QORU | quality and outcomes of person-centred care research unit

# Using the production of welfare approach to estimate the cost-effectiveness of care services

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# Disclaimer

The research on which this presentation is based was funded by the Department of Health and undertaken by researchers at the Quality and Outcomes of Person-centred Care Research Unit (QORU). The views expressed here are those of the author(s) and are not necessarily shared by any individual, government department of agency.

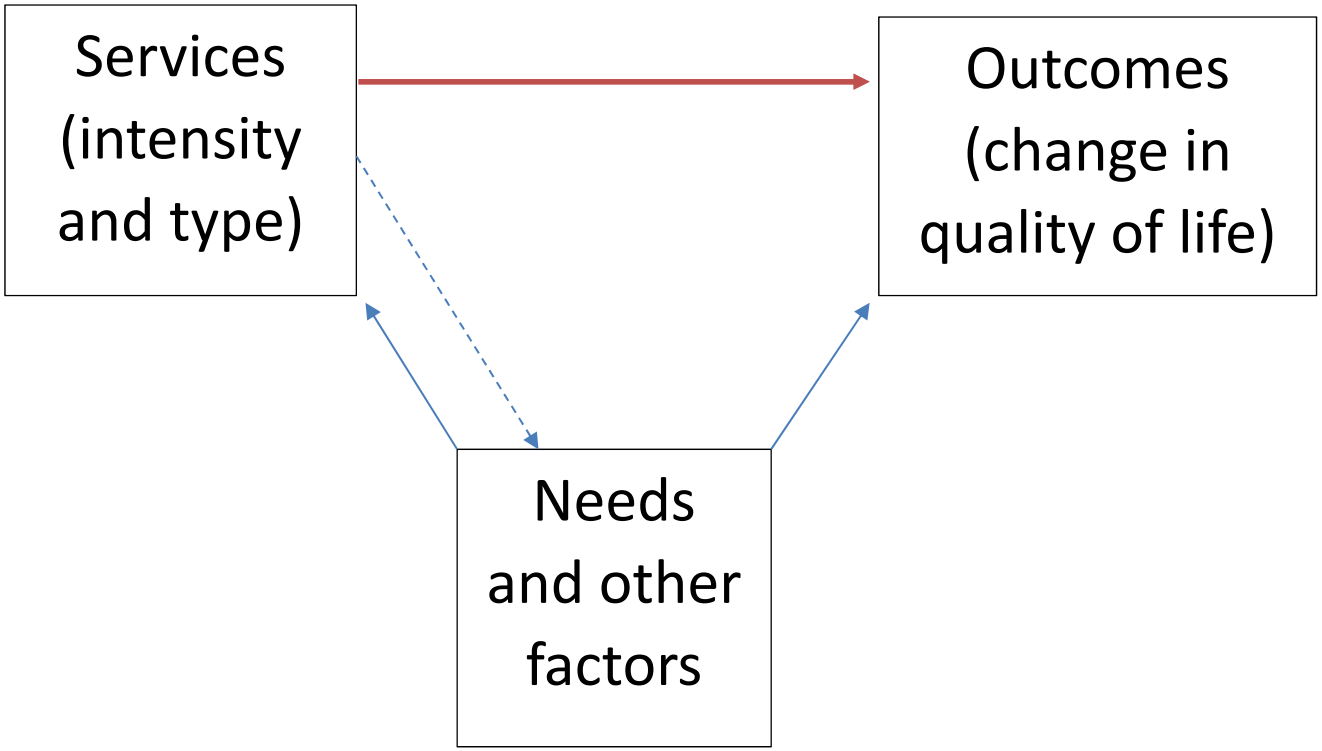
# Context

- Little research on the cost-effectiveness of social care for older people – e.g. home care
- Significant hurdles for research…
- (1) the *measurement* problem:
  - Ideally measure the impact of services in terms of how much they improve people's quality of life (QOL)
  - … measuring QOL is difficult
- (2) the *attribution* problem
  - … identifying how much of any observed improvement in QOL is due to the service rather than other factors
- Randomised Controlled Trials (RCTs) are gold standard method
  - Intervention group, compared with a control group
- … but the practical and ethical barriers are particularly high w.r.t. long-term care services (like home care) that already display *de facto* effectiveness
  - RCTs are also expensive

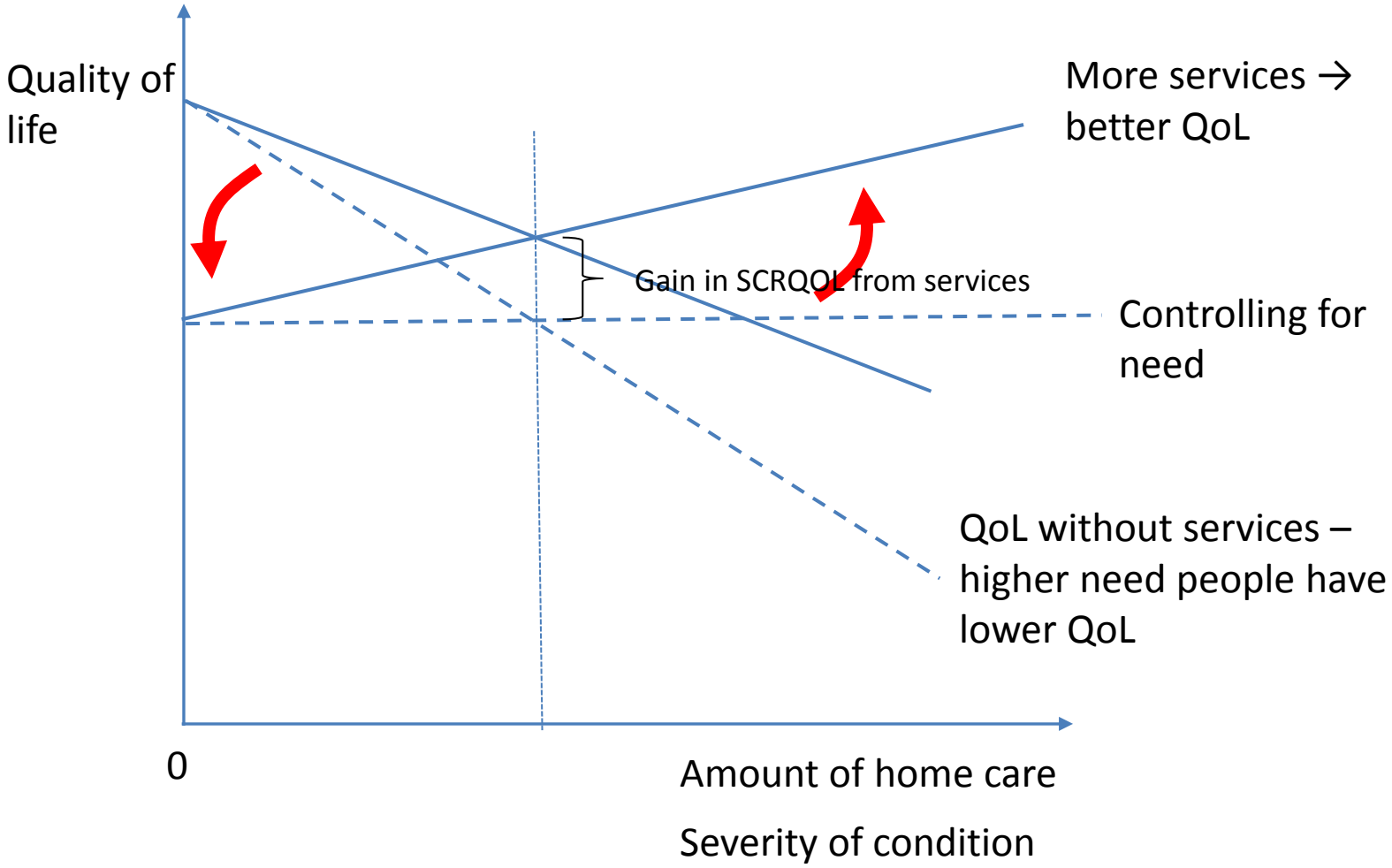
# Production of welfare

- Production of welfare model can be used as the basis for a method to provide estimates of the cost-effectiveness using survey data
- Measurement problem:
  - In PoW, Welfare = improvement in QoL.
  - Can be measured using tools as the ASCOT, a social care-related QoL measure
- Attribution problem:
  - PoW maps out the causal relationships between services, needs and other factors and outcomes
  - We can statistically model they relationships…
  - … Exploit observations of how the quality of life of service users varies with the different **intensity of their service use**, and their **needs-related characteristics**

# Simple PoW model



# How it works – finding the impact



# Measuring and valuing social care related quality of life

- This PoW method can provide an estimate of the impact of additional services on a person's ASCOT-measured quality of life
- But what does that mean?
- Suppose we want to know whether we should provide an extra hour of home care (from current average levels)
- Need to determine the opportunity cost of such a decision i.e. would the (public) money required to pay for the extra hour be better used elsewhere?

# Assessing cost-effectiveness

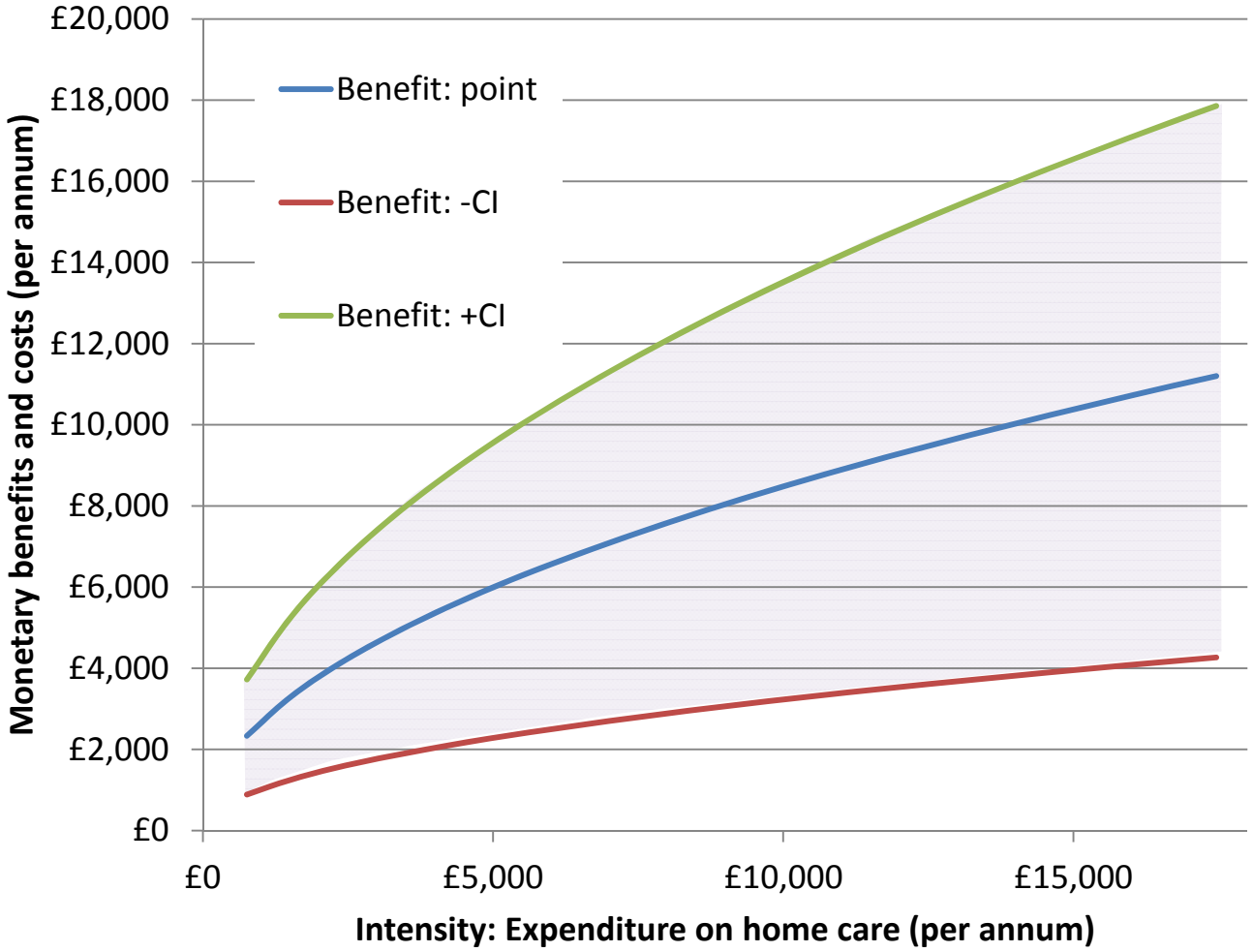
- Two options
  - (1) we can find an alternative use of the money that could produce better outcomes, and compare them directly
  - (2) or we can use a generic threshold of the minimum benefits that the new intervention must achieve
    - This threshold would (in theory) be equal to the benefit produced by the least cost-effective service currently being publicly-funded
    - This is the approach used by NICE
    - Conventionally in health care, this threshold is expressed in terms of the £-amount we are willing to pay to achieve an additional QALY e.g. £30,000 per QALY.
    - The ASCOT quality of life measure can be can be used to calculate a social care QALY equivalent

# A study of the cost-effectiveness of home care for older people

- We applied these methods in the home care case
- Use 2009 home care survey (a follow-up of the national UES). Had data on:
  - (ASCOT) SCRQOL for service users
  - Service use
  - Needs variables e.g. Activities of Daily Living (ADL) impairments, health conditions etc.
  - Final sample of 301 older people

# Results

## the impact of additional home care intensity on ASCOT QALY valued at £30,000



# Effects and cost-effectiveness

| ADL group | Mean intensity (Cost per week) | Marginal (1 hour) change in intensity (at average intensity) | | Marginal (1 hour) change in intensity (at one hour intensity) | | Total effect at mean intensity |
|---|---|---|---|---|---|---|
| | | Effect | Cost-effectiveness | Effect | Cost-effectiveness | |
| **All** | £96 | 0.015 | £50,011 | 0.039 | £19,501 | 0.20 |
| **High** | £159 | 0.014 | £53,205 | 0.047 | £16,110 | 0.31 |
| **Mod/ Low** | £69 | 0.022 | £35,146 | 0.035 | £21,794 | 0.15 |

# Some discussion points

- Suitability of method
  - These methods were applied to a home care survey dataset as a proof-of-concept
  - We were able to empirically model PoW relationships
  - Best used to estimate incremental cost-effectiveness
- Advantages: practically, low-cost, no ethics issues
- Disadvantages: high computation complexity, risk of misspecification and biased results, needs a large sample

# Some discussion points

- Given pros and cons, strategy:
  - use extrapolation method to produce preliminary estimates of CE
    - Using surveys of service-users or patients e.g. ASC
  - Where results are borderline, difficult to estimate or potentially subject to excessive error…
  - (and where this cost-effectiveness information is critical to decision-makers)…
  - … undertake a conventional trial-based study

# Some discussion points

- Developments:
  - Focused here on a single service production function
  - To comprehensively evaluate HC we should estimate multiple-service functions
    - There are other services and support that could partly substitute for home care e.g. day care, informal care and other health care
  - Accounting for these substitutes will lower society cost of extra home care, increasing the cost-effectiveness of its use.