Cost-effectiveness Modelling Using Patient-Level Simulation

What?

Patient level simulations (or individual sampling models) estimate the mean costs and benefits for a group of people by considering the costs and benefits of each individual person within that group.

Why?

To model factors which vary between patients and have a non-linear relationship with model outcomes

To incorporate the history of past events

To avoid limitations of using a discrete time interval

To develop a flexible model as an investment for future analyses

To model interactions between people or with resources

How?

Translate pathway into series of sequential events

Sample times to events from distributions or national life-table data

Track the path of each person through the model

Discount costs and QALYs accrued over time, using a continuous function

Good Practice

Only make simulated patients queue for resources when absolutely necessary

Simulate enough patients to achieve acceptably accurate results

As for all models:

Conduct PSA using mathematical approximations if run-time is too long

Present the intended and actual model structure

Verify and validate the model

Software

SIMUL8

Excel

TreeAge SOFTWARE, INC

R

For further information: Technical Support Document 15 available from http://nicedsu.org.uk

Becky Pennington, ScHARR, University of Sheffield, UK