Evidence-based Medicine Toolkit

SECOND EDITION

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Blackwell Publishing

BMJ Books

Contents

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BMJ Books

Blackwell Publishing

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Published by Blackwell Publishing Ltd

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Blackwell Publishing, Inc., 350 Main Street, Malden, Massachusetts 02148-5020, USA

Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ, UK

Blackwell Publishing Asia Pty Ltd, 550 Swanston Street, Carlton, Victoria 3053, Australia

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First published 2002

Second edition 2006

1 2006

A catalogue record for this title is available from the British Library and the Library of Congress

ISBN-13: 978-0-7279-1841-3

ISBN-10: 0-7279-1841-9

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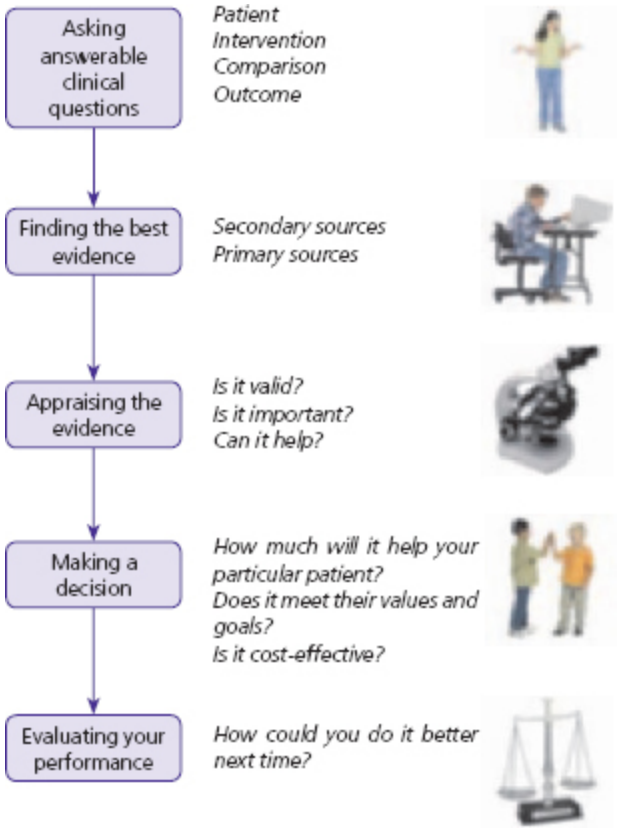
Introduction



This ‘toolkit’ is designed as a summary and reminder of the key elements of practising evidence-based medicine (EBM). It has largely been adapted from resources developed at the Centre for Evidence-based Medicine. For more detailed coverage, you should refer to the other EBM texts and web pages cited throughout.

The first page of each chapter presents a ‘minimalist’ checklist of the key points. Further sections within each chapter address these points in more detail and give additional background information. Ideally, you should just need to refer to the first page to get the basics, and delve into the further sections as required.

Occasionally, you will see the dustbin icon on the right. This means that the question being discussed is a ‘filter’

question for critical appraisal: if the answer is not satisfactory, you should consider ditching the paper and looking elsewhere. If you don't ditch the paper, you should be aware that the effect it describes may not appear in your patient in the same way.

Definition of evidence-based medicine

Evidence-based medicine is the 'conscientious, explicit and judicious use of current best evidence in making decisions about individual patients'.

This means 'integrating individual clinical expertise with the best available external clinical evidence from systematic research' (Sackett *et al*. 2000).

We can summarize the EBM approach as a five-step model:

1 Asking answerable clinical questions.

2 Searching for the evidence.

3 Critically appraising the evidence for its validity and relevance.

4 Making a decision, by integrating the evidence with your clinical expertise and the patient's values.

5 Evaluating your performance.

Asking answerable questions

The four elements of a well-formed clinical question are:

1. **P**atient or Problem
2. **I**ntervention
3. **C**omparison intervention (if appropriate)
4. **O**utcome(s)

The terms you identify from this process will form the basis of your search for evidence and the question as your guide in assessing its relevance.

Bear in mind that how specific you are will affect the outcome of your search: general terms (such as ‘heart failure’) will give you a broad search, while more specific terms (for example, ‘congestive heart failure’) will narrow the search.

Also, you should think about alternative ways or aspects of describing your question (for example, New York Heart Association Classification).

Element	**Tips**	**Specific example**
Patient or problem	Starting with your patient ask ‘How would I describe a group of patients similar to mine?’	‘In women over 40 with heart failure from dilated cardiomyopathy …’
Intervention	Ask ‘Which main intervention am I considering?’	‘… would adding anticoagulation with warfarin to standard heart failure therapy…’
Comparison intervention	Ask ‘What is the main alternative to compare with the intervention?’	‘… when compared with standard therapy alone …’
Outcome	Ask ‘What can I hope to accomplish?’ or ‘What could this exposure really affect?’	‘… lead to lower mortality or morbidity from thromboembolism.’

Patient or problem

First, think about the patient and/or setting you are dealing with. Try to identify all of their clinical characteristics that influence the problem, which are relevant to your practice and which would affect the relevance of research you might find. It will help your search if you can be as specific as possible at this stage, but you should bear in mind that if you are too narrow in searching you may miss important articles (see next section).

Intervention

Next, think about what you are considering doing. In therapy, this may be a drug or counselling; in diagnosis it could be a test or screening programme. If your question is about harm or aetiology, it may be exposure to an environmental agent. Again, it pays to be specific when describing the intervention, as you will want to reflect what is possible in your practice. If considering drug treatment, for example, dosage and delivery should be included. Again, you can always broaden your search later if your question is too narrow.

Comparison intervention

What would you do if you didn’t perform the intervention? This might be nothing, or standard care, but you should think at this stage about the alternatives. There may be useful evidence which directly compares the two interventions. Even if there isn’t, this will remind you that any evidence on the intervention should be interpreted in the context of what your normal practice would be.

Outcome

There is an important distinction to be made between the outcome that is relevant to your patient or problem and the outcome measures deployed in studies. You should spend some time working out exactly what outcome is important to you, your patient, and the time-frame that is appropriate. In serious diseases it is often easy to concentrate on the mortality and miss the important aspects of morbidity. However, outcome measures, and the relevant time to their measurement, may be guided by the studies themselves and not by your original question. This is particularly true, for example, when looking at pain relief, where the patient's objective may be 'relief of pain' while the studies may define and assess this using a range of different measures.

Type of question

Once you have created a question, it is helpful to think about what type of question you are asking, as this will affect where you look for the answer and what type of research you can expect to provide the answer.

Typology for question building

Type of question	**Type of evidence**
Aetiology: the causes of disease and their modes of operation.	Case-control or cohort study
Diagnosis: signs, symptoms or tests for diagnosing a disorder.	Diagnostic validation study
Prognosis: the probable course of disease over time.	Inception cohort study
Therapy: selection of effective treatments which meet your patient's values.	Randomized controlled trial
Cost-effectiveness: is one intervention more cost-effective than another?	Economic evaluation
Quality of life: what will be the quality of life of the	Qualitative study

patient?	

Template for asking answerable clinical questions

Patient or problem	Intervention	Comparison	Outcome
List concepts here:	List concepts here:	List concepts here:	List concepts here:
Your completed clinical question:			

Deciding which question to ask:

- Which question is most important to the patient's wellbeing? (Have you taken into account the patient's perspective?)
- Which question is most feasible to answer in the time you have available?
- Which question is most likely to benefit your clinical practice?
- Which question is most interesting to you?

Further reading

Educational Prescriptions: http://www.cebm.net

Gray J. Doing the right things right. In: *Evidence Based Health-Care*. New York: Churchill Livingstone, 1997, chapter 2.

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