



The SNAPSHOT ACS study: getting the big picture on acute coronary syndrome

How snapshot methodology identifies factors limiting translation of evidence to practice

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Translating evidence-based treatments into clinical practice is fundamental to modern health care delivery. Yet numerous studies demonstrate limited uptake of guideline-endorsed treatment recommendations.^{1,2} Why is this so? There are many possible explanations. Patient characteristics such as age, comorbidity, socioeconomic status, cultural background and frailty are likely to be important. Most trials of novel drugs or devices are funded by industry. Trials are very expensive, and a trial sponsor is understandably keen to ensure that their product is administered to those patients most likely to benefit. Consequently, patients entered into clinical trials are typically younger and have less comorbidity than the broader population of patients with a particular condition. This was found to be the case in a recent Canadian registry report on patients admitted with acute coronary syndrome (ACS), which compared the baseline characteristics of those who were included in clinical trials with the much larger cohort of patients who were not.³ Other variables also limit the translation of evidence-based treatments. For ACS, which requires acute hospital care, the type of hospital (eg, peripheral versus major teaching hospital) and its location (eg, urban versus rural or remote setting) can determine the level of medical expertise and complexity of treatment offered to a patient.

How best then to identify all the factors that limit the translation of evidence-based medicine into clinical practice? One approach is to take a "snapshot" of all patients with an acute condition admitted to every hospital nationwide and to compare patient characteristics, patterns of investigation, treatment and patient outcomes. This would allow hospitals, states and even countries to be compared, if the snapshot is broad enough. Undertaking such a study is logistically daunting, but in a landmark study published in this issue of the Journal, Chew and colleagues have attempted exactly that.⁴ The investigators approached 525 hospitals across Australia and New Zealand and obtained ethics approval from 478 to perform a prospective audit of patients admitted with suspected or confirmed ACS during 2 weeks in May 2012. They enrolled 4398 patients in 286 hospitals. Hospitals that did not enrol patients were smaller and did not admit patients with ACS during the snapshot window.⁴

Three design features of the SNAPSHOT ACS study are worth highlighting. First, use of an opt-out consent process (a consent waiver in New Zealand) no doubt contributed to the high recruitment rate.⁵ Second, standardised data definitions and real-time data collection ensured consistency between participating hospitals, in contrast to other methods of administrative data extraction where data validity is often questioned.⁶ Third, including a survey

to document the range of cardiac services at the participating hospitals facilitated benchmarking between institutions. Facilities for percutaneous coronary intervention and coronary artery bypass surgery were available in less than 30% and 20% of hospitals, respectively. This expected finding probably explains the high rate of interhospital transfer, involving 26% of enrolled patients. However, surprisingly, only two-thirds of the 286 hospitals in the study contained an acute coronary care ward.

The SNAPSHOT ACS study is in every sense a contemporary "real world" audit of the diagnostic evaluation and management of ACS across Australasia. The authors report some noteworthy findings. Although virtually all patients presented to a hospital that was capable of providing acute reperfusion therapy for ST-segment-elevation myocardial infarction, this was administered to only two-thirds of patients with this diagnosis. In addition, patients with higher Global Registry of Acute Coronary Events (GRACE) scores (and higher risk of hospital mortality) were less likely to receive an invasive management strategy. Previous publications from large prospective registries have reported similar findings.^{7,8} This may be explained by factors such as advanced age and renal failure, which contribute to the GRACE score but also reduce the likelihood of acute intervention.³ Other major comorbidities are also likely to contribute to underuse of evidence-based therapies in these high-risk patients.⁷ These and other findings deserve further published analysis of this unique dataset.

Most disturbing are the substantial variations found in implementation of evidence-based management and in patient outcomes, not only between hospitals but also between jurisdictions. Differences in the use of invasive diagnostic and therapeutic measures (coronary angiography and percutaneous or surgical revascularisation) are to be expected, as most enrolled hospitals lacked these facilities.⁴ On the other hand, the significant differences between hospitals in the use of guideline-recommended medications, cardiac rehabilitation, and diet and exercise advice are harder to explain. An important feature of the SNAPSHOT ACS study is the benchmarking of (de-identified) hospital data to enable individual clinicians and institutions to compare their performance against other institutions providing comparable services. But benchmarking needs to be followed by change-management strategies to improve the uptake of evidence-based treatments in underperforming hospitals.

Jurisdictional differences in use of evidence-based therapies for ACS and patient outcomes indicate differences in health service policy, resourcing and delivery. Exploring these differences will be important to identify jurisdictional

barriers to implementing evidence-based treatments and will require bringing together national and state government agencies, professional bodies, individual clinicians and researchers across all hospitals. This approach has been applied successfully (albeit on a limited scale) in the management of ACS, acute heart failure and stroke.^{9,10} However, a clear message from the SNAPSHOT ACS study is that much broader engagement of these stakeholders will be required to improve the outcomes of patients with ACS across the entire health sector.

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