

Supplementary Files

Further details regarding linked data and data linkages.

The MBS claims database includes all claims for subsidised medical and diagnostic services provided by registered medical and other practitioners through the MBS. For each claim for service processed, the MBS data include a range of information, including the date of the service and the item number for the service. Linkage of baseline data from 45 and Up Study participants to MBS data was performed at the Sax Institute through deterministic linkage, using an encrypted version of the Medicare number provided directly by the Department of Human Services (DHS). Data were also linked using probabilistic linkage to the Admitted Patient Data Collection (APDC) and the NSW Register of Births, Deaths and Marriages by the Centre for Health Record Linkage (CHeReL). Quality assurance data on the CHeReL data linkage show false positive and negative rates of <0.5% and <0.1%, respectively. See <https://www.saxinstitute.org.au/our-work/45-up-study> for further details.

Supplementary Table 1. Item numbers for GP services

| MBS item groups and name of group | Specific item numbers within item group | Notes on item numbers |
|--|---|---|
| A1-GP attendances | 3, 23, 36, 44 Remainder A1 attendances=4, 20, 24, 35, 37, 43, 47, 51 | Items for services in consulting rooms Items relate to consultations at residential care OR other than residential care/consulting rooms |
| A2-MPs other than GP | 52,53,54,57 Remainder of A2 attendances=58–60, 65, 92, 93, 95, 96 | Items for services in consulting rooms Items relate to consultations at residential care OR other than residential care/consulting rooms |
| A11-GP | 597, 599 | Urgent after-hours care |
| A11-MP other than GP | 598, 600 | Urgent after-hours care |
| A14-health Assessments | 701, 703, 705, 707 | |
| A14-health assessments for Aboriginal and Torres Strait Islander peoples | 715 | |
| A15-GP management plans | 721, 723, 729, 731, 732 | Care plans, care plan reviews and team care arrangements |
| A15-case conference | 735, 739, 743, 747, 750, 758 | |
| A17 | 900 and 903 | Medication reviews |
| A18-GP, cervical screening | 2497, 2501, 2503, 2504, 2506, 2507, 2509 | Incentive for overdue pap smears (>4 years since last pap) |
| A18-GP asthma | 2546, 2547, 2552, 2553, 2558, 2559 | Cycle of care |
| A18-GP diabetes | 2517, 2518, 2521, 2522, 2525, 2526 | Cycle of care |
| A19-non-referred cervical screening | 2598, 2600, 2603, 2606, 2610, 2613, 2616 | As per A18 for non-VR MPs |
| A19-non-referred, asthma | 2664, 2666, 2668, 2673, 2675, 2677 | As for A18 for non-VR MPs |
| A19-non-referred, diabetes | 2620, 2622, 2624, 2631, 2633, 2635 | As for A18 for non-VR MPs |
| A20-GP mental health care plans | 2700, 2701, 2712, 2713, 2715, 2717, 2721, 2723, 2725, 2727 | Preparation and review of mental health care plans |
| A22-after hours (GP attendances) | 5000, 5003, 5010, 5020, 5023, 5028, 5040, 5043, 5049, 5060, 5063, 5067 | Includes consultation room, residential facility and other. At consultation rooms bolded |
| A23-after hours (non-referred) | 5200, 5203, 5207, 5208, 5220, 5223, 5227, 5228, 5260, 5263, 5265, 5267 | As per A22 for non-VR MPs |

Notes:

1. GP, general practitioner; MP, medical practitioner; VR vocationally registered.
2. Medical practitioners (MPs) in this case refer to medical doctors who provide non-referred services but are not vocationally registered as a GP (i.e. have not undertaken specialist training in General Practice or other equivalent recognised training program).

Supplementary Table 2. ICD10 codes included for prior CVD (IHD/cerebrovascular disease)

| |
|--|
| I20-I25 Ischaemic heart disease |
| I20 Angina pectoris |
| I21 Acute myocardial infarction |
| I22 Subsequent myocardial infarction |
| I23 Certain current complications following acute myocardial infarction |
| I24 Other acute ischaemic heart diseases |
| I25 Chronic ischaemic heart disease |
| I61-I67, I69 (selected cerebrovascular disease) |
| I61 Intracerebral haemorrhage |
| I62 Other nontraumatic intracranial haemorrhage |
| I63 Cerebral infarction |
| I64 Stroke, not specified as haemorrhage or infarction |
| I65 Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction |
| I66 Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction |
| I67 Other cerebrovascular diseases |
| I69 Sequelae of cerebrovascular disease |
| G45,G46 (selected episodic and paroxysmal disorders) |
| G45 Transient cerebral ischaemic attacks and related syndromes |
| G46 Vascular syndromes of brain in cerebrovascular diseases |

Supplementary Table 3. ICD10 codes included for prior CVD (any)

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| I11-I13 (selected hypertensive diseases) |
| I11 Hypertensive heart disease I12 Hypertensive kidney disease I13 Hypertensive heart and kidney disease |
| I20-I25 Ischaemic heart disease |
| I20 Angina pectoris I21 Acute myocardial infarction I22 Subsequent myocardial infarction I23 Certain current complications following acute myocardial infarction I24 Other acute ischaemic heart diseases I25 Chronic ischaemic heart disease |
| I26-I28 Pulmonary heart disease and diseases of pulmonary circulation |
| I26 Pulmonary embolism I27 Other pulmonary heart diseases I28 Other diseases of pulmonary vessels |
| I34-36, I42, I44, I46-I51 (selected other forms of heart disease) |
| I34 Nonrheumatic mitral valve disorders I35 Nonrheumatic aortic valve disorders I36 Nonrheumatic tricuspid valve disorders I42 Cardiomyopathy I44 Atrioventricular and left bundle-branch block I46 Cardiac arrest I47 Paroxysmal tachycardia I48 Atrial fibrillation and flutter I49 Other cardiac arrhythmias I50 Heart failure I51 Complications and ill-defined descriptions of heart disease |
| I61-I67, I69 (selected cerebrovascular disease) |
| I61 Intracerebral haemorrhage I62 Other nontraumatic intracranial haemorrhage I63 Cerebral infarction I64 Stroke, not specified as haemorrhage or infarction I65 Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction I66 Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction I67 Other cerebrovascular diseases I69 Sequelae of cerebrovascular disease I70-I77 (selected diseases of arteries, arterioles and capillaries) I70 Atherosclerosis I71 Aortic aneurysm and dissection I72 Other aneurysm and dissection I73 Other peripheral vascular diseases I74 Arterial embolism and thrombosis I77 Other disorders of arteries and arterioles |
| I80 (selected diseases of veins, lymphatic vessels and lymph nodes, not elsewhere classified) |
| I80 Phlebitis and thrombophlebitis |
| G45,G46 (selected episodic and paroxysmal disorders) |
| G45 Transient cerebral ischaemic attacks and related syndromes G46 Vascular syndromes of brain in cerebrovascular diseases |

Supplementary Table 4. Receipt of Aboriginal and Torres Strait Islander health assessment (item 715) in relation to sociodemographic characteristics, CVD and CVD risk factors, general health status, and GP use: proportions, odd ratios (OR) and 95% confidence intervals (CI).

| | Received at least one 715 | Adjusted for age and sex | Adjusted for all sociodemographic factors | | Adjusted for all sociodemographic factors and GP use | | Adjusted for all sociodemographic factors and self-rated health | | |
|--------------------------------------|---------------------------|--------------------------|---|------------------|--|------------------|---|------------------|---------|
| | % (n/total) | OR 95%CI | P-value | OR 95%CI | P-value | OR 95%CI | P-value | OR 95%CI | P-value |
| % of Total (n/total) | 32.3(566/1753) | | | | | | | | |
| <i>Sociodemographic factors</i> | | | | | | | | | |
| <i>Age group (years)</i> | | | | | | | | | |
| 45-49 | 33.1(134/405) | 1.00 | 0.01 | 1.00 | 0.01 | 1.00 | <.001 | 1.00 | 0.01 |
| 50-54 | 33.7(152/451) | 1.06 (0.79-1.41) | | 1.03 (0.76-1.40) | | 1.00 (0.72-1.39) | | 1.04 (0.77-1.43) | |
| 55-59 | 34.4(119/346) | 1.08 (0.80-1.47) | | 1.06 (0.77-1.47) | | 0.88 (0.62-1.25) | | 1.13 (0.81-1.58) | |
| 60-64 | 34.5(82/238) | 1.10 (0.78-1.54) | | 1.07 (0.75-1.54) | | 0.81 (0.55-1.20) | | 1.06 (0.73-1.53) | |
| 65-69 | 32.7(52/159) | 1.00 (0.68-1.48) | | 0.93 (0.62-1.42) | | 0.56 (0.36-0.87) | | 0.98 (0.65-1.50) | |
| ≥70 | 17.5(27/154) | 0.44 (0.28-0.70) | | 0.42 (0.26-0.69) | | 0.24 (0.14-0.40) | | 0.43 (0.26-0.72) | |
| <i>Sex</i> | | | | | | | | | |
| Male | 27.9(205/773) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | 0.03 | 1.00 | <.001 |
| Female | 35.4(361/1020) | 1.41 (1.15-1.74) | | 1.47 (1.18-1.84) | | 1.31 (1.03-1.66) | | 1.49 (1.19-1.88) | |
| <i>Marital Status</i> | | | | | | | | | |
| Single | 42.0(267/636) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | <.001 | 1.00 | <.001 |
| Partnered | 27.0(296/1098) | 0.52 (0.42-0.65) | | 0.56 (0.45-0.70) | | 0.58 (0.45-0.73) | | 0.62 (0.49-0.77) | |
| <i>Education</i> | | | | | | | | | |
| Degree or Higher | 28.5(71/249) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | 0.02 | 1.00 | 0.02 |
| School Certificate, trade or diploma | 28.7(279/973) | 1.05 (0.77-1.43) | | 1.00 (0.72-1.38) | | 0.94 (0.67-1.33) | | 0.95 (0.68-1.31) | |
| No School Certificate | 40.3(194/482) | 1.84 (1.31-2.58) | | 1.58 (1.11-2.24) | | 1.38 (0.95-2.00) | | 1.35 (0.94-1.94) | |
| <i>Region</i> | | | | | | | | | |
| Major cities | 24.7(166/672) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | <.001 | 1.00 | <.001 |
| Inner Regional | 33.3(223/669) | 1.51 (1.19-1.92) | | 1.56 (1.22-2.01) | | 1.82 (1.40-2.38) | | 1.57 (1.22-2.02) | |
| Outer Regional/Remote | 44.7(171/383) | 2.45 (1.87-3.21) | | 2.38 (1.80-3.16) | | 2.78 (2.05-3.76) | | 2.26 (1.70-3.01) | |

| | Received at least one 715 | Adjusted for age and sex | | Adjusted for all sociodemographic factors | | Adjusted for all sociodemographic factors and GP use | | Adjusted for all sociodemographic factors and self-rated health | | |
|-----------------------------------|---------------------------|--------------------------|------------------|---|------------------|--|------------------|---|------------------|-------|
| | Proportion (%) | OR 95%CI | P-value | OR 95%CI | P-value | OR 95%CI | P-value | OR 95%CI | P-value | |
| <i>CVD and CVD risk factors</i> | | | | | | | | | | |
| Prior IHD/cerebrovascular disease | | | | | | | | | | |
| | No | 30.8(433/1406) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | 0.39 | 1.00 | 0.02 |
| | Yes | 38.3(133/347) | 1.71 (1.32-2.23) | | 1.65 (1.25-2.18) | | 1.14 (0.85-1.53) | | 1.41 (1.06-1.87) | |
| Prior CVD-all condition | | | | | | | | | | |
| | No | 28.9(339/1173) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | 0.14 | 1.00 | 0.001 |
| | Yes | 39.1(227/580) | 1.87 (1.50-2.34) | | 1.80 (1.42-2.27) | | 1.21 (0.94-1.56) | | 1.51 (1.18-1.93) | |
| Smoking | | | | | | | | | | |
| | Never | 27.1(198/732) | 1.00 | <.001 | 1.00 | 0.02 | 1.00 | 0.09 | 1.00 | 0.09 |
| | Past | 34.0(216/636) | 1.43 (1.13-1.82) | | 1.40 (1.09-1.79) | | 1.28 (0.99-1.67) | | 1.33 (1.03-1.72) | |
| | Current | 39.4(148/376) | 1.72 (1.31-2.25) | | 1.31 (0.98-1.76) | | 1.34 (0.98-1.84) | | 1.18 (0.87-1.60) | |
| Alcohol drinks (per week) | | | | | | | | | | |
| | 1 to 14 | 39.0(168/666) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | 0.04 | 1.00 | <.001 |
| | 0 | 25.2(299/767) | 1.83 (1.46-2.31) | | 1.68 (1.31-2.14) | | 1.40 (1.08-1.81) | | 1.60 (1.25-2.05) | |
| | ≥15 | 24.5(59/241) | 1.02 (0.72-1.45) | | 0.91 (0.62-1.31) | | 1.09 (0.73-1.62) | | 0.88 (0.61-1.29) | |
| BMI (kg/m ²) | | | | | | | | | | |
| | <25 | 21.1(80/379) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | 0.002 | 1.00 | <.001 |
| | 25-29 | 31.5(185/588) | 1.81 (1.33-2.46) | | 1.80 (1.31-2.49) | | 1.68 (1.19-2.38) | | 1.94 (1.39-2.70) | |
| | ≥30 | 37.3(218/584) | 2.23 (1.65-3.02) | | 2.28 (1.66-3.12) | | 1.78 (1.27-2.49) | | 2.06 (1.49-2.84) | |
| Physical activity | | | | | | | | | | |
| | insufficient | 33.6(200/596) | 1.00 | 0.31 | 1.00 | 0.59 | 1.00 | 0.88 | 1.00 | 0.71 |
| | sufficient | 30.8(304/987) | 0.89 (0.72-1.11) | | 0.94 (0.74-1.18) | | 0.98 (0.77-1.26) | | 1.05 (0.82-1.33) | |
| Diabetes | | | | | | | | | | |
| | No | 29.4(437/1487) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | <.001 | 1.00 | <.001 |
| | Yes | 48.5(129/266) | 2.35 (1.79-3.08) | | 2.41 (1.81-3.21) | | 1.77 (1.30-2.40) | | 2.01 (1.49-2.70) | |
| High blood pressure | | | | | | | | | | |
| | no | 30.3(324/1069) | 1.00 | 0.01 | 1.00 | 0.03 | 1.00 | 0.68 | 1.00 | 0.58 |
| | yes | 35.4(242/684) | 1.33 (1.07-1.64) | | 1.28 (1.02-1.6) | | 1.05 (0.83-1.33) | | 1.07 (0.85-1.35) | |
| High blood cholesterol | | | | | | | | | | |
| | no | 31.8(467/1470) | 1.00 | 0.12 | 1.00 | 0.07 | 1.00 | 0.66 | 1.00 | 0.63 |
| | yes | 35.0(99/283) | 1.25 (0.95-1.64) | | 1.31 (0.98-1.76) | | 1.07 (0.78-1.47) | | 1.08 (0.80-1.46) | |

| | Received at least one 715 | Adjusted for age and sex | | Adjusted for all sociodemographic factors | | Adjusted for all sociodemographic factors and GP use | | Adjusted for all sociodemographic factors and self-rated health | |
|------------------------------|---------------------------|--------------------------|---------|---|---------|--|---------|---|---------|
| | Proportion (%) | OR 95%CI | P-value | OR 95%CI | P-value | OR 95%CI | P-value | OR 95%CI | P-value |
| <i>General Health Status</i> | | | | | | | | | |
| Self-rated health | | | | | | | | | |
| excellent | 18.7(29/155) | 1.00 | <.001 | 1.00 | <.001 | 1.00 | 0.003 | - | |
| Very good/excellent | 21.9(101/461) | 1.27 (0.8-2.02) | | 1.22 (0.76-1.97) | | 1.23(0.68-1.86) | | - | |
| good | 33.7(200/594) | 2.3 (1.48-3.57) | | 2.02 (1.28-3.18) | | 1.64(1.02-2.65) | | - | |
| fair | 45.1(158/350) | 3.73 (2.36-5.9) | | 3.28 (2.04-5.27) | | 2.13(1.29-3.62) | | - | |
| poor | 46.6(48/103) | 3.74 (2.13-6.56) | | 3.15 (1.76-5.65) | | 1.92(1.03-3.56) | | - | |
| missing | 33.3(30/90) | 2.26 (1.24-4.12) | | 1.76 (0.94-3.29) | | 1.36(0.70-2.63) | | - | |
| <i>GP Use</i> | | | | | | | | | |
| GP use categories | | | | | | | | | |
| 0-2 visits/yr | 4.5(7/155) | 1.00 | <.001 | 1.00 | <.001 | - | | 1.00 | <.001 |
| 3-10 visit/yr | 22.1(180/813) | 6.14 (2.82-13.35) | | 9.15 (3.66-22.85) | | - | | 8.77(3.51-21.97) | |
| >10 visits/yr | 48.3(379/785) | 23.78 (10.93-51.72) | | 33.62 (13.45-84.02) | | - | | 29.35(11.70-73.65) | |

Notes: n is total number of participants in sample that have received a health assessment. % is percentage of the total sample in that category that has received an Indigenous health assessment (MB item 715). P-value for Wald joint test of significance