Australian Health Utility Value Set for MacNew-7D Heart Disease-specific Measure

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BACKGROUND

There are recent examples from National Institute for Health and Care Excellence (NICE), Pharmaceutical Benefits Advisory Committee (PBAC) and Medical Services Advisory Committee (MSAC) where Quality Adjusted Life Years played an essential role in measuring outcome in heart disease related resource allocations.

The generic measures such as the EQ-5D are found to be underestimate heart disease related quality of life improvements. This can undervalue advancements of heart related interventions.

We developed a heart disease specific classification system (MacNew-7D) using available heart disease specific quality of life instrument. This study presents the Australian utility value set for the MacNew-7D.

Methods

Discrete choice experiment (DCE) was used to elicit preference of the respondents. Online national survey was conducted using panel respondents with quota sampling to achieve representativeness of the Australian population. There were 200 choice sets with 8 sets per respondent. An example choice set is given below

RESULTS

Table 1: Distribution of the quality of life according to MacNew-7D

| Dimension	Level 1 n (%)	Level 2 n (%)	Level 3 n (%)	Level 4 n (%)
Mac-New-7D				
Physical restriction	1192 (62.6)	476 (25.0)	158 (8.3)	77 (4.0)
Excluded from doing things with other people	1206 (63.4)	302 (15.9)	317 (16.7)	78 (4.1)
Worn out or low in energy	677 (35.6)	423 (22.2)	636 (33.4)	167 (8.8)
Frustrated, impatient or angry	844 (44.4)	495 (26.0)	488 (25.6)	76 (4.0)
Unsure and lacking in self-confidence	822 (43.2)	419 (22.0)	494 (26.0)	168 (8.8)
Shortness of Breath while doing your day to day physical activities	1189 (62.5)	514 (27.0)	143 (7.5)	57 (3.0)
Chest pain	1523 (80.0)	226 (11.9)	120 (6.3)	34 (1.8)

1903 people responded including the pilot survey. They were similar to the characteristics of Australian general population with age, sex and state residence. Mean age was 47, with 221 people having diabetes and 95 with coronary artery disease. The mean EQ-5D utility value was 0.8 indicating healthy sample. After considering number of models the one presented in Table 2 was selected based on significant coefficients. This model collapsed level 3 and 4 of the "worn-out" attribute and level 1 and 2 of the "self-confidence" attributes.

To provide an example, utility value for health state 2221132 is = 1- (0.1087+0.0972+0.0143+0.0000+0.0000+0.0751+0.0485) = 0.6562

Table 2: Estimated coefficients for the selected model

		Selected model		Anchored values	
		Coefficient	SE	Utility decrement	Coefficient95% CI
Duration		**0.4421**	0.0149		
Physical restriction x duration					
	2	**-0.0480**	0.0074	-0.1087	(-0.0774 to -0.1400)
	3	**-0.0544**	0.0068	-0.1232	(-0.0938 to -0.1525)
	4	**-0.1589**	0.0078	-0.3595	(-0.3259 to -0.3930)
Exclusion of Activities x duration					
	2	**-0.0430**	0.0076	-0.0972	(-0.0649 to -0.1295)
	3	**-0.0466**	0.0069	-0.1055	(-0.0766 to -0.1344)
	4	**-0.0829**	0.0082	-0.1875	(-0.1528 to -0.2222)
Worn out x duration					
	2	-0.0063	0.0068	-0.0143	(0.0155 to -0.0440)
	3	**-0.0120**	0.0059	-0.0272	(-0.0017 to -0.0528)
	4	**-0.0120**	0.0059	-0.0272	(-0.0017 to -0.0528)
Frustration x duration					
	2	**-0.0149**	0.0067	-0.0337	(-0.0045 to -0.0628)
	3	**-0.0255**	0.0064	-0.0578	(-0.0296 to -0.0859)
	4	**-0.0764**	0.0075	-0.1727	(-0.1405 to -0.2049)
Self-confidence x duration					
	2	0.0000		0000	
	3	**-0.0284**	0.0060	-0.0642	(-0.0379 to -0.0904)
	4	**-0.0495**	0.0055	-0.1119	(-0.0895 to -0.1343)
Shortness of Breath x duration					
	2	-0.0134	0.0080	-0.0304	(0.0047 to -0.0654)
	3	**-0.0332**	0.0078	-0.0751	(-0.0418 to -0.1084)
	4	**-0.1197**	0.0078	-0.2707	(-0.2383 to -0.3031)
Chest Pain x duration					
	2	**-0.0214**	0.0084	-0.0485	(-0.0121 to -0.0849)
	3	**-0.0556**	0.0069	-0.1257	(-0.0958 to -0.1555)
	4	**-0.1247**	0.0081	-0.2821	(-0.2485 to -0.3157)
Log likelihood		-8582			
AIC		17205			
BIC		17371			

Figure 1: Distribution of MacNew-7D utility values
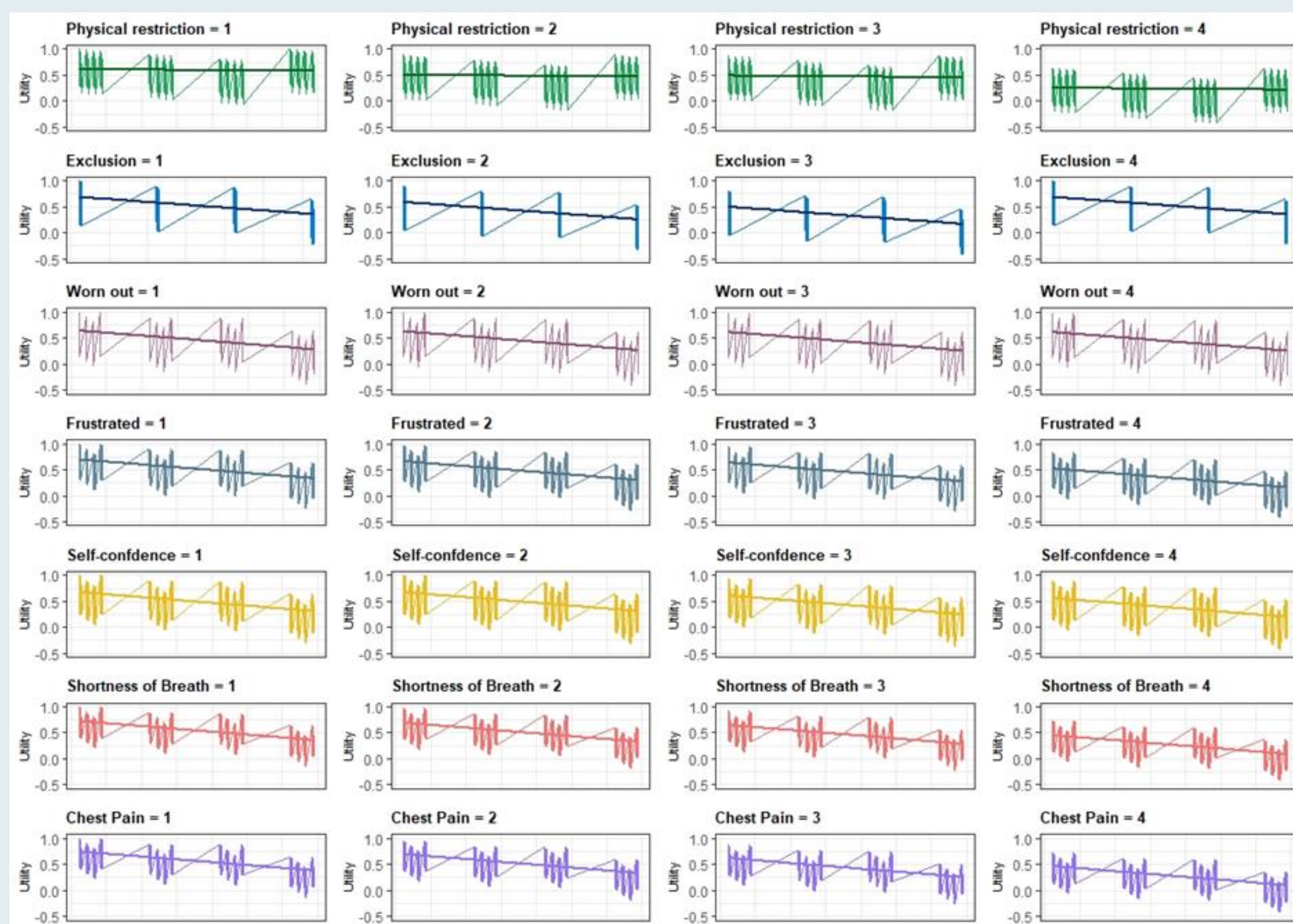
CONCLUSION

Findings indicated the MacNew-7D utility value set is likely to be suitable for estimating quality-adjusted life years derived from the MacNew heart disease health-related quality of life questionnaire.