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Prescription of secondary prevention medications, lifestyle advice, and referral to rehabilitation among acute coronary syndrome inpatients: results from a large prospective audit in Australia and New Zealand

Heart, 2014; 100(16):1281-1288

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Originally published at:

<http://doi.org/10.1136/heartjnl-2013-305296>

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Figure 1 Adjusted ORs and 95% CIs* for likelihood of receiving at least four secondary prevention medicines on discharge, referral to cardiac rehabilitation, and inpatient lifestyle advice (OR >1 means likely). *Using multilevel multivariable logistic regression. **Based on any four of the following—aspirin, other antiplatelet, statin or lipid lowering agent, β -blocker or angiotensin II receptor blocker/ACE inhibitor except in the case of patients with unstable angina and GRACE risk score <130 where at least prescription of aspirin and lipid lowering was required. CABG, coronary artery bypass graft surgery; GRACE, Global Registry of Acute Coronary Events; MI, myocardial infarction; NSTEMI, non-ST segment elevation myocardial infarction; PAD, peripheral arterial disease; PCI, percutaneous coronary intervention; STEMI, ST segment elevation myocardial infarction; TIA, transient ischaemic attack; UAP, unstable angina pectoris.

review and consideration of preventive care for patients with ACS bi-nationally. Optimising patient outcomes after ACS through standardisation of care has now emerged as a major near-term goal in the health agenda of Australia and New Zealand.²² This present study highlights the importance of inclusion of preventive care aspects within that agenda.

Our results are similar to other international studies. Two large prospective surveys of ACS patients across numerous

European countries have shown similar rates of pharmacotherapy to the Australian and New Zealand SNAPSHOT Registry.¹⁰ In the more recent European audit (n=6385) compared to the bi-national SNAPSHOT, rates of aspirin were similar for STEMI (97% vs 96%) and NSTEMI (94% vs 88%). Corresponding results for statins were STEMI (81% vs 93%) and NSTEMI (74% vs 86%), and for ACEi/ARB were STEMI (75% vs 76%) and NSTEMI (69% vs 66%).¹⁰ Our results for

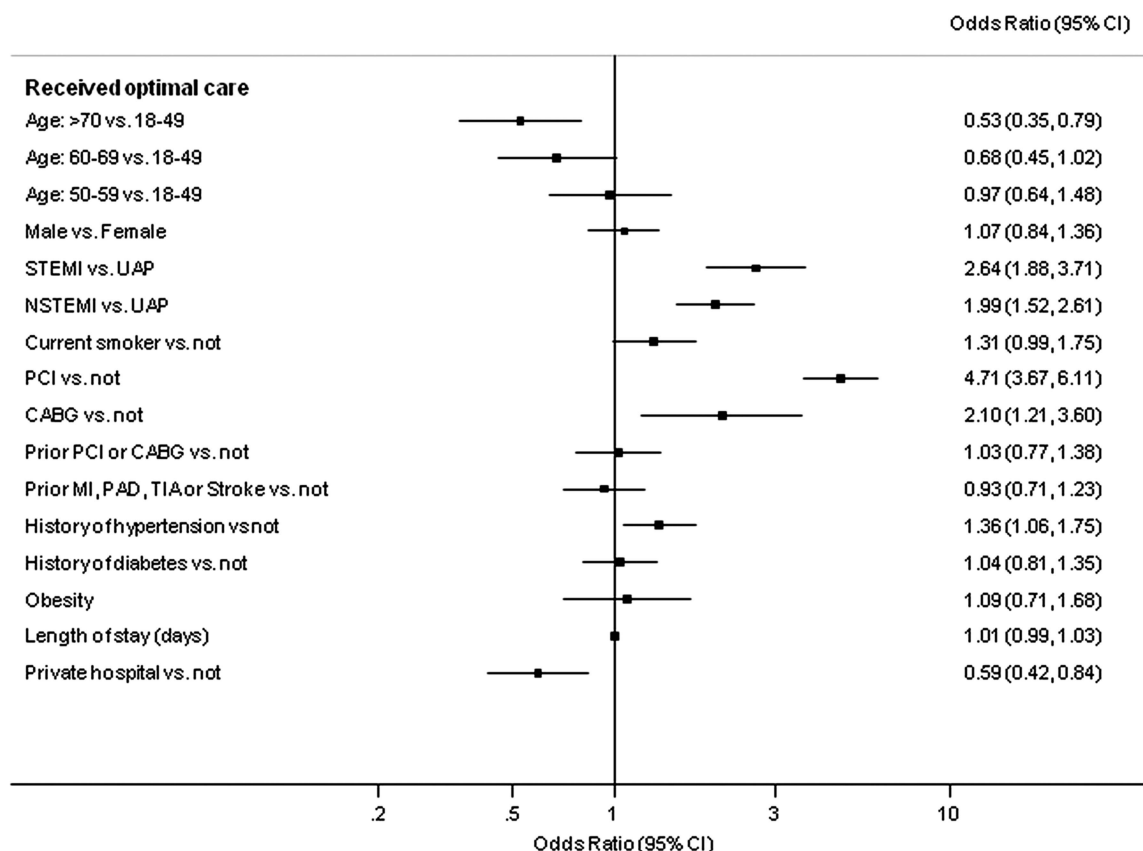


Figure 2 Adjusted ORs and 95% CIs* for likelihood of provision of optimal preventive care (OR >1 means more likely). *Using multilevel multivariable logistic regression. CABG, coronary artery bypass graft surgery; MI, myocardial infarction; NSTEMI, non-ST segment elevation myocardial infarction; PAD, peripheral arterial disease; PCI, percutaneous coronary intervention; STEMI, ST segment elevation myocardial infarction; TIA, transient ischaemic attack; UAP, unstable angina pectoris.

pharmacotherapy are also very similar to those reported by the American CRUSADE (n=64 426) national quality improvement initiative.²³ Recent results of the Myocardial Ischaemia National Audit Project (MINAP) based in the UK report medication prescription of over 95%, which is clearly higher than our Australian/New Zealand results; however, the MINAP cohort excludes patients who have been transferred, who have contraindications or who choose not to take medicines.²⁴ In New Zealand, two previous ACS audits have also been crucial in defining treatment and resource gaps in that country over recent years.^{13 14} In the 2002 New Zealand audit of 695 discharged (alive) ACS patients and the 2007 New Zealand audit of 815 discharged ACS patients, the use of discharge medications was also generally lower than in the present study including aspirin (82% and 82%, vs 87%), β -adrenergic blockers (63% and 66%, vs 71%), and statins (55% and 70%, vs 85%). These New Zealand audits are now 5 and 10 years old and improvements in prescription of discharge pharmacotherapy, especially statin therapy, may have occurred. While our study shows similar rates of pharmacotherapy, very few of the previous audits have reported inpatient preventive lifestyle care and referral to rehabilitation in the same cohort.

Clinical diagnosis and PCI during the index admission were consistently associated with improved preventive care. Patients diagnosed with MI (STEMI or NSTEMI) were significantly more likely to receive secondary prevention pharmacotherapy, referral to rehabilitation, and inpatient lifestyle advice. Interestingly, older patients and those admitted to private hospitals were less likely to receive optimal preventive care. These differences could

potentially be explained by shorter mean length of stay and potentially poorer documentation for patients admitted to the private hospitals, although this possibility requires further investigation. Unsurprisingly, those who had a longer hospital stay were more likely to receive inpatient dietary and physical activity advice, and those with obesity were more likely to receive inpatient dietary advice. This variability, particularly in relation to diagnosis, highlights the need for a more considered approach to the prevention of disease recurrence. Encouragingly, we confirmed that those with prior hypertension, prior vascular disease and PCI were more likely to receive secondary prevention pharmacotherapy.

The results of this study highlight extensive inequality in terms of the delivery of preventive care at a most vital time—the hospital admission. In particular diagnosis, intervention, age, and hospital type all impacted on the preventive care that patients received. Understanding why these inequities occur may help improve our health systems. The observations suggest that the practice patterns may reflect ‘value judgements’ where there may be a greater appreciation of value in the younger and STEMI patients. Documented risk stratification and discharge care planning may help overcome the perceived ‘judgement’ approach to provision of care. In addition, the development of standardised performance measures (for implementation in private and public hospitals) relating to secondary prevention are likely to be critical in providing objective evidence that optimal preventive care was provided. Such clinical standards and performance measures would need to take into account the diagnostic and therapeutic complexities for each patient.¹⁵

The strengths of this study are the inclusive nature of its design. This study is unique in its ability to provide insights into the provision of care but it is limited by the nature of data collection, namely, via analysis of the medical records. The design allows widespread and valuable benchmarking at a single time point rather than local continuous quality improvement to monitor change over time. This study highlights that valuable health system and public health insights can be obtained from a 'snapshot in time' at potentially much lower costs than large scale and ongoing audits. Further, although we have defined optimal care as having received inpatient lifestyle advice, medications and referral to rehabilitation on discharge, we are unable to determine the specific relative contributions of each of these aspects of care; future research is needed to investigate the ratio that each of these interventions may play in terms of future hospital readmissions and mortality.

This study is not without limitations. Most importantly, this was an audit project (without clinical outcomes) and reports data collected from medical records. As with any observational dataset, results need to be considered in the context of potential variation in record keeping between and within centres and issues of attribution, given that local researchers collected data within their area of employment. Also, data were collected based on hospital admissions during a 2-week period; this may not be representative of admissions over the entire calendar year and it may not be reflective of actions (eg, completion of rehabilitation) actually taken by patients after discharge. In addition, when analysing prescription of pharmacotherapy (despite the case report form allowing for removal of cases where medications were contraindicated or where there was drug intolerance/resistance) in a study such as this, it is difficult to account for the entirety of heterogeneity that exists between patients, particularly in those with UA. Although we have used the GRACE risk score as an indicator of risk, results should be

considered with this in mind. Finally, the study reports the preventive care received *during* the index admission, and data pertaining to what happens after the patients leave hospital is an area that requires ongoing research.

CONCLUSIONS

Only one-quarter of all patients admitted with ACS received optimal secondary prevention (pharmacotherapy, lifestyle advice, and referral to rehabilitation). This study provides unique insights into the provision of preventive therapy and lifestyle modification advice (or lack thereof) to patients admitted to hospital with an ACS. Proportionately more STEMI than non-STEMI and UA patients received guideline recommended preventive care. Findings also suggest that younger patients, those who have a PCI during admission, and those admitted to public hospitals are more likely to receive optimal preventive care. These findings highlight the persistence of the evidence treatment gaps in a contemporary cohort of ACS patients. Standardising inpatient care in line with guidelines is likely to contribute to more effective secondary prevention post-discharge.

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Acknowledgements Steering Committee: David Brieger (NSW), Co-chair, John French (NSW) Co-chair, Derek Chew (SA) Co-chair, Chris Ellis (NZ), Co-Chair, Gerry Devlin (NZ), Co-Chair, Chris Hammett (QLD), Bernadette Aliprandi-Costa (NSW), Isuru Ranasinghe (NSW), Bridie Carr (NSW), Julie Redfern (NSW), Fiona Turnbull (NSW), Carolyn Astley (SA), Tom Briffa (WA), Jamie Rankin (WA), Ahmad Farshid (ACT), Pearl Taverner (ACT), Darren Walters (QLD), Stephen Bloomer (WA), John Elliott (NZ), Jeff Lefkovits (Vic), Karice Hyun (NSW). Project managers- State-based Cardiac Clinical networks. New Zealand- Greg Gamble, NSW/ACT- Bernadette Aliprandi-Costa, Bridie Carr, Karen Lintern, Pearl Taverner, Queensland- Tegwen Howell, Cindy Hall, Susanne Spencer, Dayna Williamson, Victoria- Hella Parker, Julie Plunkett, Wendy Wallace-Mitchell, South Australia, TAS, NT- Rosanna Tavella, Carolyn Astley, Western Australia- Samantha Thompson. Data Management and analysis- The George Institute for Global Health and the South Australian Health and Medical Research Institute (SAHMRI): Associate Professor Fiona Turnbull, Dr Isuru Ranasinghe, Associate Professor Julie Redfern, Karice Hyun, Matthew Horsfall, Helen Hughes.

Contributors All authors have been involved in the study from inception and have approved the final manuscript.

Funding The SNAPSHOT ACS study was supported in part by: The Cardiac Society of Australia and New Zealand; The National Heart Foundation of Australia, The Agency for Clinical Innovation (NSW), the Victorian Cardiac Clinical Network, the Queensland Cardiac Clinical Network, the Cardiovascular Health Network, Department of Health, WA and the State-wide Cardiac Clinical Network, South Australian Health. The study was endorsed by the Australian Commission for Quality and Safety in Health Care and supported with in-kind support from each of the participating hospitals and their respective State and Territory Departments of Health. JR is funded by a NHMRC Career Development Fellowship (APP1061793) co-funded with a National Heart Foundation Future Fellowship (G160523). CC is funded by a Career Development Fellowship co-funded by the NHMRC and National Heart Foundation of Australia (1033478) and Sydney Medical Foundation Chapman Fellowship. FT is supported by a National Heart Foundation of Australia Career Development Award.

Key messages

What is already known about this subject?

- ▶ Approximately half of acute coronary events occur in individuals with prior disease.
- ▶ Internationally, acute coronary syndrome (ACS) guidelines recommend strategies targeting preventive care and highlight the importance of commencing preventive care immediately after ACS.

What does this study add?

- ▶ Provision of preventive care in patients admitted to hospital with ACS is suboptimal.
- ▶ Proportionally more ST segment elevation myocardial infarction (STEMI) patients, and those undergoing percutaneous coronary intervention, receive optimal preventive care.
- ▶ Older patients (>70 years) and those treated in private hospitals were less likely to receive optimal care.

How might this impact on clinical practice?

- ▶ Greater focus on in-hospital delivery of preventive care is needed to provide the essential foundation for lifelong secondary prevention.
- ▶ Improved provision of care to a broader range of patients is needed to ensure equity and access to preventive care during the inpatient admission.

Competing interests DC: lecture fees AstraZeneca Australia; educational programme: Heart.org. JF: Advisory Board Membership Sanofi Aventis Australia, AstraZeneca Australia, Eli Lilly Australia and Boehringer Ingelheim; Grant In Aid; The Medicines Company. TB: Grant In Aid WA Department of Health; travel support WA Department of Health. CH: Consultancy Bayer Australia and Eli Lilly Australia; lecture fees Boehringer Ingelheim and Eli Lilly Australia; travel assistance AstraZeneca Australia, Bayer Australia, Boehringer Ingelheim Australia and Eli Lilly Australia, Schering Plough Australia, Abbott Medical Australia. TH: travel assistance Heart Foundation Australia. DB: Advisory Board AstraZeneca Australia, Boehringer Ingelheim Australia, Bayer Australia, Pfizer, BMS Australia; Grants: AstraZeneca Australia, Sanofi Aventis Australia, Merck Schering Plough Australia, Boehringer Ingelheim Australia; lecture fees AstraZeneca Australia, Bayer Australia; travel assistance Bayer Australia, Boehringer Ingelheim Australia.

Ethics approval NSW Cancer Institute Human Research Ethics Committee (Population Division).

Provenance and peer review Not commissioned; externally peer reviewed.

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