Implementation of Evidence-Based Practice in research

EBRNetwork – ebrnetwork.org
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Introducing the concept Evidence-based Research
The Scientific Ideal
The scientific ideal

"If I have seen farther, it is by standing on the shoulders of giants."

Letter to Robert Hooke,
15. February 1676.
"If, as is sometimes supposed, science consisted in nothing but the laborious accumulation of facts, it would soon come to a standstill, crushed, as it were, under its own weight......

The work which deserves, but I am afraid does not always receive, the most credit is that in which discovery and explanation go hand in hand, in which not only are new facts presented, but their relation to old ones is pointed out."

Lord Rayleigh at the 54th meeting of the British Association for the Advancement of Science held in Montreal in 1884.
(Thanks to I. Chalmers, LV Hedges, H Cooper, 2002)
"The Helsinki Declaration states that biomedical research involving people should be based on a thorough knowledge of the scientific literature. That is, it is unethical to expose human subjects unnecessarily to the risks of research.

Ideally, the introduction should include a reference to a systematic review of previous similar trials or a note of the absence of such trials."

Altman et al 2001
The assumption
The assumption

One would think:
No paper has ever been published without references to earlier published scientific results. What's the problem?
The assumption

“Strictly speaking it seems hard to imagine any research not evidence-based. At least it seems impossible to imagine that articles published in journals with a high impact factor do not relates to earlier research”

Norwegian Accreditations Committee, in 2014 (nokut.no)
The evidence
The evidence

CONSORT states: "Ideally, the introduction should include a reference to a **systematic review** of previous similar trials or a note of the absence of such trials".

What are the evidence for researchers performing **SYSTEMATIC REVIEWS** before performing new research?
The evidence

SYSTEMATIC means:

• Predefined question
• Predefined inclusion criteria
• Predefined search method and selection procedure. No selection of studies – all studies should be included (exhaustive summary of current literature relevant to a research question.)
• Predefined quality assessment
• Predefined data-extraction and analysis
• The results from each study justify the conclusion
CAUTION

SINGLE-STUDY SYNDROME ALERT
Studies will differ!

• the characteristics of the participants,
• the design and execution of the trial,
• the treatment administration or dosage,
• concomitant exposures,
• outcome assessment
• the local health care system,
• the way the investigational site is organized
• etc…
Studies will differ!

When only one trial has been carried out, there is no information available about possible heterogeneity; hence, it may not be prudent to generalize the results.
The evidence

Are we as researchers referring to single studies or systematic reviews including all studies?
After 1994:
More than 2500 received unnecessary placebo!

Trials testing aprotinin in cardiac surgery.

Fergusson et al. 2005
The evidence

Cumulative number of published trials assuming a one-year lag in publication

For each trial publication, the number of prior published trials cited

Figure 6  Citations of prior publications.

Fergusson et al. 2005
A Systematic Examination of the Citation of Prior Research in Reports of Randomized, Controlled Trials

Robinson et al. 2011

The evidence
The evidence

Table 3. Summary of Results From Qualitative Review of Selected Randomized, Controlled Trials

<table>
<thead>
<tr>
<th>Variable</th>
<th>Current Study</th>
<th>Results from Clarke et al*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower Quintile</td>
<td>Upper Quintile</td>
</tr>
<tr>
<td></td>
<td>PRCI (n = 15)</td>
<td>PRCI (n = 15)</td>
</tr>
<tr>
<td></td>
<td>Total (n = 30)</td>
<td></td>
</tr>
<tr>
<td>Claimed to be the first trial assessing the question</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Actually the first trial to assess the question</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Contained an updated systematic review</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>integrating new results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussed a previous review but did not attempt</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>to integrate new results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No apparent systematic attempt to set new results</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>in context of other trials</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PRCI = prior research citation index.
* References 1–4.
The evidence

BMJ RESEARCH

How citation distortions create unfounded authority: analysis of a citation network

Steven A Greenberg, associate professor of neurology

SA Greenberg et al., BMJ 2009

CITATION NETWORK
Fig 2 | Citation bias against content critical of claim. Shown are citation frequencies to four authoritative supportive primary data papers and six primary data papers containing data critical of claim.
The evidence

Habré et al. BMJ, 2014

SUPERFLUOUS STUDIES

Ability of a meta-analysis to prevent redundant research: systematic review of studies on pain from propofol injection
The evidence
The solution

http://ebrnetwork.org/
To address this problem a group of researchers have initiated an international network, the ‘Evidence-Based Research Network’ (EBRNetwork): 1. and 2. December 2014 in Bergen, Norway.
At the ‘Bergen meeting’ (December 2014) partners agreed the aim of the EBRNetwork is to reduce waste in research by promoting:

• No new studies without prior systematic review of existing evidence
• Efficient production, updating and dissemination of systematic reviews
The solution

This demand applies to:

• The researchers
• The ethical committees
• The funding agencies
• The editors
The EBRN Network now issues a call for interested individuals and organizations to join the EBRN Network and work together in developing a consensus statement to address this challenge to the very heart and values of research.
Thank you for your attention!