Measuring performance and outcomes of acute coronary syndromes management in Australia

A national registry for acute coronary syndromes will improve patient care and clinical results

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Acute coronary syndromes (ACS) represent a substantial burden of morbidity and mortality within Australia.[1] Modern treatment of these syndromes requires efficient risk stratification, timely angiography and revascularisation, and use of proven secondary prevention therapies.[2-4] With a robust evidence base, it is a reasonable societal expectation that care be applied as completely as possible, to optimise recovery and secondary prevention. Clinical performance measures for ACS care have a central role in facilitating the translation of the evidence base into improved clinical outcomes.

The 2009 National Health and Hospitals Reform Commission report called for the creation of "an agile, responsive and self-improving health system for future generations".[5] The report also said that the health system should foster clinical leadership and governance; knowledge-led, continuous improvement innovation and research; and intelligent use of data, information and communication.[5] Several Australian ACS registries have highlighted gaps and potential outcome gains achievable through the application of the evidence base.[6-9] Such analyses suggest that the benefits of extending prevention therapies to patients who are not currently receiving care outweigh the negative impact of variation in treatments among patients who are already receiving care.[10] International system-based improvement efforts and local initiatives in other disease areas have also shown the link between objective assessment of practice and measures of quality.[11] They demonstrate a decline in morbidity or mortality, and show these activities to be cost-efficient.[12-15]

Current registries only provide a limited snapshot of Australian ACS care (including about 1% of patients), based on annual Australian Institute of Health and Welfare (AIHW) estimates of ACS admissions.[16] These data were also acquired at arm's length from clinical care providers, and consequently provide little support to local change management and clinical effectiveness initiatives. The need for ongoing information about how evidence is being applied, building on the existing AIHW standardised data elements for ACS care, and delivering this practice knowledge to clinical care providers, has emerged as a key national priority for improving heart attack outcomes.[17] We outline some principles surrounding the governance, registry conduct and potential performance measures that may form the foundation for a national Australian ACS registry.

Does Australia need more data on ACS care?

Although initiatives such as the Global Registry of Acute Coronary Events, Heart Protection Partnership, Acute Coronary Syndrome Prospective Audit, and the Cooperative National Registry of Coronary Care, Guideline Adherence and Clinical Events have provided important insights into local ACS care, their utility is limited by small patient and hospital numbers and patient selection bias.

A national registry based on a succinct set of data elements will enable identification and evaluation of disparities in care. Such disparities may include sociodemographic factors such as Aboriginal and Torres Islander descent. The need for a national registry has been recognised as a priority by the Heart Foundation and the Australian Healthcare and Hospitals Association.[18] Such a registry should have direct value to patient safety by documenting outcomes among clinical subsets that are not well represented in clinical trials. This is of value especially when outcomes are rare, as has been highlighted by recent concern about stent thrombosis among patients with ACS receiving drug-eluting stents. As clinical practice evolves, new therapies may also supersede older therapies, allowing de-investment in obsolete treatments.

Principles of registry conduct

The Australian Commission on Safety and Quality in Health Care has outlined principles for clinical quality registry conduct. These include draft operating principles and technical standards for establishing and managing clinical registries, and guidance on their attributes and governance, which we have drawn upon substantially.[19]

An ACS registry must include all ACS patients, and use established definitions to enable comparisons across diagnotic and patient groups. Any less than this will to lead to underrepresentation of the highest-risk patients and underserved subgroups for whom therapeutic and outcomes information are most valuable. However, in contrast to procedure-specific registries, disease-specific registries face the challenge of optimal definition of diagnostic groups, especially for diagnoses that evolve over time. An agreed approach to patient inclusion and exclusion, focusing on relevant audit questions, will require careful consideration.

The resources required for manual data collection are currently prohibitive. Consequently, collection of a select set of informative data elements will need to be tightly integrated with existing and emerging clinical information systems for the electronic medical record environment. Furthermore, such electronic foundations

Proposed clinical performance indicators for a national Australian acute coronary syndromes registry

Performance measure	Description
ACC/AHA performance measures[21]	
Aspirin on arrival	Patients with AMI receiving aspirin within 24 hours before or after hospital arrival
Aspirin at discharge	Patients with AMI prescribed aspirin at hospital discharge
Beta-blocker at discharge	Patients with AMI prescribed a beta-blocker at hospital discharge
Statin at discharge	Patients with AMI prescribed a statin at hospital discharge
Evaluation of LVSF	Patients with AMI with documentation in the hospital record that LVSF was evaluated during hospitalisation or is planned after discharge
ACE inhibitor or ARB for LVSD*	Patients with AMI with LVSD* prescribed an ACE inhibitor or ARB at hospital discharge
Time to fibrinolytic therapy	Median time from hospital arrival to receiving fibrinolytic therapy, in patients with STEMI or LBBB† Patients with STEMI or LBBB† receiving fibrinolytic therapy during hospital stay, with time from hospital arrival to fibrinolysis of ⩽ 30 minutes
Time to PCI	Median time from hospital arrival to primary PCI in patients with STEMI or LBBB† Patients with STEMI or LBBB† receiving primary PCI during the hospital stay with a time from hospital arrival to PCI of ⩽ 90 minutes
Reperfusion therapy Adult smoking cessation advice or counselling Cardiac rehabilitation patient referral from an inpatient setting	Patients with STEMI or LBBB† receiving either fibrinolysis or primary PCI or who are transferred to another facility for primary PCI Patients with AMI who have a history of smoking cigarettes and are given smoking cessation advice or counselling during hospital stay All patients hospitalised with a primary diagnosis of AMI referred to an early outpatient cardiac rehabilitation program
Current AIHW performance measures[20]	
Reperfusion for AMI in hospitals	Proportion of eligible patients (patients identified as candidates for emergency reperfusion) with an AMI requiring reperfusion who received: • fibrinolysis within 30 minutes, and/or • PCI within 90 minutes of presentation to the emergency department
Discharge medication management for acute myocardial infarction	Proportion of patients with a diagnosis of AMI (without contraindication) who receive a discharge prescription or supply of medication for: • antiplatelet medication • beta-blocker • angiotensin-modifying medication • lipid-modifying medication

ACC/AHA = American College of Cardiology/American Heart Association. AMI = acute myocardial infarction. LVSF = left ventricular systolic function. ACE = angiotensin converting enzyme. ARB = angiotensin receptor blocker. LVSD = left ventricular systolic dysfunction. STEMI = ST-elevation myocardial infarction. LBBB = left bundle branch block. ECG = electrocardiogram. PCI = percutaneous coronary intervention. AIHW = Australian Institute of Health and Welfare. * For this measure, LVSD is defined as chart documentation of left ventricular ejection fraction < 40% or narrative description of LVSF consistent with moderate or severe systolic dysfunction. † STEMI or LBBB diagnosed using ECG performed closest to hospital arrival time. ◆

enable assimilation of data already in electronic reporting formats, such as pathology reports and some imaging modalities. Other potential gains from using an electronic platform are automated risk stratification and evidence-based decision support at the point of care. Elements within the data should be epidemiologically sound (ie, easily collected and needing minimal interpretation). Evolving data-linkage initiatives provide an opportunity for longer-term outcomes. Audits of data quality and completeness are essential to ensure the validity of observations, and remain crucial for clinical and public credibility and engagement.

The value of performance measures

Evaluating clinical effectiveness remains the single most important rationale for an ACS registry. The capacity to routinely measure performance and outcomes electronically will help clinicians close the loop on local clinical effectiveness initiatives. Linking performance to late clinical outcomes also enables validation of these measures, ensuring that they include appropriate patient subsets (the denominators) while measuring practices (the numerators) that have an important impact on outcomes. The AIHW has attempted to define measures of ACS care.[20] The Box details a proposed set of clinical performance indicators for a national Australian ACS registry.[21]

The value of clinical registries lies in their capacity to inform change. Local decisionmakers need to interpret their own data though rapid-cycle feedback processes, and use them to guide new therapies or refine local practice. This will enable them to find value in practice changes or innovations among populations typically enrolled in clinical trials, and among other high-risk and underrepresented patient groups. Observations from clinical registries may also accelerate the rate at which clinical practice evolves to embrace new practices and discontinue treatments without sufficient therapeutic gain.

Governance of a registry

Without doubt, issues of governance stir the greatest passions in any debate about clinical registries. The need to protect patients' and clinicians' privacy and the desire for transparency and public accountability are at the heart of the debate. Consensus is a challenge, but appropriate policies may be agreed on by focusing on improving clinical effectiveness, which is the goal of an ACS registry.

Given the time-critical context of modern ACS care, and that complete representation is vital for a registry's value, alternative approaches to patient consent are required. In contrast to a clinical trial of new therapies, the key ethical issue in a registry is privacy. An appropriate method of informing patients about the use of their clinical data and the registry's purpose must be agreed on. Most patients would find such information reassuring, but the small number of patients who are uncomfortable with such data collection should be offered a clear process to "opt out" of the registry without their care being affected. In many health care settings, consent is routinely given for health care improvement or audit-focused data collection, and an ACS registry could be considered an extension of this principle.

Given the aims of informing change and evaluating clinical effectiveness, such data should remain under the governance of those who will use them, i.e. the cardiac services who collect the data. Maintaining strong clinical leadership will ensure that the observations drawn from the registry are relevant and appropriately analysed and risk adjusted. In some settings, state-based cardiovascular clinical networks may provide leadership, with appropriate governance structures for clinical data collection.

A collaborative and nationally representative group should have direct responsibility for data veracity and analysis, and should be based on: common data definitions and standards; routine reporting of clinical indicators; a knowledge base of effective service characteristics facilitating the application of evidence; and a stakeholder-led governance structure aimed at delivering accountability while protecting privacy. Such a collaboration could drive clinical effectiveness across the entire spectrum of Australian ACS care.

Conclusions

The funding of registries can be costly, but in the context of possible improvements in clinical care and outcomes, they are likely to be highly cost-effective. Cardiovascular disease currently accounts for 11% of Australia's total health care spending, and its prevalence is expected to be one of the key drivers of increased health care costs in the future.[22]

Investing in quality ACS management and cost-effective programs will improve the efficiency of ACS treatment and reduce the health cost, as well as generate better health benefits for the Australian community.[16]

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