

## Self-management interventions to reduce urgent healthcare use in patients with asthma: a systematic review and network meta-analysis

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### Review question

To evaluate and compare the effectiveness of self-management intervention (SMI) modalities in people with asthma using and network meta-analysis (NMAs).

### Searches

We will adapt the search strategy from our earlier RECURSIVE study and update the searches to identify any new eligible asthma trials. The PRISMS meta-review will be used to identify current eligible trials from the published systematic reviews, and the search strategy from this study will be re-run to check for any new reviews that are eligible to include.

The searches for trials were updated from 2012 onwards in the Cochrane Central Register of Controlled Trials (CENTRAL), Cumulative Index to Nursing and Allied Health (CINAHL), EconLit (the American Economic Association's electronic bibliography), EMBASE, Health Economics Evaluations Database, MEDLINE (the US National Library of Medicine's database), MEDLINE In-Process & Other Non-Indexed Citations, NHS Economic Evaluation Database (NHS EED) and the PsycINFO (the behavioural science and mental health database). The reference lists of reports of all included studies will be screened for reports of additional studies, and ClinicalTrials.gov and OpenTrials.net will be search for any unpublished or ongoing trials.

### Types of study to be included

Inclusion: to limit potential bias, only RCTs will be included.

Exclusion: any observational or qualitative studies were excluded.

### Condition or domain being studied

Self-management interventions in people with asthma.

### Participants/population

Inclusion: patients aged 16 years and over, who have been diagnosed with asthma.

Exclusion: patients under the age of 16 years.

### Intervention(s), exposure(s)

Inclusion: self-management interventions. We will include all formats and delivery methods (group or individual, face-to-face or remote, professional or peer-led).

Exclusion: we will exclude self-management undertaken without input, guidance or facilitation by services. Although an enormous amount of self-management is undertaken without any support from services, it is rarely the subject of intervention studies.

### Comparator(s)/control

Usual care, enhanced usual care (e.g. minimal intervention such as provision of pamphlet on target

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behaviour or provision of information on unrelated topics, attentional control), education based intervention (to promote patients' understanding of their respiratory condition and teach specific prevention and treatment strategies without a focus on self-management), alternative self-management intervention.

#### Context

##### Main outcome(s)

Unscheduled health care utilisation (such as hospitalisation and accident and emergency (A&E) visits, and costs) and quality of life (disease-specific outcomes and generic QoL).

##### *Timing and effect measures*

Not applicable.

##### Additional outcome(s)

- Health-related/generic quality of life scores (e.g. asthma quality of life questionnaire, chronic respiratory questionnaire, the St. George's Respiratory Questionnaire, the MOS 36-item short-form health survey (SF-36) and any others used).
- Number of hospitalisations (both respiratory related and all causes) or A&E visits.
- Costs (cost effectiveness, utility etc.).

##### *Timing and effect measures*

Not applicable.

##### Data extraction (selection and coding)

A data extraction form from an earlier review will be adapted and used independently by two reviewers, to extract data from any additional studies identified. This data extraction form has already been piloted by two reviewers to ensure that it captures relevant data.

The data to be extracted will include:

Characteristic data:

- Lead author and date;
- Location and setting (primary/secondary care or home-care);
- Patient characteristics (age, gender).
- Intervention:
  - Use of behaviour change theory;
  - Intensity as coded in our earlier review based on hours of support (i.e. case-management, intensive self-management, supported self-management or pure management) and involvement of health professionals (multidisciplinary team, mainly by one health professional, lay/community health worker);
  - Delivery method (i.e. self-administered, face-to-face, telecommunication or mixed).
- Comparator (usual care, enhanced usual care, education-based intervention, alternative self-management intervention).

Disagreements in the data extraction will be resolved by discussion or by an independent reviewer if consensus cannot be reached. Secondary references, data from registry reports and studies with supplementary online data will be extracted alongside the main journal reports.

##### Risk of bias (quality) assessment

The quality of the individual studies will be assessed independently by one reviewer using the Cochrane risk of bias tool for RCTs and checked by a second reviewer. Disagreements will be resolved by discussion and if necessary a third reviewer will be consulted.

##### Strategy for data synthesis

We will firstly conduct mixed-effects multivariable meta-regression of the main covariates collected to take into account the clinical and methodological variations. The covariates include the self-management support technique, location of care, provide, mode of delivery and intensity. But meta-regression has limitations, because it does not allow the simultaneous analysis of more than two treatments, assumes the same heterogeneity levels for every comparison, and cannot rank treatments. In contrast, NMA allows for simultaneous evaluations of SMI comparisons considering both direct and indirect evidence, while preserving

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the within-study randomisation. Therefore, it can provide a better insight into which combinations of programme characteristics are ranked as highest with regard to generating the largest effects.

A network of the different comparisons will need to be constructed with “nodes” representing groupings of sufficiently similar intervention components and comparators. This will give us some initial idea about the distribution of the effect modifiers in each of the nodes in the network. Then we will evaluate the two primary outcomes (QoL and number hospitalizations or A&E visits) in two separate NMAs using these intervention classifications. Both NMAs will be conducted in a Bayesian framework, and a frequentist approach will be used as a sensitivity analysis. Where sufficient data are available we will test the assumptions of consistency between direct and indirect evidence using standard methods. Appraisal of inconstancy was assessed in the entire network on particular comparisons (nodes) by node splitting analysis;  $P < 0.05$  indicated significant inconsistency. Between-study heterogeneity was assessed using  $I^2$ . Publication bias will be evaluated visually using funnel plots and quantified more formally using the Egger’s test, if 10 or more studies are available. All analyses will be performed using R (packages: metafor and netmeta) and Stata (mvmeta), and for the Bayesian NMAs WinBugs will be used.

### Analysis of subgroups or subsets

None planned.

### Contact details for further information

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02 October 2018

### Anticipated completion date

31 August 2020

### Funding sources/sponsors

NIHR Evidence synthesis working group

### Conflicts of interest

### Language

English

### Country

England

### Stage of review

Review\_Ongoing

### Subject index terms status

Subject indexing assigned by CRD

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## Subject index terms

Asthma; Cost-Benefit Analysis; Disease Management; Emergency Service, Hospital; Hospitalization; Humans; Quality of Life; Secondary Prevention; Self Care; Self-Management; Treatment Outcome

## Date of registration in PROSPERO

07 January 2019

## Date of publication of this version

07 January 2019

## Details of any existing review of the same topic by the same authors

## Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

## Versions

07 January 2019

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