



Week 2 – exercises

- 1) A small, non-randomised intervention study produces the following result for all-cause mortality outcome in a stroke population – (Technology B vs. Technology A) unadjusted relative risk (RR) = 5.23, 95% CI (1.67, 11.62), $p < 0.001$
 - a) How good is the evidence that Technology A is more effective than Technology B?
 - b) What further information would you like to be better informed to answer part a)?
- 2) These questions should be attempted after reading McKee *et al* [1] and Sox *et al* [2].
 - a) It is often said that for evaluating interventions randomised studies have better internal validity than external validity, whereas non-randomised studies have better external validity than internal validity. Can you explain what is meant by this?
 - b) In [1] there is a summary of a review of threats to internal and external validity in randomised and non-randomised studies. What point(s) is Figure 1 trying to convey? Provide a summary and critique the figure – is it successful at getting the message it wants to convey across?
 - c) From [2], we learn that randomisation is the ‘perfect instrument’. Can you explain this? In answering, you might find it helpful to consider the randomisation process being a coin toss.
 - d) Given instrumental variable (IV) analyses deal with unmeasured confounding, they seem perfect for evaluating interventions from non-randomised studies. However, there are difficulties. Summarise and discuss the difficulties associated with the IV method.

Post up your answers to these questions and other thoughts you have on these topics on the week 2 forum and start discussions with the class.

[1] McKee M *et al*. Interpreting the evidence: choosing between randomised and non-randomised studies. *BMJ* 1999;319:312. <http://www.bmj.com/content/319/7205/312.1>

[2] Sox HC *et al*. The Methods of Comparative Effectiveness Research. *Annual Review of Public Health* 2011;33:424-445. <https://www.annualreviews.org/doi/pdf/10.1146/annurev-publhealth-031811-124610>