Appendix A: Comparison of predictive risk models under consideration in Australia

PRM Features	NSW Stage 1: Ontario-HARP[i] (complex)	Commonwealth Stage 1: Qadmissions[ii]	Commonwealth Stage 2: Chronic Condition Risk Calculator: "Victoria HARP"	Consolidated List of Available Predictor Variables
Design Elements				
Required data sources	**Hospital EHR**	**GP practice management & hospital EHR**	**GP practice management & assessment data**	**APDC, EDDC, MBS, 45andUp survey, mortality**
Unit of Analysis	**discharge**	**person**	**person**	**Person**
Cohort definition	acute discharges	primary care population	primary care population (for Commonwealth application)	45and Up Survey respondents (with a MBS, EDDC, or APDC linked record)
Prediction Period	**15 mos post-index discharge**	**2 years post index time**	**12 mos post assessment**	**12 mos post index time**
Prediction Outcome	acute presentation (readmission)	1+ emergency admissions	acute presentation	1+ acute, emergency admits
Covariates Used				
Number and types covariates in final model	9 (complex model)	14	21	26 (to test)
SOCIODEMOGRAPHICS				
Age	✓	✓	x	✓
Gender	x	✓	x	✓
Income/Income Decile	x	x	✓	✓
Index of relative SES disadvantage	x	✓	x	✓
Remoteness/Rurality	x	✓ (n=10 regions)	x	✓
Ancestry/Race/Ethnicity	x	✓	x	✓
Aboriginal/Torres Strait Islander	x	x	✓	✓
Language other than English	x	x	✓	✓
Transportation	x	x	✓	X
Housing stability	x	x	✓	X
Asthma triggers	x	x	✓	X
SOCIAL SUPPORT				
Marital status	x	x	x	✓
Caregiver / Other Social Support	x	x	✓	✓
HEALTH STATUS				
Comorbidity Score/Count	✓	x	x	✓
Specific conditions (DX)	✓ (n=19)	✓ (n=12)	✓ (n=7)	✓ (tested, not used)
Illness Severity/Resources Intensity	✓	x	x	x
Specific medications/ polypharmacy/regimen changes	x	✓ (n=5)	✓ (n=2)	✓
Clinical indicators (lab values, PX, etc.)	x	✓ (n=3)	✓	x
Mental illness	x	✓	✓	✓
Drug use/abuse	x	x	✓	x
HEALTH-RELATED BEHAVIORS				
BMI	x	✓	✓	✓
Smoking status	x	✓	✓	✓
Alcohol use	x	✓	✓	✓
Physical Activity	x	x	✓	✓ (tested, not used)
Readiness to Change	x	x	✓ (n=7)	x
FUNCTIONAL STATUS				
Self-reported health status	x	x	x	✓
Health-Related Quality of Life (functional status, disability, self-care)	x	x	✓	✓
Other measures of functional status (mobility, fall history, pain, cognitive impairment, frailty)	x	✓ (falls)	✓ (dementia, pain, falls, incontinence)	✓ (falls)

PRIOR HOSPITAL/ED UTILIZATION				
Index Admit LOS	✔	x	x	✔
Discharge disposition	✔	x	x	x
Previous hospitalizations	✔	✔	✔	✔
Admit via ED	✔	x	x	✔
Previous ED use	✔	x	x	✔
ACCESSIBILITY				
GP care	X	x	✔	✔

[i] Canadian Institute for Health Information. Early Identification of People At-Risk of Hospitalization: Hospital Admission Risk Prediction (HARP) – a new tool for supporting providers and patients. Technical Appendix. Queen's Printer for Ontario: 2013. https://secure.cihi.ca/free_products/HARP_reportv_En.pdf (retrieved 05/03/17)

[ii] Hippisley-Cox J, Coupland C. Predicting risk of emergency admission to hospital using primary care data: derivation and validation of QAdmissions score. *BMJ Open*. 2013;3:e003482.