

Evaluating policies that target several chronic diseases: using a new economic model system - Australia

Agnes Walker*, James Butler*, Stephen Colagiuri**

*Australian National University, Canberra **University of Sydney, Australia

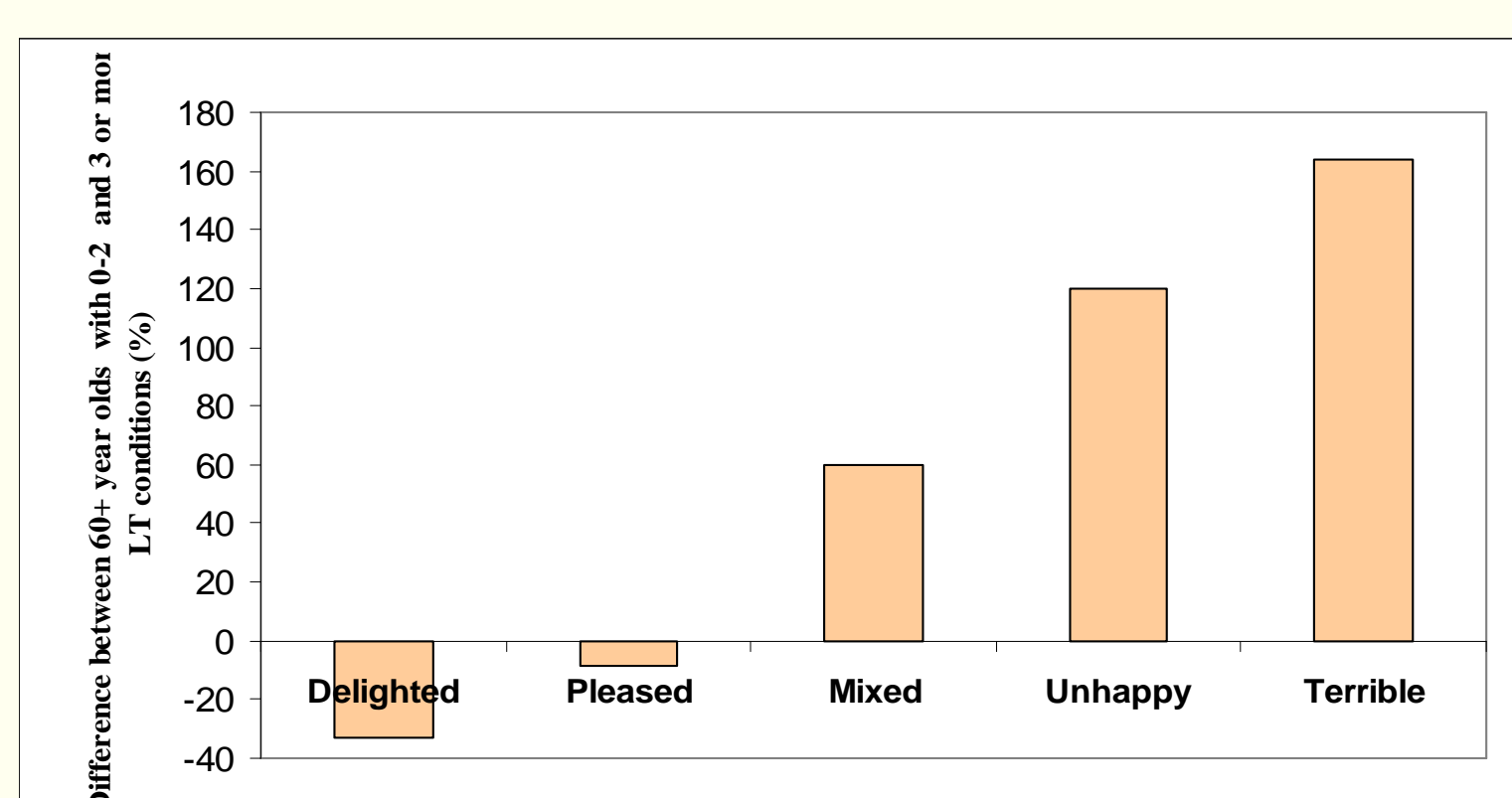


INTRODUCTION

Chronic diseases - eg heart disease, cancer, diabetes - affect around 80% of older Australians, are the main causes of disability and premature death, and account for 70% of health costs. Australia's population is ageing, so future chronic disease prevalence and related treatment costs are projected to increase considerably. The literature shows further worsening quality of life and more rapidly rising health costs as individuals acquire several chronic diseases as they age (chart/table below)

Poorer quality of life if 60+ year olds have 3 or more chronic illnesses

Higher per disease costs for those with multiple chronic diseases



Description	Average cost per person per year (\$)
Single chronic illness	
Cardiovascular disease (CVD)	4006
Cancer	2,478
Diabetes	1,289
Multiple chronic illnesses	
Cancer and CVD	8526
Diabetes and mental illness	2738
Cancer, CVD and mental illness	10,090

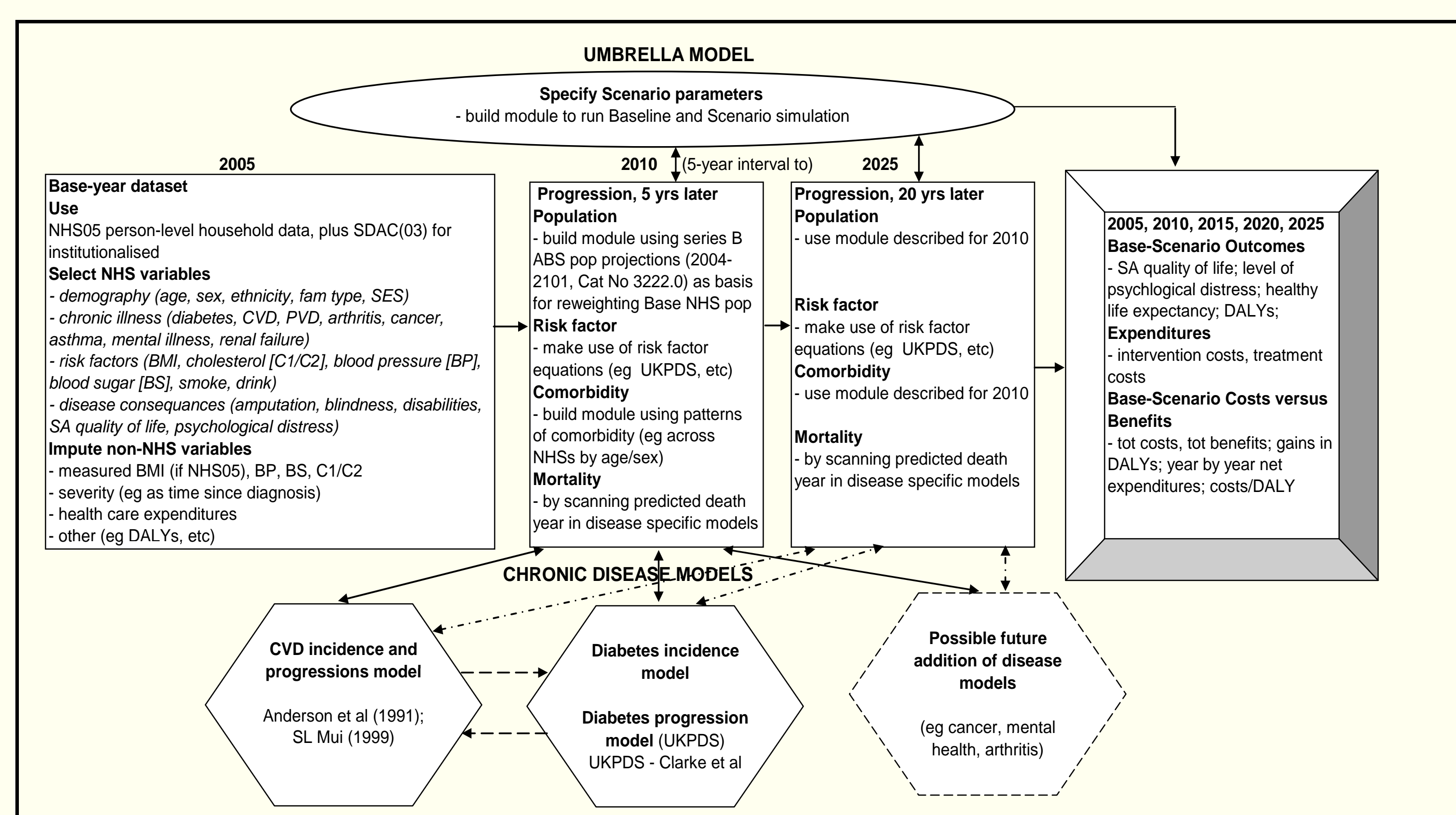
AIMS

(1) Report on the Prototype of *HealthAgeingMod*, a person-level cost-benefit model-system able to account for multiple chronic diseases that Australians may acquire as they age.

(2) Report on an Illustrative Scenario, using the Prototype.

THE *HealthAgeingMod* PROTOTYPE

Disease-specific progression sub-models are linked to an 'Umbrella' microsimulation model representing the Australian population. Type 2 diabetes, cardiovascular disease (CVD), and CVD as a complication of diabetes are considered at this stage



The Prototype projects into the future and accounts for a nationally representative sample of individuals' demographic, socioeconomic, health and health-risk characteristics; the number of chronic diseases they accumulate; their quality of life; and the related health expenditures.

REFERENCES

- 1 Australian Bureau of Statistics (2005), Population projections, No3222
- 2 Australian Bureau of Statistics (2006), National Health Survey 2004-05, No 4324
- 3 Walker et al (2008) ACERH Research Report 3, www.acerh.edu.au/publications/ACERH_RR3.pdf

RESULTS - Illustrative Scenarios

The Illustrative Scenario

- S1 projects, from 2005 to 2010, the number of Australians in 2010 with CVD, diabetes, or with both. It also estimates the related health expenditures
- S2 is similar to S1, except that each of Australia's 2.5 million obese adults has a 10% lower body weight
- S3 is similar to S2, except that the risk-factor-benefits of lower weight among the obese are also accounted for. We assumed that the positive risk-factor-impact of reduced obesity amounted to 10% lower blood pressure *and* sugar level *and* cholesterol

Results

Diabetes and non-fatal Cardiovascular hospital events, 2005-2010

	Scenario S1	Scenario S2	Scenario S3
	2010 population structure*	S1 with 10% lower weight for obese** adults	S2 with 10% lower blood pressure, sugar level, cholesterol
PERSONS IN 2010 (numbers)			
- Diabetes only	951,706	894,480	893,762
- Diabetes+CVD event	50,749	43,387	4,492
- CVD event only	285,222	277,016	274,437
All persons with diabetes and CVD	1,287,677	1,214,883	1,208,691
difference from S1		- 72,794	-78,968
5-YEAR EXPENDITURES (AU\$ million)			
- Diabetes only	4,816	4,629	4,630
- Diabetes+CVD event	1,128	981	934
- non-fatal CVD event only	5,767	5,594	5,532
- fatal CVD event only	1,317	1,317	1,303
Total CVD plus diabetes costs	13,028	12,521	12,399
difference from S1		- 507	-629

* Prototype estimates aligned to Australian Bureau of Statistics projections: a population of 20.2 million in 2010

** Body Mass Index of 30 or more

Source: Survey-based2 Prototype simulations

S2 estimates the benefits of the 10% weight loss among obese adults as 72,794 *less* Australians with diabetes and/or CVD and a saving of AU\$507 million over 5 years. S3 adds to this the downstream risk-factor benefits arising from lower blood pressure, sugar and cholesterol, in response to the 10% weight loss. The impact of S3 is 78,968 *less* Australians with diabetes and/or CVD and a saving of AU\$629 million over 5 years.

CONCLUSIONS

Accounting for multiple chronic diseases, their risk factors and their accumulation by individuals as they age, allowed improved predictions of the health status and health cost implications of chronic disease policy interventions.