The levels of evidence from the NHLBI (USA) have been equated with the NHMRC (Australia) in a table at the front of the document but needs regular referral to, if not familiar with the NHMRC levels of evidence. This can make it difficult to determine the relevance of evidence easily.

Table 3. Description and Appraisal of NHLBI/WHO Workshop Report

Objective of Guideline

COPD is identified as a major health problem, which failed to receive adequate attention from the health community and government officials (Pauwels et al., 2001, p. 1256). The Global Initiative for Chronic Obstructive Lung Disease (GOLD) was developed as a collaborative between NHLBI and WHO, with the aims to:

- Improve prevention and management of COPD through a concerted worldwide effort of people involved in all facets of health care and health care policy
- Encourage a renewed research interest in this highly prevalent disease

This workshop report is identified as a key document from GOLD for standards of practice.

Summary of findings

- In addition to findings from TSANZ/ALF COPD Guidelines:
- Health education can play a role in improving skills, ability to cope with illness, and health status

Conclusions

This guideline aims to provide state-of-the-art information to health care workers, health care authorities and the general public, based on available evidence of the most appropriate management and prevention strategies. It provides a view of the current state of knowledge and indicates directions for further research, including:

- The need to determine specific components of effective education for COPD patients
- Whether education is an essential component of pulmonary rehabilitation

Reviewer Appraisal Comments

GOLD is still in its infancy but will provide the global standard for the care and management of the patient with COPD. It intends to be an international document, adapted to different countries or groups of countries requirements.

It is a mix of evidence-based guidelines and consensus reports – the area of COPD research is well documented in some aspects (like exercise, smoking cessation education) and minimal evidence is found in other areas (like education in energy conservation and use of prednisolone).

There is no comment about evaluation of these guidelines based on new evidence and no documented review date.

References

- Murray, C.J.L., and Lopez, A.D. (Eds.), (1996). The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020. Cambridge, MA: Harvard University Press in Frith, P., (2002). Evidence base and standards for pulmonary rehabilitation in Australia – Draft document for discussion. *The Australian Lung Foundation*. P. 12.
www.lungnet.org.au/Rehab_Standards_Summary.pdf
- Rashbaum, I., & Whyte, N. (1996). Occupational therapy in pulmonary rehabilitation – energy conservation and work simplification techniques. *Physical Medicine and Rehabilitation Clinics of North America*, 7(2), 325-340.
- National Health Medical Research Council. (2000). How to use the evidence: assessment and application of scientific evidence. Handbook series on preparing clinical practice guidelines. Canberra: Commonwealth of Australia.
- Pauwels, R. A. , Buist, A. S., Calverley, P. M. A, Jenkins, C. R, & Hurd, S.S. (2001). Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. *American Journal of Respiratory and Critical Care Medicine*, 163(5), 1256-1276.
<http://ajrccm.atsjournals.org/cgi/content/full/163/5/1256>

Articles critically appraised for this summary of evidence

- The Thoracic Society of Australia and New Zealand and The Australian Lung Foundation. (2002). Chronic obstructive pulmonary disease (COPD) Australian and New Zealand management guidelines and the COPD handbook. www.lungnet.org.au/COPDHandbook.pdf
- NHLBI/WHO Workshop Report. (2001) Global Initiative for Chronic Obstructive Lung Disease (GOLD): Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. *National Institutes of Health – National Heart, Lung and Blood Institute*

Related articles not included in the appraisal

Level I Evidence

- Gibson, P. G., Powell, H., Coughlan, J., Wilson, A. J., Hensley, M. J., Abramson, M., Bauman, A., Walters, E.H., (2001). Limited (information only) patient education programs for adults with asthma (Cochrane Review). In: *The Cochrane Library*, Issue 3, 2002. Oxford: Update Software.
- Lacasse, Y., Brosseau, L., Milne, S., Martin, S., Wong, E., Guyatt, G. H., Goldstein, R. S., & White, J., (2003). Pulmonary rehabilitation for chronic obstructive pulmonary disease (Cochrane Review). In: *The Cochrane Library*, Issue 1, 2003. Oxford: Update Software.
- Ries, A. L., Carlin, B. W., Carrieri-Kohlman, V., Casaburi, R., Celli, B. R., Emery, C. F., Hodgkin, J. E., Mahler, D. A., Make, B., & Skolnick, J., (1997). Pulmonary rehabilitation: joint ACCP/AACVPR evidence-based guidelines. *Chest*, 112(5), 1363-1396.
- Monninkhof, E. M., van der Valk, P. D. L. P. M., van der Palen, J., van Herwaarden, C. L. A., Partridge, M. R., Walters, E. H., & Zielhuis, G. A., (2002). Self-management education for chronic obstructive pulmonary disease (Cochrane Review). In: *The Cochrane Library*, Issue 1, 2003. Oxford: Update Software.

Level II Evidence

- Griffiths, T. L., Burr, M. L., Campbell, I. A., Lewis-Jenkins, V., Mullins, J., Shiels, K., Turner-Lawlor, P. J., Payne, N., Newcombe, R. G., Lonescu, A. A., Thomas, J., & Tunbridge, J., (2000) Results at 1 year of outpatient multidisciplinary pulmonary rehabilitation: a randomised control trial. *The Lancet*, 355(9201), 362-368.

Level III-3 Evidence

- Clini, E., Foglio, K., Bianchi, L., Porta, R., Vitacca, M., & Ambrosino, N., (2001). In-hospital short-term training program for patients with chronic airway obstruction, *Chest*, 120, 1500-1505.