

# Cognitive-Behavioural Therapy for Anxiety and Depression in Patients With Chronic Obstructive Pulmonary Disease (COPD): A Rapid Review

Health Quality Ontario

February 2015

*Evidence Development and Standards Branch at Health Quality Ontario*

## Suggested Citation

This report should be cited as follows:

Health Quality Ontario. Cognitive-behavioural therapy for anxiety and depression in patients with COPD: a rapid review. Toronto: Health Quality Ontario; 2015 February. 21 p. Available from: <http://www.hqontario.ca/evidence/evidence-process/episodes-of-care#community-copd>.

## Permission Requests

All inquiries regarding permission to reproduce any content in Health Quality Ontario reports should be directed to [EvidenceInfo@hqontario.ca](mailto:EvidenceInfo@hqontario.ca).

## How to Obtain Rapid Reviews From Health Quality Ontario

All rapid reviews are freely available in PDF format at the following URL: <http://www.hqontario.ca/evidence/publications-and-ohtac-recommendations/rapid-reviews>.

## Conflict of Interest Statement

All authors in the Evidence Development and Standards branch at Health Quality Ontario are impartial. There are no competing interests or conflicts of interest to declare.

## Rapid Review Methodology

Rapid reviews must be completed in a 2- to 4-week time frame. Clinical questions are developed by the Evidence Development and Standards branch at Health Quality Ontario, in consultation with experts, end users, and/or applicants in the topic area. A systematic literature search is then conducted to identify relevant systematic reviews, health technology assessments, and meta-analyses. The methods prioritize systematic reviews, which, if found, are rated by AMSTAR to determine the methodological quality of the review. If the systematic review has evaluated the included primary studies using the GRADE Working Group criteria (<http://www.gradeworkinggroup.org/index.htm>), the results are reported and the rapid review process is complete. If the systematic review has not evaluated the primary studies using GRADE, the primary studies in the systematic review are retrieved and the GRADE criteria are applied to 2 outcomes. If no systematic review is found, then RCTs or observational studies are included, and their risk of bias is assessed. All rapid reviews are developed and finalized in consultation with experts.

## About Health Quality Ontario

Health Quality Ontario is an arms-length agency of the Ontario government. It is a partner and leader in transforming Ontario's health care system so that it can deliver a better experience of care, better outcomes for Ontarians, and better value for money.

Health Quality Ontario strives to promote health care that is supported by the best available scientific evidence. The Evidence Development and Standards branch works with expert advisory panels, clinical experts, scientific collaborators, and field evaluation partners to conduct evidence-based reviews that evaluate the effectiveness and cost-effectiveness of health interventions in Ontario.

Based on the evidence provided by Evidence Development and Standards and its partners, the Ontario Health Technology Advisory Committee—a standing advisory subcommittee of the Health Quality Ontario Board—makes recommendations about the uptake, diffusion, distribution, or removal of health interventions to Ontario's Ministry of Health and Long-Term Care, clinicians, health system leaders, and policy-makers.

Health Quality Ontario's research is published as part of the *Ontario Health Technology Assessment Series*, which is indexed in MEDLINE/PubMed, Excerpta Medica/Embase, and the Centre for Reviews and Dissemination database. Corresponding Ontario Health Technology Advisory Committee recommendations and other associated reports are also published on the Health Quality Ontario website. Visit <http://www.hqontario.ca> for more information.

## About Health Quality Ontario Publications

To conduct its rapid reviews, Evidence Development and Standards and its research partners review the available scientific literature, making every effort to consider all relevant national and international research; collaborate with partners across relevant government branches; consult with expert advisory panels, clinical and other external experts, and developers of health technologies; and solicit any necessary supplemental information.

In addition, Evidence Development and Standards collects and analyzes information about how a health intervention fits within current practice and existing treatment alternatives. Details about the diffusion of the intervention into current health care practices in Ontario add an important dimension to the review. Information concerning the health benefits, economic and human resources, and ethical, regulatory, social, and legal issues relating to the intervention may be included to assist in making timely and relevant decisions to optimize patient outcomes.

## Disclaimer

This rapid review is the work of the Evidence Development and Standards branch at Health Quality Ontario, and is developed from analysis, interpretation, and comparison of published scientific research. It also incorporates, when available, Ontario data and information provided by experts. As this is a rapid review, it may not reflect all the available scientific research and is not intended as an exhaustive analysis. Health Quality Ontario assumes no responsibility for omissions or incomplete analysis resulting from its rapid reviews. In addition, it is possible that other relevant scientific findings may have been reported since completion of the review. This report is current as of the date of the literature search specified in the Research Methods section. Health Quality Ontario makes no representation that the literature search captured every publication that was or could be applicable to the subject matter of the report. This rapid review may be superseded by an updated publication on the same topic. Please check the Health Quality Ontario website for a list of all publications: <http://www.hqontario.ca/evidence/publications-and-ohtac-recommendations>.

# Table of Contents

---

<b>List of Abbreviations</b> .....	<b>5</b>
<b>Background</b> .....	<b>6</b>
<b>Rapid Review</b> .....	<b>7</b>
Research Question.....	7
Research Methods.....	7
Expert Panel.....	7
Quality of Evidence .....	8
Results of Rapid Review .....	8
<b>Conclusions</b> .....	<b>11</b>
<b>Acknowledgements</b> .....	<b>12</b>
<b>Appendices</b> .....	<b>14</b>
Appendix 1: Literature Search Strategies.....	14
Appendix 2: Evidence Quality Assessment.....	16
<b>References</b> .....	<b>19</b>

# List of Abbreviations

---

<b>CBT</b>	Cognitive-behavioural therapy
<b>COPD</b>	Chronic obstructive pulmonary disease
<b>GRADE</b>	Grading of Recommendations Assessment, Development, and Evaluation
<b>QoL</b>	Quality of life
<b>RCT</b>	Randomized controlled trial

# Background

---

As legislated in Ontario's *Excellent Care for All Act*, Health Quality Ontario's mandate includes the provision of objective, evidence-informed advice about health care funding mechanisms, incentives, and opportunities to improve quality and efficiency in the health care system. As part of its Quality-Based Funding (QBF) initiative, Health Quality Ontario works with multidisciplinary expert panels (composed of leading clinicians, scientists, and administrators) to develop evidence-based practice recommendations and define episodes of care for selected disease areas or procedures. Health Quality Ontario's recommendations are intended to inform the Ministry of Health and Long-Term Care's Health System Funding Strategy.

For more information on Health Quality Ontario's Quality-Based Funding initiative, visit [www.hqontario.ca](http://www.hqontario.ca).

## Objective of Rapid Review

The objective of this analysis was to determine the effectiveness of cognitive-behavioural therapy (CBT) for treating anxiety and depression in patients with chronic obstructive pulmonary disease (COPD).

## Clinical Need and Target Population

Chronic obstructive pulmonary disease is characterized by progressive airflow limitation that cannot be completely reversed. The hallmark symptoms of shortness of breath (dyspnea), limitation in exercise capacity, and fatigue take a psychological toll as well as a physical one. Although prevalence estimates range substantially with differing assessment tools and definitions, (1) depression affects an estimated 7% to 42% of COPD patients and anxiety up to 96%. (2-5) Both subclinical and diagnosed mood disorders are associated with negative outcomes for COPD patients including poorer health-related quality of life, (6) more frequent hospitalization for COPD exacerbations among patients with anxiety, (7) longer lengths of stay, (8) self-reported physical disability, (9;10) and reduced engagement in (11) and likelihood of completion of (12) pulmonary rehabilitation.

## Technology/Technique

A number of options to treat symptoms of or clinically diagnosed mood disorders are available, including exercise (e.g., pulmonary rehabilitation), medications, and psychological treatments. The latter includes psychotherapy, cognitive-behavioural therapy, and other techniques to minimize the catastrophic thought patterns between anxiety, depression, and dyspnea. (1) CBT aims to interrupt the cycle of breathlessness leading to anxiety and anxiety leading to further breathlessness, potentially decreasing anxiety and depression overall. (1) The extent to which CBT is effective for the treatment of anxiety and depression in COPD patients is in need of clarification.

# Rapid Review

---

## Research Question

What is the clinical effectiveness of cognitive-behavioural therapy (CBT) for patients with chronic obstructive pulmonary disease (COPD) and coexisting anxiety or depression?

## Research Methods

### Literature Search

#### *Search Strategy*

A literature search was performed on April 25, 2014, using Ovid MEDLINE, Ovid MEDLINE In-Process and Other Non-Indexed Citations, and EBM Reviews, for studies published from January 1, 2008, to April 15, 2014. (Appendix 1 provides details of the search strategy.) Abstracts were reviewed by a single reviewer and, for those studies meeting the eligibility criteria, full-text articles were obtained. Reference lists were also examined for any additional relevant studies not identified through the search.

### Inclusion Criteria

- English-language full-text publications
- published between January 1, 2008, and April 25, 2014
- systematic reviews, meta-analyses, and health technology assessments
- adults with COPD with clinical or subclinical anxiety or depression
- assessing effectiveness of CBT
- control groups of usual care, education, inactive controls, or active controls

### Exclusion Criteria

- randomized controlled trials (RCT), observational studies, case reports, editorials, conference abstracts
- studies in other populations (e.g., elderly, general population)
- studies of the effectiveness of pharmacologic or other treatments, or comparative effectiveness of treatments

### Outcomes of Interest

- change in symptoms of anxiety and/or depression
- quality of life

## Expert Panel

In November 2013, an Expert Advisory Panel on Post-Acute Community-Based Care for COPD Patients was struck. Members of the panel included physicians, personnel from the Ministry of Health and Long-Term Care, and representatives from community care organizations.

The role of the expert advisory panel was to provide advice on primary COPD patient groupings; to review the evidence, guidance, and publications related to defined COPD patient populations; to identify and prioritize interventions and areas of community-based care; and to advise on the development of a

care pathway model. The role of panel members was to provide advice on the scope of the project, the methods used, and the findings. However, the statements, conclusions, and views expressed in this report do not necessarily represent the views of the expert panel members.

## Quality of Evidence

The Assessment of Multiple Systematic Reviews (AMSTAR) measurement tool was used to assess the methodological quality of systematic reviews. (13)

The quality of the body of evidence for each outcome was examined according to the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) Working Group criteria. (14) The overall quality was determined to be high, moderate, low, or very low using a step-wise, structural methodology.

Study design was the first consideration; the starting assumption was that RCTs are high quality, whereas observational studies are low quality. Five additional factors—risk of bias, inconsistency, indirectness, imprecision, and publication bias—were then taken into account. Limitations in these areas resulted in downgrading the quality of evidence. Finally, 3 main factors that may raise the quality of evidence were considered: large magnitude of effect, dose-response gradient, and accounting for all residual confounding factors. (14) For more detailed information, please refer to the latest series of GRADE articles. (14)

As stated by the GRADE Working Group, the final quality score can be interpreted using the following definitions:

<b>High</b>	High confidence in the effect estimate—the true effect lies close to the estimate of the effect
<b>Moderate</b>	Moderate confidence in the effect estimate—the true effect is likely to be close to the estimate of the effect, but may be substantially different
<b>Low</b>	Low confidence in the effect estimate—the true effect may be substantially different from the estimate of the effect
<b>Very Low</b>	Very low confidence in the effect estimate—the true effect is likely to be substantially different from the estimate of effect

## Results of Rapid Review

The database search yielded 129 citations published between January 1, 2008, and April 25, 2014 (with duplicates removed). Articles were excluded based on information in the title and abstract. The full texts of potentially relevant articles were obtained for further assessment.

The literature search identified 3 systematic reviews (15-17) and they received AMSTAR scores of 6, 7, and 9 out of 11, respectively (Appendix 2, Table A1). The 2013 systematic review by Coventry et al (17) was the highest quality as assessed by AMSTAR, included the most RCTs on CBT, and was the most recent; therefore, it was selected as the basis for the results related to change in symptoms of anxiety and depression. Only one review measured quality of life (QoL) and was therefore the basis of the findings for that outcome. (15) The reference lists of included studies and health technology assessment websites were hand-searched for other eligible reviews, and no additional citations were identified.



## Symptom Improvement

A systematic review by Coventry et al (17) published in 2013 evaluated the effectiveness of complex interventions compared with usual care, wait list controls, or active controls for patients with COPD and coexisting anxiety or depression. Included in this review was a preplanned subgroup analysis examining CBT interventions specifically, compared to usual care or education (Table 1).

**Table 1: Subgroup Analysis of RCTs of Cognitive-Behavioural Therapy for Patients with COPD**

Number of RCTs (n range)	Range of Follow-Up, Weeks	Range of Mean Ages, Years	Range of COPD Severity	Professionals Delivering Interventions	Types of CBT Intervention
7 (23–238)	4–12	50–73	Mild–severe	Clinical psychologist, psychology student, social worker, nurse specialist, gero-psychiatrist, primary care nurses	30–120 minutes x 4–12 sessions Group or individual Face-to-face or remote

Abbreviations: CBT, cognitive-behavioural therapy; COPD, chronic obstructive pulmonary disease; n, number of patients; RCT, randomized controlled trial.

Source: Coventry et al, 2013. (17)

Change in symptoms was analyzed via standardized mean difference as the tools used to measure mood disorder symptoms varied. To assess depression, 4 studies used a version of the Beck Depression Inventory, (18-21) 1 used the Geriatric Depression Scale, (22) and 1 used the Profile of Mood States Depression tool. (23) To quantify anxiety, 3 studies used the Beck Anxiety Inventory, (19;20;22) 1 used the State Trait Anxiety Inventory (18), 1 used the Symptom Checklist-90, (21) and 1 used the Profile of Mood States Anxiety tool. (23) One study used the Hospital Anxiety and Depression Scale for assessment of both anxiety and depression. (24) Follow-up ranged from 4 to 12 weeks; however, for studies with multiple time points, the time period closest to end of treatment was included in the analysis. A random effects model was used for meta-analysis; Table 2 shows results for the effect of CBT interventions on anxiety and depression.

**Table 2: Change in Anxiety and Depression after Cognitive-Behavioural Therapy Interventions for Patients with COPD**

Outcome	Anxiety			Depression		
	Pooled SMD	95% CI	I <sup>2</sup> (P value)	Pooled SMD	95% CI	I <sup>2</sup> (P value)
Change in symptoms	-0.12	-0.34 to 0.11	34.5% (0.164)	-0.17	-0.35 to 0.01	10.1% (0.352)

Abbreviations: CI, confidence intervals; COPD, chronic obstructive pulmonary disease; SMD, standardized mean difference.

Source: Coventry et al, 2013. (17)

The meta-analysis revealed a small beneficial effect of CBT on both anxiety and depression, neither of which was statistically significant. There was no significant heterogeneity in the pooled analysis; but, there were differences in frequency of follow-up, outcome measurement, and interventions (duration, modality, frequency, and type of sessions [group or individual]). The authors discuss the potential role of methodological differences and the reality that the cognitive demands required to participate in, and therefore benefit from, CBT may be too high for the COPD population. They also discuss the age trends in COPD and the potential presence of cognitive impairments (both hypoxic and non-hypoxic) secondary to COPD as potential contributors to the observed lack of effectiveness. (17) Appendix 2, Table A2 provides the GRADE evidence profile for these results.

## Quality of Life

The efficacy of psychological interventions for anxiety and depression in COPD was assessed in a systematic review by Baraniak and Sheffield. (15) This review included studies of interventions aimed at reducing symptoms and improving quality of life. Six studies evaluating CBT interventions were identified; however, only 4 assessed QoL compared with usual care, wait list controls, or education. (20;22;25;26) Three of the studies assessing CBT measured generic QoL (22;25;26) and 1 assessed both generic and disease-specific QoL. (20) Similar to the review by Coventry et al, (17) there was a wide range in the facilitators, intensity, frequency, and duration of the CBT interventions (Table 3).

**Table 3: Overview of RCTs Examining Cognitive-Behavioural Therapy and Quality of Life**

Number of RCTs (n range)	Range of Mean Ages, years	Range of COPD Severity	Professionals Delivering Interventions	Description of CBT Intervention Types
4 (48–238)	66–72	Moderate–severe	Psychiatrist, psychology intern/post-doctoral fellow, gero-psychiatrist, researcher	60–120 minutes 4–12 sessions or 10 weeks Group-based, face-to-face

Abbreviations: CBT, cognitive-behavioural therapy; COPD, chronic obstructive pulmonary disease; n, number of patients; RCT, randomized controlled trial.

Source: Baraniak and Sheffield, 2011(15)

The Baraniak and Sheffield review (15) summarized the results from individual studies narratively; without a quantitative synthesis, we were not able to GRADE the results for QoL based on data reported in the review. We therefore assessed risk of bias for each study that measured QoL, using information from the quality assessment in the systematic review (Appendix 2, Table A3).

The narrative summary reported mixed results. Two studies reported some improvement in both health-related (20) and generic QoL score (mental health subscale) (20;22), though no differences were found between study groups. Between-groups findings were not reported from the other 2 studies, and no change was found in generic QoL within subjects in each group after the CBT intervention. (25;26)

Overall, the studies had small sample sizes and were likely underpowered to assess QoL; the authors indicate it was a secondary outcome for most of the studies. The authors also cited challenges in the synthesis of findings including unclear measurement and vague reporting of analysis. (15) One study reported significantly higher anxiety in the CBT group at baseline despite randomization (25) and it is unclear if the analysis accounted for the potential confounding from this difference. Although they did not statistically synthesize the QoL results, Baraniak and Sheffield (15) comment on a heterogeneity problem and say they detected some publication bias, but it is unclear which studies or outcomes their statements pertain to. The authors discuss the potential for CBT and other interventions to be ineffective for patients with COPD, despite demonstrated effectiveness in other populations.

Both systematic reviews cite the overlap in symptoms between COPD and these mood disorders as potential contributors to the lack of effectiveness observed.

# Conclusions

---

- Cognitive-behavioural therapy did not significantly reduce symptoms of anxiety or depression in patients with mild to severe chronic obstructive pulmonary disease (COPD), compared with usual care or education. (GRADE: Low)
- Based on 4 randomized controlled trials with considerable limitations due to risk of bias, cognitive-behavioural therapy had mixed effectiveness on improving the quality of life of patients with moderate to severe COPD, compared with usual care, wait list controls, or education.

# Acknowledgements

## Editorial Staff

Amy Zierler, BA

## Medical Information Services

Kaitryn Campbell, BA(H), BEd, MLIS

## Health Quality Ontario's Expert Advisory Panel on Post-Acute Community-Based Care for COPD Patients

Panel Members	Affiliation(s)	Appointment(s)
<b>Co-Chairs</b>		
Dr Chaim Bell	Mount Sinai Hospital University of Toronto	Clinician Scientist Associate Professor
Lisa Droppo	Ontario Association of Community Care Access Centers (OACCAC)	Chief Care Innovations Officer
<b>Primary Care</b>		
Dr Kenneth Hook	Ontario College of Family Physicians STAR Family Health Team	Past-President Senior Physician
Dr Alan Kaplan	Family Physicians Airway Group of Canada	Chair, Family Physicians Airway Group of Canada
Dr Peter Selby	Department of Family and Community Medicine & Psychiatry and Dalla Lana School of Public Health University of Toronto Ontario Tobacco Research Unit	Associate Professor Principal Investigator
<b>Respirology</b>		
Dr Samir Gupta	St Michael's Hospital	Adjunct Scientist, Keenan Research Centre
Dr Roger Goldstein	West Park Health Centre Toronto Rehabilitation Institute	Respiratory Division Head Associate Medical Staff Professor of Medicine
<b>Respiratory Therapy</b>		
Ivan Nicoletti	Erie St. Clair CCAC	Care Coordinator
Sara Han	Ontario Lung Association Mount Sinai Hospital	PCAP Provincial Coordinator Certified Respiratory Educator
Miriam Turnbull	ProResp Inc	General Manager
Madonna Ferrone	Erie St. Clair LHIN	Project Manager ARG1, Lung Health Collaboratist
<b>Nursing</b>		
Cheryl Lennox	South West Community CCAC, Intensive Home Care Team	Nurse Practitioner-Primary Health Care

<b>Panel Members</b>	<b>Affiliation(s)</b>	<b>Appointment(s)</b>
		Certified Respiratory Educator
Andrea Roberts	Toronto Central CCAC	Rapid Response Transition Nurse
Mary-Jane Herlihey	ParaMed Home Health Care Ottawa	Clinical Consultant
Suzy Young	St. Mary's General Hospital	Nurse Practitioner Primary Health Care SWCCAC Intensive Health Care Team Certified Respirator Educator

# Appendices

---

## Appendix 1: Literature Search Strategies

Database: EBM Reviews - Cochrane Database of Systematic Reviews <2005 to March 2014>, EBM Reviews - ACP Journal Club <1991 to April 2014>, EBM Reviews - Database of Abstracts of Reviews of Effects <1st Quarter 2014>, EBM Reviews - Cochrane Central Register of Controlled Trials <January 2014>, EBM Reviews - Cochrane Methodology Register <3rd Quarter 2012>, EBM Reviews - Health Technology Assessment <1st Quarter 2014>, EBM Reviews - NHS Economic Evaluation Database <1st Quarter 2014>, All Ovid MEDLINE(R) <1946 to Present>

**Search Strategy:** Community QBP COPD - Anxiety and Depression

---

- 1 exp Patient Discharge/ (19612)
- 2 exp Aftercare/ or exp Convalescence/ (10162)
- 3 "Continuity of Patient Care"/ or exp "Recovery of Function"/ (47562)
- 4 ((patient\* adj2 discharge\*) or after?care or post medical discharge\* or post?discharge\* or convalescen\*).ti,ab. (37579)
- 5 exp Stroke/ (87910)
- 6 exp brain ischemia/ or exp intracranial hemorrhages/ (131389)
- 7 (stroke or poststroke or tia or transient ischemic attack or ((cerebral vascular or cerebrovascular) adj (accident\* or infarct\*)) or CVA or cerebrovascular apoplexy or brain infarct\* or (brain adj2 isch?emia) or (cerebral adj2 isch?emia) or (intracranial adj2 h?emorrhag\*) or (brain adj2 h?emorrhag\*).ti,ab. (199959)
- 8 exp Heart Failure/ (91111)
- 9 (((cardia? or heart) adj (decompensation or failure or incompetence or insufficiency)) or cardiac stand still or ((coronary or myocardial) adj (failure or insufficiency))).ti,ab. (133265)
- 10 exp Pulmonary Disease, Chronic Obstructive/ (37678)
- 11 exp Emphysema/ (10911)
- 12 (copd or coad or chronic airflow obstruction\* or (chronic adj2 bronchitis) or emphysema).ti,ab. (57781)
- 13 (chronic obstructive adj2 (lung\* or pulmonary or airway\* or airflow\* or respiratory or bronchopulmonary) adj (disease\* or disorder\*).ti,ab. (35676)
- 14 exp Pneumonia/ (75675)
- 15 (pneumoni\* or peripneumoni\* or pleuropneumoni\* or lobitis or ((pulmon\* or lung\*) adj inflammation\*).ti,ab. (140837)
- 16 or/1-15 (769935)
- 17 exp Psychotherapy/ (162316)
- 18 exp Adaptation, Psychological/ (104886)
- 19 px.fs. (776125)
- 20 CBT.ti,ab. (6782)
- 21 ((cognition\* or cognitive\*) adj2 (behaviour\* or behavior\* or therap\*).ti,ab. (33006)
- 22 (mindfulness\* or mindful-ness\*).ti,ab. (2306)
- 23 (psychoanaly\* or psycho-analy\* or psychological\* or psychosocial\* or psycho-social\* or psychotherap\* or psycho-therap\*).ti,ab. (237711)
- 24 or/17-23 (1030059)
- 25 Anxiety/ (56691)
- 26 Anxiety Disorders/ (24342)
- 27 Depression/ (79564)
- 28 exp Depressive Disorder/ (86432)
- 29 Panic/ (2661)
- 30 Panic Disorder/ (6604)
- 31 (anxiet\* or anxious\* or depress\*).ti,ab. (421536)

32 ((emotional\* adj distress\*) or panic\*).ti,ab. (20386)  
33 or/25-32 (484700)  
34 16 and 24 and 33 (6399)  
35 limit 34 to (english language and yr="2008 -Current") [Limit not valid in CDSR,ACP Journal Club,DARE,CCTR,CLCMR; records were retained] (2683)  
36 Meta Analysis.pt. (47780)  
37 Meta-Analysis/ or exp Technology Assessment, Biomedical/ (56855)  
38 (meta analy\* or metaanaly\* or pooled analysis or (systematic\* adj2 review\*) or published studies or published literature or medline or embase or data synthesis or data extraction or cochrane).ti,ab. (202542)  
39 ((health technolog\* or biomedical technolog\*) adj2 assess\*).ti,ab. (2773)  
40 or/36-39 (219010)  
41 16 and 24 and 33 and 40 (238)  
42 limit 41 to (english language and yr="2008 -Current") [Limit not valid in CDSR,ACP Journal Club,DARE,CCTR,CLCMR; records were retained] (141)  
43 from 42 keep 13-141 (129)  
44 remove duplicates from 43 (115)  
45 from 35 keep 1-13,227 (14)  
46 44 or 45 (129)

## Appendix 2: Evidence Quality Assessment

Table A1: AMSTAR Score of Included Systematic Reviews

Author, Year	AMSTAR Score	(1) Provided Study Design	(2) Duplicate Study Selection	(3) Broad Literature Search	(4) Considered Status of Publication	(5) Listed Excluded Studies	(6) Provided Characteristics of Studies	(7) Assessed Scientific Quality	(8) Considered Quality in Report	(9) Methods to Combine Appropriate	(10) Assessed Publication Bias	(11) Stated Conflict of Interest
Coventry et al, 2013 (17)	9	✓	✓	✓	✓		✓	✓	✓	✓	✓	
Baraniak and Sheffield, 2011 (15)	6	✓		✓	✓		✓	✓	✓			
Coventry and Gellatly, 2008 (16)	7	✓		✓	✓		✓	✓	✓	✓		

Abbreviations: AMSTAR, Assessment of Multiple Systematic Reviews.

\*Maximum possible score is 11. Details of AMSTAR score are described in Shea et al. (13)



**Table A2: GRADE Evidence Profile for Comparison of Cognitive-Behavioural Therapy and Usual Care**

Number of Studies (Design)	Risk of Bias	Inconsistency	Indirectness	Imprecision	Publication Bias	Upgrade Considerations	Quality
<b>Anxiety Symptoms (Standardized Mean Difference)</b>							
7 (RCTs)	Serious limitations (-1) <sup>a</sup>	Serious limitations (-1) <sup>b</sup>	No serious limitations	Serious limitations (-1) <sup>c</sup>	No serious limitations	None	⊕⊕ Low
<b>Depression Symptoms (Standardized Mean Difference)</b>							
7 (RCTs)	Serious limitations (-1) <sup>a</sup>	Serious limitations (-1) <sup>d</sup>	No serious limitations	Serious limitations (-1) <sup>c</sup>	No serious limitations	None	⊕⊕ Low

Abbreviations: GRADE, Grading of Recommendations Assessment, Development, and Evaluation.

<sup>a</sup>Risk of bias assessment taken from Coventry et al, 2013. (17)

<sup>b</sup>The range of point estimates (-0.71 to 0.36) includes large benefit to moderate favour of the control. (27)

<sup>c</sup>Power cannot be assessed as pooled sample size is not reported, sample sizes range from 23 to 238 participants, and the 95% confidence interval includes 0, as well as appreciable benefit or harm.

<sup>d</sup>The range of point estimates (-0.63 to 0.10) includes large benefit, no effect, and slight favouring of the control. (27)

**Table A3: Risk of Bias Among Randomized Controlled Trials for the Comparison of Cognitive-Behavioural Therapy and Controls for Studies Assessing Quality of Life**

Author, Year	Allocation Concealment	Blinding	Complete Accounting of Patients and Outcome Events	Selective Reporting Bias	Other Limitations
Kunik et al, 2001 (22)	Serious limitations <sup>a</sup>	Serious limitations <sup>b</sup>	Serious limitations <sup>c</sup>	No limitations	No limitations
Kunik et al, 2008 (20)	Serious limitations <sup>a</sup>	Serious limitations <sup>b</sup>	No limitations <sup>d</sup>	No limitations	No limitations
Emery et al, 1998 (26)	No limitations	No limitations <sup>e</sup>	No limitations <sup>d</sup>	No limitations	No limitations
Eiser et al, 1997 (25)	Serious limitations <sup>a,f</sup>	Serious limitations <sup>b</sup>	Serious limitations <sup>c</sup>	No limitations	No limitations

<sup>a</sup>Inadequate allocation concealment method.

<sup>b</sup>Only participants were blinded to treatment group. Infeasible to blind interventionists due to nature of the intervention.

<sup>c</sup>Loss to follow-up was partially reported and differences in attrition between groups was not analyzed.

<sup>d</sup>Loss to follow-up was fully reported and considered in the analysis, although intention-to-treat principle was not adhered to.

<sup>e</sup>Outcome assessors and participants were blinded to treatment group. Infeasible to blind interventionists due to nature of the intervention.

<sup>f</sup>Randomization unclear and suspected to be inadequate as intervention group had significantly higher prevalence of anxiety than control group at baseline.

Source: Baraniak and Sheffield, 2011. (15)

# References

---

- (1) Hill K, Geist R, Goldstein RS, Lacasse Y. Anxiety and depression in end-stage COPD. *Eur Respir J*. 2008 Mar;31(3):667-77.
- (2) Brenes GA. Anxiety and chronic obstructive pulmonary disease: prevalence, impact, and treatment. *Psychosom Med*. 2003 Nov;65(6):963-70.
- (3) Hynninen KM, Breitive MH, Wiborg AB, Pallesen S, Nordhus IH. Psychological characteristics of patients with chronic obstructive pulmonary disease: a review. *J Psychosom Res*. 2005 Dec;59(6):429-43.
- (4) Mikkelsen RL, Middelboe T, Pisinger C, Stage KB. Anxiety and depression in patients with chronic obstructive pulmonary disease (COPD). A review. *Nord J Psychiatry*. 2004;58(1):65-70.
- (5) van EL, Yzermans CJ, Brouwer HJ. Prevalence of depression in patients with chronic obstructive pulmonary disease: a systematic review. *Thorax*. 1999 Aug;54(8):688-92.
- (6) Lacasse Y, Rousseau L, Maltais F. Prevalence of depressive symptoms and depression in patients with severe oxygen-dependent chronic obstructive pulmonary disease. *J Cardiopulm Rehabil*. 2001 Mar;21(2):80-6.
- (7) Dahlen I, Janson C. Anxiety and depression are related to the outcome of emergency treatment in patients with obstructive pulmonary disease. *Chest*. 2002 Nov;122(5):1633-7.
- (8) Ng TP, Niti M, Tan WC, Cao Z, Ong KC, Eng P. Depressive symptoms and chronic obstructive pulmonary disease: effect on mortality, hospital readmission, symptom burden, functional status, and quality of life. *Arch Intern Med*. 2007 Jan 8;167(1):60-7.
- (9) Engstrom CP, Persson LO, Larsson S, Ryden A, Sullivan M. Functional status and well being in chronic obstructive pulmonary disease with regard to clinical parameters and smoking: a descriptive and comparative study. *Thorax*. 1996 Aug;51(8):825-30.
- (10) Kim HF, Kunik ME, Molinari VA, Hillman SL, Lalani S, Orengo CA, et al. Functional impairment in COPD patients: the impact of anxiety and depression. *Psychosomatics*. 2000 Nov;41(6):465-71.
- (11) Lacasse Y, Goldstein R, Lasserson TJ, Martin S. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2006;(4):CD003793.
- (12) Keating A, Lee A, Holland AE. What prevents people with chronic obstructive pulmonary disease from attending pulmonary rehabilitation? A systematic review. *Chron Respir Dis*. 2011;8(2):89-99.
- (13) Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol*. 2007;7:10.
- (14) Guyatt GH, Oxman AD, Schunemann HJ, Tugwell P, Knottnerus A. GRADE guidelines: a new series of articles in the *Journal of Clinical Epidemiology*. *J Clin Epidemiol*. 2011 Apr;64(4):380-2.

- (15) Baraniak A, Sheffield D. The efficacy of psychologically based interventions to improve anxiety, depression and quality of life in COPD: a systematic review and meta-analysis. *Patient Education & Counseling*. 2011;83(1):29-36.
- (16) Coventry PA, Gellatly JL. Improving outcomes for COPD patients with mild-to-moderate anxiety and depression: a systematic review of cognitive behavioural therapy. *British Journal of Health Psychology*. 2008;13(Pt:3):3-400.
- (17) Coventry PA, Bower P, Keyworth C, Kenning C, Knopp J, Garrett C, et al. The effect of complex interventions on depression and anxiety in chronic obstructive pulmonary disease: systematic review and meta-analysis. *PLoS ONE*. 2013;8(4):e60532.
- (18) Blumenthal JA, Babyak MA, Keefe FJ, Davis RD, Lacailla RA, Carney RM, et al. Telephone-based coping skills training for patients awaiting lung transplantation. *J Consult Clin Psychol*. 2006 Jun;74(3):535-44.
- (19) Hynninen MJ, Bjerke N, Pallesen S, Bakke PS, Nordhus IH. A randomized controlled trial of cognitive behavioral therapy for anxiety and depression in COPD. *Respir Med*. 2010 Jul;104(7):986-94.
- (20) Kunik ME, Veazey C, Cully JA, Soucek J, Graham DP, Hopko D, et al. COPD education and cognitive behavioral therapy group treatment for clinically significant symptoms of depression and anxiety in COPD patients: a randomized controlled trial. *Psychol Med*. 2008 Mar;38(3):385-96.
- (21) Lamers F, Jonkers CC, Bosma H, Chavannes NH, Knottnerus JA, van Eijk JT. Improving quality of life in depressed COPD patients: effectiveness of a minimal psychological intervention. *COPD*. 2010 Oct;7(5):315-22.
- (22) Kunik ME, Braun U, Stanley MA, Wristers K, Molinari V, Stoeber D, et al. One session cognitive behavioural therapy for elderly patients with chronic obstructive pulmonary disease. *Psychol Med*. 2001 May;31(4):717-23.
- (23) Kapella MC, Herdegen JJ, Perlis ML, Shaver JL, Larson JL, Law JA, et al. Cognitive behavioral therapy for insomnia comorbid with COPD is feasible with preliminary evidence of positive sleep and fatigue effects. *Int J Chron Obstruct Pulmon Dis*. 2011;6:625-35.
- (24) Livermore N, Sharpe L, McKenzie D. Prevention of panic attacks and panic disorder in COPD. *Eur Respir J*. 2010 Mar;35(3):557-63.
- (25) Eiser N, West C, Evans S, Jeffers A, Quirk F. Effects of psychotherapy in moderately severe COPD: a pilot study. *Eur Respir J*. 1997 Jul;10(7):1581-4.
- (26) Emery CF, Schein RL, Hauck ER, MacIntyre NR. Psychological and cognitive outcomes of a randomized trial of exercise among patients with chronic obstructive pulmonary disease. *Health Psychol*. 1998 May;17(3):232-40.
- (27) Brooks D, Krip B, Mangovski-Alzamora S, Goldstein RS. The effect of postrehabilitation programmes among individuals with chronic obstructive pulmonary disease. *Eur Respir J*. 2002 Jul;20(1):20-9.

Health Quality Ontario  
130 Bloor Street West, 10<sup>th</sup> Floor  
Toronto, Ontario  
M5S 1N5  
Tel: 416-323-6868  
Toll Free: 1-866-623-6868  
Fax: 416-323-9261  
Email: [EvidenceInfo@hqontario.ca](mailto:EvidenceInfo@hqontario.ca)  
[www.hqontario.ca](http://www.hqontario.ca)

© Queen's Printer for Ontario, 2015