

Indecisives Anonymous

DARTH Hands-on Exercise

You've been invited to attend a meeting of Indecisives Anonymous (IA), a support group and 12-step program for managers and executives who have found themselves unable to make important decisions for their organizations. At these meetings, attendees share stories of decision-making challenges with the group. They've asked you to attend to provide guidance on how decision analysis might help overcome indecision.

Five people share their decision frustrations and challenges at the meeting (see below). For each person's situation, briefly outline how you would use decision analysis to inform their decision. Be sure to include the type of model you would use (e.g., a decision tree, cohort state transition model, microsimulation, etc.) and how you would measure outcomes (e.g., life-years, deaths, costs, cost-effectiveness, etc.) to capture the objective of their decision. Keep in mind that we generally want to use the simplest model possible to answer a given question (but not all questions can be answered with just a decision tree).

- a) Homer S. is the first attendee to share his story. He is overweight and at ongoing risk for heart attack, stroke, and diabetes. His doctor has recommended a restrictive diet as a weight loss strategy. However, Homer can't quite commit. Being on a restrictive diet would reduce his quality of life and he's unsure if it's worth the lower risk of adverse events (though the occurrence of these would also reduce his quality of life). Homer would like to maximize his remaining quality-adjusted life-expectancy, but he doesn't know how to figure out if he should go on the diet or do nothing.
- b) Sister J. supervises a religious midwifery practice that serves urban, low-income clients who are seen mostly through home visits. Because much of the work is conducted outside of the sterile and controlled conditions of a healthcare clinic, ensuring proper infection control measures is a challenge. Recently, the sister has had to deal with a number of incidents where midwives were accidentally exposed to serious infectious diseases while caring for their patients. The sister is now considering a number of different infection control measures to minimize the risk that her staff is exposed to infectious agents. She also considering using a risk assessment tool to estimate the risk infectious disease exposure prior to sending a midwife to a home visit, allowing infection control precautions to be tailored to each situation. However, she is not sure if these measures are worth the cost.

- c) Cristina Y. shares next. She is a cardiac surgeon and this is her first IA meeting, as she's usually very decisive. Cristina is currently facing an especially complicated surgical case. Her patient needs surgery, but due to a multitude of co-morbidities, will not likely survive standard surgical procedures. Cristina is considering an experimental approach, however there are a number of uncertain events and complications that could occur during the surgery. To maximize her patient's chance of surviving the procedure, Cristina needs to determine the best course of action for each and every complication. That is, she needs to identify the full contingency plan that will maximize her patient's overall probability of surviving the procedure. But she has had trouble incorporating all the complexities of the situation into a systematic decision-making approach.
- d) Tony S. runs a waste management company that employs the majority of individuals in his neighborhood. Tony pays for his employees' healthcare and recently he has been concerned about the increasing number of sexually transmitted infections (STIs) among his employees (and the associated healthcare costs). He has decided to invest in STI prevention for his neighborhood (and employees). Tony is considering a number of different interventions. Ultimately, he would like to invest in the intervention that minimizes the number of STIs cases over the next 24 months. However, he is unsure how to estimate the impact of different interventions on STI spread and associated healthcare costs.
- e) Dr. B. is the chief of surgery at a large, metropolitan hospital where they have recently adopted a new electronic medical record (EHR) system. Since the implementation of the new system, Dr. B. has seen an increase in staff absenteeism due to repetitive strain injuries. It seems that certain data entry tasks require a particularly cumbersome combination of keystrokes that is leading to these injuries. After careful observation, Dr. B. has compiled data to estimate the daily probability that a staff member executes the problematic keystrokes, the probability that the task results in a strain injury requiring time off, and the daily probability that a worker returns to work after 1, 2, or 3+ days off. They also note that history of a previous injury increases the probability of future injury. The IT department estimates that it will be four weeks before they can develop a fix for the system. Until the EHR system can be changed, Dr. B. wants to do *something* to reduce staff absenteeism and improve their unit's productivity. But they just can't decide if it would be better to implement a program to prevent injury (but which would slow productivity) or to pay for (costly) physical therapy services out of their department's budget to ensure a faster recovery for those who do get injured.