Communicating risks and evidence in a public health emergency

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“to inform and not persuade”  Dr Alex Freeman  @alex_freeman
Inform vs Persuade
Inform vs Persuade

Informed consent in medicine
Forensic evidence in court

Marketing
PR
Inform vs Persuade

Informed consent

Public health?

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>
The principles of good communication of numbers...
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 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

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

(Barnett & Breakwell, 2003)
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
- Very low

<table>
<thead>
<tr>
<th>Format</th>
<th>Risk Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 in 100</td>
<td>5%</td>
</tr>
<tr>
<td>12 in 100</td>
<td>12%</td>
</tr>
<tr>
<td>20 in 100</td>
<td>20%</td>
</tr>
</tbody>
</table>
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
  - 1 in 100: 0.1 in 1000
  - 1 in 100: 1 in 100
  - 1 in 20: 1 in 20
  - 1 in 8: 1 in 8
  - 1 in 5: 1 in 5

Winton Centre for Risk and Evidence Communication
Which scenario do you prefer?

The UK is preparing for the outbreak of ‘flu that is expected to kill 6000 children. Two companies are offering you vaccines, with different claims. Which would you choose?

A. 2000 children will be saved.
B. There is a 1/3 probability that 6000 children will be saved, and a 2/3 probability that none will be saved.
Which scenario do you prefer?

A month later you need to order more vaccine stock. The companies now have different vaccines available. Which do you choose?

A. 4000 children will die.
B. There is a 1/3 probability that no children will die, and a 2/3 probability that 6000 children will die.
Framing affects decisions

Scenario 1 (Gain Frame)
• 2000 children will be saved.

• There is a 1/3 probability that 6000 children will be saved, and a 2/3 probability that none will be saved.

Scenario 2 (Loss Frame)
• 4000 children will die.

• There is a 1/3 probability that no children will die, and a 2/3 probability that 6000 children will die.
Can we use words instead of numbers?
Can we use words instead of numbers?

What do you think is the risk of you getting the following side-effects from your statin?

• Constipation (‘common’): ?

• Pancreatitis (‘rare’): ?
Can we use words instead of numbers?

What do you think is the risk of you getting the following side-effects from your statin?

• Constipation (‘common’): 34% (mean estimate)

• Pancreatitis (‘rare’): 18% (mean estimate)

Can we use words instead of numbers?

What do you think is the risk of you getting the following side-effects from your statin?

<table>
<thead>
<tr>
<th>Side-effect</th>
<th>Actual risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constipation ('common')</td>
<td>34%</td>
</tr>
<tr>
<td>Pancreatitis ('rare')</td>
<td>18%</td>
</tr>
</tbody>
</table>

Over to Dr Gabe Recchia....
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)*
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.
Measure of change

- Select one of these measures from the paper:
  - Relative risk
  - Absolute risk
  - Hazard ratio: 1.17
  - % change
  - Odds ratio

Results summary

- Research paper: Diet and colorectal cancer in UK Biobank: a prospective study
- DOI: 10.3866/PKU.WHB.20112.303
- Study group: Men
- Condition: Bowel cancer
- Intervention: Eating bacon every day
- General risk: 6%

https://realrisk.wintoncentre.uk
### Results

<table>
<thead>
<tr>
<th>General risk</th>
<th>Eating bacon every day risk</th>
<th>Population impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 men in every 100 will normally get bowel cancer (2m in the UK)</td>
<td>7 men in every 100 will get bowel cancer (2.3m in the UK)</td>
<td>Eating bacon every day increases the number of men in the UK who get bowel cancer by 300,000</td>
</tr>
</tbody>
</table>

### Results summary

**RESEARCH PAPER**
Diet and colorectal cancer in UK Biobank: a prospective study

**DOI**
10.3866/PKU.WHXB201112303

**STUDY GROUP**
Men

**CONDITION**
Bowel cancer

**INTERVENTION**
Eating bacon every day

**GENERAL RISK**
69%

**MEASURE OF CHANGE**
Hazard ratio 1.17

**POPULATION**
30,000,000 in the UK

See original research paper