
Article:
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Figures

Manuscript Title:

Modelling the economic impact of interventions for older populations with multimorbidity: a method of linking multiple single-disease models

Figure 1. A schematic diagram of the linked disease model

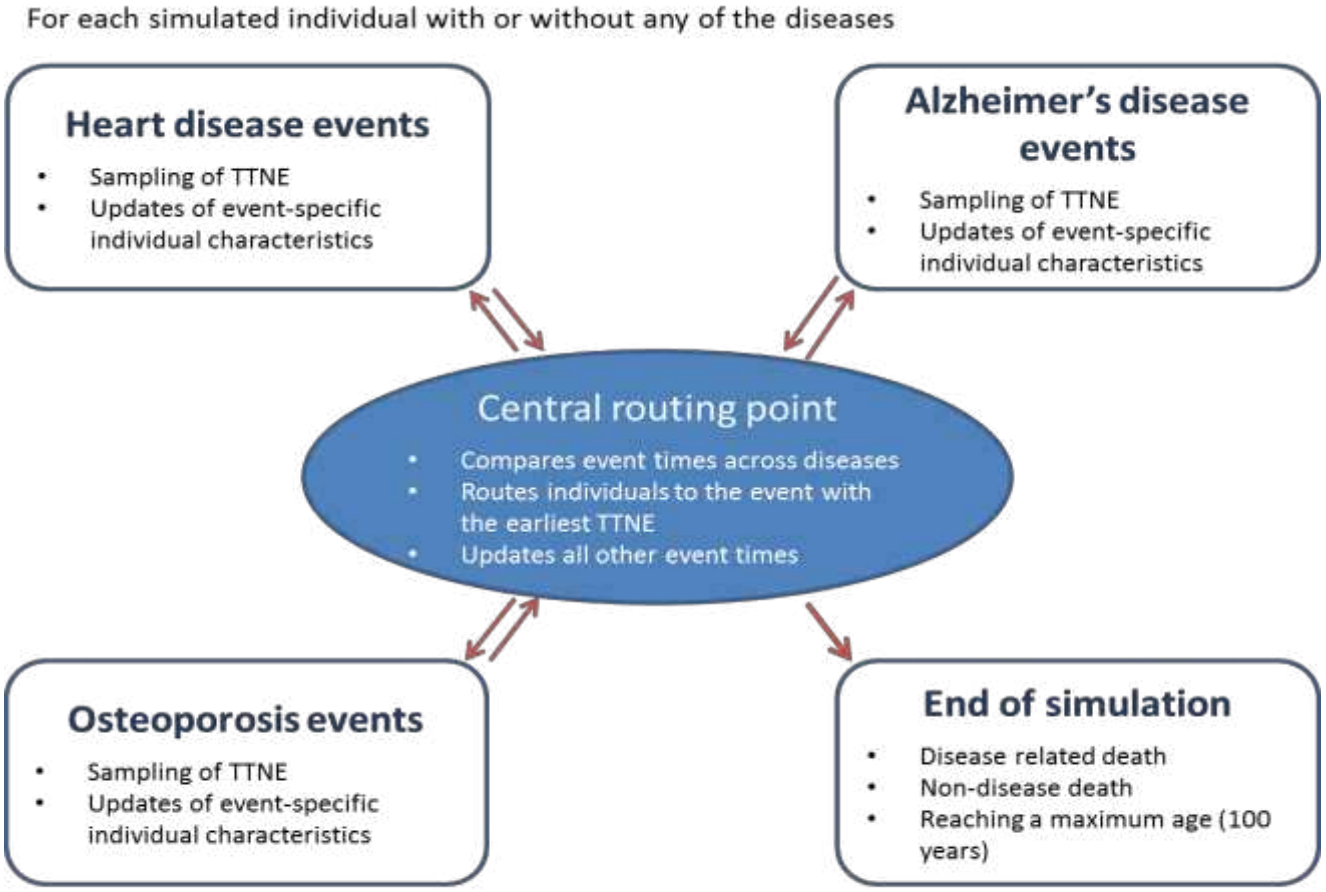
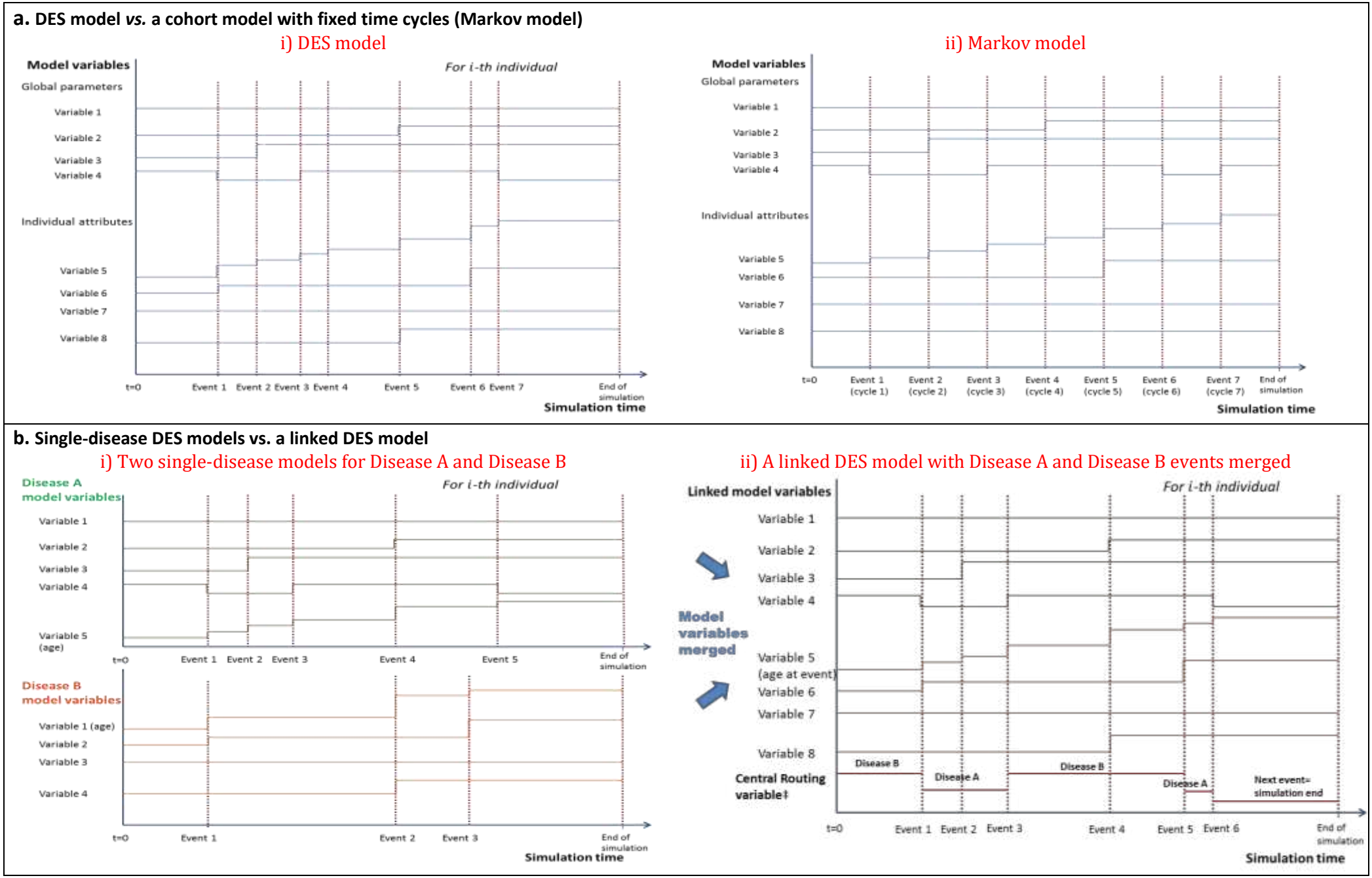


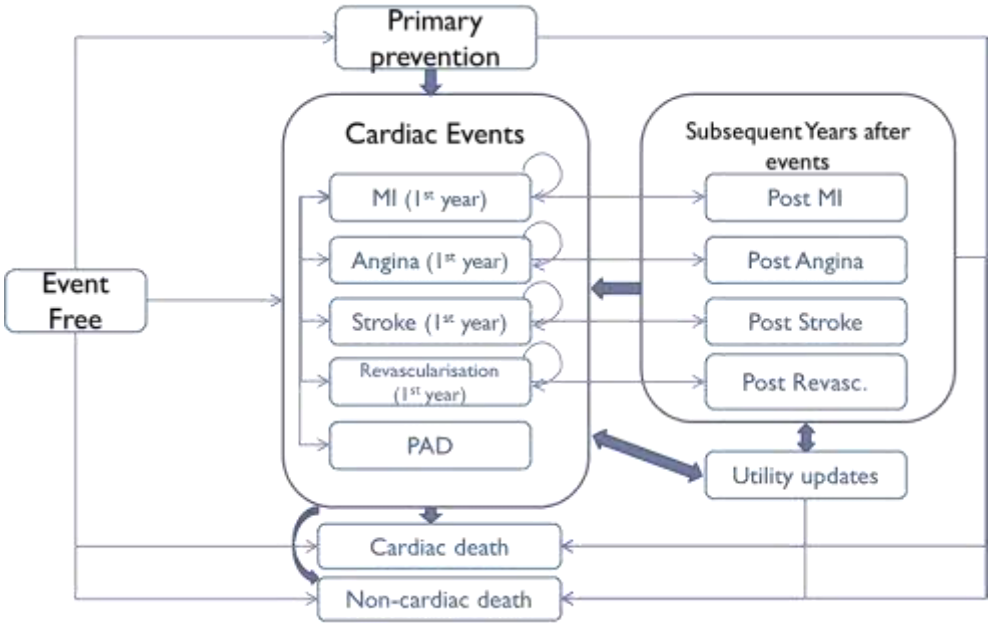
Figure 2. Discrete event simulation (DES) model with and without model linkage†



†All y-axes of the diagrams show examples of variables defining the respective models and changes in their values over simulation time (x-axes); *Global parameters: variables that apply to all simulated individuals such as discount rates, unit cost of interventions and utility associated with health events; **Individual attributes: variables that reflect changes in individual characteristics over time such as age, a previous experience of disease events and utility multipliers relevant to the individual at specific event times; ‡Central routing variable was added after combining all single-disease model variables in the linked model to indicate in which disease model the next event is scheduled to occur.

Figure 3. The structure of the individual disease models

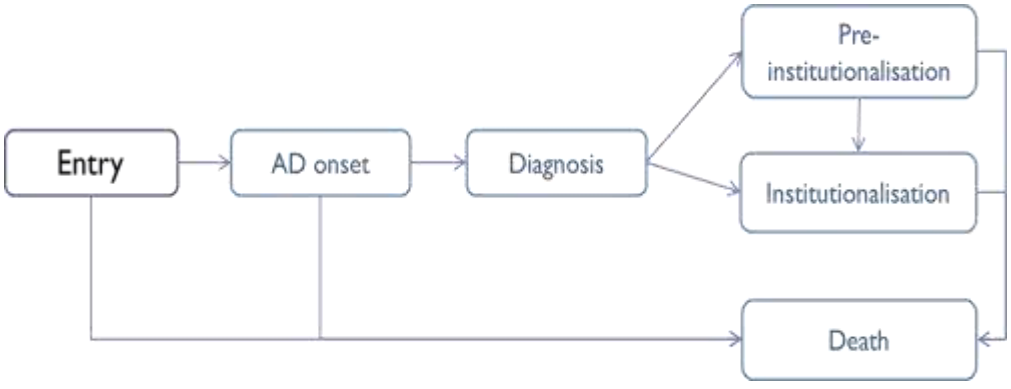
a) Heart disease model*



MI: myocardial infarction; PAD: peripheral artery disease; Revasc: revascularisation;

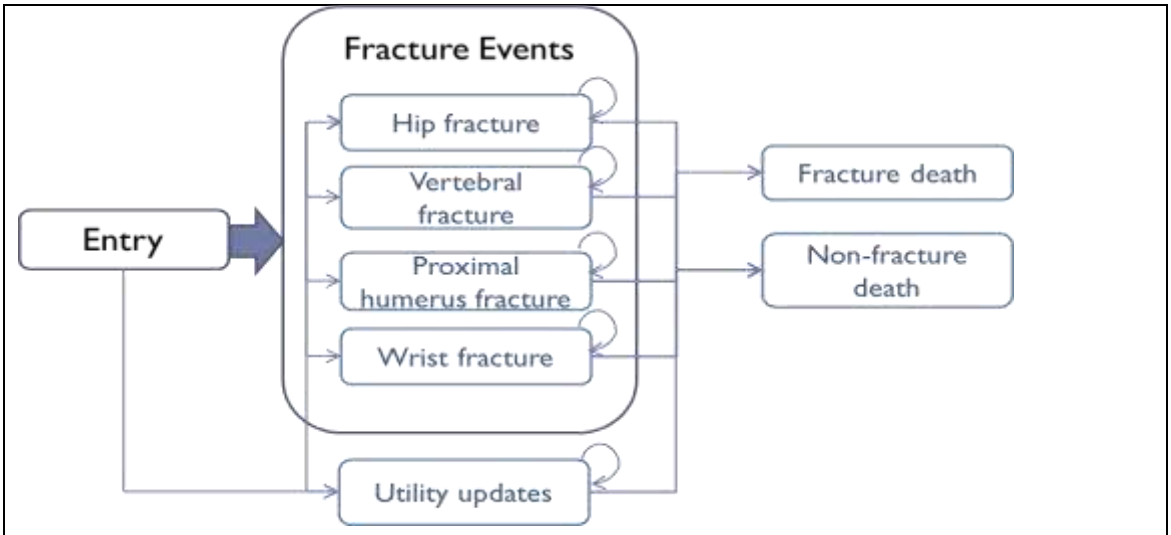
The heart disease model included MI, stroke, angina, revascularisation PAD and cardiac and non-cardiac deaths as qualifying health events. Each non-fatal cardiac event except PAD (MI, angina, stroke and revascularisation) was divided into two temporal categories: first-year and subsequent years after the event.

b) Alzheimer's disease model



Alzheimer's disease: The onset and diagnosis of AD were added to the structure of the model by Bond et al. (2012) in order to model a general population.

c) Osteoporosis model*



Osteoporosis model: Four fractures (hip, vertebral, wrist and proximal humerus) were included as osteoporotic fracture events. The events also included nursing home entry from hip fracture; death following fracture; and non-fracture related death (see Stevenson et al. 2009).

*The 'utility updates' event was included in Figure 2a and 2c in order to reflect the differences in costs and utilities for the first year and subsequent years after each event. This event activated a transient utility state where a different utility value is applied when there is no actual disease event but there is a change in utilities and costs.

Figure 4. Comparison of incremental costs and QALYs from the three individual disease models