

EVIDENCE THAT'S NOT GOOD ENOUGH TO CHANGE YOUR PRACTICE

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It is obviously not worth changing practice when the evidence is invalid because of fraud and misconduct. However, this can be difficult to detect and not come to light until practice has already been changed by the original false report. Even if clinical practice has not been changed, falsified evidence may also waste much time and effort by erroneously guiding further research. Even when real evidence is considered valid by accepted standards, there are many factors to consider before one should consider changing practice. As a start, one should consider whether the whole practice of evidence-based medicine (EBM) is flawed – an inappropriate model for changing practice. The hierarchy of evidence in EBM places too much reliance on randomised controlled trials, there is often misinterpretation of the frequentist statistical methods used in these studies, and the recommendations may not apply to your patients.

There is a very long history of fraud in science and biomedical research [1,2], but anaesthesia had not been a prominent victim until the recent revelations regarding Dr Scott Reuben [3]. Many of the benefits of cyclooxygenase-2 inhibitors in perioperative analgesia were retracted and are now in doubt [4]. Although this was an example of overt fraud, there is a spectrum of severity from fabrication, falsification and plagiarism to misconduct and dishonesty, including problems with consent, conflict of interest, failure to follow protocols, failure to publish, and selective use of data and citations. Fraud corrupts the existing body of knowledge, undermines the public trust in medical research and doctors, and is unethical, potentially causing harm to patients. Fraud is commonplace and even the recent POISE trial of 8351 patients had to exclude 947 patients because of it [5]. The submission of duplicate publications and plagiarism is a very common problem for all medical journals. Examples of this will be included in the lecture. Various resources are available to try and combat plagiarism [6-8], but the peer review process is still fallible.

Even if one has real evidence, should practice be changed? EBM supposedly provides a framework for systematically reviewing, appraising and using clinical research findings to aid the delivery of optimum clinical care to patients. However, evidence based medicine has become a slogan. EBM is not the same as medicine based on evidence. What is evidence? Why do or should some types of evidence count more than others? How should medicine be based on evidence? [9] Since the foundation of EBM nearly 20 years ago, EBM has attracted much criticism, and it has only slowly responded by shifting its definitions and procedures to deflect this criticism. Now it is less clear what EBM really means to different people. It was some 10 years before one of the initial proponents admitted that EBM had evolved from its initial misconception that it might replace traditional medicine, becoming less pretentious and more practical [10]. EBM still had to address issues such as uncertain scientific underpinnings, moral stance and consequences, and practical matters of dissemination and implementation. The criticisms of EBM include fundamental philosophical questions about why one should base decisions mainly on those types of evidence favoured by EBM, ignoring other forms of evidence, clinical expertise, historical experience, and pathophysiologic rationale [11,12]. Should meta-analyses and randomised controlled trials provide the best evidence given the many flaws of these methods. Systematic reviews conducted by non-experts just reduce a large amount of garbage to more compact garbage, because relevant clinical questions are not asked, and the results cannot be applied to the individual. Methodological quality should not be the main aspects of a trial that determine whether the findings should be considered important or not. There is no evidence that EBM provides a better outcome.

So when and why should one change practice? Do you have a problem to solve, or an aspect of anaesthetic practice that you would like to improve? I certainly hope so because professional responsibility should drive us to review our own practice! By all means look for systematic reviews and guidelines, but do not ignore the other information. Critical thinking is required to make a decision after balancing all the evidence [13]. Is the evidence plausible? Reproducible? Applicable to your patients? [14] Consider Bayesian thinking. If something seems very improbable, then you should need more convincing than when something is unsurprising [15,16]. What is considered improbable is however based on your previous knowledge. Experts are likely to have more knowledge



about a subject, but they are not omniscient. Do you trust the experts? What does your patient want? Sometimes medicine is about trust and values. Medicine is complex and requires judgement [17]. However we still need critical thinking to justify whatever decision we make, based on whatever evidence we use.

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