A CYNIC'S GUIDE TO EVIDENCE BASED MEDICINE

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Introduction

Treating patients is as much an art as it is a science. Even allowing for a large 'art' component, a significant amount of what we do has little or no evidence to support it. Even a common and simple practice such as oxygen administration has been subject to little in the way of appropriate research.

Why Do We Do What We Do?

Much of what we do is either based either on history or theory. The problem with this is that there are multiple examples of clinical practice based on history or theory that turned out to be harmful when subject to an appropriate randomised trial. For example –

- Prophylactic hyperventilation in traumatic brain injury
- Steroids for traumatic brain injury

Why Don't We Have Good Evidence?

At the moment we have an evidence pyramid with a large amount of clinically meaningless evidence at the bottom and a small amount of clinically meaningful evidence at the top. The evidence at the bottom is contributed to by –

- Too many underpowered studies
- Too many single centre studies run by enthusiasts in tertiary centres
- Too many studies with surrogate outcome markers
- Too many studies with results that are statistically significant, but clinically insignificant
- Too many studies sponsored by companies with financial interests in the study
- Pressure to publish as a result of an inappropriate focus on the number of personal publications

What About The Clinically Meaningful Evidence That We Have?

We do have some clinically meaningful evidence, but there are problems here too –

- Some ignore it
- Some take the evidence and apply it to a wider group of patients than those entered in to the study

Meta-analyses

Meta-analyses are fraught with problems including selection bias and statistical 'smoke and mirrors.' Meta-analyses are probably useful at summarising the evidence that we have but they are not useful for guiding clinical decisions. There are multiple examples of the results of meta-analyses being overturned by an appropriately powered randomised trial. Examples include –

- Dopamine for patients at risk of renal failure
- Albumin containing fluid for resuscitation from shock

What Can We Do?

It is time we changed the shape of the evidence pyramid. It is time we –

- Largely abandoned single centre studies
- Abandoned surrogate outcome markers
- Largely abandoned meta-analyses
- Focused on a collaborative approach to multicentre, randomised trials

The Future

Our workload is going to grow at 4-6% per year and our funding is going to grow at 1-2% a year. Part of the future is performing research on how we can deliver healthcare more efficiently. This is unlikely to come from researching new treatments but researching how to use existing treatments (or combinations of treatments) more effectively.