Evidence based medicine

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Evidence-based medicine (EBM) is a form of medicine that aims to optimize decision-making by emphasizing the use of evidence from well designed and conducted research.

Evidence-based medicine - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Evidence-based_medicine

More about Evidence-based medicine

Accessed 9/3/15
The EBM movement...
The EBM movement...

<table>
<thead>
<tr>
<th>Research question</th>
<th>Overall rank</th>
<th>Clinician rank</th>
<th>Patient / carer rank</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>How can we reduce the effects of anaesthesia on brain function, particularly in the elderly?</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>ELDERLY CARE</td>
</tr>
<tr>
<td>For which patients does regional (local) anaesthesia give better outcomes than general anaesthesia?</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>REGIONAL ANAESTHESIA</td>
</tr>
<tr>
<td>How can preoperative exercise or fitness training, including physiotherapy, improve outcomes after surgery?</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>PREPARING FOR SURGERY</td>
</tr>
<tr>
<td>Do enhanced recovery programmes (fast track surgery to speed up patient recovery) improve short and long-term outcomes?</td>
<td>4</td>
<td>2</td>
<td>14</td>
<td>RECOVERING FROM SURGERY</td>
</tr>
<tr>
<td>What outcomes should we use to measure the 'success' of anaesthesia and perioperative care?</td>
<td>5</td>
<td>4</td>
<td>12</td>
<td>PERIOPERATIVE CARE DELIVERY</td>
</tr>
</tbody>
</table>
Critical appraisal

Validity

Results

Relevance
## Levels of Evidence

### Box 2. SIGN classification for grading evidence

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1++</td>
<td>High-quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias</td>
</tr>
<tr>
<td>1+</td>
<td>Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias</td>
</tr>
<tr>
<td>1–</td>
<td>Meta-analyses, systematic reviews, or RCTs with a high risk of bias</td>
</tr>
</tbody>
</table>
| 2++   | High-quality systematic reviews of case-control or cohort studies  
High-quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal |
| 2+    | Well-conducted case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal |
| 2–    | Case-control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal |
| 3     | Non-analytic studies; for example, case reports, case series |
| 4     | Expert opinion |

RCT: randomised controlled trial; SIGN: Scottish Intercollegiate Guidelines Network
Grades of Recommendation

A

B

C

D

SIGN classification
## Clinical Recommendations

### Table: Size of Treatment Effect

<table>
<thead>
<tr>
<th>CLASS</th>
<th>Description</th>
<th>Procedure/Treatment Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS I</td>
<td>Benefit &gt;&gt; Risk, with little or no risk</td>
<td>SHOULD be performed/administered</td>
</tr>
<tr>
<td>CLASS Ia</td>
<td>Benefit &gt;&gt; Risk, additional studies with focused objectives needed</td>
<td>IT IS REASONABLE to perform procedure/administer treatment</td>
</tr>
<tr>
<td>CLASS IIb</td>
<td>Benefit ≥ Risk, with broad objectives needed; additional registry data would be helpful</td>
<td>Procedure/Treatment MAY BE CONSIDERED</td>
</tr>
</tbody>
</table>

### Level A

- **Multiple populations evaluated**
- **Data derived from multiple randomized clinical trials or meta-analyses**

- Recommendation that procedure or treatment is useful/effective
- Sufficient evidence from multiple randomized trials or meta-analyses

### Level B

- **Limited populations evaluated**
- **Data derived from a single randomized trial or nonrandomized studies**

- Recommendation that procedure or treatment is useful/effective
- Evidence from single randomized trial or nonrandomized studies
- Some conflicting evidence from single randomized trial or nonrandomized studies

### Level C

- **Very limited populations evaluated**
- **Only consensus opinion of experts, case studies, or standard of care**

- Recommendation that procedure or treatment is useful/effective
- Only expert opinion, case studies, or standard of care
- Only diverging expert opinion, case studies, or standard of care

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Fleischer et al. 2014

Queen Mary University of London

www.qmul.ac.uk
### Clinical Recommendations

**Fleisher et al. 2014 ACC/AHA Perioperative Guideline: Executive Summary**

#### Table 4. Summary of Recommendations for Perioperative Therapy

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>COR</th>
<th>LOE</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary revascularization before noncardiac surgery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revascularization before noncardiac surgery is recommended when indicated by existing CPGs</td>
<td>I</td>
<td>C</td>
<td>95, 96</td>
</tr>
<tr>
<td>Coronary revascularization is not recommended before noncardiac surgery exclusively to reduce perioperative cardiac events</td>
<td>III: No Benefit</td>
<td>B</td>
<td>97</td>
</tr>
<tr>
<td>Timing of elective noncardiac surgery in patients with previous PCI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncardiac surgery should be delayed after PCI</td>
<td>I</td>
<td>C: 14 d after balloon angioplasty</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 30 d after BMS implantation</td>
<td>99–101</td>
</tr>
<tr>
<td>Noncardiac surgery should optimally be delayed 365 d after DES implantation</td>
<td>I</td>
<td>B</td>
<td>102–105</td>
</tr>
<tr>
<td>A consensus decision as to the relative risks of discontinuation or continuation of antiplatelet therapy can be useful</td>
<td>IIa</td>
<td>C</td>
<td>N/A</td>
</tr>
<tr>
<td>Elective noncardiac surgery after DES implantation may be considered after 180 d</td>
<td>IIb*</td>
<td>B</td>
<td>102, 106</td>
</tr>
</tbody>
</table>
Standardisation: STROBE/CONSORT

Enrollment

Assessed for eligibility (n= )

Excluded (n= )
- Not meeting inclusion criteria (n= )
- Declined to participate (n= )
- Other reasons (n= )

Randomized (n= )

Allocation

Allocated to intervention (n= )
- Received allocated intervention (n= )
- Did not receive allocated intervention (give reasons) (n= )

Allocated to intervention (n= )
- Received allocated intervention (n= )
- Did not receive allocated intervention (give reasons) (n= )

Follow-Up

Lost to follow-up (give reasons) (n= )
Discontinued intervention (give reasons) (n= )

Lost to follow-up (give reasons) (n= )
Discontinued intervention (give reasons) (n= )

Analysis

Analysed (n= )
- Excluded from analysis (give reasons) (n= )

Analysed (n= )
- Excluded from analysis (give reasons) (n= )
Outcome measures....

Core Outcome Measures for Perioperative and Anaesthetics Care (COMPAC)

Standards for definitions and use of outcome measures for clinical effectiveness research in perioperative medicine: European Perioperative Clinical Outcome (EPCO) definitions

A statement from the ESA-ESICM joint taskforce on perioperative outcome measures

Ib Jammer, Nadine Wickboldt, Michael Sander, Andrew Smith, Marcus J. Schultz, Paolo Pelosi, Brigitte Leva, Andrew Rhodes, Andreas Hoefl, Bernhard Walder, Michelle S. Chew and Rupert M. Pearse

P I C O

Population

Intervention

Comparator

Outcome measure(s)
Reviewing a paper

Some things to think about........

• Concept?
• Relevance?
• Research ethics?
• Type of study?
• Inclusion/exclusion criteria (population),DB?
• Randomisation?
• \textit{a priori} endpoints?
• Statistical analysis – intention to treat?
• Figures/tables?
• Mean (s.d.) vs. median (IQR)?
• Data interpretation/conclusions?
Evidence based medicine: a movement in crisis?

Trisha Greenhalgh and colleagues argue that, although evidence based medicine has had many benefits, it has also had some negative unintended consequences. They offer a preliminary agenda for the movement’s renaissance, refocusing on providing useable evidence that can be combined with context and professional expertise so that individual patients get optimal treatment.

Poor fit for multimorbidity

Too much evidence

Overemphasis on following algorithmic rules

*BMJ* 2014;348:g3725 doi: 10.1136/bmj.g3725