



The recent Ebola outbreak in West Africa has sadly already claimed many lives, with a fatality rate of 50%. Some of those infected have been treated with untested drugs, whose success rate is unknown. How does the framing of known and unknown risks shape individual choice and policy?

### The problem

There is an ongoing epidemic of the Ebola virus disease in West Africa (Guinea, Liberia, Sierra Leone, and Nigeria). The fatality rate of Ebola can reach 90%, but at the time of writing, the current outbreak's fatality rate is at about 50% (ranging from 39% in Sierra Leone to 64% in Guinea). So far there have been 3,685 people infected (probable, confirmed and suspected cases), of those 1,841 have died.<sup>1</sup>

On the 12<sup>th</sup> of August the World Health Organisation (WHO) declared that it is ethical to use untested drugs to treat Ebola patients, even though their efficacy and adverse effects are yet unknown.<sup>2</sup>

This is a controversial measure, due to these unknown aspects mentioned above, but also due to there being

only a very limited supply of those untested drugs (ZMapp and TKM-Ebola). So far six Ebola patients have been administered ZMapp – two American humanitarian workers, three Liberian doctors, and a Spanish missionary. One Liberian and the Spanish Ebola patients treated with ZMapp died.<sup>3</sup> Whether the others recovered (or are recovering) due to the drug, or through natural causes, is unknown. ZMapp has been said to work on monkeys. However, it has not been tested on humans.

### Intervention as a gamble

The decision the WHO had to take is of interest because it involves choosing between a *known* risk of survival / death without intervention, and an *unknown* risk of survival / death with intervention. Intervention is a gamble with unknown odds.

According to an early study by Ellsberg (1961), individuals tend to be ambiguity averse.<sup>4</sup> That is, where there are known and unknown risks, people tend to choose the 'devil they know', rather than jump into the unknown. Taken at face value, Ellsberg's work suggests that individuals and (arguably the WHO) would not choose to use untested drugs.

But there is now a rich behavioural economics literature which suggests that the way in which risks are framed affect the way decisions are made – and this possibility was not taken account of by Ellsberg. Here, the decision the WHO had to take could be presented in two ways:

- » There is a 50% of *surviving* if we do not use untested drugs, or there is an unknown chance of surviving if we do use untested drugs; or
- » There is a 50% of *dying* if we do not use untested drugs, or there is an unknown chance of dying if we do use untested drugs.

<sup>1</sup> <http://www.afro.who.int/en/clusters-a-programmes/dpc/epidemic-a-pandemic-alert-and-response/outbreak-news/4271-ebola-virus-disease-west-africa-4-september-2014.html>

<sup>2</sup> <http://www.bbc.co.uk/news/world-africa-28754160>

<sup>3</sup> <http://www.bbc.co.uk/news/world-africa-28925491>

<sup>4</sup> Daniel Ellsberg (1961), "Risk, Ambiguity, and the Savage Axioms."

For example, a study by Tversky and Kahneman (1981), showed that when an outcome is framed positively (like the first presentation above), individuals will tend to pick the certain outcome over an uncertain outcome.<sup>5</sup> When an outcome is framed negatively (like the second presentation above), individuals tend to behave in the opposite way.

Specifically, they asked respondents to a survey the following question:

*“Imagine that the UK is preparing for the outbreak of an unusual disease which is expected to kill 600 people. Two alternative programmes to combat the disease have been proposed. Assuming that the exact scientific estimates of the consequences are as follows, which programme would you favour?”*

In doing so, they presented two choice scenarios.

- » **Scenario 1:** Programme A: 200 people will be saved. Programme B: 1/3 chance that 600 will be saved, and 2/3 chance that no people will be saved.
- » **Scenario 2:** Programme C: 400 people will die. Programme D: 1/3 chance that nobody will die; 2/3 chance that 600 people will die.

In Scenario 1, 72% of respondents chose the certain outcome of Programme A. In Scenario 2, 22% of respondents chose the certain outcome of Programme C.

A limitation of this study – and many other similar studies – is that it applies to the situation where the risks are known – in the case of the WHO decision, the effect of the drugs on survival rates was (and is) unknown. However, other studies, such as one by Chakravarty and Roy (2007), suggests that the same findings hold in these situations.<sup>6</sup>

## Conclusion

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Thankfully, the outbreak of Ebola is a rare and extreme situation, and it would be wrong to suggest that other decisions made under uncertainty are the ‘same’.

But it is fair to say that there is a clear philosophical practical questions raised by the Ebola outbreak and the results of academic research into framing, namely:

- » How should framing effects be taken account of when governments seek public endorsement of critical decisions (e.g. through surveys and opinion polls)?
- » When framing effects matter, what weight can and should be attached to public endorsement or otherwise?
- » Finally, is sufficient scrutiny given to these issues in practice?

*Economic Insight regularly advises the Government on policy appraisal and evaluation.*

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<sup>5</sup> Amos Tversky and Daniel Kahneman (1981), “The Framing of Decisions and the Psychology of Choice.”

<sup>6</sup> Sujoy Chakravarty and Jaideep Roy (2007), “Attitudes towards Risk and Ambiguity across Gains and Losses.”