Trustworthy and useful evidence communication to decision-makers

“to inform and not persuade”
Inform vs Persuade
Inform vs Persuade

- Informed consent in medicine
- Forensic evidence in court

Marketing
PR
Inform vs Persuade

Public health?

Informed consent

Marketing
<table>
<thead>
<tr>
<th>Inform</th>
<th>vs</th>
<th>Persuade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand</td>
<td>vs</td>
<td>Believe</td>
</tr>
<tr>
<td>Better informed</td>
<td>vs</td>
<td>Changed behaviour</td>
</tr>
<tr>
<td>Information</td>
<td>vs</td>
<td>A message</td>
</tr>
<tr>
<td>Be trustworthy</td>
<td>vs</td>
<td>Be trusted</td>
</tr>
</tbody>
</table>
Trustworthy & useful communication...

To individual and policy decision-makers
1) Balanced information...
1) Balanced information...

NHS Glos CCG 🌸 @GlosCCG · Jan 21

The coronavirus (COVID-19) vaccine is safe and effective. It gives you the best protection against coronavirus.

You cannot catch coronavirus from the vaccine 🥊
1) Balanced information...

For **18-64 year olds:**

<table>
<thead>
<tr>
<th>POTENTIAL BENEFITS From 2 weeks after 2nd dose</th>
<th>Dummy injection (10,521 people)</th>
<th>Vaccine injection (10,551 people)</th>
<th>What difference did the vaccine make?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number who developed symptoms confirmed to be COVID-19</td>
<td>156 (1.5%)</td>
<td>7 (less than 0.1%)</td>
<td>149 fewer cases (95.5% reduction in COVID-19 cases)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POTENTIAL HARMs* (usually lasting 2-3 days)</th>
<th>Dummy injection (10,315 people)</th>
<th>Vaccine injection (10,357 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number who reported:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain at the injection site</td>
<td>1,942 (18.8%)</td>
<td>9,335 (90.1%)</td>
</tr>
<tr>
<td>(some also reported redness and swelling)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swollen/sore armpit glands</td>
<td>444 (4.3%)</td>
<td>1,654 (16%)</td>
</tr>
<tr>
<td>Fever</td>
<td>38 (0.4%)</td>
<td>1,806 (17.4%)</td>
</tr>
<tr>
<td>Headache (a similar number reported other 'flu-like symptoms such as fatigue, aching joints, chills)</td>
<td>2,617 (25.4%)</td>
<td>6,500 (62.8%)</td>
</tr>
<tr>
<td>Nausea/Vomiting</td>
<td>754 (7.3%)</td>
<td>2,209 (21.3%)</td>
</tr>
</tbody>
</table>

Kerr et al, 2021
Numbers need context as well...
The 3rd generation oral contraceptive pill ‘doubles’ the rate of potentially fatal venous thrombosis

UK Committee on Safety of Medicines 1995
The 3rd generation oral contraceptive pill ‘doubles’ the rate of potentially fatal venous thrombosis

UK Committee on Safety of Medicines 1995

10,000 extra abortions
30,000 extra conceptions
The 3\textsuperscript{rd} generation oral contraceptive pill ‘doubles’ the rate of potentially fatal venous thrombosis

UK Committee on Safety of Medicines 1995

10,000 extra abortions
30,000 extra conceptions

Absolute risks (actual likelihood):
1 in 7000 per year for 2\textsuperscript{nd} generation pill
2 in 7000 per year for 3\textsuperscript{rd} generation pill

(Barnett & Breakwell, 2003)
How can we help people understand ‘their risk’ from COVID?
How can we help people understand ‘their risk’ from COVID?

• Absolute risks (chances for any one person) very low

• Relative risks (context): ‘relative to what’?
How can we help people understand ‘their risk’ from COVID?

• Absolute risks (chances for any one person) very low

• Relative risks (context): ‘relative to what’?
  • Can’t give a chance over time as it’s a new risk – not like earthquakes
  • Relative to other causes of death for that person? Are they helpful?
  • Relative to another person’s COVID risk? Whose?
Please note the numbers on this scale were made up for our study – they weren’t known at the time!
Weighing up the potential benefits and harms of the Astra-Zeneca COVID-19 vaccine

For 100,000 people with low exposure risk*

ICU admissions due to COVID-19 prevented every 16 weeks:

<table>
<thead>
<tr>
<th>Age group</th>
<th>Potential benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29yr</td>
<td>0.8</td>
</tr>
<tr>
<td>30-39yr</td>
<td>2.7</td>
</tr>
<tr>
<td>40-49yr</td>
<td>5.7</td>
</tr>
<tr>
<td>50-59yr</td>
<td>10.5</td>
</tr>
<tr>
<td>60-69yr</td>
<td>14.1</td>
</tr>
</tbody>
</table>

Specific blood clots associated with the vaccine:

<table>
<thead>
<tr>
<th>Age group</th>
<th>Potential harms</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29yr</td>
<td>1.9</td>
</tr>
<tr>
<td>30-39yr</td>
<td>1.5</td>
</tr>
<tr>
<td>40-49yr</td>
<td>1.2</td>
</tr>
<tr>
<td>50-59yr</td>
<td>1.0</td>
</tr>
<tr>
<td>60-69yr</td>
<td>0.8</td>
</tr>
</tbody>
</table>

* Based on coronavirus incidence of 2 per 10,000 per day (140 per 100,000 per week): roughly UK in March 2021

Other potential benefits not shown include prevention of COVID-19 cases not leading to ICU and reduction of transmission

Other potential harms not shown include short-term side effects

Data from reactions to first dose only

Data from UK up until 28th April 2021
It’s not just what you say, it’s the way that you say it...
Even the format of the number makes a difference...

How risky does this chance of dying of COVID-19 feel...

Very high

5%

12%

20%

Very low
Even the format of the number makes a difference...

How risky does this chance of dying of COVID-19 feel...

- Very high
  - 5 in 100 (5%)
  - 12 in 100 (12%)
  - 20 in 100 (20%)

- Very low
  - 0.1 in 100 (0.1%)
  - 1 in 100 (1%)
  - 5 in 100 (5%)

Even the format of the number makes a difference...
Even the format of the number makes a difference...

How risky does this chance of dying of COVID-19 feel...

- **Very high**
  - 5 in 100 (5%)
  - 1 in 20 (20%)
  - 1 in 8 (12%)

- **Very low**
  - 0.1 in 1000 (0.01%)
  - 1 in 100 (1%)
  - 1 in 20 (5%)
  - 1 in 8 (12%)
  - 1 in 5 (20%)
2) Uncertainty
2) Uncertainty

UK unemployment falls to 1.44 million

UK unemployment fell by 3,000 to 1.44 million in the three months to November, official figures show.

The number of those in work increased sharply and wages rose at their fastest rate in almost a year, the Office for National Statistics said.
2) Uncertainty
2) Uncertainty

As well as calculating precision measures around the numbers and rates obtained from the survey, we can also calculate them for changes in the numbers. For example, for September to November 2017, the estimated change in the number of unemployed people since June to August 2017 was a small fall of 3,000, with a 95% confidence interval of plus or minus 77,000. This means that we are 95% confident the actual change in unemployment was somewhere between an increase of 74,000 and a fall of 80,000, with the best estimate being a small fall of 3,000. As the estimated fall in unemployment of 3,000 is smaller than 77,000, the estimated fall in unemployment is said to be “not statistically significant”.
Illness due to COVID-19 infection is generally mild, especially for children and young adults. However, it can cause serious illness: for people aged 70-80, about 17% of those who catch it need hospital care.

There is some uncertainty about that percentage, it could be somewhat higher or lower.

No uncertainty condition:

Illness due to COVID-19 infection is generally mild, especially for children and young adults. However, it can cause serious illness: for people aged 70-80, about 17% of those who catch it need hospital care.

Numerical uncertainty condition:

Illness due to COVID-19 infection is generally mild, especially for children and young adults. However, it can cause serious illness: for people aged 70-80, about 17% (range between 10% and 34%) of those who catch it need hospital care.

Verbal uncertainty condition:

Illness due to COVID-19 infection is generally mild, especially for children and young adults. However, it can cause serious illness: for people aged 70-80, about 17% of those who catch it need hospital care. There is some uncertainty about that percentage, it could be somewhat higher or lower.

10,707 people

12 countries

5 continents
3) Quality of the evidence
3) Communicating quality of underlying evidence is different

What protects against COVID-19 infection or transmission?

**Intervention**
- Eye protection

**Chance of infection or transmission**

<table>
<thead>
<tr>
<th>Without intervention</th>
<th>With intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without eye protection</td>
<td>With eye protection</td>
</tr>
<tr>
<td>16.0%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Quality of evidence: **Low***

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* High quality: we are very confident that the true effect lies close to that of the estimate of the effect.
* Low quality: our confidence in the effect estimate is limited; the true effect could be substantially different from the estimate of the effect.

Schneider et al, 2021
John Krebs’ checklist

1. What you know
2. What you don’t know
3. What you are doing to find out
4. What we can all can do in the meantime to be on the safe side
5. That advice will change *(and when/how you will update it)*
Trustworthy messages and prior beliefs
Trustworthiness (providing balance, uncertainty, quality of evidence cues, pre-empting misunderstandings) matters most to those who are initially skeptical.
In summary, to give people information on which to base decisions:

1) Listen to your audience: what information do they need, what decision are they making?

2) Provide appropriate context and balance – don’t ignore inconvenient evidence or cherry-pick.

3) Be balanced in the way you present evidence as much as in the information itself – be aware of the effects of different formats, framings etc.

4) Be upfront about your uncertainties, and how you are resolving them.

5) Communicate the quality of your evidence

6) Pre-empt misunderstandings or misinformation.