



# How to develop brief economic commentaries for Cochrane Intervention Reviews

Economic Methods

A Joint Campbell and Cochrane Methods Group

Methods Training Workshop

Cochrane Colloquium Seoul

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



# COI Declaration

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

# Learning objective

- To understand the process of developing a Brief Economic Commentary for inclusion in a Cochrane Intervention Review

# Background

- End-user decisions increasingly need to take account of evidence on resource use, costs and cost-effectiveness
- Economic perspectives and evidence are either absent from CIRs or injudiciously treated
- At best CIRs lack relevance and impact and at worst may mislead
- Extending CIRs to include economic perspectives and evidence can increase applicability for end-user decisions

Shemilt et al. *Cochrane Handbook* Chp 15: Incorporating economic evidence, 2011.

Lavis et al. *J Health Serv Res Policy* 2005; 10 (S1): 35-48.

Cochrane Handbook for S x  
handbook.cochrane.org

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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 and 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.

[15.1 The role and relevance of economics evidence in Cochrane reviews](#)  
[15.2 Planning the economics component of a Cochrane review](#)  
[15.3 Locating studies](#)  
[15.4 Selecting studies and collecting data](#)  
[15.5 Addressing risk of bias](#)  
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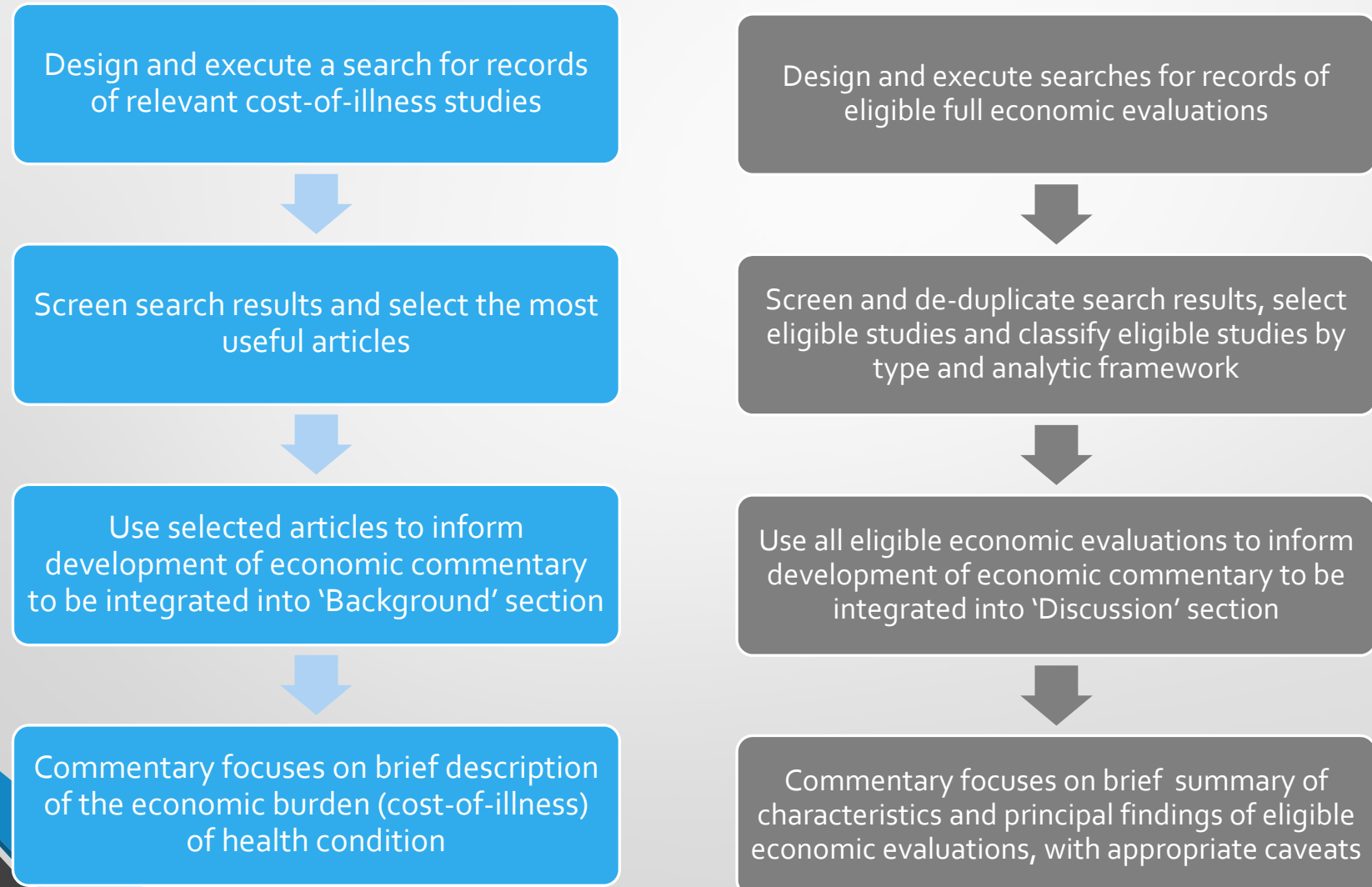
16 Special topics in statistics  
17 Patient-reported outcomes  
18 Reviews of individual patient data  
19 Prospective meta-analysis  
20 Qualitative research and Cochrane reviews  
21 Reviews in public health and health promotion  
22 Overviews of reviews  
Additional material

# Background

- Integrated full SR of economic evaluations requires specialist expertise/support and can be time and resource intensive
- What can be achieved with little time and without specialist expertise?
- CEU proposal for brief economic commentaries - place an 'economics lens' on health condition and interventions, without major additional resource or workload burden

# Brief economic commentaries

Basic stages of process:



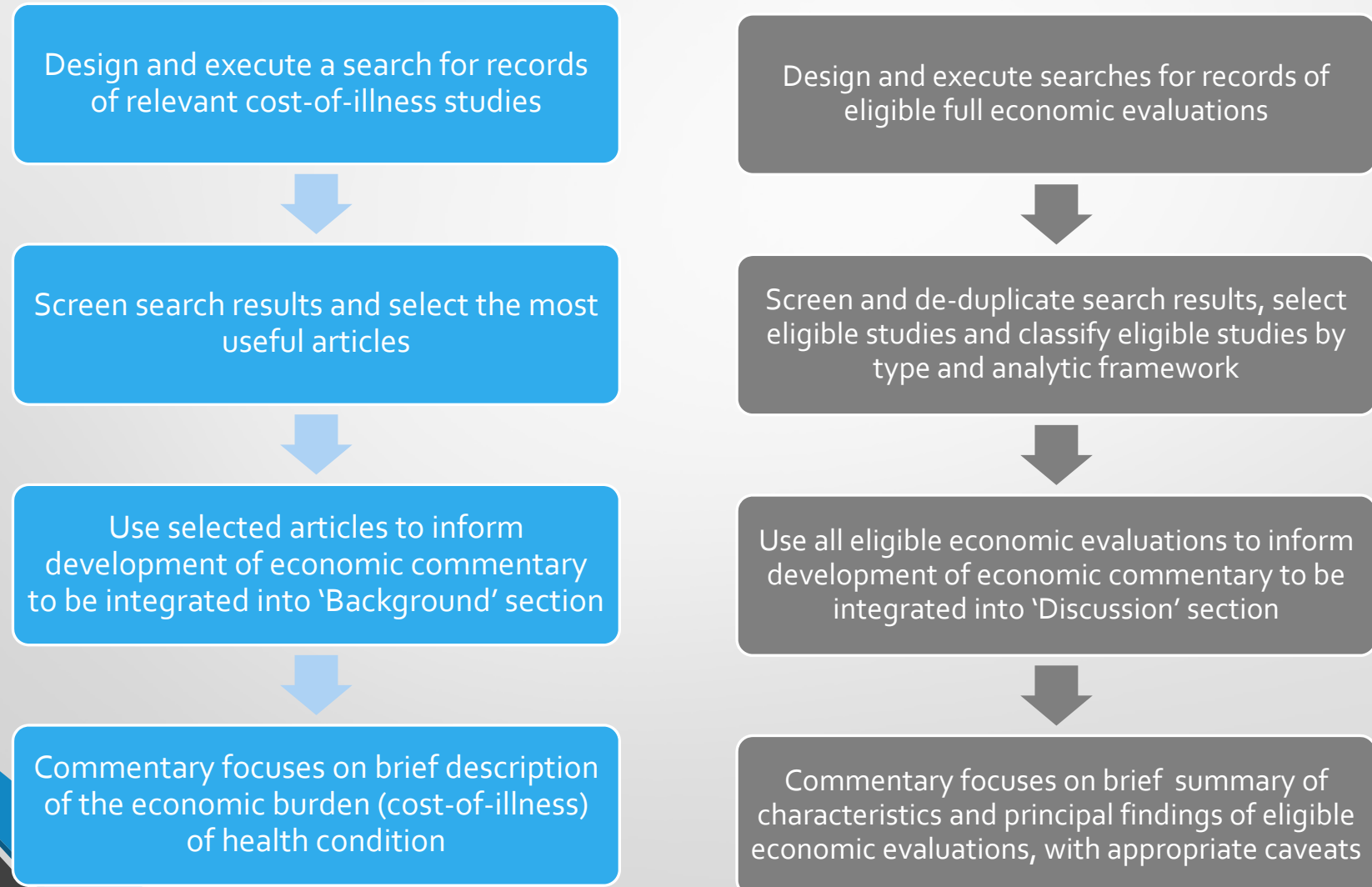
# Cost-of-illness studies

- Identify and estimate all the costs of a health condition in a defined population over a specified time period
- Monetised estimates of the total economic burden of the health condition
- Maximum amount potentially saved or gained if health condition were eradicated
- Analytic perspective: direct health care costs > societal costs
- Geographical scope: within-country region > country > world > region > global
- Use to inform economic commentary integrated into 'Background' section of CIR - 'Description of the condition' and 'Why it is important to do the review'



# Brief economic commentaries

Basic stages of process:



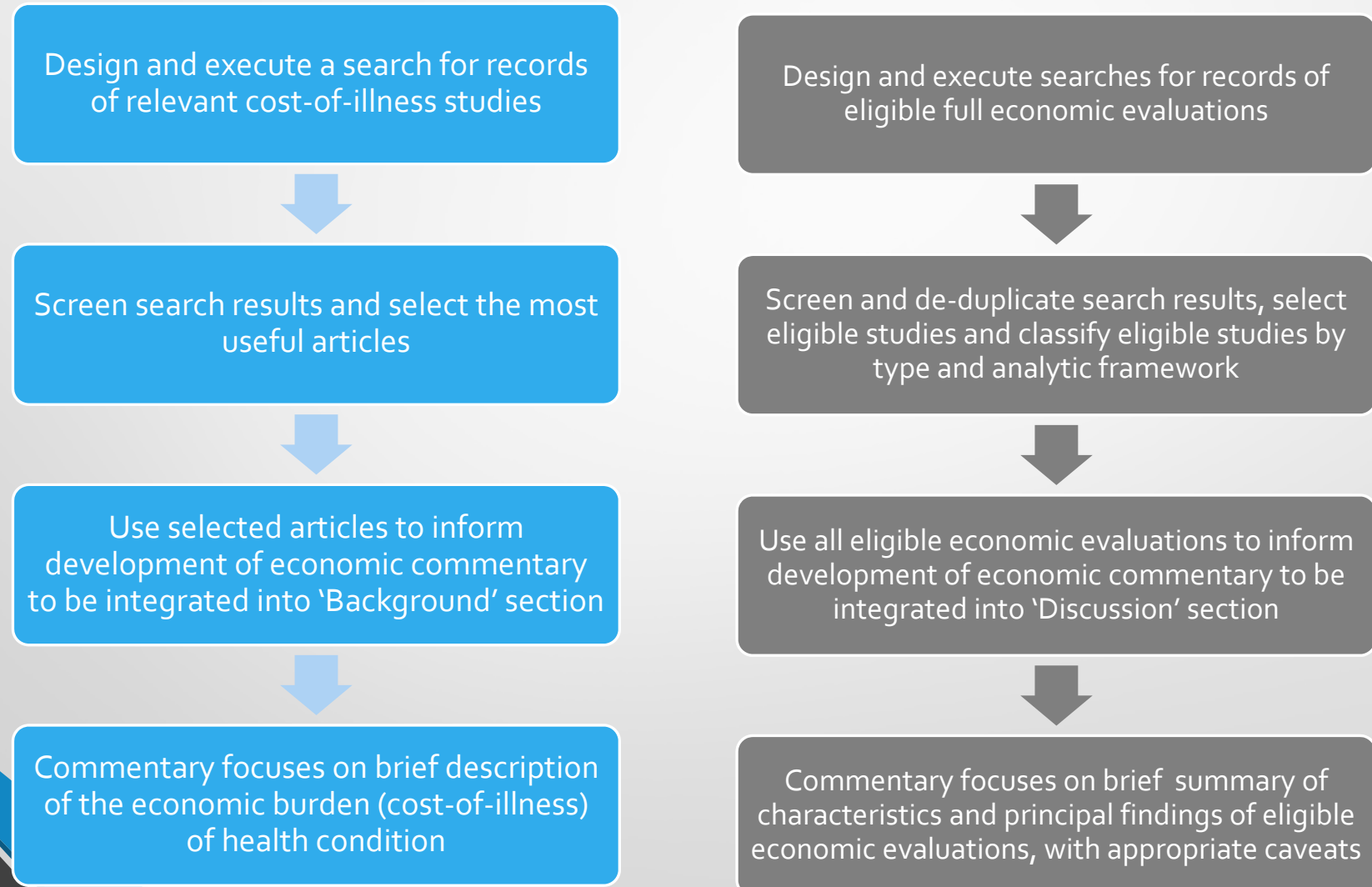
# Economic evaluations

Is there comparison of alternatives?	<b>No</b>		<b>Yes</b>	
	<i>Examines only effects</i>	<i>Examines only costs</i>		
	<b>No</b>	1A Partial evaluation Outcome description	1B Cost description	2 Partial evaluation Cost-outcome description
	<b>Yes</b>	3A Partial evaluation Efficacy or effectiveness evaluation	3B Cost analysis	4 Full economic evaluation Cost-effectiveness analysis (CEA) Cost-utility analysis (CUA) Cost-benefit analysis (CBA)

Are both costs (inputs) and effects (outputs) examined?

# Brief economic commentaries

## Basic stages of process:



# Worked example of a published Cochrane intervention review

Brito et al, 2011- Plain Language Summary

- Unstable angina
- Non ST-elevation myocardial infarction (Non-STEMI)
- ST-elevation myocardial infarction (STEMI)

...and low molecular weight heparins greatly reduces the risk of mortality and morbidity in acute coronary syndromes. However, their use has been associated with a risk of adverse events such as major bleeding, which has prompted researchers to seek safer alternative anticoagulants such as the synthetic inhibitors of the Xa factor - a crucial enzyme in the coagulation cascade. We systematically reviewed the efficacy and safety of factor Xa inhibitors in treating acute coronary syndromes when compared to unfractionated heparins or low molecular weight heparins.



Intervention



Comparators



Health condition

# Brief economic commentaries

## Basic stages of process

Design and execute a search for records of relevant cost-of-illness studies



Screen search results and select the most useful articles



Use selected articles to inform development of economic commentary to be integrated into 'Background' section



Commentary focuses on brief description of the economic burden (cost-of-illness) of health condition

Design and execute searches for records of eligible full economic evaluations



Screen and de-duplicate search results, select eligible studies and classify eligible studies by type and analytic framework



Use all eligible economic evaluations to inform development of economic commentary to be integrated into 'Discussion' section



Commentary focuses on brief summary of characteristics and principal findings of eligible economic evaluations, with appropriate caveats

# Cost-of-illness search

- Aim to locate the few most useful records:-
    - Economic burden (cost-of-illness) of the health condition being addressed
    - Recent cost-of-illness studies or reviews of cost-of-illness studies
    - International comparisons or world-region , global estimates
    - Wider societal economic burden (alongside economic burden to health systems)
  - Based on keyword search terms designed to capture 'Population' concepts
  - Adapted from searches used to locate eligible efficacy or effectiveness studies
- Coupled with use of a cost-of-illness search filter

# MEDLINE filter for cost-of-illness studies

1. (cost? adj2 (illness or disease or sickness)).tw.
2. (burden? adj2 (illness or disease? or condition? or economic\*)).tw.
3. ("quality-adjusted life years" or "quality adjusted life years" or QALY?).tw.
4. Quality-adjusted life years/
5. "cost of illness"/
6. Health expenditures/
7. (out-of-pocket adj2 (payment? or expenditure? or cost? or spending or expense?)).tw.
8. (expenditure? adj3 (health or direct or indirect)).tw.
9. ((adjusted or quality-adjusted) adj2 year?).tw.
10. or/1-9

# EMBASE filter for cost-of-illness studies

1. (cost? adj2 (illness or disease or sickness)).tw.
2. (burden? adj2 (illness or disease? or condition? or economic\*)).tw.
3. ("quality-adjusted life years" or "quality adjusted life years" or QALY?).tw.
4. Quality adjusted life year/
5. "cost of illness"/
6. exp "health care cost"/
7. (out-of-pocket adj2 (payment? or expenditure? or cost? or spending or expense?)).tw.
8. (expenditure? adj3 (health or direct or indirect)).tw.
9. ((adjusted or quality-adjusted) adj2 year?).tw.
10. or/1-9



# PsycINFO filter for cost-of-illness studies

1. (cost? adj2 (illness or disease or sickness)).tw.
2. (burden? adj2 (illness or disease? or condition? or economic\*)).tw.
3. ("quality-adjusted life years" or "quality adjusted life years" or QALY?).tw.
4. Health Care Economics/
5. Costs and Cost Analysis/
6. health care costs/
7. (out-of-pocket adj2 (payment? or expenditure? or cost? or spending or expense?)).tw.
8. (expenditure? adj3 (health or direct or indirect)).tw.
9. ((adjusted or quality-adjusted) adj2 year?).tw.
10. or/1-9

# Example: Brito et al. EMBASE

1. exp heart muscle ischemia/
2. Myocardial Ischemi\$.mp.
3. angina.ti,ab.
4. myocardial infarct\$.mp.
5. heart infarct\$.mp.
6. acute coronar\$.mp.
7. coronary syndrom\$.mp.
8. (Preinfarct\$ or pre infarct\$).mp.
9. (STEMI or NONSTEMI or NON-STEMI or NSTEMI).mp.
10. ACS.ti,ab.
11. exp acute coronary syndrome/
12. or/1-11
13. (cost? adj2 (illness or disease or sickness)).tw.
14. (burden? adj2 (illness or disease? or condition? or economic\*)).tw.
15. ("quality-adjusted life years" or "quality adjusted life years" or QALY?).tw.
16. Quality adjusted life year/
17. "cost of illness"/
18. exp "health care cost"/
19. (out-of-pocket adj2 (payment? or expenditure? or cost? or spending or expense?)).tw.
20. (expenditure? adj3 (health or direct or indirect)).tw.
21. ((adjusted or quality-adjusted) adj2 year?).tw.
22. or/13-22
23. 12 and 22

# Brief economic commentaries

## Basic stages of process

Design and execute a search for records of relevant cost-of-illness studies



Screen search results and select the most useful articles



Use selected articles to inform development of economic commentary to be integrated into 'Background' section



Commentary focuses on brief description of the economic burden (cost-of-illness) of health condition

Design and execute searches for records of eligible full economic evaluations



Screen and de-duplicate search results, select eligible studies and classify eligible studies by type and analytic framework



Use all eligible economic evaluations to inform development of economic commentary to be integrated into 'Discussion' section



Commentary focuses on brief summary of characteristics and principal findings of eligible economic evaluations, with appropriate caveats

# Economic evaluations search

- Aim to locate *all* eligible economic evaluations
  - Analysis types: CEA, CUA, CBA
  - Analytic framework: Single empirical study or decision model
  - Compares the experimental intervention(s) with one or more eligible comparators...
  - ...for an eligible population of patients (ref. health condition)
- Based on (at least) keyword search terms designed to capture 'Intervention' concepts
- Adapted from searches used to locate eligible efficacy or effectiveness studies
- NHS EED Search (#1)
- Economic evaluation search filter for records 2015- (#2)

# #1 NHS EED Search

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Centre for Reviews and Dissemination

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The Department of Health and the National Institute for Health Research (NIHR) funded the production of DARE and NHS EED between 1994 and March 2015. Although funding has ceased and we are no longer adding new records to the databases both can be accessed via the CRD website.

NHS EED includes economic evaluations of health and social care interventions. Economic evaluations compare the costs and outcomes of two or more interventions using cost-benefit, cost-utility, or cost-effectiveness analyses.

Weekly searches of MEDLINE, EMBASE, CINAHL, PsycINFO and PubMed were carried out, up until the end of December 2014. [Full details of the search strategies are available here.](#)

We assessed thousands of citations to identify relevant economic evaluations. Critical abstracts were written for those of importance to the NHS. Each abstract provides details of the key components of the economic evaluation and summarises the effectiveness information on which the evaluation is based. The overall reliability and generalisability of the study are stated along with any implications for the NHS.

A copy of each abstract was sent to the original authors for information. Authors were invited to reply with corrections to factual errors, and other relevant research and where applicable, this information was added to the abstract.

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

Page last updated: 3 June, 2015

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# #1 NHS EED Search

EMBASE:-

14. (fondaparinux or idraparinux or Arixtra or otamixaban or Razaxaban or Fonadaparin or Dx 9065\$.mp.
15. xa inhibit\$.mp.
16. 10a inhibit\$.mp.
17. xa antagonist\$.mp.
18. 10a antagonist\$.mp.
19. xa block\$.mp.
20. factor x inhibit\$.mp.
21. Fxa inhibit\$.mp.
22. vaso flux.mp.

- Retrieves 30 records

NHS EED (Quick search):-

fondaparin\* OR idraparinux OR arixtra OR otamixaban OR ((xa OR 10a) AND (inhibit\* OR antagonist\* OR block\*)) OR ("factor x" NEAR inhibit\*) OR (fxa NEAR inhibitor\*) OR "vaso flux" OR razaxaban OR "dx 9065"

# #1 NHS EED Search



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Search results [30 hits] Selected records [0 hits]

Any field  OR

Title  OR

Author

Record date  to

Publication year  to

DARE  
 CRD assessed review (bibliographic)  
 CRD assessed review (full abstract)  
 Cochrane review  
 Cochrane related review record  
 NHS EED  
 CRD assessed economic evaluation (bibliographic)  
 CRD assessed economic evaluation (full abstract)  
 HTA  
 HTA in progress  
 HTA published

Results for: ((fondaparin\* OR idraparinux OR arixtra OR otamixaban OR ((xa OR 10a) AND (inhibit\* OR antagonist\* OR block\*)) OR (factor x NEAR inhibit\*) OR (fxa NEAR inhibitor\*) OR vaso flux OR razaxaban OR dx 9065)) and ((Economic evaluation:ZDT and Bibliographic:ZPS) OR (Economic evaluation:ZDT and Abstract:ZPS)) IN NHSEED

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	Year	Database	Source	Title
<input type="checkbox"/>	2014	NHS EED	Clinical Drug Investigation	Apixaban, dabigatran, and rivaroxaban versus warfarin for stroke prevention in non-valvular atrial fibrillation: a cost-effectiveness analysis [Preview]
<input type="checkbox"/>	2014	NHS EED	Clinical Drug Investigation	Cost effectiveness of apixaban versus aspirin for stroke prevention in patients with non-valvular atrial fibrillation in Belgium [Preview]
<input type="checkbox"/>	2014	NHS EED	European Heart Journal	Cost-effectiveness of apixaban vs. current standard of care for stroke prevention in patients with atrial fibrillation [Preview]



# #1 NHS EED Search

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Centre for Reviews and Dissemination

  
National Institute for  
Health Research

## Apixaban, dabigatran, and rivaroxaban versus warfarin for stroke prevention in non-valvular atrial fibrillation: a cost-effectiveness analysis

Rognoni C, Marchetti M, Quaglini S, Liberato NL

### Record Status

This is an economic evaluation that meets the criteria for inclusion on NHS EED.

### Bibliographic details

Rognoni C, Marchetti M, Quaglini S, Liberato NL. Apixaban, dabigatran, and rivaroxaban versus warfarin for stroke prevention in non-valvular atrial fibrillation: a cost-effectiveness analysis. *Clinical Drug Investigation* 2014; 34(1): 9-17

### PubMedID

24135964

### DOI

10.1007/s40261-013-0144-3

### Indexing Status

Subject indexing assigned by NLM

### MeSH

Aged; Anticoagulants /economics /therapeutic use; Antithrombins /economics /therapeutic use; Atrial Fibrillation /complications; Benzimidazoles /economics /therapeutic use; Cost-Benefit Analysis; Dabigatran; Drug Costs; Factor Xa Inhibitors /economics /therapeutic use; Health Care Costs; Humans; Italy; Markov Chains; Morpholines /economics /therapeutic use; Pyrazoles /economics /therapeutic use; Pyridones /economics /therapeutic use; Quality of Life; Rivaroxaban; Stroke /complications /drug therapy /economics /prevention & Thiophenes /economics /therapeutic use; Treatment Outcome; Warfarin /economics /therapeutic use; beta-Alanine /analogs & control; derivatives /economics /therapeutic use

### AccessionNumber

22013046625

### Date bibliographic record published

19/11/2013

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Results for: ((fondaparinux OR idraparinux OR arixtra OR otamixaban OR ((xa OR 10a) AND (inhibit\* OR antagonist\* OR block\*)) OR (factor x NEAR inhibit\*) OR (fxa NEAR inhibitor\*) OR vaso flux OR razaxaban OR dx 9065)) and ((Economic evaluation:ZDT and Bibliographic:ZPS) OR (Economic evaluation:ZDT and Abstract:ZPS)) IN NHSEED

First	1	2	Last		
Year	Database	Source	Title		
<input type="checkbox"/>	2014	NHS EED	Clinical Drug Investigation	Apixaban, dabigatran, and rivaroxaban versus warfarin for stroke prevention in non-valvular atrial fibrillation: a cost-effectiveness analysis <a href="#">[Preview]</a>	
<input type="checkbox"/>	2014	NHS EED	Clinical Drug Investigation	Cost effectiveness of apixaban versus aspirin for stroke prevention in patients with non-valvular atrial fibrillation in Belgium <a href="#">[Preview]</a>	
<input type="checkbox"/>	2014	NHS EED	European Heart Journal	Cost-effectiveness of apixaban vs. current standard of care for stroke prevention in patients with atrial fibrillation <a href="#">[Preview]</a>	
<input type="checkbox"/>	2014	NHS EED	Thrombosis Research	Cost-effectiveness of dabigatran etexilate for the prevention of stroke and systemic embolism in atrial fibrillation in Taiwan <a href="#">[Preview]</a>	
<input type="checkbox"/>	2014	NHS EED	Revista Portuguesa de Cardiologia	Cost-effectiveness of rivaroxaban for stroke prevention in atrial fibrillation in the Portuguese setting <a href="#">[Preview]</a>	
<input type="checkbox"/>	2014	NHS EED	Journal of Medical Economics	Stroke prevention in patients with atrial fibrillation in France: comparative cost-effectiveness of new oral anticoagulants (apixaban, dabigatran and rivaroxaban), warfarin and aspirin <a href="#">[Preview]</a>	
<input type="checkbox"/>	2013	NHS EED	Stroke	Cost-effectiveness of apixaban, dabigatran, rivaroxaban, and warfarin for stroke prevention in atrial fibrillation <a href="#">[Preview]</a>	Commentary available
<input type="checkbox"/>	2013	NHS EED	Pharmacotherapy	The cost-effectiveness of oral direct factor Xa inhibitors compared with low-molecular-weight heparin for the prevention of venous thromboembolism prophylaxis in total hip or knee replacement surgery <a href="#">[Preview]</a>	
<input type="checkbox"/>	2012	NHS EED	Arquivos Brasileiros de Cardiologia	Cost-effectiveness of fondaparinux in patients with acute coronary syndrome without ST-segment elevation <a href="#">[Preview]</a>	
<input type="checkbox"/>	2012	NHS EED	Thrombosis and Haemostasis	Dabigatran versus rivaroxaban for the prevention of stroke and systemic embolism in atrial fibrillation in Canada: comparative efficacy and cost-effectiveness <a href="#">[Preview]</a>	Commentary available



# NHS EED Critical abstract

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National Institute for  
Health Research

## Cost-effectiveness of apixaban, dabigatran, rivaroxaban, and warfarin for stroke prevention in atrial fibrillation

Harrington AR, Armstrong EP, Nolan PE, Malone DC

### Record Status

This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

### CRD summary

This study evaluated the cost-effectiveness of new oral anticoagulants, for stroke prevention, in patients with nonvalvular atrial fibrillation, compared with warfarin. The authors concluded that the anticoagulants were more cost-effective than warfarin, and apixaban was preferred. The study was generally well reported, but had some unclear and potentially inappropriate costs. The analysis was not fully incremental, and there were questions around the costing methods, so the validity of the authors' conclusions is unclear.

### Type of economic evaluation

Cost-utility analysis

### Study objective

This study evaluated the long-term cost-effectiveness of new oral anticoagulants, for stroke prevention, in patients with nonvalvular atrial fibrillation, compared with the standard treatment of warfarin.

### Interventions

The four interventions were warfarin, apixaban 5mg twice daily, dabigatran 150mg twice daily, and rivaroxaban 20mg once daily. Warfarin dose was assumed to be adjusted to achieve the patient's target international normalised ratio (INR).

### Location/setting

USA/in-patient and out-patient care.

### Methods

#### Analytical approach:

A Markov model, with one-month cycles, combined the published data. The time horizon was 30 years and the authors stated that the perspective was societal.

#### Effectiveness data:

Several types of effectiveness data were used. Adverse events were from three trials; one for each drug. The Apixaban for Reduction in Stroke and Other Thromboembolic Events in Atrial Fibrillation (ARISTOTLE) trial was used for apixaban. The Randomized Evaluation of Long-Term Anticoagulation Therapy (RE-LY) trial

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# Changes to NHS EED

## **Message for NHS EED database users**

From January 2015 no new records/commentaries have been added to NHS EED. Existing content continues to be accessible via the CRD site. NIHR funding to produce NHS EED ceased at the end of March 2015.

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We assessed thousands of citations to ~~identify relevant economic evaluations.~~ ~~Critical abstracts~~ were written for those of importance to the NHS. Each abstract provides details of the key components of the economic evaluation and summarises the effectiveness information on which the evaluation is based. The overall reliability and generalisability of the study are stated along with any implications for the NHS.

A copy of each abstract was sent to the original authors for information. Authors were invited to reply with corrections to factual errors, and other relevant research and where applicable, this information was added to the abstract.

# #2 EE search filters: MEDLINE

## NHS EED MEDLINE using OvidSP - download as PDF

- 1 Economics/
- 2 exp "costs and cost analysis"/
- 3 Economics, Dental/
- 4 exp economics, hospital/
- 5 Economics, Medical/
- 6 Economics, Nursing/
- 7 Economics, Pharmaceutical/
- 8 (economic\$ or cost or costs or costly or costing or price or
- 9 (expenditure\$ not energy).ti,ab.
- 10 value for money.ti,ab.
- 11 budget\$.ti,ab.
- 12 or/1-11
- 13 ((energy or oxygen) adj cost).ti,ab.
- 14 (metabolic adj cost).ti,ab.
- 15 ((energy or oxygen) adj expenditure).ti,ab.

# #2 EE search filters: EMBASE

NHS EED EMBASE using OvidSP - [download as PDF](#)

1. Health Economics/
2. exp Economic Evaluation/
3. exp Health Care Cost/
4. pharmacoeconomics/
5. 1 or 2 or 3 or 4
6. (econom\$ or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic\$).ti,ab.
7. (expenditure\$ not energy).ti,ab.
8. (value adj2 money).ti,ab.
9. budget\$.ti,ab.
10. 6 or 7 or 8 or 9
11. 5 or 10
12. letter.pt.
13. editorial.pt.
14. note.pt.
15. 12 or 13 or 14
16. 11 not 15
17. (metabolic adj cost).ti,ab.
18. ((energy or oxygen) adj cost).ti,ab.
19. ((energy or oxygen) adj expenditure).ti,ab.
20. 17 or 18 or 19
21. 16 not 20
22. animal/
23. exp animal experiment/
24. nonhuman/
25. (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep).ti,ab,sh.
26. 22 or 23 or 24 or 25
27. exp human/
28. human experiment/
29. 27 or 28
30. 26 not (26 and 29)
31. 21 not 30
32. 0959-8146.is.
33. (1469-493X or 1366-5278).is.
34. 1756-1833.en.
35. 32 or 33 or 34
36. 31 not 35
37. conference abstract.pt.
38. 36 not 37
39. limit 38 to yr="2010 -Current"

## #2 EE search filters: PubMed

### NHS EED PubMed - download as PDF

- #1 economic evaluation\*[ti]
- #2 economic analy\*[ti]
- #3 cost analy\*[ti]
- #4 cost effectiveness[ti]
- #5 cost benefit\*[ti]
- #6 cost utilit\*[ti]
- #7 (#1 OR #2 OR #3 OR #4 OR #5 OR #6)

# #2 EE search filters

- Interim guidance for BECs:
  - Use to filter search results conducted for the main review of intervention effects conducted in: MEDLINE, EMBASE, CINAHL, PsycINFO, EMBASE and/or PubMed
  - Combine filter with (at least) index and keyword terms designed to capture 'intervention' concepts
  - Do not incorporate any other study design filter (e.g. RCT filter)
  - Incorporate 'publication date' limit: 2015-



## #2 EE search filters: Brito 'intervention' terms

EMBASE:-

13. Exp fondaparinux/

14. (fondaparinux or idraparinux or Arixtra or otamixaban or Razaxaban or Fonadaparin or Dx 9065\$).mp.

15. xa inhibit\$.mp.

16. 10a inhibit\$.mp.

17. xa antagonist\$.mp.

18. 10a antagonist\$.mp.

19. xa block\$.mp.

20. factor x inhibit\$.mp.

21. Fxa inhibit\$.mp.

22. vaso flux.mp.

23. or/13-22

# #2 EE search filters: Brito in EMBASE

1. exp fondaparinux/
2. (fondaparinux or idraparinux or Arixtra or otamixaban or Razaxaban or Fonadaparin or Dx 9065\$).mp.
3. xa inhibit\$.mp.
4. 10a inhibit\$.mp.
5. xa antagonist\$.mp.
6. 10a antagonist\$.mp.
7. xa block\$.mp.
8. factor x inhibit\$.mp.
9. Fxa inhibit\$.mp.
10. vaso flux.mp.
11. or/1-10
12. Health Economics/
13. exp Economic Evaluation/
14. exp Health Care Cost/
15. pharmacoeconomics/
16. 12 or 13 or 14 or 15
17. (econom\$ or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic\$).ti,ab.
18. exp Economic Evaluation/
19. (value adj2 money).ti,ab.
20. budget\$.ti,ab.
21. 17 or 18 or 19 or 20
22. 16 or 21
23. letter.pt.
24. editorial.pt.
25. note.pt.
26. 23 or 24 or 25
27. 22 not 26
28. (metabolic adj cost).ti,ab.
29. ((energy or oxygen) adj cost).ti,ab.
30. ((energy or oxygen) adj expenditure).ti,ab.
31. 28 or 29 or 30
32. 27 not 31
33. animal/
34. exp animal experiment/
35. nonhuman/
36. (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep).ti,ab,sh.
37. 33 or 34 or 35 or 36
38. exp human/
39. human experiment/
40. 38 or 39
41. 37 not (37 and 40)
42. 32 not 41
43. 0959-8146.is.
44. (1469-493X or 1366-5278).is.
45. 1756-1833.en.
46. 43 or 44 or 45
47. 42 not 46
48. conference abstract.pt.
49. 47 not 48
50. 11 and 49
51. limit 50 to yr="2015- current"

- Retrieves 90 records  
(17/10/2016)

# Developing economic commentaries:

## Basic stages of process

Design and execute a search for records of relevant cost-of-illness studies



Screen search results and select the most useful articles



Use selected articles to inform development of economic commentary to be integrated into 'Background' section



Commentary focuses on brief description of the economic burden (cost-of-illness) of health condition

Design and execute searches for records of eligible full economic evaluations



Screen and de-duplicate search results, select eligible studies and classify eligible studies by type and analytic framework



Use all eligible economic evaluations to inform development of economic commentary to be integrated into 'Discussion' section



Commentary focuses on brief summary of characteristics and principal findings of eligible economic evaluations, with appropriate caveats

# Screening results of searches for cost-of-illness studies

Brito et al, 2011

- Records of cost-of-illness studies or reviews of cost-of-illness studies of the target health condition:
  - ❖ Unstable angina
  - ❖ Non-STEMI
  - ❖ STEMI
  - ❖ But ideally ACS (i.e. all 3 clinical entities combined)
- At least single country-level estimates (ideally >)
- Whole patient groups of interest (not sub-groups):-
  - ❖ Adults  $\geq 18$  years
- Corresponding article published in a peer reviewed journal

# Screening results of searches for economic evaluations

- Duplicate screening by two researchers working independently (ideal)
- Eligibility criteria same as main review – **P**opulation(s), **I**ntervention(s), **C**omparison(s)
  - ❖ **P**: Adults  $\geq 18$  years with ACS
  - ❖ **I**: Factor Xa inhibitors
  - ❖ **C**: Unfractionated heparins or low molecular weight heparins
- Refer to taxonomy of evaluation types and descriptions of analysis types and analytic frameworks in Cochrane Handbook, Chp 15, Section 15.1

# Economic evaluations

Is there comparison of alternatives?	<b>No</b>		<b>Yes</b>	
	<i>Examines only effects</i>	<i>Examines only costs</i>		
	<b>No</b>	1A Partial evaluation Outcome description	1B Cost description	2 Partial evaluation Cost-outcome description
	<b>Yes</b>	3A Partial evaluation Efficacy or effectiveness evaluation	3B Cost analysis	4 Full economic evaluation Cost-effectiveness analysis (CEA) Cost-utility analysis (CUA) Cost-benefit analysis (CBA)

Are both costs (inputs) and effects (outputs) examined?

# Screening results of searches for economic evaluations

- Duplicate screening by two researchers working independently (ideal)
- Eligibility criteria same as main review – **P**opulation(s), **I**ntervention(s), **C**omparison(s)
  - ❖ **P**: Adults  $\geq 18$  years with ACS
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# Economic commentary: 'Background'

- A brief, general introductory statement of the scale of economic burden to health care systems, patients and/or their families and/or society as a whole

*Stroke is the leading cause of sustained disability in the world today, placing a huge economic burden on health systems and society.*

*The global economic burden of schizophrenia is high and the costs-of-illness are wide-ranging.*

*The economic burden of Crohn's Disease to society is substantial, comprising both direct medical costs and indirect costs, such as loss of productivity, sick pay, reduced productivity during paid work, early retirement and loss of leisure time.*

# Economic commentary: 'Background'

- Monetised estimate(s) of the scale of economic burden to:
  - health care systems
  - patients and/or their families
  - economic burden to societies as a whole
- Include details of currency and price year applicable to each monetised estimate
- Cite all sources and include bibliographic details in 'Additional references' section
- Make commentary as widely applicable as possible, contingent on information available in identified cost-of-illness studies

# 'Background' – Brito et al.

## BACKGROUND

Acute coronary syndromes (ACS) are life-threatening disorders which remain as a common cause of cardiovascular morbidity and mortality, accounting for half of all deaths due to cardiovascular diseases and contributing to **high economic burden to global health care systems** (ACC/AHA 2009; ACCP 2008; ESC Guideline 2007), in terms of both **direct health care costs and indirect, social and economic costs** (Turpie 2006) that continue to be incurred long after the acute event has resolved (Shetty 2008).

One study estimated that the total direct US healthcare costs associated with management of coronary heart disease (CHD) in 2006, most of which consisted of costs for ACS, were \$75.2 billion (comprising \$11.1 billion for physician and other professional costs; \$41.8 billion for hospital costs; \$10.9 billion for nursing-home costs; \$9.8 billion for the cost of drugs and other medical durables; and \$1.6 billion for home healthcare costs) (Turpie 2006). The same study estimated that indirect US costs associated with CHD in 2006 (due to lost productivity) were \$142.5 billion. Another study estimated the total direct healthcare costs associated with management of ACS during the first year following diagnosis at €1.9 billion in the UK (2004 Euros), compared with €1.3 billion in France, €3.3 billion in Germany, €3.1 billion in Italy and €1.0 billion in Spain, accounting for between 0.9% and 2.9% of total healthcare expenditure in these countries (Taylor 2007), and with pharmaceutical expenditure contributing a 14-25% of total direct healthcare costs.

# Economic commentary: 'Discussion'

Overall focus:

- To what extent is there a *prima facie* case that an intervention might be judged favourably (or unfavourably) from an economic point of view?

Include details of:

- Electronic health economics literature databases and other search strategies searched
- Numbers of relevant economic evaluations identified for each eligible comparison

# Economic commentary: 'Discussion' – Standard form of words

Introductory:

*To supplement the main systematic review of effects, we sought to identify economic evaluations which have compared ['Intervention X'] with ['Comparator Y']. A targeted keyword search of the NHS Economic Evaluation Database, along with supplementary electronic searches of [MEDLINE] and [EMBASE], identified [N] such economic evaluations.*

# Economic commentary: 'Discussion'

Include details of:

- Primary types of analysis used
- Frameworks used to assemble data, including source(s) of efficacy/effectiveness and safety/adverse effects data used (if applicable)
- Analytic perspective and time horizon adopted for costs and effects
- Main cost categories included
- Currency and price year
- Authors' principal conclusions (base case analysis)
- Uncertainty regarding authors' principal conclusions (sensitivity analyses)
- Cite all sources and include bibliographic details in 'Additional references' section

## 'Discussion' – Brito et al.

Two cost-utility analyses (decision models) compared subcutaneous (SC) fondaparinux (2.5mg/day) with SC enoxaparin (1mg/kg 12 hourly) in patients with non ST-elevation myocardial infarction, pre-treated with triple antiplatelet therapy and early revascularization in Spain and the US respectively (Latour-Perez 2009, Sculpher 2009). Both analyses utilised comparative effectiveness and safety data collected from the OASIS-5 trial (Yousef 2006). Both adopted a health care provider perspective and modelled costs and quality adjusted life years (QALYs) over the patients' lifetime. Both analyses found that fondaparinux dominated enoxaparin (i.e. was both less costly and generated more QALYs) over the patients' lifetime, in most scenarios considered, and across all levels of baseline risk.

A cost-effectiveness analysis (decision model) compared four anticoagulation strategies (UFH with a glycoprotein inhibitor; enoxaparin with a glycoprotein inhibitor; bivalirudin alone; and fondaparinux with a glycoprotein inhibitor) in patients with non-ST-elevation acute coronary syndrome (Maxwell 2009) in US secondary care. This analysis utilised clinical evidence collected from three RCTs, including the OASIS-5 trial (Yousef 2006). It adopted a health care provider perspective but the time horizon was not reported. The analysis found that bivalirudin and fondaparinux were superior in most scenarios considered and the authors concluded that bivalirudin was the least costly anticoagulation therapy amongst those compared for early invasive treatment, with fondaparinux preferred for patients undergoing conservative treatment.

## 'Discussion' – Important caveats

*We did not subject the [N] identified economic evaluations to critical appraisal and we do not attempt to draw any firm or general conclusions regarding the relative costs or efficiency of the [Interventions/Comparators] being compared.*



# Economic commentary: 'Discussion'

## Example form of words

***Prima facie*** case that an intervention might be judged favourably (or unfavourably) from an perspective?

### Lack of evidence

*The apparent scarcity of relevant economic evaluations indicates that economic evidence regarding ['Intervention X'] for ['Health Condition Z'] is currently lacking.*

# Economic commentary: 'Discussion'

## Example form of words

### Equivocal findings between studies

*However, it is clear that the available economic evidence for ['Intervention X'] compared ['Comparator Y'] in the treatment of patients with ['Health Condition Z'] is, at best, equivocal.*

# Economic commentary: 'Discussion'

## Example form of words

### Consistent findings between studies [1]

*However, the available economic evidence indicates that, from an economic perspective, use of ['Intervention X'] is (at least) a promising strategy compared with ['Comparator Y'] for the secondary prevention of ['Health Condition Z'].*

# Economic commentary: 'Discussion' – Example form of words

## Consistent findings between studies [2]

*Taking into account these limitations, there was consistency between economic evaluations in the finding that short-term direct health care costs were, on average, lower amongst patients with ['Health Condition Z'] who underwent ['Intervention X'] compared with those who underwent ['Comparator Y']. When considered alongside the principal finding from our main review of intervention effects that there is no clear difference in perioperative outcomes and re-operation rates for disease recurrence between ['Intervention X'] and ['Comparator Y'], the available economic evidence indicates that, from an economic perspective, ['Intervention X'] may be a promising surgical technique, as a comparably safe and lower cost alternative to ['Comparator Y'], in patients with ['Health Condition Z'].*

## 'Discussion' – Brito et al.

We did not subject the three identified economic evaluations to critical appraisal and we do not attempt to draw any firm or general conclusions regarding the relative costs or efficiency of the anticoagulation strategies compared. However, evidence collected from these economic evaluations indicates that, from an economic perspective, use of fondaparinux is (at least) a promising strategy compared with other anticoagulation strategies in patients with non-ST-elevation acute coronary syndrome.

# Economic commentary: 'Discussion'

## Standard form of words

Final caveat:

*End users of this review will need to assess the extent to which methods and results of identified economic evaluations may be applicable (or transferable) to their own setting.*

# Critical appraisal

- Not necessary to subject cost-of-illness studies selected to inform 'Background' commentary to formal critical appraisal
- Not recommended that authors should necessarily subject economic evaluations to formal critical appraisal, but this fact should be stated explicitly as a caveat alongside the 'Discussion' commentary.

*It is important to highlight that we did not subject any of the [N] identified economic evaluations to any formal critical appraisal and we do not attempt to draw any firm or general conclusions regarding the relative costs or efficiency of ['Intervention X'] compared with ['Comparator Y'].*

# How much time does it take to develop brief economic commentaries?

- Aggregate (median) *trained* researcher time input (time on task) required to complete all stages of the process:
  - ❖ Design and execution of search strategies
  - ❖ Processing search results
    - Initial screening of NHS EED records
    - Initial screening of cost-of-illness/economic evaluation search records
    - Assessment of relevance/ eligibility
    - Retrieval and assessment of full-text articles;
    - Classification of eligible economic evaluations
  - ❖ Development of economic commentaries



# How much time does it take to develop brief economic commentaries?

If recommendations were implemented (*including the independent screening and classification of economic evaluations by two researchers*):

Estimated aggregate researcher time input (time on task) = *approximately 4 hours - 1 day*

# Proposed criteria for prioritising CIRs for development of brief economic commentaries

- The comparator(s) being considered include alternative management strategies that are used in current practice (i.e. comparator(s) are not limited to placebo only)
- Important cost differences are expected between the experimental intervention(s) and comparator(s)
- The CIR is being updated (i.e. updates rather than new reviews)



Thank You



# How to develop brief economic commentaries for Cochrane Intervention Reviews

Economic Methods

A Joint Campbell and Cochrane Methods Group

Methods Training Workshop

Cochrane Colloquium Seoul

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