# MODEM

## A comprehensive approach to modelling outcome and costs impacts of interventions for dementia

2014-2018

@MODEMProject

ILPN Conference 2016

LSE

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# A collaborative study:

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# Research questions:

1. How many people with dementia will there be over the period to 2040; and what will be the costs of their treatment, care and support ***under present arrangements***?
2. How do those costs ***vary*** with the characteristics and circumstances of people with dementia and their carers?
3. How could future costs change (in level and distribution) if ***evidence-based interventions were more widely implemented***?

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# Interventions, costs and outcomes:

## Interventions of interest

- ***Risk-reduction*** (e.g. lifestyle, nutrition, exercise etc.) and prevention (e.g. falls)
- ***Treatments*** (e.g. medications, cognitive stimulation therapy)
- ***Care and support arrangements*** (e.g. home care, telecare, respite, case management, acute care, end-of-life care)
- ***Carer-focused arrangements*** (e.g. carer training and support)

## Costs and outcomes

- All resource impacts (health, social care and other), including resources of people with dementia, families and communities.
- Quality of life, clinical and lifestyle effects, for people with dementia and carers.

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# MODEM Components

**Engagement** with people with dementia, carers, other stakeholders.

**Systematic Mapping of the Literature** of effective and cost-effective interventions for people with dementia and carers (available via the *MODEM Dementia Evidence Toolkit*).

**Collection new data,** analyses of data from trials and large surveys.

**Experiential evidence** from people with dementia & carers

**Suite of simulation models to estimate:**

- N of people with dementia over the period to 2040
- family or other unpaid support available to them
- costs of services and unpaid support.
- **Impact of a wider roll-out** of evidence-based interventions on outcomes, costs, patterns of expenditure

**A Legacy model** to make local projections of needs for care and support, outcomes and costs.

# Systemic mapping of the literature

- Systematic mapping of empirical evaluations of interventions to:
  - Prevent or delay dementia onset
  - Reduce symptom severity
  - Improve the quality of life of people with dementia & carers
- Review of previously published systematic reviews
- Own reviews of areas in which we have identified gaps
- The review informs the choice of interventions that we are modelling
- Mapping of value in its own right:
  - Identification of gaps in evidence
  - Implications of different research methods for use of evidence for modelling
  - Publicly available via the MODEM Dementia Evidence Toolkit

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# Data collection:

- Cohort of 300 dyads: people living with dementia and carers.
- 100 each with mild, moderate and severe dementia, clinical population from Sussex.
- Interviewed at baseline and 52 week follow-up.
- Questions: different measures of need, care use and outcomes, enabling researchers to cross-walk across different measures and studies.
- Detailed questions on use of care services by people with dementia and provision of unpaid care.

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# MODEM suite of models:

- Dynamic micro-simulation projection model on disabling consequences of dementia (Newcastle)
- Care pathways models of how interventions impact on the use of services and costs (LSE)
- Life-time costs model of the overall costs of the care pathway for an intervention (LSE)
- Macro-simulation projection model of long-term care need and costs (LSE)

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# Macro-simulation model

PSSRU macro-simulation model will produce projections of:

- future numbers of people with dementia or cognitive impairment
- future numbers by severity of disability (interval needs)
- long-term care, including unpaid care and formal services
- associated public expenditure and wider costs

under variant assumptions about trends in:

- mortality rates by age and gender
- rates of dementia, cognitive impairment and disability
- supply of unpaid care, eg by daughters and sons
- patterns of care services, eg between home and residential care
- unit costs of care, eg cost of an hour's home care

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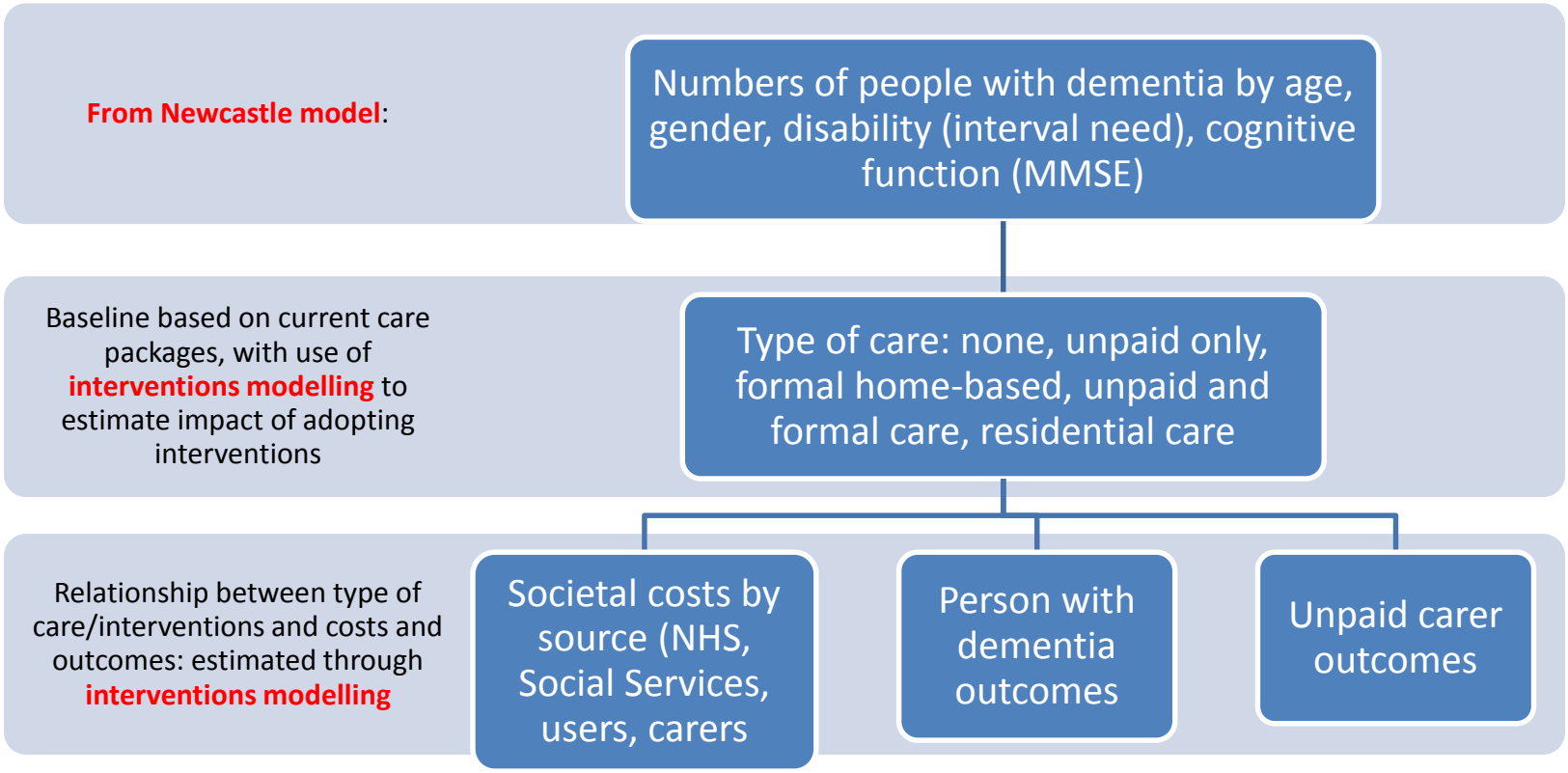
# Interventions models

- A suite of different models for different interventions, to examine their impact on service use, costs and quality of life
- Different interventions require different types of models, because of
  - differences in duration of intervention and duration of effect
  - differences in available data and evidence

# Macro-simulation model: bringing it all together

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# Life-time costs model

- This model divides the median duration of dementia – 4.5 years – by severity of cognitive impairment and type of care
- Average costs of care by funding source, derived from trials' data, are attached to each month of care
- The lifetime estimate of care costs is around £200k, before any discounting, including health, social care and unpaid care.

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