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Evidence-based prescribing of drugs for secondary prevention of acute coronary syndrome in Aboriginal and non-Aboriginal patients admitted to Western Australian hospitals

Abstract

Objectives: To assess the level of evidence-based drugs prescribing for acute coronary syndrome (ACS) at discharge from Western Australian (WA) hospitals and determine predictors of such prescribing in Aboriginal and non-Aboriginal patients.

Methods: All Aboriginal (2002-04) and a random sample of non-Aboriginal (2003) hospital admissions with a principal diagnosis of ACS were extracted from the WA Hospital Morbidity Data Collection (HMDC) of WA Data Linkage System. Clinical information, history of co-morbidities and drugs were collected from medical notes by trained data collectors. Evidence-based prescribing (EBP) was defined as prescribing of aspirin, statin, and beta-blocker or angiotensin converting enzyme (ACE) inhibitor/Angiotensin II antagonist (ARB).

Results: Records for 1717 ACS patients discharged alive from hospitals were reviewed. The majority of patients (71%) had EBP and there was no significant difference between Aboriginal and non-Aboriginal patients (70% vs 71%, $p=0.36$). Conversely, a significantly higher proportion of Aboriginal patients had none of the drugs prescribed compared to non-Aboriginal patients (11% vs 7%, $p<0.01$). EBP for ACS was independently associated with male sex (OR 1.63, 95% CI 1.26 -2.11), previous admission for ACS (OR 1.83, 95% CI 1.39-2.42) and diabetes (OR 1.36, 95% CI 1.04-1.79). However, ACS patients living in regional and remote areas, attending district or private hospitals, or with a history of COPD were significantly less likely to have ACS drugs prescribed at discharge.

Conclusions: Opportunity exists to improve prescribing of recommended drugs for ACS patients at discharge from WA hospitals in both Aboriginal and non-Aboriginal patients. Attention regarding pharmaceutical management post-ACS is particularly required for patients from rural and remote areas, and those attending district and private hospitals.

Key words: Acute coronary syndrome, Evidence-based prescribing, Secondary preventive drugs, Aboriginal, Hospital, discharge prescription, Western Australia

Evidence-based prescribing of drugs for secondary prevention of acute coronary syndrome in Aboriginal and non-Aboriginal patients admitted to Western Australian hospitals

Background

Despite a reduction in the incidence of ischaemic heart disease (IHD) since the 1960s, acute coronary syndrome (ACS), the acute manifestation of IHD, contributes substantially to morbidity and mortality in Australia and internationally ¹⁻³. National statistics show that 75,000 Australians were hospitalised for ACS in 2010 alone, with death rates expected to increase by over 40% from repeat heart attack by 2020 ². Additionally, there are considerable disparities between Aboriginal and non-Aboriginal Australians in the burden of IHD and other chronic conditions ^{4,5}. A reduction in these disparities can contribute significantly to the reduction in the gap in life expectancy between these populations.

Evidence suggests that adoption of a healthy life style and behavioural changes (diet, cessation of smoking and exercise), routine monitoring and addressing of health risk indicators (high blood pressure and cholesterol levels), dedicated cardiac rehabilitation programs, and the use of appropriate pharmacotherapy can significantly reduce mortality as well as morbidity following an ACS episode ⁶⁻⁹. Evidence-based consensus guidelines developed by the National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand for the management of ACS recommend prescription of four types of secondary prevention drugs: aspirin, statin, beta-blocker, and angiotensin-converting enzyme (ACE) inhibitor/Angiotensin II antagonist (ARB) ^{10,11}.

Despite the guideline recommendations, many studies have reported an underutilization of secondary preventive drugs in ACS patients ¹²⁻¹⁶. There may also be differences in prescribing patterns of these drugs between teaching and non-teaching hospitals. For

example, data on the use of antiplatelet agents (e.g. aspirin), statins and beta-blockers from 11,543 patients in 14 countries indicated a significantly lower use in non-teaching hospitals compared to teaching hospitals ¹⁵. A recent comparison study on ACS in the Northern Territory, Australia, documented significantly lower discharge prescription of statins among Aboriginal patients than non-Aboriginals ⁴

Although secondary preventive drug therapy has incrementally reduced the likelihood of ACS readmission and death ^{17 18}, questions have been raised about the suitability of such combinations of drugs in subgroups of ACS patients with chronic comorbidities ¹⁹. Comorbid conditions such as severe chronic obstructive pulmonary disease (COPD), and severe heart or kidney failure may be contraindications to the use of some of these secondary prevention drugs. Given the high burden of ACS in the general Australian population, the significant contribution of ACS to the gap in health between Aboriginal and non-Aboriginal Australians, and the potential of drug therapy to reduce recurrence and mortality, this study aimed to evaluate evidence based prescribing (EBP) of drugs at discharge from WA hospitals and to determine the predictors of evidence-based prescribing (EBP) for all ACS patients, as well as for Aboriginal and non-Aboriginal patients separately.

Methods

All Aboriginal patients admitted to Western Australian (WA) hospitals in 2002-04, and a random sample of non-Aboriginal admissions in 2003, with a principal discharge diagnosis reflecting Myocardial Infarction and Unstable Angina (ICD-10 AM I21, I20.0) cardiac disease and chest pain (ICD-10 AM I10-I52, R07) were extracted from

the Hospital Morbidity Data Collection (HMDC), one of the core datasets of the WA Data Linkage System²⁰. ~~These routinely collected administrative data were supplemented by clinical information pertaining to symptoms, medical history, drugs prescribed (inpatient and discharge) and procedures collected from medical notes in hospitals throughout WA and entered into a database.~~

The linked HMDC records allowed a series of continuous admissions for each patient (including transfers but without discharge home) to be grouped into episodes of care. The current person-based analysis pertains to the last admission of the first episode in the study period in which ACS was a principal discharge diagnosis, for which we collected data and where the patient was discharged alive. These routinely collected administrative data were supplemented by clinical information pertaining to symptoms, medical history, drugs prescribed (inpatient and discharge) and procedures collected from medical notes in hospitals throughout WA and entered into a database.

Trained data collectors extracted information about the prescription of secondary prevention drugs for ACS during the admission and at discharge from medical notes, discharge summaries and drug charts. Demographic data including age, sex, ethnicity (Aboriginal: ever recorded as Aboriginal in HMDC or death record), residence (based on the Statistical Local Area in which address fell) and health insurance status were extracted from the hospital administrative records. Information on co-morbidities and risk factors such as smoking and hypertension -~~whereas~~ extracted from the medical history recorded in the written notes. Additionally, a 5-year history of admission for a range of co-morbidities was ascertained from the linked HMDC. Thus both physician-recorded and administrative data were used to identify history of specific conditions, namely chronic kidney disease (CKD), heart failure (HF), chronic obstructive

pulmonary diseases (COPD) including Asthma, Gastrointestinal (GI) bleeding -and diabetes. Additionally, the Charlson comorbidity Index was calculated from the HMDC using a 5-year lookback period to provide a summary measure of general comorbidity

²¹.

The primary outcome was prescription of at least 3 of the 4 evidence-based drugs for ACS at discharge. Evidence-based prescribing (EBP) was defined as prescription of aspirin plus a statin, as well as either a beta-blocker or ACE inhibitor/ARB. Where information on discharge drugs was missing but there was a record of having received ACS drugs during their hospital stay, it was assumed that they were prescribed at discharge.

Ethics

Ethical approval was obtained from the WA Human Research Ethics Committee, the UWA Human Research Ethics Committee and the WA Aboriginal Human Ethics Committee.

Data analysis

Baseline characteristics were summarised by the use of frequencies and percentages for categorical variables and mean and standard deviations (SD) for continuous variables. Differences between Aboriginal and non-Aboriginal groups were tested using t-test and chi-squared tests. Binary logistic regression analysis was carried out to identify the predictors of EBP including socio-demographic variables (age, sex, rurality of residence, Aboriginal status, health insurance status), type of hospital (Metro Teaching,

Metro Non-Teaching, Rural regional hospital, Rural District/small hospital and private hospital) from which the patient was discharged, and a history of particular co-morbid conditions (history of HF, CKD, COPD and/or Asthma, GI bleeding and diabetes) and Charlson co-morbidity index (calculated excluding ACS, HF, COPD including Asthma, CKD and Diabetes). All platelet aggregation inhibitor (clopidogrel, Dipyridamol and Aspirin) drugs were collated into one group and referred to as 'Aspirin' in this analysis.

Of the 141 patients (54 Aboriginal, 87 non-Aboriginal) who had no ACS drugs recorded at discharge, 128 patients (49 Aboriginal, 79 non-Aboriginal) had no drugs of any kind recorded in their medical record. Only patients for whom any drug prescriptions could be found in their hospital medical notes (n=1589, 93%) were used in the regression analysis, thus excluding any cases where drugs were not recorded at all. All predictor variables were assessed individually (unadjusted odds ratios) and collectively in a multivariate model (adjusted odds ratios). To investigate differences in determinants of EBP in Aboriginal and non-Aboriginal patients, we fitted the multivariate model separately for each group and also obtained the p-value for the interaction between the predictor and Aboriginal status in the combined model. All analyses were performed using SAS version 9.2 for Windows.

Results

There was a total of 1717 patients included in the cohort and 499 (29%) were Aboriginal (Table 1). Compared to non-Aboriginal patients (n=1218), Aboriginal patients were much younger (mean age 53 vs 65 years), more likely to be female (43% vs 30%) and living in a very remote area (27% vs 4.5%). A greater proportion of non-

Aboriginal than Aboriginal patients were admitted for unstable angina (58% vs 48%), and were admitted to private hospitals (25% vs 6%). Aboriginal patients were twice as likely to be smokers and had two to three times higher prevalence of COPD, diabetes and CKD (Table1).

The overall characteristics of the groups that received EBP and the groups that had no ACS drugs recorded are also shown in Table 1. Compared to the total groups, for both Aboriginal and non-Aboriginal patients, the EBP group had a higher proportion of patients who were discharged from metropolitan teaching hospitals, current smokers, patients with history of ACS, and hypertension, and a lower proportion of patients with heart failure and COPD. Compared with the total group, for both Aboriginal and non-Aboriginal patients, those with no ACS drugs recorded were less likely to be discharged from a metropolitan teaching hospital (more likely to be a private hospital), have a history of hypertension and ACS, but were more likely to have smoking status not recorded.

The distribution of the possible combinations of ACS drugs and the overall prevalence for each drug and EBP are shown in Table 2. Prescribing of secondary preventive drugs for ACS varied, with aspirin being the most common with about 90% of non-Aboriginal and 87% of Aboriginal patients receiving aspirin at discharge. Similar proportions of Aboriginal and non-Aboriginal patients had prescriptions for ACE inhibitor/ARB, while a significantly lower proportion of Aboriginal patients received beta-blockers.

Approximately three quarters of both Aboriginal and non-Aboriginal patients were prescribed statins at discharge.

Just over half (51%) of the patients received all four ACS drugs at discharge whilst 71% had at least three of the four drugs prescribed, with similar proportions in Aboriginal and non-Aboriginal patients (Table 2). However, a significantly higher proportion of Aboriginal patients received none of the four drugs during their hospital stay or at discharge compared with non-Aboriginal patients (11% vs 7%; $p<0.01$). Non-Aboriginal patients were more likely than Aboriginal patients to have been prescribed a combination of aspirin, beta-blocker and statin at discharge (Table 2).

Table 3 shows the unadjusted and adjusted odds ratios for each predictor of EBP in the combined groups of patients and Table 4 shows the adjusted odds ratios separately for Aboriginal and non-Aboriginal patients. After adjusting for socio-demographic factors, hospital type and clinical comorbidities, the odds of EBP at discharge was 63% higher in men than women (Table 3). Compared with metropolitan residents, patients living in regional and remote areas in WA were less likely to have received EBP drugs. Patients admitted to district and private hospitals were also less likely to have been prescribed EBP drugs compared with patients attending metropolitan teaching hospitals. Health insurance status did not have any impact on EBP. The odds ratio (OR) for a clinical diagnosis of MI relative to unstable angina was elevated but not significantly associated with EBP (OR 1.28; CI=0.97-1.69), whereas a history of ACS was the strongest predictor of EBP at discharge, with an OR of 1.83 (CI= 1.39-2.42). While diabetic patients were more likely to have received EBP, patients with COPD were less likely to have those drugs prescribed. However, overall comorbidity, as reflected in the Charlson score, was not statistically associated with EBP at discharge.

The only predictor that had a significantly different effect in Aboriginal and non-Aboriginal patients was sex (Table 4). Being male or female had no relationship with EBP among Aboriginal patients, but non-Aboriginal males were 90% more likely to receive EBP than females. In the analysis stratified by Aboriginality, the adjusted ORs for hospital type, regional residence, ACS diagnosis type, and histories of HF, diabetes and COPD were similar in the two groups. The magnitude of the ORs in the two groups appeared different for very remote residence (significant in non-Aboriginal only), private insurance and CKD but these ORs were not statistically significant. The odds of EBP was almost twice as high in patients with a history of ACS than without, for both Aboriginal and non-Aboriginal patients.

Discussion

To our knowledge, this is the first study that included ACS patients from state-wide hospitals in WA to provide insights on evidence-based prescribing of secondary preventive drugs at discharge, and comparing Aboriginal and non-Aboriginal Australians. Approximately three quarters (71%) of the ACS patients had EBP at discharge. Overall, the prescribing of these drugs was independently positively associated with male gender and history of ACS or diabetes, and inversely associated with residence in rural and remote areas, type and location of hospital and history of COPD. After adjustment for demographic and clinical characteristics, Aboriginal patients were equally as likely as non-Aboriginal patients to have evidence-based drugs prescribed at discharge.

In this study, half (51%) of the patients with ACS were prescribed a combination of aspirin, statin, beta-blocker and ACE inhibitor/ARB (all four guideline-recommended drugs) at discharge from WA hospitals. This finding is consistent with studies conducted in Australia and elsewhere^{12 22-26}. Though Wai et al. reported a slightly higher percentage (57%) of discharge prescriptions for all four ACS drug groups than we have, results from a Canadian ACS registry and a Korean registry have shown similar proportions in ACS patients with 51% receiving a discharge prescription for the combination of all four ACS preventive drug groups^{25 26}. More recent data from six Middle Eastern countries and from China and Germany show that 49%, 48% and 46% of ACS patients, respectively, were prescribed the four drug groups on discharge²²⁻²⁴.

Although secondary preventive drug therapy has incrementally reduced the likelihood of ACS readmission and death^{17 18}, a significantly higher proportion of Aboriginal patients received none of the four drugs during their hospital stay or at discharge compared with non-Aboriginal patients (11% vs 7%; $p < 0.01$) in this study. This finding has implications for 'closing the gap' between Aboriginal and non-Aboriginal population in Australia. Ensuring availability and continuation of ACS preventive drugs would contribute in increasing life expectancy and avoid deaths in Aboriginal patients.

While the rates of EBP in this study are comparable with reports from other cohorts, this study is more complete in its analysis of the predictors of EBP. The prescribing of any drug depends on contraindications, side effects and the patient's comorbid conditions. Although beta blockers may still be prescribed in patients with severe heart failure, COPD and asthma, they should be used with caution and close monitoring in patients with these comorbidities²⁷. This may explain the slightly lower proportion of beta-blocker prescribing in Aboriginal patients in our study because they had a higher

prevalence of heart failure and COPD than non-Aboriginal patients. Given the evidence that cardioselective beta blockers should not be withheld from patients with mild to moderate reactive airways disease or COPD ²⁸, our results suggest possible over-caution in this patient population.

Overall, comorbidities were independently associated with EBP in our study. Patients with a history of COPD were significantly less likely to receive these drugs than patients without COPD. In contrast, patients with diabetes and a history of ACS were more likely to have EBP at discharge than patients who were not diabetic or had no history of ACS. The reasons behind these variations are not straightforward. Reduced evidence-based therapies among patients with increased comorbidities have been reported in other studies ²⁹⁻³¹. Prescribing of discharge medications may also depend on the type of hospital and level of service providers involved in the management of ACS patients ^{15 22 32}.

Indeed, in our study we found that patients discharged from district hospitals were significantly less likely to have EBP at discharge than patients discharged from metro teaching hospitals. The association of EBP at discharge and type of hospital in our study may be partly attributed to the likelihood of cardiologists being involved in the care of patients with ACS at metro tertiary hospitals, but not at non-metro hospitals. There is evidence of a practice gap between cardiologists and general physicians found for the management of heart diseases in other studies ^{33 34}. Further, the significantly lower rate of EBP in district hospitals may be associated with the lack of trained health service providers, lack of awareness about national guidelines for ACS management and unavailability of long-term patient management plans at discharge. Compared to metro-teaching hospitals, patients in private hospitals were also less likely to have EBP in our

study, and this could be partly artefactual. The low level of EBP in private hospitals was also found in an Australian snapshot audit of ACS admissions in 2013³², reflecting an ongoing systemic issue in the private sector as well. Maintenance of hospital notes is another area that might have partly contributed to the lower rate of EBP not only in the district hospitals but also in private hospitals in this study.

The significantly lower rate of EBP among patients from regional and remote areas could be due to insufficient numbers of providers trained in the EBP for ACS management. In a multicentre study in Australia³⁵, Interventions in these areas, including training of over 3000 hospital staff, resulted in a marked improvement in discharge prescribing of evidence-based ACS drugs, increasing from 57% pre-intervention to 69% post intervention. Further, the continuation of evidence based care relies on timely and legible communication of the discharge medication to primary care.

A limitation of our study is that we did not collect specific information on possible contraindications to the evidence-based drugs for each patient, so we could not assess definitively whether the lack of EBP was due to an absolute contraindication to the drug. However, from our linked data on hospital admissions we were able to identify comorbidities such as COPD that commonly lead to cautious prescribing of specific drugs.

In contrast, our study had a number of strengths. First, the state-wide collection of data from all hospitals in WA minimised selection bias in the study sample. Secondly, our data were reliable, having been extracted by trained data collectors (mostly nurses) from medical notes and drug charts in clinically confirmed cases of ACS. To ensure that there was no bias due to missing drug data, we included only patients who had at least one

drug of any type recorded in their medication charts. In addition, if there were no data on discharge drugs prescribed, then we used inpatient drug data and assumed that evidence-based drugs used during the inpatient stay would have been continued at discharge. Overall, 4% to 8% of patients prescribed one of the 4 types of ACS preventive drugs during the hospital admission did not have them recorded in their discharge prescription. While the reasons for this were not elicited in the study, poor record keeping in some hospitals, particularly in rural and remote areas, could have accounted for some of this difference. -Finally and most importantly, the use of linked data allowed tracking the full treatment history and journey of patients across all admissions, including transfers to other hospitals, and thus capturing the complete episode of ACS care.

Conclusions

The level of adherence to guidelines when prescribing drugs at discharge in our historical cohort of ACS patients in WA was found to be similar to results reported from more recent Australian cohorts. Moreover, no disparity in regards to the EBP of ACS preventive drugs has been observed between Aboriginal and non-Aboriginal patients'. However, as the overall level of EBP is only 70%, Therefore, there remains an opportunity to improve the level of prescribing of the guideline-recommended drugs at discharge from WA hospitals. Attention is particularly required for patients from rural and remote areas regarding pharmaceutical management post-ACS. The poor adherence to guidelines in district and private hospitals also needs further investigation, but may be an artefact due to suboptimal recording of treatment in the hospital notes.

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Table 1: Socio-demographic characteristics and comorbidities for Aboriginal and non-Aboriginal patients in the cohort.

	At least 3 of the 4 drugs [†] (n=348)		Aboriginal No ACS drugs (n= 54)		Total (n=499)		At least 3 of the 4 drugs [†] (n=876)		Non Aboriginal No ACS drugs (n=87)		Total (n=1218)		p value [‡]	
Age														<0.0005
Mean age (SD) years	52.4 (11.3)		56.5 (13.0)		53.0 (11.9)		64.2 (10.5)		63.9 (10.6)		64.8 (10.5)			
Sex														<0.0001
Male	206	59.2	28	51.9	284	56.9	642	73.3	62	71.3	854	70.1		
Female	142	40.8	26	48.1	215	43.1	234	26.7	25	28.7	364	29.9		
Residence														<0.0001
Metro	179	51.4	25	46.3	243	48.7	615	70.2	13	14.9	765	62.8		
Regional	76	21.8	9	16.7	119	23.8	232	26.5	63	72.4	398	32.7		
Very remote	93	26.7	20	37.0	137	27.5	29	3.3	11	12.6	55	4.5		
Clinical diagnosis														<0.0001
MI	188	54.0	22	40.7	261	52.3	366	41.8	41	47.1	508	41.7		
Unstable angina	160	46.0	32	59.3	238	47.7	510	58.2	46	52.9	710	58.3		
Attended health care facilities														<0.0001
Metro Teaching	249	71.6	17	31.5	322	64.5	542	61.9	21	24.1	677	55.6		
Metro Non-Teaching	4	1.1	4	7.4	11	2.2	0	0.0	0	0.0	0	0.0		
Rural Regional hospital	52	14.9	4	7.4	77	15.4	84	9.6	24	27.6	147	12.1		
Rural District/small hospital	32	9.2	15	27.8	61	12.2	48	5.5	5	5.7	86	7.1		
Private	11	3.2	14	25.9	28	5.6	202	23.1	37	42.5	308	25.3		
Life style														<0.0001
Current smokers	176	50.6	4	7.4	222	44.5	194	22.1	3	3.4	241	19.8		
Ex-smoker	100	28.7	2	3.7	127	25.5	429	49.0	5	5.7	544	44.7		
Never smoked	28	8.0	2	3.7	40	8.0	184	21.0	0	0.0	250	20.5		
Unknown	44	12.6	46	85.2	110	22.0	69	7.9	79	90.8	183	15.0		
History of comorbidities														
Hypertension	219	62.9	4	7.4	274	54.9	529	60.4	2	2.3	679	55.7	0.003	
Heart failure	52	14.9	12	22.2	85	17.0	109	12.4	8	9.2	162	13.3	0.045	
GI bleeding	11	3.2	3	5.6	20	4.0	35	4.0	3	3.4	49	4.0	0.989	

Chronic Kidney Disease (CKD)	20	5.7	5	9.3	33	6.6	22	2.5	1	1.1	28	2.3	<0.0001
Diabetes	188	54.0	29	53.7	266	53.3	273	31.2	23	26.4	368	30.2	<0.0001
COPD <u>and/or Asthma</u>	79	22.7	20	37.0	139	27.9	122	13.9	8	9.2	191	15.7	<0.0001
ACS	180	51.7	20	37.0	238	47.7	480	54.8	31	35.6	634	52.1	0.101

†= Evidence-based prescribing (aspirin + statin+ beta blocker/ACE inhibitor/ARB).

‡= between all Aboriginal vs all non-Aboriginal

ACS = acute coronary syndrome

Table 2: Distribution of ACS drug combinations prescribed at discharge and overall prescription rates of each drug and EBP

ACS drugs	<u>Aboriginal</u>		<u>Non-Aboriginal</u>		<u>Total</u>		<i>p</i> value [†]
	n	%	n	%	n	%	
<i>None of the four drugs</i>	54	10.8	87	7.1	141	8.2	0.01
<i>One drug only</i>							
Aspirin	15	3.0	37	3.0	52	3.0	0.97
Beta blocker	2	0.4	5	0.4	7	0.4	0.99 [‡]
ACE inhibitor/ARB	3	0.6	3	0.2	6	0.3	0.37 [‡]
Statin	0	0.0	3	0.2	3	0.2	0.57 [‡]
<i>Two drugs</i>							
Aspirin+ Beta blocker	18	3.6	55	4.5	73	4.3	0.40
Aspirin+ ACE inhibitor/ARB	11	2.2	34	2.8	45	2.6	0.49
Aspirin+ Statin	14	2.8	30	2.5	44	2.6	0.68
Beta blocker+ ACE inhibitor/ARB	3	0.6	3	0.2	6	0.3	0.37 [‡]
Beta blocker + Statin	1	0.2	3	0.2	4	0.2	0.99 [‡]
ACE inhibitor/ARB+ Statin	4	0.8	6	0.5	10	0.6	0.49 [‡]
<i>Three drugs</i>							
Aspirin+ Beta blocker+ ACE inhibitor/ARB	26	5.2	66	5.4	92	5.4	0.86
Aspirin+ Beta blocker+ Statin	39	7.8	134	11.0	173	10.1	0.05
Aspirin+ ACE inhibitor/ARB + Statin	58	11.6	123	10.1	181	10.5	0.35
Beta blocker+ ACE inhibitor/ARB + Statin	0	0.0	10	0.8	10	0.6	0.07 [‡]
<i>Four drugs</i>							
Aspirin + Beta blocker + ACE Inhibitor/ARB + Statin	251	50.3	619	50.8	870	50.7	0.84
<i>Evidence-based prescribing (EBP)</i>							
Aspirin + Statin + (Beta blocker or ACE inhibitor/ARB)	348	69.7	876	71.9	1224	71.3	0.36
<i>Overall ACS drugs</i>							
Aspirin	432	86.6	1098	90.1	1530	89.1	0.04
Beta blocker	340	68.1	895	73.5	1235	71.9	0.03
ACE inhibitor/ARB	356	71.3	864	70.9	1220	71.1	0.87
Statin	367	73.5	928	76.2	1295	75.4	0.25

† =Aboriginal vs Non-Aboriginal

‡= Fishers exact test

Table 3: Predictors of evidence-based prescribing at discharge in WA hospitals

	Crude Odds Ratio	Adjusted Odds Ratio	95% CI for adjusted OR
Age (per year)	0.98	0.98	(0.97-1.00)
Sex (Male vs Female)	1.68	1.63	(1.26-2.11)
Regional vs Metro residence	0.49	0.55	(0.39-0.77)
Very remote vs Metro residence	0.63	0.64	(0.39-1.04)
Aboriginal vs non-Aboriginal	1.02	0.94	(0.67-1.33)
Metro non-teaching vs Metro teaching hospital	0.29	0.39	(0.08-1.94)
Regional vs Metro teaching hospital	0.46	0.71	(0.46-1.08)
District vs Metro teaching hospital	0.34	0.51	(0.32-0.82)
Private vs Metro teaching hospital	0.62	0.58	(0.39-0.85)
No private Insurance vs Private insurance	0.90	0.88	(0.61-1.26)
Clinical diagnosis of MI vs Unstable angina	1.07	1.28	(0.97-1.69)
History of ACS (yes vs no)	1.40	1.83	(1.39-2.42)
History of Heart failure (yes vs no)	0.66	0.70	(0.48-1.01)
History of CKD (yes vs no)	0.96	0.99	(0.5-1.97)
History of Diabetes (yes vs no)	1.16	1.36	(1.04-1.79)
History of COPD (yes vs no)	0.48	0.53	(0.4-0.72)
Charlson scores (per unit score)	0.93	0.92	(0.84-1.00)

OR = Odds ratio, 95% CI = 95% confidence interval, MI = myocardial infarction, ACS = acute coronary syndrome, CKD = chronic kidney disease, COPD = chronic obstructive pulmonary disease.

Table 4: Predictors of evidence-based prescribing at discharge in Aboriginal and non-Aboriginal patients separately

	<u>Aboriginal</u>		<u>Non-Aboriginal</u>		Interactions (<i>p</i> values)
	n= 450 Adjusted OR	Events= 348 95% CI	n = 1139 Adjusted OR	Events= 876 95% CI	
Age (per year)	1.00	(0.97-1.02)	0.98	(0.96-0.99)	0.10
Sex (Male vs Female)	1.03	(0.63-1.68)	1.90	(1.4-2.58)	0.04
Regional vs Metro residence	0.60	(0.31-1.14)	0.53	(0.35-0.80)	0.37
Very remote vs Metro residence	0.90	(0.45-1.79)	0.43	(0.2-0.89)	
Metro non-teaching vs Metro teaching hospital	0.39	(0.08-2.05)			0.77
Regional vs Metro teaching hospital	0.70	(0.35-1.43)	0.70	(0.41-1.19)	
District vs Metro teaching hospital	0.50	(0.23-1.10)	0.51	(0.28-0.93)	
Private vs Metro teaching hospital	0.69	(0.19-2.47)	0.56	(0.37-0.85)	
No private Insurance vs Private insurance	1.00	(0.34-2.97)	0.87	(0.59-1.29)	0.86
Clinical diagnosis of MI vs Unstable angina	1.32	(0.77-2.26)	1.32	(0.95-1.83)	0.54
History of ACS (yes vs no)	2.17	(1.29-3.64)	1.76	(1.26-2.45)	0.33
History of Heart failure (yes vs no)	0.67	(0.35-1.30)	0.71	(0.45-1.13)	0.83
History of CKD (yes vs no)	0.81	(0.31-2.14)	1.06	(0.38-2.97)	0.86
History of Diabetes (yes vs no)	1.38	(0.84-2.26)	1.34	(0.96-1.87)	0.60
History of COPD (yes vs no)	0.45	(0.26-0.75)	0.55	(0.38-0.81)	0.79
Charlson scores (per unit)	0.90	(0.74-1.10)	0.92	(0.83-1.01)	0.89

OR=Odds ratio, 95% CI = 95% confidence interval, MI = myocardial infarction, ACS = acute coronary syndrome, CKD = chronic kidney disease, COPD = chronic obstructive pulmonary disease.