University of Leicester

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Trends in disease and how they will impact on disability in the older population

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nda PROGRAMME

new dynamics of ageing
a cross-council research programme

MAP 2030
Modelling Ageing Populations to 2030

Background

- Projections of future numbers with disability often apply current age specific prevalence's to total population projection
- Do not take into account trends in disease
- Models of disablement place disease at the start of the process

Aim

- To use a macro simulation model, linking diseases with disability to determine the future burden of disability in the older population under different scenarios in disease trends

The data - MRC CFAS

- Uses 5 centres
- stratified random sample aged 65+
- includes those in institutions
- N=13004 at baseline (1992)
- 2 year follow-up
- death information from National Death Registry

Measures

Disability

- Inability to perform at least one of: put on shoes or socks, have a bath or all over wash, or transfer to and from bed

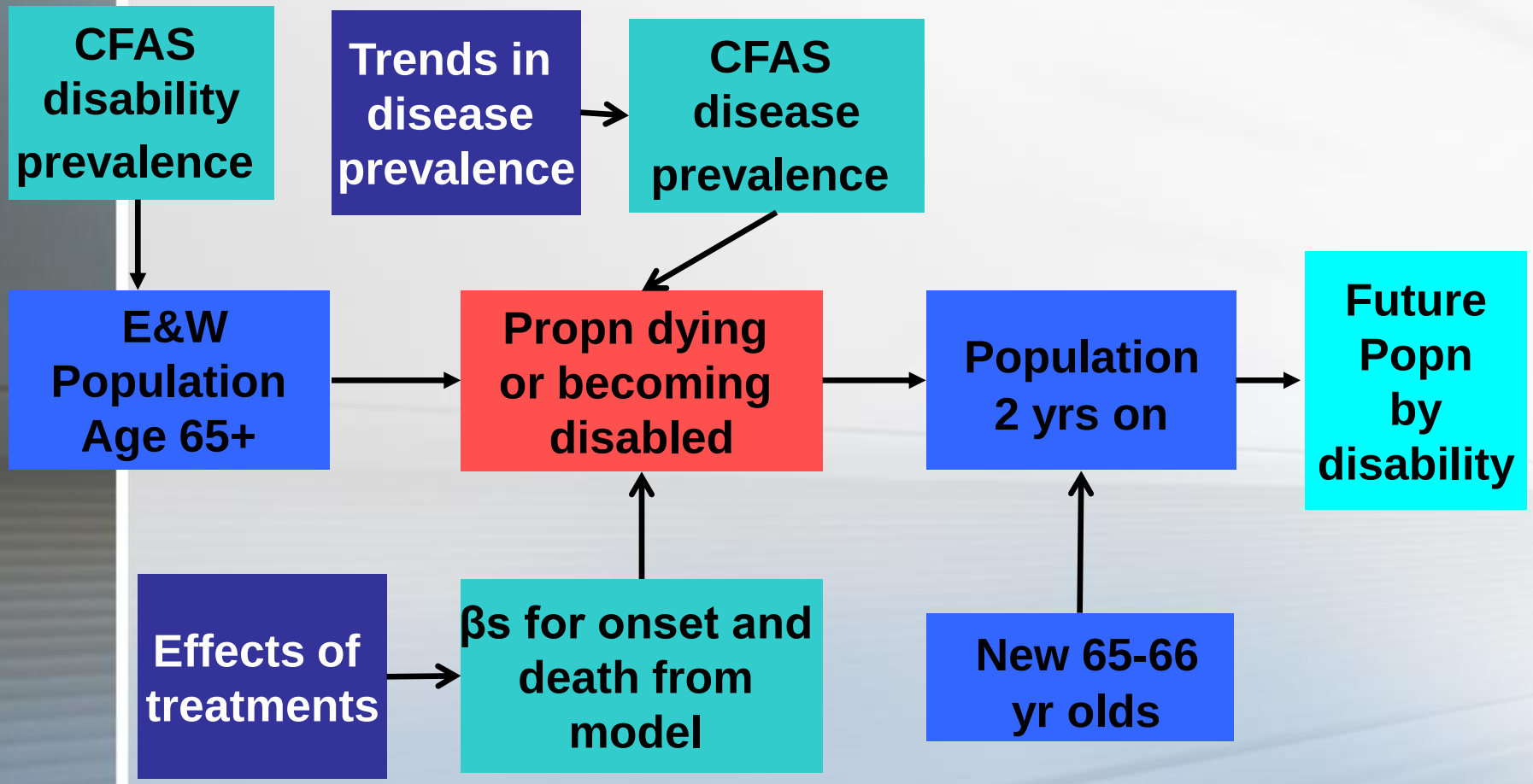
Diseases

- Self reported: 11 diseases, including diagnosed stroke, CHD and arthritis
- Diagnostic scales: cognitive impairment (MMSE 0-21: moderate or severe, 22-25: mild), angina and peripheral vascular disease.

Methods

- Stage 1: Modelling transitions
  - Trichotomous logistic regression model linking diseases with onset of disability or death in those NOT disabled at baseline (N=8,693)
  - Observed probabilities of recovery or death by 2 year age group in those disabled at baseline
- Stage 2: Simulation phase
  - Applies age-specific prevalence of disability and transition rates to England & Wales population to estimate population by disability 2 years later.
- DFLE and LE
  - Life expectancy calculated from abridged life tables
  - DFLE calculated using Sullivan's method

Simulation model



Scenario 1: Population ageing alone

- Age-specific prevalence of diseases, incidence & recovery rates all remain the same.
- Mortality rates continue to fall according to levels set by GAD principal projection

Scenario 2: Current trends in health continue

- Prevalence of arthritis, stroke, CHD and cognitive impairment INCREASED by 2% every 2 years from 2012
- Onset of disability INCREASED by 10% from 2012 in those with arthritis, stroke and CHD
- Mortality from Stroke, CHD and mild cognitive impairment REDUCED by 5% from 2012

Scenario 3: Improving population health

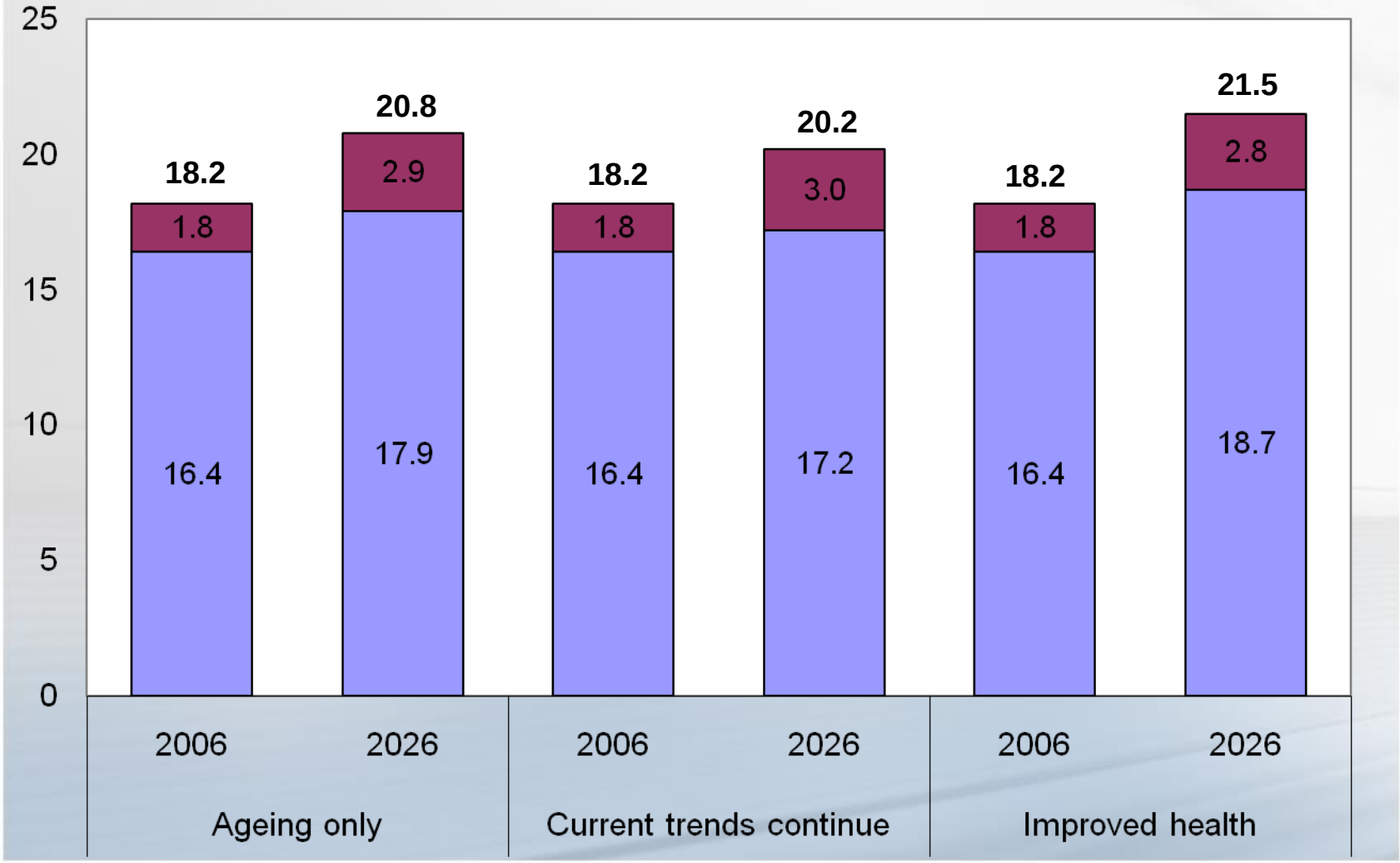
- Prevalence of arthritis, stroke, CHD, and mild CI REDUCED by 2% every 2 years from 2012
- Onset of disability REDUCED by 10% in those with arthritis, stroke, CHD and mild CI from 2012
- Mortality REDUCED by further 5% in those with stroke, CHD and mild CI from 2015

RESULTS

Scenario 1: Population ageing alone

- Total population aged 65+ years increases from 8.9 million in 2006 to 12.3 million in 2026
- Disabled population increases from 0.9 million to 1.6 million
- Life expectancy increases by 2.6 years at age 65, and 1.7 years at age 85
- Gain in DFLE of 1.5 years at age 65 and 0.6 years at age 85

LE and DFLE at age 65 in 2006 and 2026



Increases in DLE relative to LE

	Increase from 2006 to 2026 in			
	LE	DFLE	DLE	%DFLE/LE
At age 65				
Ageing only	2.6	1.5	1.1	-4.2
Current trends continue	2.1	0.8	1.2	-4.9
Improved health	3.4	2.3	1.0	-3.5
At age 85				
Ageing only	1.7	0.6	1.1	-8.3
Current trends continue	1.3	0.1	1.2	-11.6
Improved health	2.3	1.2	1.0	-5.1

Further improvement in health

- Prevalence REDUCED by 2, 10, 20 & 50% every 2 years from 2012 for:
  - Arthritis
  - Stroke
  - CHD
  - Cognitive impairment (from 2016)
- Reductions of 10, 20 & 50% in disabling consequences of the diseases

Increases in DFLE relative to LE

REDUCTION in disabling effect/prevalence	Increase from 2006 to 2026 in			
	LE	DFLE	DLE	%DFLE/LE
At age 65				
Disabling effect 10% / Prevalence 2%	3.3	2.3	1.0	-3.1
Disabling effect 10% / Prevalence 10%	5.2	4.2	1.0	-2.1
Disabling effect 10% / Prevalence 50%	8.1	7.2	0.8	-0.4
Disabling effect 50% / Prevalence 50%	8.0	7.2	0.8	0
At age 85				
Disabling effect 10% / Prevalence 2%	2.2	1.2	1.0	-5.3
Disabling effect 10% / Prevalence 10%	3.5	2.6	0.9	0.2
Disabling effect 10% / Prevalence 50%	5.6	5.0	0.6	7.7
Disabling effect 50% / Prevalence 50%	5.6	5.0	0.6	7.7

Conclusions

- Life expectancy will continue to rise, but most of extra years spent with disability
- Absolute compression of health is unlikely under any improvement in population health.
- A relative compression of disability could occur at age 85 if key diseases reduced by 10% and a 10% reduction in their disabling effect.
- Severity of disability considered may be important.