Applying of principles of evidence based medicine in Anaesthesia and Intensive Care

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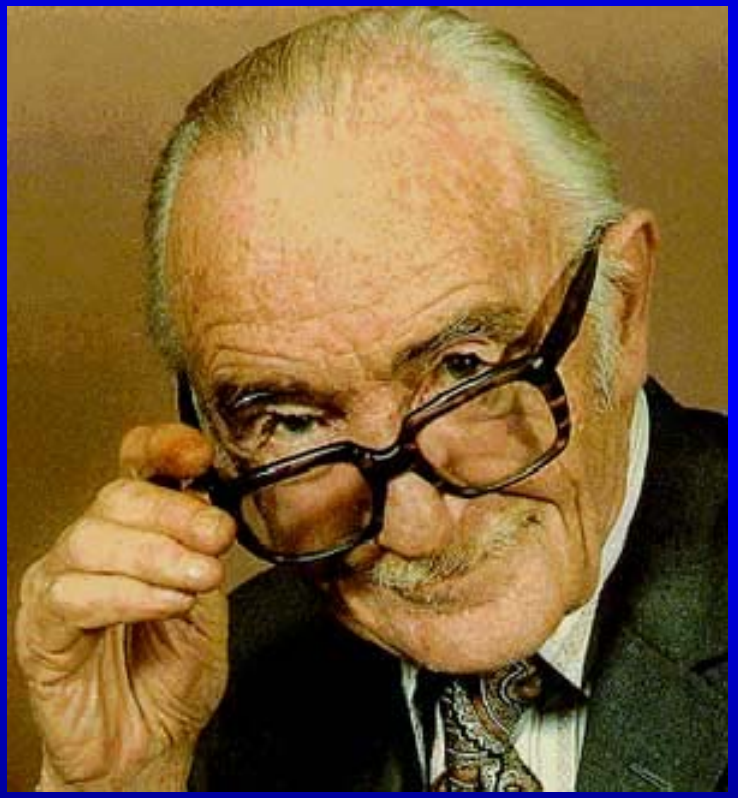
Evidence Based Practice

- What is this
- Can we apply the principles to Anaesthesia and Intensive Care
- Do we?
- If not why not?

Prof Archie Cochrane



1972 Effectiveness and Efficiency

- Why do Doctors use a particular intervention on their patients?
  - Anecdote
  - Habit
  - Selective experience
  - Faulty memory
  - A skewed reading of clinical trials.

Cochrane's Vision

- A catalogue of definitive reviews about effectiveness of interventions
- Regularly updated
- Available to inform Clinical decisions
- A reliable comprehensive and accurate medical database.

The Cochrane Collaboration

- A Library of such reviews of the data

How to do EBM

1. Ask yourself a question:

Do epidurals improve outcome in patients having surgery?

Just a moment, is this question going to get an answer? Is it clear and focused?

Additional questions:

Which patients, which epidurals, which outcomes?

Stage two
Refine the question

- OK, do adult patients
  - » Undergoing abdominal surgery
  - » With lumbar or thoracic epidurals
  - » Started pre-operatively and continued post operatively
  - » Have fewer respiratory, cardiovascular and thrombo-embolic complications?

Stage 3
Search the literature

Looking for

RCTs

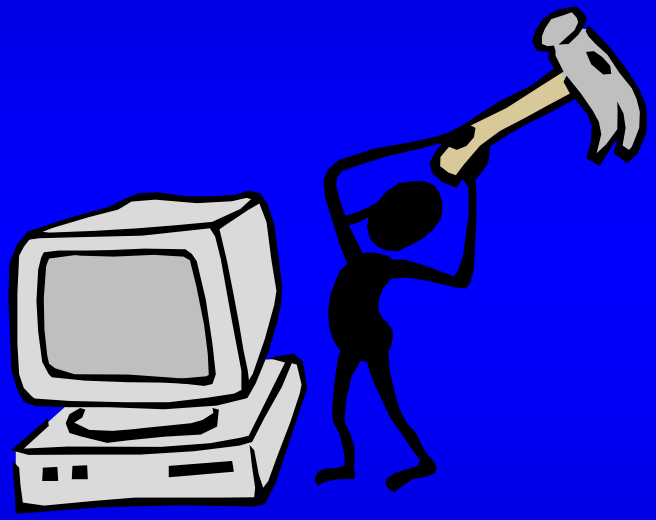
Systematic reviews

Bandolier

Narrative reviews

Cochrane Anaesthesia Review group

Searching



Where?

- Medline
  - –Most commonly used database
  - –But not the most complete db for anaesthesia.
  - –Should search at least 2 data bases

Where

- The Cochrane Library
- Cochrane Anaesthesia review group
- Em Base

- Data retrieval has become a complex field in its own right and the speciality of medical librarians

Stage 4

- Critical appraisal
  - Are the results useful?
  - Are the results valid?
    - Study design
    - Randomisation
    - Blind
    - Outcomes
    - statistics

Epidural analgesia

- Cochrane anaesthesia library has a review!
- Results not necessarily helpful!!

Patient controlled intravenous opioid analgesia versus continuous epidural analgesia for pain after intra-abdominal surgery

Werawatganon T, Charuluxanun S

Summary

Continuous epidural analgesia is superior to intravenous opioid patient-controlled analgesia in relieving postoperative pain for up to 72 hours after abdominal surgery

Continuous epidural analgesia (CEA) is more effective than intravenous opioid patient-controlled analgesia (PCA) in relieving postoperative pain for up to 72 hours after abdominal surgery. CEA is associated with a higher incidence of generalized itching than PCA. There is insufficient evidence to draw comparisons about the other advantages and disadvantages of these two methods of pain relief.

Details of the results

Background

- There are two common techniques for postoperative pain control after intra-abdominal surgery: patient-controlled analgesia (PCA) with intravenous opioids and continuous epidural analgesia (CEA). It is uncertain which method has better pain control and fewer adverse effects.

Objectives

- The objective of this review was to compare PCA opioid therapy with CEA for pain control after intra-abdominal surgery in terms of analgesic efficacy, side effects, patient satisfaction and surgical outcome by meta-analysis of the relevant trials.

Methodology

- **Search strategy**
- We searched CENTRAL (*The Cochrane Library* Issue 4, 2002), MEDLINE (January 1966 to October 2002), EMBASE (January 1988 to October 2002), and reference lists of articles. We also contacted researchers in the field.
- **Selection criteria**
- Randomized controlled trials of adult patients after intra-abdominal surgery comparing the effect of two pain control regimens in terms of analgesic efficacy and side effects. In the patient-controlled analgesia (PCA) group the patient should be able to operate the device himself. In the continuous epidural analgesia group there was no PCA device.
- **Data collection and analysis**
- Two authors independently assessed trial quality and extracted data. Study authors were contacted for additional information. Adverse effects information was collected from the trials.

Results

- Nine studies involving 711 participants were included.
- The PCA group had a higher pain visual analogue scale than the CEA group during 6, 24 and 72 hour periods.
- The weighted mean difference and 95% confidence interval of resting pain was 1.74 (95% CI 1.30 to 2.19), 0.99 (95% CI 0.65 to 1.33), and 0.63 (95% CI 0.24 to 1.01), respectively.
- The length of hospital stay and other adverse effects were not statistically different except that the incidence of pruritus was lower in the PCA group, odds ratio of 0.27 (95% CI 0.11 to 0.64).

Authors Conclusions

- CEA is superior to opioid PCA in relieving postoperative pain for up to 72 hours in patients undergoing intra-abdominal surgery, but it is associated with a higher incidence of pruritus. There is insufficient evidence to draw comparisons about the other advantages and disadvantages of these two methods of pain relief.

Stage 5

- Clinical appraisal
  - How do I use this information myself
  - How does summary information influence the outcome for an individual?

How useful is this?

- The review available, *The evidence,* only answers a part of our question
- Individual clinicians unlikely to have the time or expertise to conduct a review to address the rest of the question
- So back to all those other ways of deciding what to do!

Is Intensive Care any better?

- A much newer speciality
- ? More likely to be evidence based?

- Not necessarily.

Why isn't Intensive Care more evidence based?

- Difficulty in doing research on critically ill patients
- Most 'evidence' especially in sepsis is from animal models
- Wide range of conditions underlying the element of treatment being studied.
- 'many intensivists have a voracious appetite for novel therapies'

Some evidence is taken up

- Low tidal volume ventilation to prevent lung injury

- Use of ‘renal dopamine’

Some evidence is not yet there

- The management of Sepsis
- Anti TNFά
- Activated Protein C
- LPS inhibitors
- Etc etc.

Evidence Based Intensive Care

- Standard of studies carried out is improving
- Understanding of the patho-physiology of critical illness is increasing
- Complexity of the questions we need to ask is also increasing.
- EBM in Intensive care is the goal, but not yet the norm.

Applying the principles of Evidence Based Medicine to Anaesthesia and Intensive Care

- Where we can, we do
- Massive need for more high quality studies
- Education is key
- Still many Barriers to overcome

Renal Dopamine
or ‘the evidence of my own eyes’

Lancet editorial of 2000 – ‘Renal Dopamine, will the message get through now?’

BJA editorial ‘ Although we know dopamine does not protect the kidney, it is nice to see the urine flowing. But we have to believe what we read following a critical appraisal rather than seeing with our own eyes the urine in the bag,’

Principles of EBM

- Can we apply them? Yes – sometimes
- Do we apply them? Yes sometimes
- Answer 1 does not necessarily correlate with answer 2!!!

Evidence based medicine