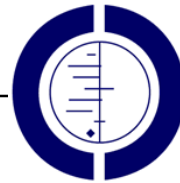


HOW TO INCLUDE ECONOMICS IN COCHRANE REVIEW PROTOCOLS



Part Two: Searches, assessing risk of bias and methodological quality, data collection and analysis

COI statement

I have no actual or potential conflict of interest in relation to this presentation

Campbell & Cochrane Economics Methods Group

<http://methods.cochrane.org/economics/>



Learning objectives - Part Two

- Formulate a protocol for a search strategy for health economic studies
- Identify tools for assessment of risk-of-bias and methodological quality in health economic studies
- Formulate a protocol for collection of data on resource use, costs and cost-effectiveness
- Formulate a protocol for analysis and presentation of results

Preliminary points

- Advisory support from a health economist useful
 - Check with CRG - health economist advisor?
 - Contact Economics Methods Group
janice.legge@newcastle.ac.uk
- Focus on how to prepare protocol for a critical review of health economics studies

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 - 12 Interpreting results and drawing conclusions
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Chapter 15: Incorporating economics evidence

Authors: Ian Shemilt, Miranda Mugford, Sarah Byford, Michael Drummond, Eric Eisenstein, Martin Knapp, Jacqueline Mallender, David McDaid, Luke Vale, Damian Walker on behalf of the Campbell and Cochrane Economics Methods Group.

Key points

- Economics is the study of the optimal allocation of limited resources for the production of benefit to society and is therefore relevant to any healthcare decision;
- Optimal decisions also require best evidence of effectiveness;
- This chapter describes methods for incorporating economics perspectives and evidence into Cochrane reviews, with a focus on critical review of health economics studies;
- Incorporating economics perspectives and evidence into Cochrane reviews can enhance their usefulness and applicability for healthcare decision making and new economic analyses.

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Search methods for identification of studies

[fixed, level 2 heading]

The methods used to identify studies should be summarized. The following headings are recommended. Before starting to develop this section, authors should contact their Cochrane Review Group (CRG) for guidance.

See also

- Search methods are discussed in detail in Chapter 6 (Sections 6.3).

Electronic searches

[recommended, level 3 heading]

The bibliographic databases searched, the dates and periods searched and any constraints, such as language should be stated. The full search strategies for each database should be listed in an appendix to the review. If a CRG has developed a specialized register of studies and this is searched for the review, a standard description of this register can be referred to but information should be included on when and how the specialized register was most recently searched for the current version of the review and the search terms used should be listed.

See also

- Search strategies are discussed in detail in Chapter 6 (Section 6.4).

Searching other resources

[recommended, level 3 heading]

List grey literature sources, such as internal reports and conference proceedings. If journals are specifically handsearched for the review, this should be noted but handsearching done by the authors to help build the specialized register of the CRG should not be listed because this is covered in the standardized description of the register. List people (e.g. trialists or topic specialists) and organizations who were contacted. List any other sources used, which may include, for example, reference lists, the World Wide Web or personal collections of articles.

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Grey literature

Searches: Electronic searches for health economics studies

- Electronic searches of MEDLINE, EMBASE, CINAHL etc. (alongside searches for studies of effects)
 - Further information on methods and tools (e.g. search filters for health economics studies) in Chapter 15 of Cochrane Interventions Handbook
- Electronic searches of specialist health economics literature databases

Searches: Electronic searches for health economics studies

- NHS Economic Evaluation Database (NHS EED)
 - No longer up-to-date (entries through December 2014)
 - Over 9,000 quality assessed structured abstracts of full economic evaluations, plus bibliographic records of thousands more
 - Still worth searching given highly specific content.

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Title	<input type="text"/>	OR	<input type="checkbox"/> CRD assessed review (full abstract)	<input type="checkbox"/> Cochrane review
Author	<input type="text"/>		<input type="checkbox"/> Cochrane related review record	
Record date	<input type="text"/>	to	<input type="text"/>	<input type="checkbox"/> NHS EED
Publication year	<input type="text"/>	to	<input type="text"/>	<input type="checkbox"/> CRD assessed economic evaluation (bibliographic)
				<input type="checkbox"/> CRD assessed economic evaluation (full abstract)
			<input type="checkbox"/> HTA	<input type="checkbox"/> HTA in progress
				<input type="checkbox"/> HTA published

News

DARE abstracts now in PubMed Health

We are delighted to announce that DARE abstracts critically appraising systematic reviews of health and social care interventions are now available in PubMed Health.

Systematic reviews are widely recognised as reliable sources of information about the effects of health and social care interventions. But as with individual research studies, they can be hard to find, may have flaws and can be difficult to interpret.

Between 1994 and March 2015, CRD produced and maintained DARE, a database uniquely providing access to over 13 000 abstracts of quality assessed and critically

Most shared

- Effect of long-acting beta-agonists on the frequency of COPD exacerbations: a meta-analysis
- Effects of the Finnish Alzheimer Disease Exercise Trial (FINALEX): a randomized controlled trial
- A systematic review and meta-analysis of yoga for low back pain
- A comparison of the clinical effectiveness and cost-effectiveness of treatments for moderate to severe psoriasis
- Radiation-induced cardiac toxicity after therapy for breast cancer: interaction between treatment era and follow-up duration

<http://www.crd.york.ac.uk/crdweb/>

Databases to search for full economic evaluation studies

- The CEA Registry www.cearegistry.org
- Econlit www.aeaweb.org/econlit/
- Paediatric Economic Database Evaluation (PEDE)
<http://pede.ccb.sickkids.ca/pede/search.jsp>

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The following *optional* headings may be used, either in place of 'Searching other resources' (in which case they would be level 3 headings) or as subheadings (level 4).

Grey literature

Handsearching

Reference lists

Correspondence

See also

- Other search resources are discussed in Chapter 6 (Section 6.2).



Searches: Searching other sources for health economics studies

Grey literature

- Sources of grey literature for studies of effects
- Online sources including coverage of economics grey literature

Searches: Searching other sources for health economics studies

Grey literature

- Agency for Healthcare Research and Quality (AHRQ) <http://www.ahrq.gov/>
- Research Papers in Economics (RePEc) <http://econpapers.repec.org/>
- IDEAS <http://ideas.repec.org/>
- Health Management and Policy(HMIC) Database (Free trial available) <http://www.ovid.com/site/catalog/databases/99.jsp>
- The New York Academy of Medicine Library Grey Literature Reports <http://www.greylit.org/library/search>
- Health Care Improvement Scotland http://www.nhshealthquality.org/nhsqis/CCC_FirstPage.jsp
- Euroscan <http://www.euroscan.org.uk> (new and emerging techs)

<https://www.nlm.nih.gov/archive/20060905/nichsr/ehta/chapter10.html>

Searches: Searching other sources for health economics studies

Grey literature

- Sources of grey literature for studies of effects
- Online sources including significant coverage of economics grey literature
- Working papers and reports from specialist health economics research centres

Searches: Searching other sources for health economics studies

Hand searching ?

- Hand search specialist health economics journals
(e.g. *'Cost-Effectiveness and Resource Allocation'*, *'Health Economics'*, *'Journal of Health Economics'*, *'Pharmacoeconomics'*, *'Value in Health'*)

Searches: Searching other sources for health economics studies

Reference lists

- ...of identified studies of effects
- ...of identified health economic studies

In Revman:

Reference lists

Reference lists of identified studies will be searched to identify further potentially eligible RCTs and economic evaluations.

Searches: Searching other sources for health economics studies

Correspondence

- Contact CCEMG for help contacting health economist topic specialists?
janice.legge@newcastle.ac.uk
- Final stage of search process
- No details of personal contacts required in protocol

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Assessment of risk of bias in included studies

[recommended, level 3 heading]

The method used to assess risk of bias (or methodological quality). Whether methods are applied independently by more than one author should be stated, along with how any disagreements are resolved. The tool(s) used should be described or referenced, with an indication of how the results are incorporated into the interpretation of the results.

See also

- The recommended tool for doing so is described in Chapter 8 (Section 8.5).

Measures of treatment effect

[recommended, level 3 heading]

The effect measures of choice should be stated. For example, odds ratio (OR), risk ratio (RR) or risk difference (RD) for dichotomous data; difference in means (MD) or standardized difference in means (SMD) for continuous data. The following *optional* headings may be used, either in place of 'Measures of treatment effect' (in which case they would be level 3 headings) or as subheadings (level 4):

- Dichotomous data**
- Continuous data**
- Time-to-event data**

See also

- Types of data and effect measures are discussed in Chapter 9 (Section 9.2).

Unit of analysis issues

[recommended, level 3 heading]

Special issues in the analysis of studies with non-standard designs, such as cross-over trials and cluster-randomized trials, should be described. Alternatively, *optional* (level 3) headings specific to the types of studies may be used, such as:

Assessment of risk-of-bias in health economics studies

Stage 1

Assess risk of bias in single or body of primary studies of effect

- Trial based economic evaluations

If the study generating the effects data used included full economic evaluation based on single RCTs

Use 'The Cochrane Collaboration's tool for assessing risk of bias' (see Chapter 8 of Cochrane Handbook)

If review is considering evidence from economic evaluations conducted within framework of non-randomized studies of effects

Use 'The Risk Of Bias In Non-randomized studies-of Interventions (ROBINS-I) assessment tool

<https://sites.google.com/site/riskofbiastool/home/resources>

Assessment of risk-of-bias in health economics studies

- Model based economic evaluations

When source of data estimate is from single study of effects

- *Use Cochrane Risk of Bias tool and/or ROBIN-I assessment tool*

If source of data is a meta analyses/systematic reviews of the results of two or more studies

- *Use ROBIS tool for assessing the risk of bias in systematic review*

<http://www.bristol.ac.uk/media-library/sites/social-community-medicine/robis/robisguidancedocument.pdf>

Assessment of risk-of-bias in health economics studies

Stage 2

Assess overall methodological quality of each included full or partial economic evaluation

Checklist developed to assess methodological quality

- Economic evaluations conducted alongside single, empirical primary studies of effects:
 - *Consolidated Health Economics Evaluation Reporting Standards (CHEERS) statement plus*
 - *CHEC criteria list assessment of methodological quality of economic evaluations (Evers 2005)*

Assessment of risk-of-bias in health economics studies

- Model-based economic evaluations

Combination of two tools, supplemented by reference to a third

- *CHEERS statement, plus*
- *NICE "study limitations" checklist*
- *Phillips checklist (Phillips 2004)*
<http://www.journalslibrary.nihr.ac.uk/hta/volume-8/issue-36#>

Assessment of risk-of-bias in health economics studies

Assessment of risk of bias in included studies

Risk-of-bias in single, empirical studies providing clinical data utilised in included economic evaluations will be assessed using the Cochrane Collaboration's tool for assessing risk of bias (Higgins 2008).

Assessment of the overall methodological quality of included economic evaluations based on single, empirical studies will be informed by application of a combination of Consolidated Health Economics Evaluation Reporting Standards (CHEERS) statement (Husereau 2013) and CHEC Criteria list for assessment of methodological quality of economic evaluations (Evers 2005).

Assessment of the overall methodological quality of model-based economic evaluations will be informed by application of CHEERS statement (Husereau 2013) and NICE "study limitations" checklist.

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Data extraction and management

[recommended, level 3 heading]

The method used to extract or obtain data from published reports or from the original researchers (for example, using a data collection form). Whether data are extracted independently by more than one author should be stated, along with how any disagreements are resolved. If relevant, methods for processing data in preparation for analysis should be described.

See also

- Data collection is discussed in Chapter 7, including which data to collect (Section 7.3), sources of data (Section 7.4), data collection forms (Section 7.5) and extracting data from reports (Section 7.6)

Assessment of risk of bias in included studies

[recommended, level 3 heading]

The method used to assess risk of bias (or methodological quality). Whether methods are applied independently by more than one author should be stated, along with how any disagreements are resolved. The tool(s) used should be described or referenced, with an indication of how the results are incorporated into the interpretation of the results.

See also

- The recommended tool for doing so is described in Chapter 8 (Section 8.5).

Measures of treatment effect

[recommended, level 3 heading]

The effect measures of choice should be stated. For example, odds ratio (OR), risk ratio (RR) or risk difference (RD) for dichotomous data; difference in means (MD) or standardized difference in means (SMD) for continuous data. The following *optional* headings may be used, either in place of 'Measures of treatment effect' (in which case they would be level 3 headings) or as subheadings (level 4):

Dichotomous data

Continuous data

Data extraction and management for health economics studies

- Precise data collection requirements for the economics components of reviews will need to be determined for each individual review
- Depends on measures of resource use, costs and/or cost-effectiveness included in 'Types of outcome measures'
- Develop data collection form based on NHS EED template for structured 'full abstracts'
- <http://www.crd.york.ac.uk/CRDWeb/>
 - 'NHS EED'
 - 'CRD assessed economic evaluation (full abstract)'

Data extraction and management for health economics studies

NHS EED structured abstract template outline

- Summary
- Type of economic evaluation
- Author's objective
- Interventions
- Location
- Method
 - *Analytical approach*
 - *Effectiveness data*
 - *Monetary benefit and utility valuations*
 - *Measure of benefit*
 - *Cost data*
 - *Analysis of uncertainty*
- Results
- Conclusions



Data extraction and management for health economics studies

Data extraction and management

A data extraction form for economic evaluations will be developed based on the format and guidelines used to produce structured abstracts of economic evaluations for inclusion in the NHS Economic Evaluation Database (NHS EED), adapted to the specific requirements of this review.

The screenshot shows a web browser window with a blue header bar containing 'Contents', 'Search', and a search box with a 'GO' button. The main content area is divided into two panes. The left pane shows a hierarchical table of contents for a handbook, with '4.5 Main text' selected. The right pane displays the content for 'Measures of treatment effect', including a definition of effect measures, a list of optional headings for different data types, and a reference to Chapter 9. Below this, it covers 'Unit of analysis issues', defining special issues and providing a list of optional headings for different study designs, with a reference to Chapter 9 and Chapter 16.

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- Dichotomous data**
- Continuous data**
- Time-to-event data**

See also

- Types of data and effect measures are discussed in Chapter 9 (Section 9.2).

Unit of analysis issues

[recommended, level 3 heading]

Special issues in the analysis of studies with non-standard designs, such as cross-over trials and cluster-randomized trials, should be described. Alternatively, *optional* (level 3) headings specific to the types of studies may be used, such as:

- Cluster-randomised trials**
- Cross-over trials**
- Studies with multiple treatment groups**

See also

- Unit of analysis issues are discussed in Chapter 9 (Section 9.3).
- Some non-standard designs are discussed in detail in Chapter 16, including cluster-randomized trials (Section 16.3), cross-over trials (Section 16.4), and studies with multiple intervention groups (Section 16.5). Non-randomized studies are discussed in Chapter 13.

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Dealing with missing data

[recommended, level 3 heading]

Strategies for dealing with missing data should be described. This will principally include missing participants due to drop-out (and whether an intention-to-treat analysis will be conducted), and missing statistics (such as standard deviations or correlation coefficients).

See also

- Issues relevant to missing data are discussed in Chapter [16](#) (Sections [16.1](#)) and intention-to-treat issues in Chapter [16](#) (Section [16.2](#)).

Assessment of heterogeneity

[recommended, level 3 heading]

Approaches to addressing clinical heterogeneity should be described, along with how the authors will determine whether a meta-analysis is considered appropriate. Methods for identifying statistical heterogeneity should be stated (e.g. visually, using I^2 , using a chi-squared test).

See also

- Assessment of heterogeneity is discussed in Chapter [9](#) (Section [9.5](#)).

Assessment of reporting biases

[recommended, level 3 heading]

This section should describe how publication bias and other reporting biases are addressed (for example, funnel plots, statistical tests, imputation). Authors should remember that asymmetric funnel plots are not necessarily caused by publication bias (and that publication bias does not necessarily cause asymmetry in a funnel plot).

See also

- Reporting biases are discussed in Chapter [10](#).

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See also

- Reporting biases are discussed in Chapter [10](#).

Data synthesis

[recommended, level 3 heading]

The choice of meta-analysis method should be stated, including whether a fixed-effect or a random-effects model is used. If meta-analyses are not undertaken, systematic approaches to synthesizing the findings of multiple studies should be described.

See also

- Meta-analysis and data synthesis are discussed in Chapter [9](#) (Section [9.4](#)).

Subgroup analysis and investigation of heterogeneity

[recommended, level 3 heading]

All planned subgroup analyses should be listed (or independent variables for meta-regression). Any other methods for investigating heterogeneity of effects should be described.

See also

- Investigating heterogeneity is discussed in Chapter [9](#) (Section [9.6](#)).

Sensitivity analysis

[recommended, level 3 heading]

This should describe analyses aimed at determining whether conclusions are robust to decisions made during the review process, such as inclusion/exclusion of particular studies from a meta-analysis, imputing missing data or choice of a method for analysis.

See also

- Sensitivity analysis is discussed in Chapter [9](#) (Section [9.7](#)).

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 - 4.6 Tables
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Subgroup analysis and investigation of heterogeneity

[recommended, level 3 heading]

All planned subgroup analyses should be listed (or independent variables for meta-regression). Any other methods for investigating heterogeneity of effects should be described.

See also

- Investigating heterogeneity is discussed in Chapter 9 (Section 9.6).

Sensitivity analysis

[recommended, level 3 heading]

This should describe analyses aimed at determining whether conclusions are robust to decisions made during the review process, such as inclusion/exclusion of particular studies from a meta-analysis, imputing missing data or choice of a method for analysis.

See also

- Sensitivity analysis is discussed in Chapter 9 (Section 9.7).

The following further, *optional* (level 3) headings for the Methods section may be helpful:

Economics issues

Methods for future updates

Authors seeking to cover economics aspects of interventions in a review will need to consider economics issues from the earliest stages of developing a protocol.

See also

- Economics issues are discussed in Chapter 15.
- Issues in updating reviews are discussed in Chapter 3.



Analysis and presentation of results of health economics studies

- Use of tables
- Use of a narrative summary



Analysis and presentation of results of health economics studies

Economics issues

Characteristics and results of included economic evaluations will be summarised using additional tables, supplemented by a narrative summary that will compare and evaluate methods used and principal results between studies.

Unit cost data will also be tabulated, when available.

Analysis and presentation of results of health economics studies

Economics issues

The currency and price year applicable to measures of costs in each original study will be reported alongside measures of costs, incremental costs and incremental cost-effectiveness, by study.

Where details of currency and price year are available in original studies, measures of costs, incremental costs and cost-effectiveness will be converted to [*latest year*] International Dollars value using implicit price deflators for GDP and GDP Purchasing Power Parities (<http://eppi.ioe.ac.uk/costconversion/default.aspx> ; Shemilt 2010).



Analysis and presentation of results of health economics studies

Economics issues

Details of the methodological characteristics of individual included health economics studies will be summarised in 'Characteristics of included studies' tables.

All elements of the economics component of this review will be conducted according to current guidance on the use of economics methods in the preparation and maintenance of Cochrane reviews (Shemilt 2011).



The Campbell & Cochrane Economics Methods Group (CCEMG) is an international network of individuals with an interest and expertise in approaches to evidence synthesis that combine economics and systematic review methods. CCEMG strives to promote the inclusion of economic perspectives and evidence in systematic reviews of health care, social welfare, education and criminal justice interventions.

This is achieved through our development and provision of methods guidance, training, peer review and advisory support for economics components of reviews. CCEMG is a Methods Groups of Cochrane and a subgroup of The Campbell Collaboration Methods Coordinating Group.

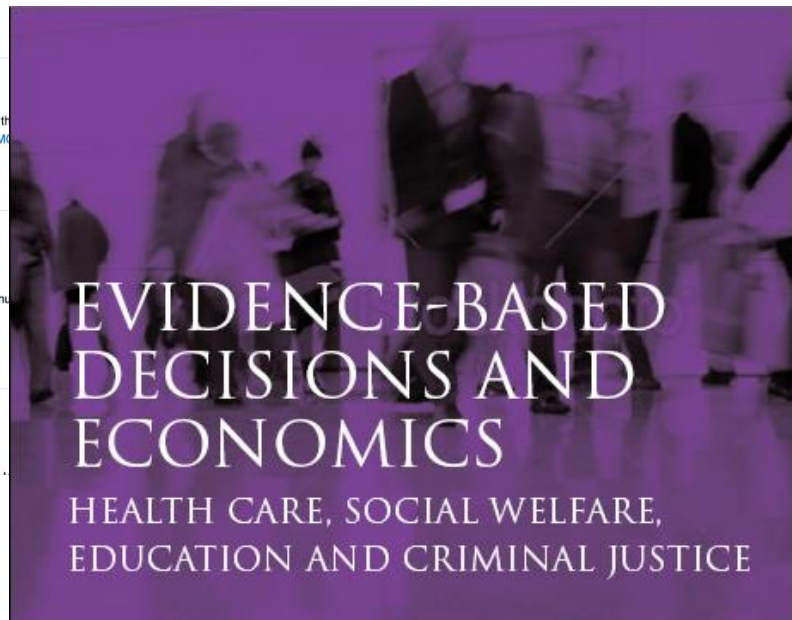
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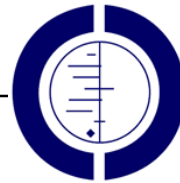


EVIDENCE-BASED DECISIONS AND ECONOMICS

HEALTH CARE, SOCIAL WELFARE, EDUCATION AND CRIMINAL JUSTICE

Edited by
Ian Shemilt
Miranda Mugford
Luke Vale
Kevin Marsh
Cam Donaldson

HOW TO INCLUDE ECONOMICS IN COCHRANE REVIEW PROTOCOLS



Part Two: Searches, assessing risk of bias and methodological quality, data collection and analysis

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