Making sense of the evidence - a workshop for consumers
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Introductions

Why is evidence important?

In a traffic accident which would you prefer?
A. A team trained and equipped for advanced trauma life support to stabilise you in the field?
   or
B. A team trained and equipped only for basic life support to take you as quickly as possible to the nearest A&E?

Stay and Play
or
Scoop and Run?

¿Quedar y Jugar o Recoger y Correr?

End
Systematic review of ATLS vs BLS

- Liberman et al J Trauma 2000 49(4):584-599
- 15 research papers reported mortality
- Direction of research findings by quality of study:

<table>
<thead>
<tr>
<th>Quality</th>
<th>ATLS</th>
<th>BLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Good</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Excellent</td>
<td>1</td>
<td>6</td>
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</tbody>
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- Meta-analysis
  - Relative Risk: 2.92
  - Relative Risk adjusted for quality: 2.59

Why is evidence important?

- Doing things that have not been tested can cause harm even if our intentions are good!

How should I put my baby to sleep?

1. On back
2. On side
3. On front

What would you advise?
Conclusion

"Advice to put infants to sleep on the front for nearly a half century was contrary to evidence available from 1970 that this was likely to be harmful. Systematic review of preventable risk factors for SIDS from 1970 would have led to earlier recognition of the risks of sleeping on the front and might have prevented over 10,000 infant deaths in the UK and at least 50,000 in Europe, the USA, and Australasia."

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Imagine that your mother has recently been diagnosed with breast cancer

A. Should she simply have the tumour removed – a lumpectomy?
B. Should she have the surrounding tissues removed as well in case it has spread – a radical mastectomy?

Discuss with in small groups

Radical mastectomy

“It is a scandal that the medical profession systematically mutilated thousands of women without the slightest evidence that this was likely to do more good than harm.”

Iain Chalmers
Why is evidence is important?

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"Mind you only one out of every ten doctors recommends it!"

What makes good evidence about the effectiveness of treatments?

Do friendly bacteria help IBS?
Investigating effects and effectiveness

how could you design a study to minimise the chance of being fooled into thinking an intervention is effective (or harmful), when the changes observed would simply have happened any way?

answer

• Compare what happens to people given the intervention to what happens to people that didn’t have the intervention
• This is known as a Control Group

‘The art of medicine consists in amusing the patient while nature cures the disease.’

Voltaire

Well it can’t do any harm…”

• Trial of probiotics in patients with acute pancreatitis
• Stopped
• Infectious complications occurred in 30% patients in the probiotics group and 28% in the placebo group
• 16% patients in the probiotics group died, compared with 6% in the placebo group
• Nine patients in the probiotics group developed bowel ischaemia (eight with fatal outcome), compared with none in the placebo group.
Is the “effect” due to pre-existing differences between the groups?

- Differences?
  - Severity of illness
  - Where they live
  - Genetics
  - Social class
  - Volunteers
  - Sex
  - Age
  - Past treatments

How can we get comparable groups?

- Sex
- Severity of illness
- Age
- Social class
- Past treatments
- Genetics

2 groups
Mild, average, severe (6)
<18, 18-40, 40-70, >70 (24)
5 social classes (>100)
Smoker? (>300)
(?Unknown)

Randomised controlled trial

Population
\[\text{Intervention}\]
\[\text{Outcome}\]
\[\text{Group 1}\]
\[\text{Group 2}\]
\[\text{Control} \quad \text{(No intervention; placebo; usual care)}\]
Allocation concealment

- The researcher or health care provider entering a participant into a trial cannot tell which treatment they will get
- Sequentially numbered opaque sealed envelopes
- Centralised randomisation

Check the baseline characteristics of the groups – imbalances can occur by chance

Probiotic yoghurt trial
Groups otherwise treated equally
Additional interventions are provided preferentially to one group

Unconscious measurement bias

How can we make groups remain comparable?
• Blinding (patient, researcher, health professionals)
• Reduce losses to follow up
• Assess differential drop out (attrition bias)
• Are those who drop out similar to other participants?

When things go wrong
“There could be no worse experimental animals on earth than human beings: they go on vacations, they take things they are not supposed to take, they live incredibly complicated lives and, sometimes, they do not take their medicine.”