



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

R. Matthews, C. Jagger & MRC CFAS

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

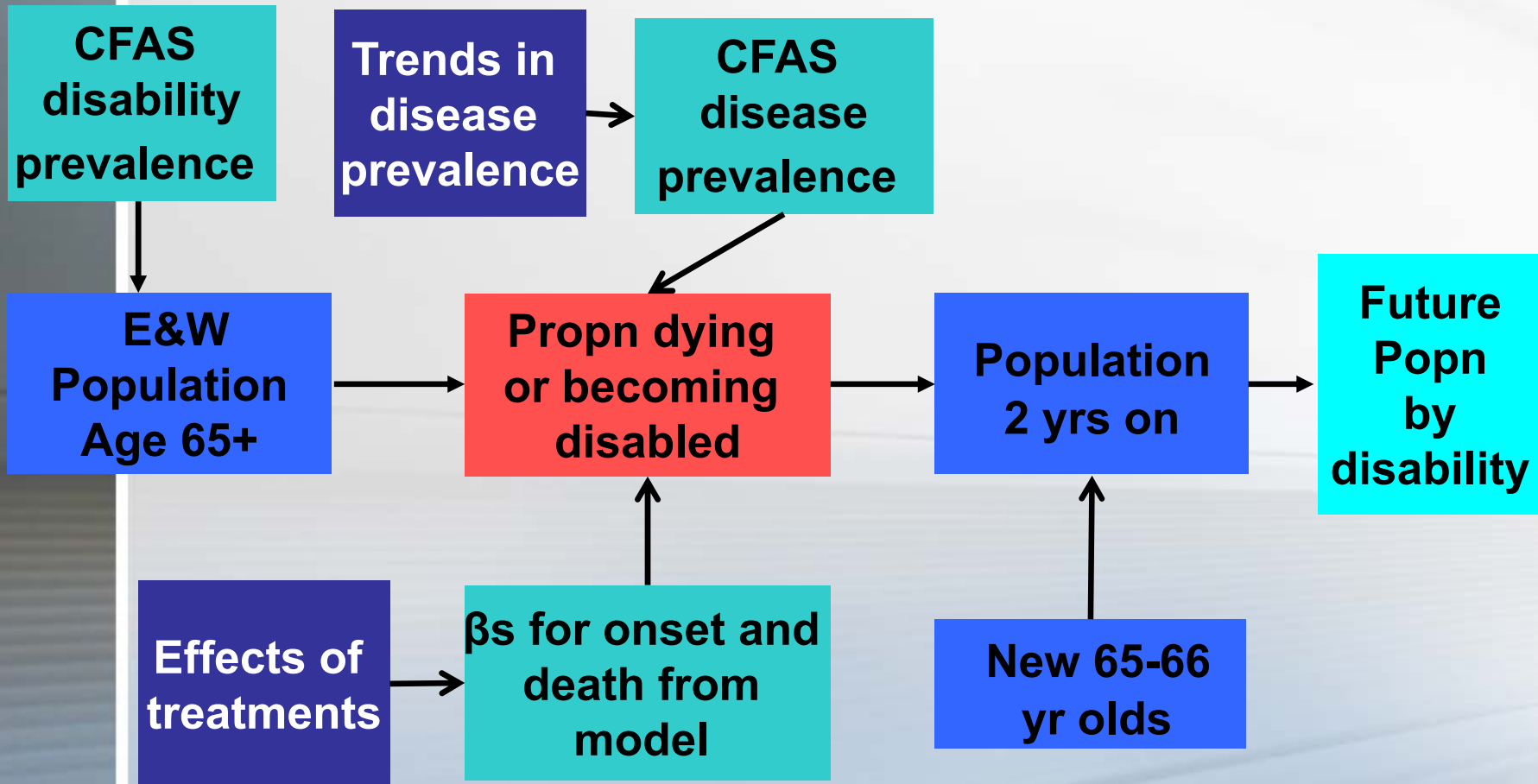
Stage 2: Simulation phase

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

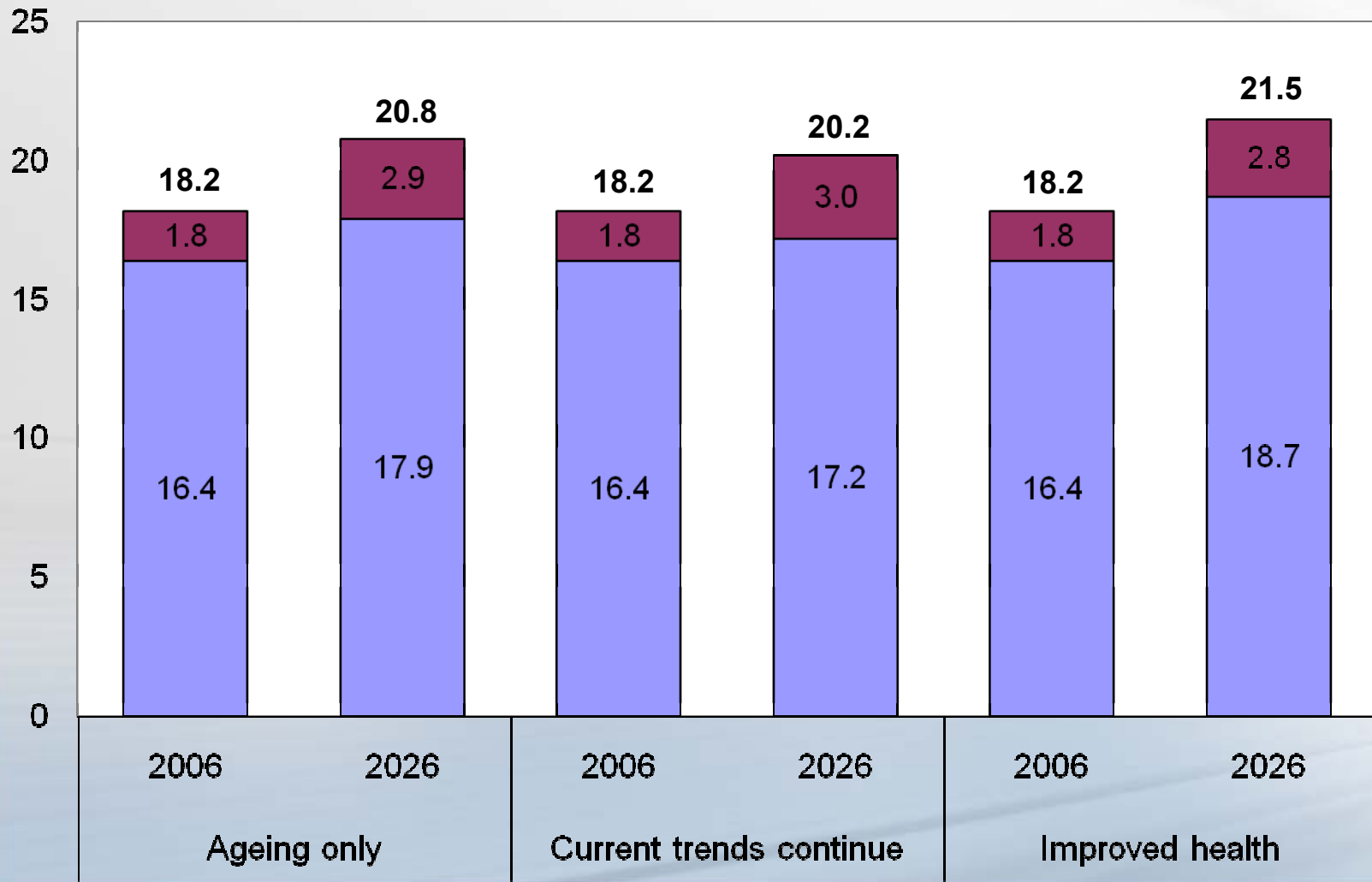
Total population aged 65+ years increases from 8.9 million in 2006 to 12.3 million in 2026

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



□ DFLE ■ DLE

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.