

How to read a paper (The basics of evidence based Medicine – 2nd Edⁿ)

By

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BMJ Publishing Gp. London (2001)**

Introduction

As clinical practice becomes busier and time for reading and gaining knowledge of best practice from the medical literature becomes even more precious, the excellent approach to how to make best use of medical literature and the benefits of evidence based medicine (EBM) in this lively book of T. Greenhalgh provides essential skills for doctors. It helps a person who reads papers to develop a pragmatic and at times unconventional system for testing their merits. This book has become a standard reader in many medical and nursing schools, offering different angles on the 12 topics covered briefly in its chapters.

Why read paper at all?

[EBM in reading medical papers]

EBM means "The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients". Moreover it is "the enhancement of a clinician's traditional skills in diagnosis, treatment, prevention and related areas through the systematic framing of relevant and answerable questions and the use of mathematical estimates of probabilities and risk"

Essential steps in EBM

To convert our information needs into answerable questions (i.e. to formulate the problem), to track down, with maximum efficacy the best evidence answering these questions-which may come from the clinical examination, the diagnostic laboratory, the published literature or other sources, to appraise the evidence critically (i.e. weigh it up) to assess its validity (closeness to truth) and usefulness (clinical applicability), to implement the results of this appraisal in our clinical practice and to evaluate our performance.

Decision making in clinical practice

Decision making by anecdote, press cutting, expert opinion (EBM) sponsored by pharmaceutical company, and by cost minimization.

Searching the literature

3 levels of reading literature are present:

1. Browsing, in which we flick through books and journals looking for anything that might interest us.

2. Reading for information, in which we approach the literature looking for answers to a specific question, usually related to problem we have met in real life.
3. Reading for research, in which we seek to gain a comprehensive view of the existing state of knowledge, ignorance, and uncertainty in a defined area. "Where is the wisdom we have lost in knowledge, and the knowledge we have lost in information", after Richard Smith.

Getting your bearings (what is this paper about?)

If you are going to trash a paper, you should do so before you even look at the results.

Common reasons why papers are rejected for publications

1. The study did not examine important scientific issue.
2. The study was not original-that is, someone else has already done the same or a similar study.
3. The study did not actually test authors' hypothesis.
4. A different study design should have been used.
5. Practical difficulties (e.g. in recruiting subjects) led the authors to compromise on the original study protocol.
6. The sample size was too small.
7. The study was uncontrolled or inadequately controlled.
8. The statistical analysis was incorrect or inappropriate.
9. The authors have drawn unjustified conclusion from their data.
10. There is a considerable conflict of interest (e.g. one of the authors or a sponsor might benefit financially from the publication of the paper and insufficient safe guards were seen to be in place to guard against bias).
11. The paper is so badly written that it is incomprehensible.

Q.1:

Three preliminary questions to get your bearings
Why was the study done and what hypothesis were the authors testing?

Q.2:

What type of study was done?
Primary (First hand research) or secondary study (interrogative) that summarizes and draws conclusions from primary studies.

Primary studies are grouped into 3 categories:

- a) Experiments, on animals or volunteers.
- b) Clinical trials, in which intervention (drug treatments offered) then follow up to show results.

- c) Survey, in which something is measured in a group of patients, health professionals, or some other sample of individuals.

Secondary research is composed of:

- A. Overviews
 - Nonsystematic reviews, which explore primary studies.
 - Systematic reviews, which do this according to rigorous and predefined methodology.
 - Meta-analyses, which integrate the numerical data from more than one study.
- B. Guidelines, which draw conclusions from primary studies about how clinicians should be behaving.
- C. Decision analyses, these use the results of primary studies to generate probability trees to be used by both health professionals and patients in making choices about clinical management or resource allocation.
- D. Economic analyses, which use the results of primary studies to say whether a particular course of action is a good use of resources.

- d) Clinical trials, in which intervention (drug treatments offered) then follow up to show results.

Q.3: was this design appropriate to the broad field of research addressed?

Broad topics of research

Most studies are concerned with one or more of the following:

1. **Therapy:** Testing the efficacy of drug treatment, surgical procedures, alternative methods of patient education or other interventions. *Preferred study* is (randomized controlled study).
2. **Diagnosis:** To demonstrate the validity of diagnostic test (we can trust it), and reliability (would we get the same results every time).
Preferred studies (cross sectional survey) in which both the new test and the gold standard test are performed.
3. **Screening:** Demonstrate the value of tests that can be applied to large populations and that pick up disease at a presymptomatic stage.
Preferred study (cross sectional survey)
4. **Causation:** Determining whether a putative harmful agent, such as environmental pollution, is related to the development of illness.
Preferred study (Cohort or case control study), while (case reports may provide crucial information)
5. **Prognosis:** Determining what is likely to happen to someone whose disease is picked is an early stage.
Preferred study design is (Longitudinal cohort study).

Randomized controlled studies

- A. Advantages:
 - Allow rigorous evaluation of single variable.

- Prospective design.
- Uses hypothetic deductive reasoning (seeks to falsify rather than to confirm hypothesis)
- Potentially eradicates bias by comparing two otherwise identical groups.
- Allows for meta analysis (combining the numerical results of several similar trials)

B. Disadvantages:

- Expensive, time consuming
- May introduce hidden bias by:
 - Imperfect randomization.
 - Failure to randomize all eligible patients.

Cohort studies

Two or more groups exposed to same vaccine, medicine or environmental toxin and are followed up for years to know the effect of such toxin.

Case control studies

Patients with particular disease or condition (cases are identified and matched with controls; patient with some other disease or general population, or relatives).

Cross-sectional studies

They are conducted by epidemiologists

Case reports

It describes the medical history of a single patient in the form of a story. They often run together to form a case series to illustrate an aspect of a condition, the treatment or adverse reaction to treatment.

Statistics for non statisticians

- Have the author used any statistical test at all?
- Have they determined whether their groups are comparable and if necessary, adjusted for baseline differences?
- What sort of data have they got and have they used appropriate statistical tests?
- Have the data been analyzed according to the original study protocol?

How to avoid misleading caused by papers

In report of drug trials, pay attention to:

1. Sample size
2. Methodological quality
3. Safety of the drug, tolerability, efficacy and price.

This book is not a dry academic subject but more a way of thinking that should permeate every aspect of medical practice, including psychiatry. Its highly logical and systematic approaches to clinical practice is a state of mind that every clinical teacher hopes to develop in their students. It is useful for everyone who wishes to find his way into the medical literature, assess the scientific validity and practical relevance of the articles they find, and, where appropriate, put the results into practice. Hoping this book will help you to read and interpret medical papers better.

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How to present at a meeting

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Presentation at a meeting tends to be one way communication process. You must prepare your presentation well by understanding your audience, rehearsing your presentation, preparing prompt cards and checking the venue and equipment. Describe the purpose of the talk, deliver the talk and summarize. The delivery of the presentation is important, try to think carefully about both verbal and non-verbal communication and visual aids.

To prepare a meeting you must put into consideration the following points: the key to a good lecture is presentation and rehearsal. Check the content of the meeting at which you are going to talk, the subject and timing. Understand the audience in order to select the right level at which to pitch your presentation. Think carefully about the title and the content of your talk. Select and arrange information according to the audience and time given. Note rehearsal is mandatory.

Your talks must be of different lengths require slightly different techniques but the general principles are the same. Use an overhead projector for five minutes talk. For a fifteen minutes talk information must be brief and to the point. There are several types of forty five minutes talks: the teaching lecture, at a symposium, the guest lecture and the eponymous lecture and you should prepare for each type accordingly.

Visual aids are essential when giving medical presentations. Only use board and colored pens if you have the necessary talent. Flip charts are also not encouraged. Videos are occasionally valuable in demonstrating a new practical technique. Slides are most common form of visual aid used, especially in power point. Remember that the fewer slides used the better. Keep them simple and make figures and tables easy to understand.

Your appearance on the stage is a very important subject. make sure you arrive in plenty of time. Spend time before your presentation to do a sound check. Look self-assured. When speaking be audible, intelligible and engaging. Maintain eye contact with the audience.

Be clear what your message are and try to keep them simple. Only have two or three key messages in your presentation. Ensure that the audience understands the benefits of the messages. Maintain the right projection of emotion and interest. When preparing a presentation, prepare for the types of the questions that might be asked afterwards. Make sure you cater for the particular audience you are addressing. When being interviewed prepare up to five points and try to remain courteous but cautious. If you are a member of a panel respond with a relevant answer and do not interrupt your colleagues. And finally in order to chair a session you must do your home work thoroughly. The role and responsibilities of the chair will

be colored by the type of meeting. Get to know your speakers and their work a few months before the meeting. Identify what visual aids the speakers will be using and familiarize your self with the technical arrangements of the venue. On the day of the session get there early to check that everything is organized and running to schedule. Ensure that the speakers keep to their allotted time.

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Journal Search

From Journal Abstracts

Am. J. Psychiatry
160:3, March 2003:

Fertility Of Patients With Schizophrenia, Their Siblings, and the General Population: a Cohort Study from 1950-9 In Finland (pp. 460-3): by Haukka, J., Suvisaari, J., and Lonngrist, J.

Objective: Genetic factors are the most important risk factors for schizophrenia. However, despite the fact that patients with schizophrenia have significantly fewer offspring than the general population, schizophrenia persists. The authors investigated whether the siblings of patients with schizophrenia produce more offspring, thereby compensating for the low fertility of the affected individuals.

Method: From all 870,093 individuals born in Finland from 1950 to 1959, the authors determined how many had schizophrenia or were siblings of schizophrenia patients and how many offspring they had. The population data were obtained from the Population Register Center of Finland, and the National Hospital Discharge Register was used to identify all persons who had been hospitalized because of schizophrenia.

Results: Of the total population, 1.3% were patients with schizophrenia, and 2.8% were their siblings. The mean number of offspring among female siblings was slightly but significantly higher than among women in the general population (1.89 versus 1.83), while the opposite was true for