Chronic disease management items in general practice: a population-based study of variation in claims by claimant characteristics

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ABSTRACT

Objective: To describe how Medical Benefits Schedule (MBS) chronic disease (CD) item claims vary by sociodemographic and health characteristics in people with heart disease, asthma or diabetes.

Design, setting and participants: A cross-sectional analysis of linked unit-level MBS and survey data from the first 102 934 participants enrolled in the 45 and Up Study, a large-scale cohort study in New South Wales, who completed the baseline survey between January 2006 and July 2008.

Main outcome measure: Claim for any general practitioner CD item within 18 months before enrolment, ascertained from MBS records.

Results: The proportion of individuals making claims for MBS CD items was 18.5% for asthma, 22.3% for heart disease, and 44.9% for diabetes. Associations between participant characteristics and a claim for a CD item showed similar patterns across the three diseases. For heart disease and asthma, people most likely to claim a CD item were women, older, of low income and education levels, with multiple chronic conditions, fair or poor self-rated health, obesity and low physical activity levels. The pattern of claims was slightly different for participants with diabetes in that there was no significant association with number of chronic conditions, smoking or physical activity.

Conclusions: Many individuals with self-reported CD do not claim CD items. People with diabetes and individuals with greatest need based on health, socioeconomic and lifestyle risk factors are the most likely to claim CD items.

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Health policies globally have emphasised better coordination and planning of health care as key components in improving outcomes for people with chronic illness.[1-3] Lack of integration and coordination continue to be identified as key barriers to good management.[4]

Most primary medical care in Australia is provided on a fee-for-service basis, paid by Medicare, the universal health insurance scheme, according to the Medical Benefits Schedule (MBS) of payments, sometimes with patient copayments. The introduction of the Enhanced Primary Care (EPC) package in 1999 added specific items to the MBS to fund planning and coordination of complex care.[2]

Barriers to the use of EPC items have been identified[5-7] and debated.[8,9] Yet although Medicare claims for chronic disease (CD) items have increased from 1.1 million claims, at a cost of $117 million, in the financial year 2005–06,[10] to over 3 million claims costing $311 million in 2009–10,[11] there has been limited published work evaluating their use or effectiveness.[12-15]

This study describes variation in claims for MBS CD items by sociodemographic and health characteristics in people with heart disease, diabetes or asthma.

METHODS

We used data from the 45 and Up Study, a large-scale cohort study involving men and women aged 45 years and over from New South Wales, Australia.[16]

Participants in the study were randomly sampled from the Medicare database, which provides virtually complete coverage of the Australian population. They joined the study by completing a baseline questionnaire.[17] All participants gave signed consent for follow-up and linkage to a range of health databases. We used data on the first 102 934 participants enrolled in the study, who completed the baseline questionnaire between January 2006 and July 2008. We selected participants with heart disease, diabetes or asthma, based on their response to the question "Has a doctor ever told you that you have …" followed by a list of 14 common chronic or complex conditions, including heart disease, diabetes, and asthma (listed separately from January 2007). Survey data for each participant were linked to MBS data, which included records of every medical service claimed by study participants since July 2004. These records contain MBS item numbers and the date on which each service was received. All participants were enrolled at least 18 months after June 2004, enabling an adequate time period to capture claims for a CD management service.

The outcome variable was the claim for any general practitioner CD item number (MBS Items 721–732) within 18 months before enrolment in the study, which was coded as a dichotomous variable (1 = yes; 0 = no). For patients with asthma, the outcome variable was also coded as 1 if the participant had claimed an asthma annual cycle of care service (MBS Items 2546–2559 and 2664–2677). For patients with diabetes, the outcome variable was also coded as 1 if the participant had claimed a diabetes annual cycle of care service (MBS Items 2517–2526 and 2620–2635). Sociodemographic and health-related exposure variables were based on self-reported data collected on the baseline survey. The main sociodemographic variables of interest were sex, age, area of residence, education and household income, and the health variables of interest were overall self-rated health, body mass index, smoking, physical activity, alcohol consumption and other chronic conditions from the list of those available (Box). Other variables (data not shown) included country of birth (Australia, New Zealand, elsewhere), marital status (married, de facto, not married), area-based socioeconomic status (SES) (quintiles of disadvantage based on Socio-Economic Indexes for Areas,[18] derived from postcode of residence), employment status (employed/retired/not employed) and Health Care Card (yes/no).

The strength of association between each sociodemographic or health variable and a

CD item claim for people reporting heart disease, asthma and diabetes was estimated using logistic regression, with the results presented as odds ratios adjusted for age and sex. Analyses were conducted using Stata, version 11.1 (StataCorp, College Station, Tex, USA). Two sensitivity analyses were done to examine potential biases. The first analysis involved excluding participants who were diagnosed within the 18 months before enrolment, to limit the analysis to those who were potentially eligible for a CD item for the full 18 months. The second analysis excluded participants who enrolled before January 2007, to limit the analysis to the period after introduction of the new CD items (in July 2005).

Ethics approval

The 45 and Up Study has approval from the University of New South Wales Human Research Ethics Committee. We obtained approval from the Australian National University Human Research Ethics Committee for our study.

RESULTS

After excluding those for whom Medicare data were not yet linked at the time of this study (1044, 1%), there were 12 545 people identified with heart disease, 7659 with asthma and 9113 with diabetes.

Among participants with heart disease, just over a fifth (22.3%) claimed at least one CD item in the 18 months before their enrolment in the study. Associations between patient characteristics and a claim for a CD item were significant for all the factors except smoking (Box). People most likely to claim a CD item were women; older (aged above 54 years); of lower SES (ie, for income and education); living in an inner regional area (least likely in remote areas); in relatively poor health (ie, multiple chronic conditions, fair or poor self-rated health, obese, low physical activity levels); and non-drinkers. Claimants were also less likely to have private health insurance or a DVA (Department of Veterans' Affairs) treatment card.

Among people with asthma, less than one in five (18.5%) claimed a CD item in the 18 months before their enrolment in the study, and only 1.5% claimed an asthma annual cycle of care service. Associations between patient characteristics and claims for a CD item showed a very similar pattern to that of people with heart disease (Box). However, among people with asthma (unlike among those with heart disease), past smokers and current smokers were more likely to have claimed a CD item than participants who had never smoked.

Among participants with diabetes, almost half (44.9%) claimed a CD item, with 23.1% claiming a diabetes annual cycle of care service. The pattern of service use with respect to sociodemographic and health characteristics was slightly different compared with the patterns found among people with heart disease and asthma. Participants with diabetes who lived in remote areas were more likely to claim a CD item than those living in major cities, and there was no association with number of chronic conditions, smoking or physical activity. People most likely to claim a CD item were women; aged 65–74 years; of lower SES (income and education); obese; without a DVA card or private insurance; and non-drinkers (Box).

In addition to the results shown in the Box, people with heart disease, asthma or diabetes were significantly less likely to claim a CD item if they lived in areas of least disadvantage, were currently employed, and did not have a Health Care Card. These findings, like those above, show a greater probability of a CD claim among people of low SES. Among people with heart disease, those born outside Australia or New Zealand were significantly more likely to claim a CD item than those born in Australia or New Zealand, while the reverse was true among those with diabetes. Among people with heart disease or asthma, those who were not married were significantly more likely to claim an item than those who were married or in a de facto relationship (data available on request).

We also separately examined a subset of the CD items — for Team Care Arrangements (TCAs) (Items 723 and 727) — and found that about half of those with any CD item had claimed a TCA item (data available on request). The pattern and strength of association between these TCA items and sociodemographic and health characteristics were very similar to those reported above for any CD item. The two sensitivity analyses showed results to be essentially unchanged after excluding participants who were diagnosed within the 18 months before enrolment, and after excluding only those who enrolled before January 2007.

DISCUSSION

Our study is the first to link unit-level survey and MBS data to examine claims for MBS CD items. We have shown that while the majority of people with heart disease, asthma or diabetes do not claim CD items, such items are most likely to be claimed by individuals of low income, low educational attainment, and poor health. Individuals with different lifestyle risk factors also have different claim patterns. High body mass index, and in some cases levels of physical activity and smoking, are also associated with an increased likelihood of a claim.

Strengths of our study include the large number of participants and the ability to link individual survey data to MBS records. The study examines CD item claims made between 7 and 9 years after the EPC package was launched, at least 2 years after changes were made in item descriptors, and following significant government and Division of General Practice promotion. Thus the study reflects the use of the items in a mature policy environment. A limitation is that no case note review of care was undertaken and some individuals may have had formal CD management plans created but never claimed against the item number. Another limitation is that all exposure data were self-reported. In particular, self-report of morbidity has well known methodological limitations, and the simple enumeration of chronic conditions from a restricted list, with no assessment of severity or time since diagnosis, is a crude measure of comorbidity.

There are no previous studies with which we can directly compare our results. Our finding that women and those with multiple chronic conditions are the most likely to claim CD items is similar to that of a recent clinically based study on TCAs;[15] and our finding that people of lower SES are more likely to claim CD items than those with higher SES is consistent with a study based on MBS data aggregated by SES of postcode of general practice.[12,19] This suggests that these items are claimed by those most in need. In contrast to aggregate-level studies,[19] but similar to the individual level study of TCAs,[15] we found that people (with asthma and heart disease at least) had a significantly decreased likelihood of claiming for a CD item in remote areas compared with major cities. As access to Medicare rebates for allied health services is a driver of some of the CD items,[13] the relative paucity of available allied health services in remote areas may go some way to explaining this finding.

There were significant differences in the patterns of MBS CD item use across the three CDs. This suggests that GPs discriminate, perhaps appropriately, between condi-

Number of people with heart disease, asthma or diabetes who claimed a chronic disease item in the 18 months before enrolment in the study (Jan 2006), by sociodemographic and health characteristics, and associated odds ratios adjusted for age and sex

	Heart disease				Asthma				Diabetes			
	Total	No. of claims	Odds ratio (95% CI)	*P*	Total	No. of claims	Odds ratio (95% CI)	*P*	Total	No. of claims	Odds ratio (95% CI)	*P*
Total	12 545	2800 (22.3%)	–	–	7659	1418 (18.5%)	–	–	9113	4088 (44.9%)	–	–
Sex												
Male	8243	1787 (21.7%)	1.00	–	3072	543 (17.7%)	1.00	–	5328	2281 (42.8%)	1.00	–
Female	4302	1013 (23.6%)	1.16 (1.06–1.26)	0.001	4587	875 (19.1%)	1.27 (1.12–1.43)	< 0.001	3785	1807 (47.7%)	1.27 (1.16–1.38)	< 0.001
Age (years)												
45–54	1022	131 (12.8%)	1.00	–	2232	235 (10.5%)	1.00	–	1271	445 (35.0%)	1.00	–
55–64	2842	546 (19.2%)	1.61 (1.33–1.95)	< 0.001	2500	384 (15.4%)	2.16 (1.65–2.81)	< 0.001	2630	1127 (42.9%)	1.98 (1.57–2.49)	< 0.001
65–74	3821	954 (25.0%)	2.33 (1.94–2.79)	< 0.001	1668	441 (26.4%)	4.07 (3.09–5.37)	< 0.001	2850	1414 (49.6%)	2.77 (2.20–3.48)	< 0.001
75–84	3905	967 (24.8%)	2.31 (1.93–2.78)	< 0.001	1067	313 (29.3%)	4.69 (3.51–6.26)	< 0.001	1969	950 (48.3%)	2.13 (1.67–2.70)	< 0.001
⩾ 85	955	202 (21.2%)	1.92 (1.53–2.39)	< 0.001	192	45 (23.4%)	3.35 (0.34–32.7)	0.298	393	152 (38.7%)	2.51 (0.15–40.6)	0.517
Area of residence*												
Major cities	5980	1313 (22.0%)	1.00	–	3305	638 (19.3%)	1.00	–	4229	1746 (41.3%)	1.00	–
Inner regional	4230	1076 (25.4%)	1.23 (1.12–1.35)	< 0.001	2726	526 (19.3%)	1.02 (0.89–1.17)	0.758	3107	1546 (49.8%)	1.38 (1.25–1.52)	< 0.001
More remote	2323	410 (17.7%)	0.78 (0.69–0.86)	< 0.001	1623	254 (15.7%)	0.79 (0.67–0.93)	0.006	1772	793 (44.8%)	1.13 (1.01–1.27)	0.033
Education												
No school qualification	1957	525 (26.8%)	1.00	–	985	250 (25.4%)	1.00	–	1675	841 (50.2%)	1.00	–
School Certificate/trade/ apprenticeship	5792	1364 (23.6%)	0.86 (0.77–0.97)	0.015	3002	613 (20.4%)	0.82 (0.69–0.98)	0.026	4247	1953 (46.0%)	0.88 (0.78–0.98)	0.024
Certificate/diploma/degree	4472	820 (18.3%)	0.66 (0.58–0.75)	< 0.001	3510	503 (14.3%)	0.64 (0.54–0.77)	< 0.001	2925	1163 (39.8%)	0.71 (0.63–0.81)	< 0.001
Income												
< $20 000	3826	1082 (28.3%)	1.00	–	1652	487 (29.5%)		–	2925	1436 (49.1%)		–
$20 000– < $40 000	2735	599 (21.9%)	0.72 (0.64–0.81)	< 0.001	1320	280 (21.2%)	0.71 (0.60–0.85)	< 0.001	1839	860 (46.8%)	0.94 (0.83–1.05)	0.265
$40 000– < $70 000	1662	272 (16.4%)	0.54 (0.47–0.63)	< 0.001	1306	157 (12.0%)	0.42 (0.34–0.51)	< 0.001	1165	451 (38.7%)	0.73 (0.63–0.84)	< 0.001
⩾ $70 000	1458	161 (11.0%)	0.37 (0.31–0.45)	< 0.001	1833	157 (8.6%)	0.34 (0.27–0.42)	< 0.001	1007	325 (32.3%)	0.59 (0.50–0.69)	< 0.001
Missing data	2864	686 (24.0%)	0.81 (0.73–0.91)	< 0.001	1548	337 (21.8%)	0.71 (0.60–0.83)	< 0.001	2177	1016 (46.7%)	0.91 (0.81–1.01)	0.087
Private insurance/DVA card†												
None	4875	1325 (27.2%)	1.00	–	2794	676 (24.2%)	1.00	–	4166	2056 (49.4%)	1.00	–
Hospital insurance	6801	1405 (20.7%)	0.71 (0.65–0.77)	< 0.001	4711	727 (15.4%)	0.62 (0.55–0.70)	< 0.001	4542	1966 (43.3%)	0.8 (0.74–0.88)	< 0.001
DVA card	693	39 (5.6%)	0.14 (0.10–0.19)	< 0.001	116	9 (7.8%)	0.17 (0.09–0.34)	< 0.001	344	46 (13.4%)	0.15 (0.11–0.20)	< 0.001
Hospital insurance and DVA card	176	31 (17.6%)	0.51 (0.34–0.75)	0.001	38	6 (15.8%)	0.4 (0.16–0.97)	0.043	61	20 (32.8%)	0.47 (0.27–0.81)	0.007
Self-rated health												
Excellent/very good	3580	628 (17.5%)	1.00	–	3106	335 (10.8%)	1.00	–	2309	970 (42.0%)	1.00	–
Good	4970	1092 (22.0%)	1.29 (1.16–1.44)	< 0.001	2729	542 (19.9%)	1.86 (1.60–2.16)	< 0.001	3631	1655 (45.6%)	1.16 (1.04–1.29)	0.007
Fair/poor	3647	979 (26.8%)	1.69 (1.51–1.89)	< 0.001	1644	485 (29.5%)	3.1 (2.64–3.63)	< 0.001	2893	1337 (46.2%)	1.2 (1.07–1.34)	0.002

Other chronic conditions[‡]													
None	2860	466 (16.3%)	1.00	–	1863	205 (11.0%)	1.00	–	1802	758 (42.1%)	1.00	–	
One	4587	939 (20.5%)	1.27 (1.12–1.44)	< 0.001	2897	446 (15.4%)	1.35 (1.13–1.62)	0.001	3480	1569 (45.1%)	1.07 (0.95–1.20)	0.256	
Two	3142	794 (25.3%)	1.63 (1.44–1.86)	< 0.001	1780	422 (23.7%)	2.05 (1.70–2.47)	< 0.001	2301	1076 (46.8%)	1.1 (0.97–1.25)	0.139	
Three or more	1956	601 (30.7%)	2.12 (1.85–2.44)	< 0.001	1119	345 (30.8%)	2.59 (2.12–3.17)	< 0.001	1530	685 (44.8%)	0.99 (0.86–1.14)	0.907	
Body mass index (kg/m^2)													
Underweight (< 18.5)	162	32 (19.8%)	0.95 (0.64–1.42)	0.809	94	25 (26.6%)	1.81 (1.11–2.94)	0.017	60	26 (43.3%)	1.03 (0.61–1.74)	0.92	
Healthy weight (18.5– < 25)	3920	795 (20.3%)	1.00	–	2327	377 (16.2%)	1.00	–	1759	730 (41.5%)	1.00	–	
Overweight (25–30)	4812	1045 (21.7%)	1.14 (1.02–126)	0.019	2597	434 (16.7%)	1.1 (0.95–1.29)	0.211	3115	1371 (44.0%)	1.11 (0.98–1.25)	0.088	
Obese (> 30)	2674	691 (25.8%)	1.52 (1.35–1.72)	< 0.001	1976	445 (22.5%)	1.66 (1.42–1.94)	< 0.001	3348	1570 (46.9%)	1.31 (1.16–1.58)	< 0.001	
Smoking													
Current smoker	667	137 (20.5%)	1.00	–	538	102 (19.0%)	1.00	–	658	258 (39.2%)	1.00	–	
Past smoker	6129	1399 (22.8%)	0.96 (0.79–1.18)	0.705	3001	631 (21.0%)	0.82 (0.65–1.05)	0.119	4147	1861 (44.9%)	1.14 (0.96–1.35)	0.134	
Never smoker	5698	1246 (21.9%)	0.89 (0.72–1.09)	0.25	4092	673 (16.5%)	0.64 (0.50–0.81)	< 0.001	4267	1943 (45.5%)	1.13 (0.95–1.34)	0.167	
Physical activity[§]													
Low	4110	976 (23.8%)	1.00	–	2331	477 (20.5%)	1.00	–	3456	1527 (44.2%)	1.00	–	
Moderate	4259	919 (21.6%)	0.88 (0.80–0.98)	0.018	2583	468 (18.1%)	0.87 (0.75–1.00)	0.053	2891	1341 (46.4%)	1.08 (0.97–1.19)	0.156	
High	3871	831 (21.5%)	0.89 (0.80–0.99)	0.039	2545	423 (16.6%)	0.82 (0.70–0.95)	0.007	2500	1095 (43.8%)	0.99 (0.89–1.10)	0.855	
Alcohol (drinks per week)													
None	4488	1148 (25.6%)	1.00	–	2706	631 (23.3%)	1.00	–	4185	2018 (48.2%)	1.00	–	
< 15	5936	1229 (20.7%)	0.76 (0.71–0.85)	< 0.001	3759	575 (15.3%)	0.65 (0.57–0.74)	< 0.001	3622	1549 (42.8%)	0.84 (0.76–0.92)	< 0.001	
⩾ 15	1837	357 (19.4%)	0.74 (0.64–0.85)	< 0.001	1055	180 (17.1%)	0.78 (0.64–0.95)	0.014	1024	403 (39.4%)	0.74 (0.64–0.86)	< 0.001	

* Area of residence based on ARIA+ (Accessibility/Remoteness Index of Australia Plus), derived from postcode of residence. † DVA card is Department of Veterans' Affairs treatment card, which is issued to veterans, their war widows and widowers and dependants, which enhances access to various health care services. ‡ Full list of other conditions and survey questions available at: http://www.45andup.org.au/studymaterialsandpublications.aspx § Physical activity is based on number of weekly sessions of at least 10 minutes duration, weighted for intensity, divided into tertiles.

tions when they consider making a CD management plan. For patients with diabetes, the proportion of patients who claimed at least one CD item was nearly double that for people with either heart disease or asthma. The reasons for this greater use may include the emphasis given to diabetes management in Division of General Practice education and practice support programs, and the influence of accepted best practice guidelines for management and monitoring in diabetes.[20] It may also reflect the fact that the original EPC items were designed around multidisciplinary practice, and diabetes management best practice explicitly involves other specified professionals.[20,21] The relatively low proportion of participants with asthma who claimed an item may reflect the fact that asthma is not necessarily a current problem for many participants.

Many individuals with chronic conditions do not claim CD management items, but those who appear to have greatest need, based on health, socioeconomic and lifestyle risk factors, are the most likely to claim them. Further, CD items are claimed most for individuals with diabetes, where the evidence to support structured and multidisciplinary care is strongest. This suggests that Australian GPs are more likely to adopt policy when it is supported by good evidence. Further studies assessing whether MBS CD items are associated with improvements in health outcomes are needed.

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COMPETING INTERESTS

None relevant to this article declared (ICMJE disclosure forms completed).

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