

Chronic obstructive pulmonary disease in over 16s: diagnosis and management (update)

Search strategies

NICE guideline <number>

Search strategies

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Contents

1	Scoping search strategies	5
1.1	Scoping searches.....	5
1.2	Main searches.....	6
1.3	Identification of evidence for review questions.....	6
2	Review question search strategies	7
2.1	Search strategy review questions.....	7
2.2	Search strategy review question	7
2.3	Search strategy review question	7
2.4	Search strategy review question	8
2.5	Search strategy review questions	10
2.6	Search strategy review question	14
2.7	Search strategy review questions.....	13
3	Cochrane search strategies	17
3.1	Search Strategy review question	17
3.2	Search strategy review question	17
3.3	Search strategy review question	19
4	Study Design Filters	21
5	Health economics search strategy	23
5.1	Economic evaluations and quality of life data	23

1 Scoping search strategies

1.1 Scoping searches

Scoping searches were undertaken on the following websites and databases (listed in alphabetical order) in November 2016 to provide information for scope development and project planning. Browsing or simple search strategies were employed.

Guidelines/website	Systematic review/economic evaluations
British Lung Foundation	Campbell Collaboration
British Thoracic Society	Cochrane Database of Systematic Reviews (CDSR)
Canadian Medical Association Infobase	Database of Abstracts of Reviews of Effects (DARE) – last updated April 2015
Care Quality Commission	DUETS
Core Outcome Measures in Effectiveness Trials (COMET)	Health Technology Assessment (HTA) Database – last updated October 2016
Department of Health	NHS Economic Evaluation Database (NHS EED) – last updated April 2015
General Medical Council	NIHR Health Technology Assessment Programme
Guidelines & Audit Implementation Network (GAIN)	NIHR Health Services and Delivery Research (HS&DR) Programme
Guidelines International Network (GIN)	PROSPERO
Health and Social Care Information Centre	TRIP Database
Healthtalk Online	
Medicines and Products Regulatory Agency (MHRA)	
National Audit Office	
National Clinical Audit and Patient Outcomes Programme	
National Health and Medical Research Council - Australia	
National Institute for Health and Care Excellence (NICE) - published & in development guidelines	
National Institute for Health and Care Excellence (NICE) - Topic Selection	
NHS Choices	
NHS England	
NICE Clinical Knowledge Summaries (CKS)	
NICE Evidence Search	
Patient UK	
PatientVoices	
Public Health England	
Royal College of Anaesthetists	
Royal College of General Practitioners	
Royal College of Midwives	
Royal College of Nursing	
Royal College of Obstetricians and Gynaecologists	
Royal College of Ophthalmologists	
Royal College of Pathologists	
Royal College of Physicians	
Royal College of Psychiatrists	

Guidelines/website	Systematic review/economic evaluations
Royal College of Radiologists Royal College of Speech & Language Therapists Royal College of Surgeons Scottish Government Scottish Intercollegiate Guidelines Network (SIGN) UK Data Service UK National Statistics US National Guideline Clearinghouse	

1.2 Main searches

Bibliographic databases searched for the guideline

- Cochrane Database of Systematic Reviews – CDSR (Wiley)
- Cochrane Central Register of Controlled Trials – CENTRAL (Wiley)
- Database of Abstracts of Reviews of Effects – DARE (Wiley)
- Health Technology Assessment Database – HTA (Wiley)
- EMBASE (Ovid)
- MEDLINE (Ovid)
- MEDLINE Epub Ahead of Print (Ovid)
- MEDLINE In-Process (Ovid)

1.3 Identification of evidence for review questions

The searches were conducted between April 2017 and November 2017 for 12 review questions (RQ). In collaboration with Cochrane, the evidence for several review questions was identified by an update of an existing Cochrane review. Review questions in this category are indicated below. Where review questions had a broader scope, supplement searches were undertaken by NICE.

Searches were re-run in February 2018.

Where appropriate, study design filters (either designed in-house or by McMaster) were used to limit the retrieval to, for example, randomised controlled trials. Details of the study design filters used can be found in section 4.

2 Review question search strategies

2.1 Search strategy review question

RQ: What are the most clinically and cost-effective therapies for managing complications (pulmonary hypertension and cor pulmonale) in people with stable chronic obstructive pulmonary disease (COPD)?

Table 1: search strategy

Medline Strategy, searched 28th April 2017

Database: Ovid MEDLINE(R) 1946 to April Week 3 2017

Search Strategy:

- 1 lung diseases, obstructive/
- 2 exp pulmonary disease, chronic obstructive/
- 3 (copd or coad or cobd or aecb).tw.
- 4 emphysema*.tw.
- 5 (chronic* adj4 bronch*).tw.
- 6 (chronic* adj3 (airflow* or airway* or bronch* or lung* or respirat* or pulmonary) adj3 obstruct*).tw.
- 7 (pulmonum adj4 (volumen or pneumatosis)).tw.
- 8 pneumonectasia.tw.
- 9 *Dyspnea/
- 10 (chronic* adj3 (breath* or respirat*) adj3 (difficult* or labor* or labour* or problem* or short*)).tw.
- 11 (chronic* adj3 (dyspnea* or dyspnoea* or dyspneic or breathless*)).tw.
- 12 or/1-11
- 13 exp Hypertension, Pulmonary/
- 14 ((pulmonary or lung) adj4 hypertensi*).tw.
- 15 Pulmonary Heart Disease/
- 16 (cor adj4 pulmonale).tw.
- 17 corpulmonale.tw.
- 18 (pulmonary adj4 (cardiac or heart) adj4 (disease* or disorder*)).tw.
- 19 (chronic* adj3 (anoxemia or anoxia or hypoxi* or hypoxemi*)).tw.
- 20 (chronic* adj3 oxygen adj3 deficienc*).tw.
- 21 or/13-20
- 22 12 and 21
- 23 animals/ not humans/
- 24 22 not 23
- 25 limit 24 to english language
- 26 limit 25 to (letter or historical article or comment or editorial or news or case reports)
- 27 25 not 26

Note: *In-house RCT and systematic review filters were appended. No date limit was used as the previous guideline recommendations were not based on a systematic literature search.*

2.2 Search strategy review questions

RQ: What is the effectiveness of oxygen therapy in people with stable COPD who are mildly hypoxaemic or non-hypoxaemic at rest?

RQ: In which subgroups of people is long-term oxygen therapy indicated, and is it a clinically and cost effective option for managing stable COPD in these subgroups?

This search was constructed in two parts. The first part was covered by a Cochrane Review and the searches can be found in section 3.1.

The NICE Guidance Information Services search below covered the second part on long-term oxygen therapy.

Table 3: search strategy

Medline Strategy, searched 15th June 2017	
Database: Ovid MEDLINE(R) 1946 to June Week 1 2017	
Search Strategy:	
1	lung diseases, obstructive/
2	exp pulmonary disease, chronic obstructive/
3	(copd or coad or cobd or aecb).tw.
4	emphysema*.tw.
5	(chronic* adj4 bronch*).tw.
6	(chronic* adj3 (airflow* or airway* or bronch* or lung* or respirat* or pulmonary) adj3 obstruct*).tw.
7	(pulmonum adj4 (volumen or pneumatosis)).tw.
8	pneumonectasia.tw.
9	*Dyspnea/
10	(chronic* adj3 (breath* or respirat*) adj3 (difficult* or labor* or labour* or problem* or short*)).tw.
11	(chronic* adj3 (dyspnea* or dyspnoea* or dyspneic or breathless*)).tw.
12	or/1-11
13	Oxygen Inhalation Therapy/
14	Respiratory Therapy/
15	Oxygen/
16	((oxygen* or o2) adj4 (long* or prolong* or indefinit* or contin* or ongoing or timespan or duration or length*)).tw.
17	((inhalation* or respiratory) adj4 therap*).tw.
18	LTOT.tw.
19	or/13-18
20	12 and 19
21	animals/ not humans/
22	20 not 21
23	limit 22 to english language
24	limit 23 to (letter or historical article or comment or editorial or news or case reports)
25	23 not 24

Note: In-house RCT and systematic review filters were appended. No date limit was used as the previous guideline recommendations were not based on a systematic literature search.

2.3 Search strategy review question

RQ: What is the clinical and cost effectiveness of self-management interventions, education, and telehealth monitoring for improving outcomes and adherence to treatment in people with stable COPD?

Table 4: search strategy

Medline Strategy, searched 18th July 2017	
Database: Ovid MEDLINE(R) 1946 to July Week 1 2017	
Search Strategy:	
1	lung diseases, obstructive/
2	exp pulmonary disease, chronic obstructive/
3	(copd or coad or cobd or aecb).tw.
4	emphysema*.tw.
5	(chronic* adj4 bronch*).tw.
6	(chronic* adj3 (airflow* or airway* or bronch* or lung* or respirat* or pulmonary) adj3 obstruct*).tw.
7	(pulmonum adj4 (volumen or pneumatosis)).tw.
8	pneumonectasia.tw.
9	*Dyspnea/
10	(chronic* adj3 (breath* or respirat*) adj3 (difficult* or labor* or labour* or problem* or short*)).tw.
11	(chronic* adj3 (dyspnea* or dyspnoea* or dyspneic or breathless*)).tw.
12	or/1-11
13	exp Self Care/ or self efficacy/ or social support/ or self-help groups/
14	(selfhelp or selfguid* or self-guid* or selfmanage* or selfpace* or selftreat*).tw.
15	((self or selves or personal* or themsel*) adj2 (assess* or care or caring or control* or efficacy or help* or intervention* or manag* or pace* or treat*)).tw.
16	((network* or support or therap*) adj2 (club* or group* or social* or peer* or friend* or companion* or buddy)).tw.
17	Patient Care Planning/ or case management/ or managed care programs/ or patient care management/
18	((action or care or manag* or individual* or patient* or self or personal*) adj2 (plan* or program*)).tw.
19	(goal* adj2 (care* or set*)).tw.
20	(case adj2 manag*).tw.
21	Health education/ or consumer health information/ or patient education as topic/
22	patient education handout/ or pamphlets/
23	exp Health Promotion/
24	(health adj4 (consumer* or educat* or promot*)).ti.
25	Information centers/ or information services/ or information dissemination/ or libraries/ or library services/
26	((patient* or carer* or caregiver* or care-giver* or consumer*) adj2 (advis* or advice* or counsel* or booklet* or brochure* or communicat* or dvd* or educat* or forum* or handout* or hand-out* or informat* or leaflet* or learn* or lesson* or material* or pamphlet* or promot* or resource* or support* or teach* or tool* or train* or video* or website*)).tw.
27	Telemedicine/
28	Computers/ or exp computers, handheld/
29	exp Internet/
30	Mobile Applications/
31	Social Networking/
32	electronic mail/ or text messaging/ or telephone/ or exp cell phones/ or hotlines/
33	exp Teaching Materials/
34	Computer-Assisted Instruction/
35	Videoconferencing/
36	(digihealth* or digi-health* or digital health* or digital therap* or digital treat* or ehealth or e-health or etherap* or e-therap* or etreat* or e-treat* or mhealth or m-health or mobile health*

Medline Strategy, searched 18th July 2017

Database: Ovid MEDLINE(R) 1946 to July Week 1 2017

Search Strategy:

or telehealth* or tele-health* or telemedic* or tele-medic* or telecommunicat* or tele-communicat* or tele-homecare or telehomecare or tele-monitor* or telemonitor* or telemanage* or tele-manage* or teleconsult* or tele-consult* or telecare* or tele-care* or telepharmac* or tele-pharmac* or telenurs* or tele-nurs* or tele-support or telesupport).tw.
37 ((online or internet or remote or phone* or telephone*) adj2 (care or consult* or management* or monitor* or therap* or treatment*)).tw.
38 (android* or app or apps or blog* or facebook or facetime or face time or helpline* or hotline* or ipad* or iphone* or mobile phone* or cell phone* or personal digital assistant* or mp3* or podcast* or skype* or smartphone* or smart-phone* or social media or social network* or sms or text messag* or twitter or tweet* or tutorial* or wiki* or youtube*).tw.
39 ((digital* or mobile* or phone* or tablet* or portable) adj4 application*).tw.
40 (device* adj4 (handheld or palm* or pda or tablet*)).tw.
41 Reminder Systems/
42 (reminder adj2 system*).tw.
43 Bibliotherapy/
44 bibliotherap*.tw.
45 ((book* or information*) adj2 prescription*).tw.
46 or/13-45
47 12 and 46
48 animals/ not humans/
49 47 not 48
50 limit 49 to english language
51 limit 50 to (letter or historical article or comment or editorial or news or case reports)
52 50 not 51
53 (200305* or 200306* or 200307* or 200308* or 200309* or 200310* or 200311* or 200312* or 2004* or 2005* or 2006* or 2007* or 2008* or 2009* or 201*).ed.
54 52 and 53

Note: In-house RCT and systematic review filters were appended. Searches were limited by date (1/05/2003-18/07/2017) from when previous guideline searches were undertaken.

2.4 Search strategy review questions

RQ: In people with suspected COPD, what is the most accurate and appropriate test (for example imaging or biomarkers) to confirm the diagnosis?

RQ: In people with suspected COPD, which tests (for example imaging or biomarkers) are the most accurate to identify whether they are at risk of poor outcomes and whether they will develop mild, moderate or severe COPD?

RQ: In people with stable COPD, does routine assessment using a multidimensional severity assessment index (such as BODE [BMI, airflow obstruction, dyspnoea/ breathlessness and exercise capacity]) better predict outcomes than forced expiratory volume in 1 second (FEV11) alone?

Table 5: search strategy

Medline Strategy, searched 8th August 2017

Database: Ovid MEDLINE(R) 1946 to July Week 4 2017

Search Strategy:

1 lung diseases, obstructive/

Medline Strategy, searched 8th August 2017

Database: Ovid MEDLINE(R) 1946 to July Week 4 2017

Search Strategy:

- 2 exp pulmonary disease, chronic obstructive/
- 3 (copd or coad or cobd or aecb).tw.
- 4 emphysema*.tw.
- 5 (chronic* adj4 bronch*).tw.
- 6 (chronic* adj3 (airflow* or airway* or bronch* or lung* or respirat* or pulmonary) adj3 obstruct*).tw.
- 7 (pulmonum adj4 (volumen or pneumatosis)).tw.
- 8 pneumonectasia.tw.
- 9 *Dyspnea/
- 10 (chronic* adj3 (breath* or respirat*) adj3 (difficult* or labor* or labour* or problem* or short*)).tw.
- 11 (chronic* adj3 (dyspnea* or dyspnoea* or dyspneic or breathless*)).tw.
- 12 or/1-11
- 13 *Respiratory Function Tests/
- 14 ((lung* or pulmonary or respirat* or ventilat*) adj2 function* adj2 test*).tw.
- 15 exp *Spirometry/
- 16 (spiometr* or bronchspiometr*).tw.
- 17 *Forced Expiratory Volume/
- 18 exp *Forced Expiratory Flow Rates/
- 19 (peak* adj2 flow*).tw.
- 20 (FEV or FEV1 or FEV1 or "FEV(1)" or PEFR).tw.
- 21 (forced adj2 expir* adj2 (flow* or volume* or test* or index*)).tw.
- 22 ((lung* or timed or forced) adj2 vital capacit*).tw.
- 23 (maxim* adj2 (breath* or lung*) adj2 (volume* or capacit*)).tw.
- 24 (maxim* adj2 (expir* or inspirat* or respirat* or ventilat*)).tw.
- 25 or/13-24
- 26 *body mass index/
- 27 ((body mass or quetelet*) adj2 index*).tw.
- 28 BMI.tw.
- 29 or/26-28
- 30 *Airway Obstruction/
- 31 ((airflow* or airway* or respirat*) adj2 (closure or obstruct* or occlu*)).tw.
- 32 or/30-31
- 33 (DLCO or TLCO).tw.
- 34 transfer factor for carbon monoxide.tw.
- 35 or/33-34
- 36 *Biomarkers/
- 37 (biomarker* or bioindicator*).tw.
- 38 (biolog* adj2 indicator*).tw.
- 39 ((biochemical* or biolog* or clinical* or disease* or immun* or inflamm* or laborator* or serum* or surrogate* or viral) adj2 marker*).tw.
- 40 *Eosinophils/
- 41 (eosinophil* or eosinophyl*).tw.
- 42 (acidophil* adj2 (granulocyte* or leucocyte* or leukocyte*)).tw.
- 43 or/36-42
- 44 *Sputum/
- 45 sputum*.tw.
- 46 or/44-45

Medline Strategy, searched 8th August 2017

Database: Ovid MEDLINE(R) 1946 to July Week 4 2017

Search Strategy:

47 *Oximetry/
48 (pulse* adj2 oximetr*).tw.
49 ((oxygen* or O2) adj2 saturation).tw.
50 or/47-49
51 *Polycythemia/
52 (erythrocythemia* or polycytemia* or polycythemia* or polycythaemia* or polyerythemia*
or polyglob*).tw.
53 or/51-52
54 *Interleukin-6/
55 (b cell* adj2 (differentiat* or stimulat*) adj2 factor*).tw.
56 (bsf-2 or ifn-beta 2 or il-6 or (interferon adj2 (beta-2 or beta2)) or interleukin-6 or mgi-2).tw.
57 (interleukin adj2 (b or hp1)).tw.
58 (protein* adj2 26*).tw.
59 (myeloid adj2 differentiat*).tw.
60 ((hepatocyte* or hybridoma* or plasmacytoma*) adj3 factor*).tw.
61 (a1pi or prolantin or zemaira).tw.
62 ((antipro* or antitrypsin or pi or protease or proteinase or trypsin) adj2 alpha).tw.
63 serpin a1.tw.
64 or/54-63
65 *Diagnostic Imaging/
66 (diagnos* adj2 (imag* or scan* or tomograph*)).tw.
67 exp *Tomography, X-Ray Computed/
68 ((CT or CAT) adj2 (imag* or diagnos* or scan* or detect* or exam* or tomograph*)).tw.
69 (cine-ct or tomodensitometr*).tw.
70 ((compute* or electro*) adj2 tomograph*).tw.
71 *X-Rays/
72 (x-ray* or xray* or x-radiation*).tw.
73 ((radiation* or ray*) adj2 roentgen).tw.
74 exp *Positron-Emission Tomography/
75 ((positron or PET or FDG) adj2 (imag* or scan* or tomograph*)).tw.
76 (PET adj2 FDG).tw.
77 exp *Echocardiography/ or exp *Electrocardiography/
78 ((cardi* or heart* or myocardium) adj2 scan*).tw.
79 (cardiog* or cardioecho* or (cardi* adj2 echo*) or ecg or ekg or echocardiog* or echog* or
electrocardiog* or (electro adj2 cardiog*) or electromyocardiog* or polycardiog*).tw.
80 or/65-79
81 *Exercise Tolerance/
82 exp *Exercise Test/
83 (exercis* adj2 (capacit* or tolerance or test*)).tw.
84 ((fitness or step* or treadmill* or walk*) adj2 test*).tw.
85 ((six or shuttle* or "6") adj2 walk*).tw.
86 or/81-85
87 (ADO or BODE or BODEx or mBODE or CAT or CCQ or CODEX or DECAF or GOLD or SGRQ).tw.
88 (COPD adj2 assess* adj2 test*).tw.
89 "Global Initiative for Chronic Obstructive Lung Disease".tw.
90 (DOSE adj2 (index* or indice*)).tw.
91 ((COPD or St George*) adj4 questionnaire*).tw.

Medline Strategy, searched 8th August 2017

Database: Ovid MEDLINE(R) 1946 to July Week 4 2017

Search Strategy:

92 ((dyspnea* or dyspnoea* or dyspneic or breathless*) adj4 (borg or mrc or mmrc or medical research council or scale* or scor* or tool*)).tw.
93 *"Predictive Value of Tests"/
94 *"Severity of Illness Index"/
95 *"Surveys and Questionnaires"/
96 ((severity or assess* or multicomponent or multi-component or multidimensional or multi-dimensional or prognos*) adj2 (index* or indice* or survey* or tool* or questionnaire* or grad* or rate or rating or scale* or scor*)).tw.
97 (severity adj2 assess*).tw.
98 ((scor* or grad* or rate or rating) adj2 (scale* or system*)).tw.
99 or/87-98
100 25 or 29 or 32 or 35 or 43 or 46 or 50 or 53 or 64 or 80 or 86 or 99
101 12 and 100
102 sensitiv:.mp.
103 predictive value:.mp.
104 accurac:.tw.
105 or/102-104
106 prognos:.tw.
107 first episode.tw.
108 cohort.tw.
109 or/106-108
110 105 or 109
111 101 and 110
112 limit 111 to english language
113 limit 112 to (letter or historical article or comment or editorial or news or case reports)
114 112 not 113

Note: McMaster optimal diagnosis and specific prognosis filters were appended. This was adapted for Wiley database. The search is not date limited as it covers multiple review questions and the 2004 recommendations were not based on a systematic literature search.

2.5 Search strategy review questions

RQ: What is the clinical and cost effectiveness of prophylactic oral antibiotics for preventing exacerbations in people with stable COPD?

RQ: In people with COPD, what factors (for example, viral infection) may cause an exacerbation?

This search was constructed in two parts. The first part on prophylactic oral antibiotics was covered by a Cochrane Review and the searches can be found in section 3.3.

The NICE Guidance Information Services search below covers the second part on factors causing an exacerbation.

Table 7: search strategy

Medline Strategy, searched 1st November 2017

Database: Ovid MEDLINE(R) 1946 to October Week 3 2017

Search Strategy:

1 lung diseases, obstructive/

Medline Strategy, searched 1st November 2017

Database: Ovid MEDLINE(R) 1946 to October Week 3 2017

Search Strategy:

```
2 exp pulmonary disease, chronic obstructive/
3 (copd or coad or cobd or aecb).tw.
4 emphysema*.tw.
5 (chronic* adj4 bronch*).tw.
6 (chronic* adj3 (airflow* or airway* or bronch* or lung* or respirat* or pulmonary) adj3
obstruct*).tw.
7 (pulmonum adj4 (volumen or pneumatosis)).tw.
8 pneumonectasia.tw.
9 *Dyspnea/
10 (chronic* adj3 (breath* or respirat*) adj3 (difficult* or labor* or labour* or problem* or
short*).tw.
11 (chronic* adj3 (dyspnea* or dyspnoea* or dyspneic or breathless*).tw.
12 or/1-11
13 symptom flare up/
14 (exacerbat* or flare* or flaring).tw.
15 or/13-14
16 12 and 15
17 animals/ not humans/
18 16 not 17
19 limit 18 to english language
20 limit 19 to (letter or historical article or comment or editorial or news or case reports)
21 19 not 20
```

Note: An adapted in-house observational filter was appended. No date limit was used as the previous guideline recommendations were not based on a systematic literature search.

2.6 Search strategy review questions

RQ: In people with stable COPD, what is the clinical and cost effectiveness of a LAMA plus a LABA compared with:

- a LAMA alone
- a LABA alone
- a LABA plus an inhaled corticosteroid (ICS)

RQ: Which is the most clinically and cost-effective long-acting anticholinergic (LAMA) for managing stable COPD, and which subgroups of people should receive treatment with it?

This search was constructed in two parts. The first part was covered by a Cochrane Review and the searches can be found in section 3.2.

The NICE Guidance Information Services search below covered the second part on LAMA's.

Table 6: search strategy

Medline Strategy, searched 14th September 2017	
Database: Ovid MEDLINE(R) 1946 to September Week 1 2017	
Search Strategy:	
1	lung diseases, obstructive/
2	exp pulmonary disease, chronic obstructive/
3	(copd or coad or cobd or aecb).tw.
4	emphysema*.tw.
5	(chronic* adj4 bronch*).tw.
6	(chronic* adj3 (airflow* or airway* or bronch* or lung* or respirat* or pulmonary) adj3 obstruct*).tw.
7	(pulmonum adj4 (volumen or pneumatosis)).tw.
8	pneumonectasia.tw.
9	*Dyspnea/
10	(chronic* adj3 (breath* or respirat*) adj3 (difficult* or labor* or labour* or problem* or short*)).tw.
11	(chronic* adj3 (dyspnea* or dyspnoea* or dyspneic or breathless*)).tw.
12	or/1-11
13	Muscarinic Antagonists/
14	(long act* adj4 muscarinic*).tw.
15	(muscarinic* adj1 antagonist*).tw.
16	LAMA*.tw.
17	(anticholinergic* or antimuscarinic* or anti-muscarinic*).tw.
18	Tiotropium Bromide/
19	(tiotropium* or ba 679 br or ba679 br or spiriva* or handihaler* or braltus).tw.
20	(tiova adj2 rotacap*).tw.
21	Glycopyrrolate/
22	(glycopyrrolate* or glycopyrrolate* or seebri* or nva237 or nva 237 or dimethylpyrrolidinium* or ad237 or ad 237 or ahr504 or ahr 504 or aseeryl or cuvposa or drm04 or "drm 04" or enurev or gastrodyn or glersa or mobinul or nodapton or robinal or robinol or robinul or sialanar or sroton or strodin or tarodyl or tarodyn or tovanor).tw.
23	(aclidinium or bretaris or eklira or las34273 or las 34273 or tudorza).tw.
24	(umeclidinium or ellipta or gsk573719* or gsk 573719* or incruce).tw.
25	(GSK233705 or BEA2180 or BEA 2180).tw.
26	or/13-25
27	12 and 26
28	animals/ not humans/
29	27 not 28
30	limit 29 to english language
31	limit 30 to (letter or historical article or comment or editorial or news or case reports)
32	30 not 31

Note: In-house RCT and systematic review filters were appended. No date limit was used due to additional terminology to that in the searches carried out in the 2010 guideline update.

2.7 Search strategy review question

RQ: In people with stable COPD, what are the referral criteria (for example intact fissures) for lung surgery?

Table 2: search strategy

Medline Strategy, searched 14th June 2017

Database: Ovid MEDLINE(R) 1946 to June Week 1 2017

Search Strategy:

- 1 lung diseases, obstructive/
- 2 exp pulmonary disease, chronic obstructive/
- 3 (copd or coad or cobd or aecb).tw.
- 4 emphysema*.tw.
- 5 (chronic* adj4 bronch*).tw.
- 6 (chronic* adj3 (airflow* or airway* or bronch* or lung* or respirat* or pulmonary) adj3 obstruct*).tw.
- 7 (pulmonum adj4 (volumen or pneumatosis)).tw.
- 8 pneumonectasia.tw.
- 9 *Dyspnea/
- 10 (chronic* adj3 (breath* or respirat*) adj3 (difficult* or labor* or labour* or problem* or short*)).tw.
- 11 (chronic* adj3 (dyspnea* or dyspnoea* or dyspneic or breathless*)).tw.
- 12 or/1-11
- 13 Lung/su (Surgery)
- 14 Pulmonary Surgical Procedures/
- 15 ((lung* or alveolar or pulmonary) adj2 (surg* or operat* or procedure*)).tw.
- 16 Pneumonectomy/
- 17 ((lung* or pneumoplasty or volume) adj2 reduction*).tw.
- 18 ((lung* or pneumonic or pulmonary) adj2 resect*).tw.
- 19 (pneumonectom* or pneumoresection* or pulmonectom*).tw.
- 20 Bronchoscopy/
- 21 bronchoscop*.tw.
- 22 bullectom*.tw.
- 23 Lung Transplantation/
- 24 ((lung* or pulmonary) adj4 (transplant* or grafting* or allotransplant*)).tw.
- 25 ((endobronchial or intrabronchial or intra bronchial) adj4 (nitinol or coil* or valve* or spring* or spiral*)).tw.
- 26 (LVR or LVRS or LVRC).tw.
- 27 or/13-26
- 28 12 and 27
- 29 animals/ not humans/
- 30 28 not 29
- 31 limit 30 to english language
- 32 limit 31 to (letter or historical article or comment or editorial or news or case reports)
- 33 31 not 32

Note: In-house RCT and systematic review filters were appended. No date limit was used as the previous guideline recommendations were not based on a systematic literature search.

3 Cochrane search strategies

3.1 Search Strategy review question

RQ: What is the effectiveness of oxygen therapy in people with stable COPD who are mildly hypoxaemic or non-hypoxaemic at rest?

Ekström M, Ahmadi Z, Bornefalk-Hermansson A, Abernethy A, Currow D. (2016) Oxygen for breathlessness in patients with chronic obstructive pulmonary disease who do not qualify for home oxygen therapy. Cochrane Database of Systematic Reviews, Issue 11. Art. No.: CD006429. DOI: 10.1002/14651858.CD006429.pub3

Medline Strategy, searched 12th July 2016

Search Strategy:

MEDLINE search strategy:

1. exp Dyspnea/
2. (dyspnoea\$ or dyspnoea\$).ti,ab.
3. breathless\$.ti,ab.
4. ((shortness\$ or difficult\$) adj2 breath\$).ti,ab.
5. or/1-4
6. Oxygen/ad, tu [Administration & Dosage, Therapeutic Use]
7. exp Oxygen Inhalation Therapy/
8. LTOT.ti,ab.
9. (inhalation\$ adj3 therap\$).ti,ab.
10. (oxygen\$ adj3 (therap\$ or palliative\$ or inhal\$ or long-term\$)).ti,ab.
11. or/6-10
12. 5 and 11
13. (controlled clinical trial or randomized controlled trial).pt.
14. (randomized or randomised).ab,ti.
15. placebo.ab,ti.
16. dt.fs.
17. randomly.ab,ti.
18. trial.ab,ti.
19. groups.ab,ti.
20. or/13-19
21. Animals/
22. Humans/
23. 21 not (21 and 22)
24. 20 not 23
25. 12 and 24

Note: All databases were searched from their inception to 12th July 2016. Update searches to February 2018 are covered by the NICE searches.

3.2 Search strategy review question

RQ: In people with stable COPD, what is the clinical and cost effectiveness of a LAMA plus a LABA compared with:

- a LAMA alone
- a LABA alone

- a LABA plus an inhaled corticosteroid (ICS)

Oba Y, Fadila M, Keeney E, Dias S. (2017). Fixed-dose combination inhalers compared to long-acting bronchodilators for COPD: a network meta-analysis (Protocol). Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD012620. DOI: 10.1002/14651858.CD012620.

Table 12: search strategy

Cochrane Strategy
Search Strategy:
#1 MeSH DESCRIPTOR Pulmonary Disease, Chronic Obstructive Explode All
#2 MeSH DESCRIPTOR Bronchitis, Chronic
#3 (obstruct*) near3 (pulmonary or lung* or airway* or airflow* or bronch* or respirat*)
#4 COPD:MISC1
#5 (COPD OR COAD OR COBD OR AECOPD):TI,AB,KW
#6 #1 OR #2 OR #3 OR #4 OR #5
#7 mometasone* AND formoterol*
#8 fluticasone* AND salmeterol*
#9 budesonide* AND formoterol*
#10 beclomethasone* AND formoterol*
#11 fluticasone* AND formoterol*
#12 Flutiform or Fostair or Simplyone
#13 fluticasone* AND vilanterol*
#14 mometasone* AND indacaterol*
#15 formoterol* and ciclesonide*
#16 QMF149
#17 GW685698 AND GW642444
#18 steroid* OR corticosteroid* or ICS
#19 (long-acting* or long NEXT acting*) NEAR beta*
#20 #18 AND #19
#21 #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #20
#21 formoterol* AND aclidinium*
#22 indacaterol* AND glycopyrronium*
#23 indacaterol* AND tiotropium*
#24 olodaterol* AND tiotropium*
#25 vilanterol* AND umeclidinium*
#26 QVA149
#27 Ultibro or Stiolto or Duaklir Genuair
#28 Muscarinic* Next Antagonist*
#29 #19 AND #28
#30 #21 or # 22 or #23 or #24 or #25 or #26 or #27 or # 29
#31 combin* NEAR inhaler*
#32 FDC:ti,ab
#33 #21 or #30 or #31 or #32
#34 #6 AND #33
[In search line #4, MISC1 denotes the field in which the reference has been coded for condition, in this case, COPD]

Note: All databases were searched from their inception. Update searches to February 2018 are covered by the NICE searches.

3.3 Search strategy review question

RQ: What is the clinical and cost effectiveness of prophylactic oral antibiotics for preventing exacerbations in people with stable COPD?

Herath SC, Poole P. (2013). Prophylactic antibiotic therapy for chronic obstructive pulmonary disease (COPD). Cochrane Database of Systematic Reviews, Issue 11. Art. No.: CD009764. DOI: 10.1002/14651858.CD009764.pub2.

Table 13: search strategy

Cochrane Strategy	
Search Strategy:	
	MeSH DESCRIPTOR Pulmonary Disease, Chronic Obstructive Explode All AND
1	INSEGMENT
2	MeSH DESCRIPTOR Bronchitis, Chronic AND INSEGMENT
	(obstruct*) near3 (pulmonary or lung* or airway* or airflow* or bronch* or respirat*) AND
3	INSEGMENT
4	COPD:MISC1 AND INSEGMENT
5	(COPD OR COAD OR COBD):TI,AB,KW AND INSEGMENT
6	#1 OR #2 OR #3 OR #4 OR #5 AND INSEGMENT
7	MeSH DESCRIPTOR Anti-Bacterial Agents Explode 1 AND INSEGMENT
8	chemoprophylaxis AND INSEGMENT
9	antibiotic* NEAR prophyla* AND INSEGMENT
10	continuous NEAR antibiotic* AND INSEGMENT
11	antibiotic* AND INSEGMENT
12	penicillin AND INSEGMENT
13	phenoxymethylpenicillin AND INSEGMENT
14	phenethicillin AND INSEGMENT
15	amoxicillin AND INSEGMENT
16	amoxycillin AND INSEGMENT
17	clavulanic acid AND INSEGMENT
18	tetracycline AND INSEGMENT
19	oxytetracycline AND INSEGMENT
20	doxycycline AND INSEGMENT
21	quinolone AND INSEGMENT
22	ciprofloxacin AND INSEGMENT
23	moxifloxacin AND INSEGMENT
24	macrolide AND INSEGMENT
25	erythromycin AND INSEGMENT
26	roxithromycin AND INSEGMENT
27	azithromycin AND INSEGMENT
28	sulphonamide AND INSEGMENT
29	co-trimoxazole AND INSEGMENT
30	sulphaphenazole AND INSEGMENT
31	trimethoprim AND INSEGMENT
32	sigmamicin AND INSEGMENT
33	tetracycline AND oleandomycin AND INSEGMENT

Cochrane Strategy
Search Strategy:

- 34 sulfamethoxazole AND INSEGMENT
- 35 sulfaphenazole AND INSEGMENT
- 36 sulfonamide AND INSEGMENT
#7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or
#20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32
37 or #33 or #34 or #35 or #36 AND INSEGMENT
- 38 #6 and #37 AND INSEGMENT
- 39 INREGISTER AND 01/08/2013_TO_09/08/2017:CRSCREATED
- 40 #39 AND #38

Note: All databases were searched from their inception. Update searches to February 2018 are covered by the NICE searches.

4 Study Design Filters

Table 13: study design filters

The MEDLINE SR, RCT, and observational studies filters are presented below with the McMaster optimal diagnosis and specific prognosis filters.

Systematic Review

1. Meta-Analysis.pt.
2. Meta-Analysis as Topic/
3. Review.pt.
4. exp Review Literature as Topic/
5. (metaanaly\$ or metanaly\$ or (meta adj3 analy\$)).tw.
6. (review\$ or overview\$).ti.
7. (systematic\$ adj5 (review\$ or overview\$)).tw.
8. ((quantitative\$ or qualitative\$) adj5 (review\$ or overview\$)).tw.
9. ((studies or trial\$) adj2 (review\$ or overview\$)).tw.
10. (integrat\$ adj3 (research or review\$ or literature)).tw.
11. (pool\$ adj2 (analy\$ or data)).tw.
12. (handsearch\$ or (hand adj3 search\$)).tw.
13. (manual\$ adj3 search\$).tw.
14. or/1-13
15. animals/ not humans/
16. 14 not 15

RCT

- 1 Randomized Controlled Trial.pt.
- 2 Controlled Clinical Trial.pt.
- 3 Clinical Trial.pt.
- 4 exp Clinical Trials as Topic/
- 5 Placebos/
- 6 Random Allocation/
- 7 Double-Blind Method/
- 8 Single-Blind Method/
- 9 ((random\$ or control\$ or clinical\$) adj3 (trial\$ or stud\$)).tw.
- 10 (random\$ adj3 allocat\$).tw.
- 11 placebo\$.tw.
- 12 ((singl\$ or doubl\$ or trebl\$ or tripl\$) adj (blind\$ or mask\$)).tw.
- 13 or/1-12
- 14 animals/ not humans/
- 15 13 not 14

Note: analysts requested cross-over studies to be removed.

McMaster optimal diagnosis

sensitiv:.mp. OR
predictive value:.mp. OR
accurac:.tw.

McMaster specific prognosis

prognos:.tw. OR
first episode.tw. OR
cohort.tw.

The MEDLINE SR, RCT, and observational studies filters are presented below with the McMaster optimal diagnosis and specific prognosis filters.

Observational

1. Observational Studies as Topic/
2. Observational Study/
3. Epidemiologic Studies/
4. exp Cohort Studies/
5. Controlled Before-After Studies/
6. Interrupted Time Series Analysis/
7. Comparative Study.pt.
8. case series.tw.
9. (cohort adj (study or studies)).tw.
10. cohort analy\$.tw.
11. (follow up adj (study or studies)).tw.
12. (observational adj (study or studies)).tw.
13. longitudinal.tw.
14. prospective.tw.
15. retrospective.tw.
16. or/1-16
17. animals/ not humans/
18. 16 not 17

Note: analysts requested terms relating to case-control, historically controlled studies and cross-sectional studies to be removed

5 Health economics search strategy

5.1 Economic evaluations and quality of life data

Sources searched to identify economic evaluations

- NHS Economic Evaluation Database – NHS EED (Wiley) last updated Apr 2015
- Health Technology Assessment Database – HTA (Wiley) last updated Oct 2016
- EconLit (Ovid)
- Embase (Ovid)
- MEDLINE (Ovid)
- MEDLINE In-Process (Ovid)

Search filters to retrieve economic evaluations and quality of life papers were appended to the population terms to identify relevant evidence. Searches were carried out on 5th May 2017 with a date limit from the previous search of January 2009 – May 2017. Searches were re-run in February 2018.

An English language limit was applied and animal studies and certain publication types (letters, historical articles, comments, editorials, news and case reports) were excluded.

Table 14: Economic evaluation and quality of life filters

Medline Strategy	
Economic evaluations	
1	Economics/
2	exp "Costs and Cost Analysis"/
3	Economics, Dental/
4	exp Economics, Hospital/
5	exp Economics, Medical/
6	Economics, Nursing/
7	Economics, Pharmaceutical/
8	Budgets/
9	exp Models, Economic/
10	Markov Chains/
11	Monte Carlo Method/
12	Decision Trees/
13	econom\$.tw.
14	cba.tw.
15	cea.tw.
16	cua.tw.
17	markov\$.tw.
18	(monte adj carlo).tw.
19	(decision adj3 (tree\$ or analys\$)).tw.
20	(cost or costs or costing\$ or costly or costed).tw.
21	(price\$ or pricing\$).tw.
22	budget\$.tw.
23	expenditure\$.tw.
24	(value adj3 (money or monetary)).tw.

Medline Strategy

25 (pharmacoeconomic\$ or (pharmaco adj economic\$)).tw.
26 or/1-25

Quality of life

1 "Quality of Life"/
2 quality of life.tw.
3 "Value of Life"/
4 Quality-Adjusted Life Years/
5 quality adjusted life.tw.
6 (qaly\$ or qald\$ or qale\$ or qtime\$).tw.
7 disability adjusted life.tw.
8 daly\$.tw.
9 Health Status Indicators/
10 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six).tw.
11 (sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six).tw.
12 (sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve).tw.
13 (sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen).tw.
14 (sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or sftwenty or shortform twenty or short form twenty).tw.
15 (euroqol or euro qol or eq5d or eq 5d).tw.
16 (qol or hql or hqol or hrqol).tw.
17 (hye or hyes).tw.
18 health\$ year\$ equivalent\$.tw.
19 utilit\$.tw.
20 (hui or hui1 or hui2 or hui3).tw.
21 disutili\$.tw.
22 rosser.tw.
23 quality of wellbeing.tw.
24 quality of well-being.tw.
25 qwb.tw.
26 willingness to pay.tw.
27 standard gamble\$.tw.
28 time trade off.tw.
29 time tradeoff.tw.
30 tto.tw.
31 or/1-30