Epi213_Lecture 4

Feb 1, 2018

Agenda:
- Review of HW3
- Review of Discounting, Rates and Probabilities
- Implementation in Excel

Notes:

HW3 solution posted online on CLE under prior week - take a look for explanations if you missed one of the answers. I've even posted an excel spreadsheet that you can use to go back and forth between rates and probabilities. Give it a try.

Remember that identifying the optimal strategy (from a cost-effectiveness perspective) is a **two-step process.**

- **First, you estimate ICERs for each strategy**
  - Line all up in increasing order of QALYs
  - Eliminate any strictly dominated strategies
  - Estimate ICERs of each strategy relative to the next best strategy
  - Eliminate any strategies by extended dominance
  - Re-estimate and report delta costs, delta QALYs, ICERs.
- **Second, you compare the ICERs with your willingness-to-pay threshold** to identify the strategy that yields the largest benefit (the most QALYs), with an ICER below less than or equal to your willingness-to-pay threshold. These two steps are distinct exercises, i.e., changing your willingness-to-pay threshold doesn't mean you have to recalculate ICERs.

Revisit strict and extended dominance as concepts.

As a rule, we modify rates but not probabilities.

We also introduced Markov models as a concept. Look at the readings for next week to understand key concepts - we will build a tree in TreeAge next time. The starting point is to identify a complete (exhaustive) list of states that people can be in within the tree, and identify transition probabilities for movements between states (e.g. Stage 1 cancer -> stage 2 cancer). There is usually one absorption state that one can only enter into but not leave (in health care models, it is usually death). The original idea of Markov models was that they were amnestic - i.e., they had no memory of how long you spent in each stage, they only cared about transitions. We now have tools to incorporate changing probabilities (or costs or

QALYs) based on how long one spends in a certain state. More to follow.

Imagine a cohort of healthy adults. Every year, there is a 10% probability of dying of natural causes. In addition, 20% develop disease X every year (which is a chronic disease that cannot be cured). Among those who develop disease X, 20% die from the disease each year, in addition to the background rate of death from natural causes of 10%. Death, of course, is the absorption state. Can you draw the