

Guideline topic: Asthma 2018-19 Update

General comments

This update was based on 12 key questions covering the following topics: monitoring, self-management, non-pharmacological and pharmacological management, and acute asthma. An additional question on vitamin D supplementation was added during the guideline development process.

Search coverage

Systematic reviews

The systematic review search was conducted using the generic stem search strategy outlined below in conjunction with the SIGN systematic review filter. A single search for systematic reviews was carried out for Key Questions 1-12. The results were then sifted for each individual question.

Key Question 13 was searched separately as it was added later (no date limit, date searched 23/05/18).

Databases covered: Medline, Embase, Cochrane Library, Cinahl

Dates covered: 2012-01/03/2018 (KQ1-12)

Total hits: 2817 (KQ1-12)
125 (KQ13)

Sifted result: see Scope of Searches below

Papers requested: see Scope of Searches below

RCTs

Databases covered: Medline, Embase, Cochrane Library, Cinahl

Dates covered: (with variations depending on topic; see Scope of Searches below)

Observational studies/ Searches without filter

Databases covered: Medline, Embase, Cochrane Library, Cinahl

Dates covered: (with variations depending on topic; see Scope of Searches below)

Search strategies

The following are listings of the main Medline strategies used for this guideline. All conventions and symbols are from the Ovid implementation of Medline. Strategies used in other databases were substantially the same, though different terminology may have been used to take account of different thesauri used in non-Medline databases.

Search filters were added to identify studies of a particular type (systematic review, RCT etc.) Listings of the search filters used by SIGN can be found on the SIGN Web site.

Generic Stem:

1. exp Asthma/
2. asthma*.tw.
3. 1 or 2

Scope of searches for SRs, RCTs, and no filter (NOF) searches

KQ	Type of studies	Date range	Initial recall	Sifted result	Requested
1	SR	2012-2018	2817	19	17
1	NOF	2014-2018	1030	18	6
2	SR	2012-2018	2817	17	17
2	NOF	No date limit	465	33	29
3	SR	2012-2018	2817	3	2
3	NOF	No date limit	965	9	9
4	SR	2012-2018	2817	15	15
4	NOF	2014-2018	324	26	0
5	SR	2012-2018	2817	7	7
5	RCT	2013-2018	298	20	13
6	SR	2015-2018	2817 (for 2012-18)	24	22
6	RCT*	2014-2018	364	25	12
7	SR	2012-2018	2817	19	16
8	SR	2012-2018	2817	22	19
9	SR	2012-2018	2817	2	2
10	SR	2012-2018	2817	21	21
11	SR	2012-2018	2817	30	27
12	SR	2012-2018	2817	26	25
13	SR	No date limit	125	7	7
13	RCT	2016-2018	164	15	7

*For KQ6 the results of update searches for 5 Cochrane Reviews were provided via the Cochrane Airways Group. These update searches were sifted to identify any relevant RCTs.

Medline Search strategies used for specific key questions (combined with generic stem search strategy):

KQ 1(monitored current asthma control)

1. symptom score*.tw.
2. control score*.tw.
3. exp Respiratory Function Tests/
4. lung function test*.tw.
5. Bronchial Hyperreactivity/
6. bronchial reactivity.tw.
7. Airway challenge*.tw.
8. airway responsiveness.tw.
9. Breath Tests/
10. exhaled condensate*.tw.
11. breath condensate*.tw.
12. EBC.tw.
13. SPUTUM/
14. sputum.tw.
15. Eosinophils/
16. eosinophil*.tw.
17. Periostin.tw.
18. marker*.tw.
19. biomark*.tw.
20. Biomarkers/
21. Monitoring, Physiologic/
22. monitor*.tw.
23. or/1-20
24. or/21-22
25. 23 and 24

KQ 2 (prediction of future loss of control and/or future risk of attacks)

1. exp Asthma/
2. asthma.tw.
3. 1 or 2
4. (predict* adj5 attack*).tw.
5. (predict* adj5 exacerbation*).tw.
6. 4 or 5
7. 3 and 6
8. loss of control.tw.
9. predict*.tw.
10. 3 and 8

KQ 3 (increasing the dose of ICS or adding an LTRA as part of self-management)

1. Patient Participation/
2. self care/ or self-management/
3. Self Administration/
4. self care.tw.
5. self management.tw.
6. (self adj3 administ*).tw.
7. ((patient* or parent* or caregiver* or carer*) adj3 (initiat* or suggest* or instigat* or originat* or request* or propose* or encourage* or advocate*)).tw.
8. or/1-7
9. Inhaled corticosteroid*.tw.
10. Inhaled glucocorticoid*.tw.
11. ICS.tw.
12. Beclomethasone/
13. Beclomethasone.tw.
14. BUDESONIDE/
15. Budesonide.tw.
16. Flunisolide.tw.
17. Fluticasone/
18. Fluticasone.tw.
19. Mometasone Furoate/
20. Mometasone.tw.
21. Triamcinolone Acetonide/
22. Triamcinolone.tw.
23. Leukotriene Antagonists/
24. Leukotriene receptor antagonist*.tw.
25. LTRA*.tw.
26. Montelukast.tw.
27. zafirlukast.tw.
28. or/9-27
29. 8 and 28

KQ 4 (interventions (avoidance or reduction of exposure to environmental factors) in the home/school/outdoor environment)

1. exp Allergens/
2. allergen*.tw.
3. exp Environmental Exposure/
4. (environmental adj5 exposure*).tw.
5. (environmental adj5 factor*).tw.
6. IRRITANTS/
7. irritant*.tw.
8. trigger*.tw.
9. exp Mites/
10. dust mite*.tw.

11. exp Pollen/
12. pollen*.tw.
13. Dander/
14. dander*.tw.
15. (pest or pests).tw.
16. Pets/
17. (pet or pets).tw.
18. exp Smoke/
19. Tobacco Smoke Pollution/
20. exp Air Pollution/
21. air pollution.tw.
22. tobacco smoke.tw.
23. second hand smoke.tw.
24. exp Fungi/
25. (mould or mold).tw.
26. (dampness or damp).tw.
27. or/1-26
28. (reduc* or avoid* or eliminat*).ti.
29. 27 and 28
30. Air Filters/
31. Beds/
32. Housekeeping/
33. Sanitation/
34. VACUUM/
35. exp Pest Control/
36. Ventilation/
37. mattress cover*.tw.
38. Air Ionization/
39. ioni?ed air.tw.
40. ioni?er*.tw.
41. dehumidif*.tw.
42. air filt*.tw.
43. pet removal.tw.
44. mould removal.tw.
45. mold removal.tw.
46. carpet removal.tw.
47. or/30-46
48. exp ASTHMA/
49. asthma*.tw.
50. 48 or 49
51. 47 and 50
52. 29 and 50
53. 51 or 52

KQ 5 (breathing training)

1. exp Breathing Exercises/
2. Respiratory Therapy/
3. (Breath* adj5 (exercis* or train* or re-train* or technique* or educat* or re-educat* or coach* or adapt*)).tw.
4. (Breath* adj5 (physiotherap* or physical therapy or respiratory therapy)).tw.
5. (breath* adj5 diaphragm*).tw.
6. (breath* adj5 control*).tw.
7. (Lung* adj5 (exercis* or train* or re-train* or technique* or educat* or re-educat* or coach* or adapt*)).tw.
8. (respiratory muscle\$ adj5 (exercis* or train* or re-train* or technique* or educat* or re-educat* or coach* or adapt*)).tw.
9. buteyko.tw.
10. (Yoga or yogic).tw.

11. or/1-10

KQ07 In people with asthma whose symptoms are not adequately controlled by low-dose (>12 years) or very low-dose (<5, 5-12 years) ICS plus a LABA, is adding an LTRA, LAMA, theophylline or slow-release B2-agonist tablets, more effective than increasing the dose of ICS at reducing asthma attacks, improving symptoms, reducing side effects, improving treatment adherence or improving pulmonary/lung function?

1. inhaled corticosteroids.mp.
2. ICS.mp.
3. inhaled steroids.mp.
4. LTRA.mp.
5. *Leukotriene Antagonists/
6. leukotriene receptor antagonists.mp.
7. montelukast.mp.
8. zafirlukast.mp
9. receptors leukotriene.mp. or *Receptors, Leukotriene/
10. long acting bronchodilators.mp.
11. *Bronchodilator Agents/
12. formoterol.mp. or *Formoterol Fumarate
13. Salmeterol.mp. or *Salmeterol Xinafoate/
14. theophyllines.mp. or *Theophylline/
15. long acting muscarinic antagonist.mp
16. *Muscarinic Antagonists/
17. slow acting beta2 agonist.mp
18. *Adrenergic beta-Agonists/ or long-acting Beta-2 Agonists.mp. or *Adrenergic beta-2 Receptor Agonists/
19. 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18
20. 1 or 2 or 3
21. 19 and 20

KQ08 In people with asthma who are not adequately controlled on high-dose ICS plus LABA or on oral corticosteroids, does addition of monoclonal antibodies (eg, omalizumab, mepolizumab, reslizumab) reduce use of oral steroids, unscheduled care, side-effects, or improve symptoms, treatment adherence or lung function?

1. inhaled corticosteroids.mp.
2. ICS.mp.
3. inhaled steroids.mp.
4. long acting bronchodilators.mp
5. *Bronchodilator Agents
6. formoterol.mp. or *Formoterol Fumarate/
7. Salmeterol.mp. or *Salmeterol Xinafoate
8. corticosteroids.mp. or *Adrenal Cortex Hormones
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. monoclonal antibodies.mp. or *Antibodies, Monoclonal/
11. omalizumab.mp. or *Omalizumab/
12. Antibodies, Monoclonal, Humanized/ or mepolizumab.mp.
13. reslizumab.mp
14. 10 or 11 or 12 or 13
15. 9 and 14

KQ09. In people with asthma who are not adequately controlled on high-dose ICS plus a LABA or oral corticosteroids, does addition of bronchial thermoplasty reduce use of oral steroids, unscheduled care, side-effects, or improve symptoms, treatment adherence or lung function??

1. inhaled corticosteroids.mp.
2. ICS.mp.
3. inhaled steroids.mp.
4. long acting bronchodilators.mp
5. *Bronchodilator Agents

6. formoterol.mp. or *Formoterol Fumarate/
7. Salmeterol.mp. or *Salmeterol Xinafoate
8. corticosteroids.mp. or *Adrenal Cortex Hormones
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. bronchial thermoplasty.mp. or *Bronchial Thermoplasty/
11. 9 and 10

KQ10. In people with asthma who are poly- or mono-sensitised, is sublingual immunotherapy compared to standard therapy effective at reducing asthma attacks, improving asthma control, improving treatment adherence or improving lung function?

1. sublingual therapy.mp.
2. sublingual immunotherapy.mp. or *Sublingual Immunotherapy/
3. 1 or 2

KQ11. What interventions in the home or workplace/school improve adherence with asthma treatments?

1. inhaler adherence.mp. or *Administration, Inhalation/
2. *Time Factors/ or timers.mp.
3. *Clinical Alarms/ or alarms.mp.
4. directly observed therapy.mp. or *Directly Observed Therapy/
5. patient compliance.mp. or *Patient Compliance/
6. 2 or 3 or 4 or 5
7. 1 and 6

KQ12. In the immediate treatment of people with life-threatening or near-fatal asthma, does extracorporeal membrane oxygenation (ECMO) or other potentially life-saving therapies, compared to usual care, improve patient survival or other outcomes?

1. *Extracorporeal Membrane Oxygenation/ or ECMO.mp.
2. ketamine.mp. or *Ketamine/
3. rescue therapies.mp.
4. or/1-3

KQ 13 (vitamin D supplementation)

1. exp ASTHMA/
2. asthma.tw.
3. 1 or 2
4. exp Vitamin D/
5. exp Vitamin D Deficiency/
6. vitamin d.tw.
7. or/4-6
8. 3 and 7