

Epi213_Assignment 2

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v2017

Background:

A woman is incidentally discovered to have a 6mm aneurysm (dilatation) of a blood vessel in the brain. These aneurysms are usually asymptomatic but still at risk of spontaneously bursting and bleeding into the brain, resulting in severe disability or death. The alternative is to surgically clip the aneurysm; this surgery carries a risk of peri-op mortality; but survivors can expect a normal life expectancy.

Transition Probabilities:

Life Expectancy from diagnosis = 35 years

Lifetime risk of rupture with watchful waiting = 5.0%

A ruptured aneurysm would require emergent surgery: 45% will die, 25% will have severe disability, the remaining will survive

Surgical mortality = 2%

If successfully operated, normal life expectancy (35 years)

Costs:

Elective Surgery: \$30,000

Emergent Surgery and recovery: \$150,000

Disabled care (lifetime): \$1,000,000

Quality of Life:

Full Health = 1

Severe disability = 0.3

Death = 0

1. State the relevant CEA question here (cue: include all components of PICO-HP):
2. Create the decision tree (ignore the temporal component for now, assume all bleeds in the watchful waiting arm occur at time 0):
3. Roll-back the tree and report your results in the form of a table of total costs and qalys, incremental cost-effectiveness ratio, and also a complete sentence:

4. Perform the following sensitivity analyses:

What if the surgical mortality increased to 2.5%

What if the cost of elective surgical clipping declined to \$15,000

Bonus points: what if we assumed that in the watchful waiting arm, the bleed occurred after a mean of 5 years?

5. We learned the difference between rates and probabilities in class. Let's try using those formulae:

We saw in the example above that the probability of an aneurysmal bleed was 5% at 35 years. What is the estimated annual rate of aneurysmal bleed?

The risk of aneurysmal bleeding is twice as high in a particular subpopulation. What is the 35-year probability of bleeding in that population?

For next class:

- Draft one or two cost-effectiveness questions that you would be interested in addressing. This will serve two purposes.

This will serve two purposes:

1) you may get feedback on the feasibility of the question; and

2) you can use this opportunity to convince one of your classmates to partner with you on this question.

If you're not going to attend class, let Sili or Vignesh know and send them a copy of your questions – they'll read these out on your behalf.

- Be sure to figure out TreeAge access. Figure out access to MyResearch (and give TreeAge a run before you show up so you know you can get it to work), or download the trial version. The latter only allows 14 days of access.

- Remember to register for the global health economics conference! Feb 10, 2017

