

Challenges and Opportunities Associated With Quantification of Cardiovascular Readmissions

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With increasing use and collection of administrative and registry data, there is real need to focus on the importance of quality reporting and documentation. Current research from a Canadian group highlights the importance and challenges associated with this very issue.¹ In their study, the authors report that readmissions to the hospital after an acute coronary syndrome (ACS) hospitalization are common. Their cohort included data from 3411 patients post ACS with primary outcomes being 30-day and 1-year hospital readmissions. Their results demonstrate that one third of ACS patients had a readmission within 30 days and two thirds had a readmission within 1 year. Around half of the readmissions were for cardiovascular reasons and around 45% were presentations to an emergency department only. However, in their conclusion they identify that the rate of readmission at 30 days may not be an ideal measure of hospital performance primarily due to their heterogeneous nature. Southern and colleagues raise discussion about whether readmissions after ACS are indeed avoidable. The issue of inherent reliance on administrative data documented at the hospital level is also raised. Similar results are evident in a similar report from the Australia and New Zealand SNAPSHOT ACS study, which has also captured clinical characteristics, management, and outcomes of 4398 patients hospitalized with ACS from 478 participating Australian and New Zealand hospitals.^{2,3}

The opinions expressed in this article are not necessarily those of the editors or of the American Heart Association.

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Defining Readmissions in the Context of Heart Disease

Hospital readmissions for ACS are common, costly, and potentially preventable and their rates are often used as quality performance indicators. Despite a lack of consistency about the definition of avoidable and unavoidable readmissions, avoidable readmissions are generally considered those that are the result of a patient or provider issue that if managed differently might have prevented the admission. Unavoidable readmissions are defined as those in which a patient was in need of acute care. In the context of heart disease (and in many other areas of chronic disease), the nature of an admission also needs to be considered with respect to the relationship (or not) with an index admission.

The term “avoidable” is somewhat challenging in the area of heart disease care and prevention. National campaigns actively encourage people to seek urgent medical attention as soon as possible if they are experiencing the so-called “warning signs” of heart attack, stroke, or cardiac arrest.⁴ This will inevitably result in a proportion being unavoidable on the basis of precaution and safety. The term “avoidable” is therefore challenging because patients may experience symptoms of a repeat ACS and follow the advice to call for emergency medical support, but the symptoms could indeed be unrelated to the index event (eg, neck pain or indigestion). It is likely that patients who have survived an ACS will be having anxiety⁵ and possibly be hypersensitive to potential repeat episodes, and this could impact on the frequency of repeat admissions. Southern et al found that slightly less than half of readmissions were not related to the index admission. However, it is important to note that 53% of the readmissions were likely to be related to the index. These readmissions come at huge financial and emotional costs to society.

Importance of Considering Readmissions in the Broader Context

As Southern and colleagues highlight, readmission rates (particularly at 30 days) are not necessarily an ideal measure of the quality of care provided by the hospital where the index

admission occurred. In that light, there has been debate about strategies such as the Affordable Care Act in United States being too simplistic in terms of addressing the challenges associated with readmissions.⁶ Indeed, readmissions could be related to system-level issues after discharge and the primary care environment, or could be related to geographical or patient-level factors that contribute to the rate of readmissions. The importance of a patient's characteristics (including comorbidities and socioeconomic factors)^{7,8} and psychological needs⁹ should be highlighted. We also need to differentiate the type of readmissions, cardiovascular and noncardiovascular, urgent and planned, related and unrelated to the index admission. For example, a visit to the Emergency Department due to diarrhea, which is usually is not related to the index ACS hospitalization, is not as serious (or costly) as an inpatient readmission for a new ACS event caused by stent thrombosis due to poor cardiovascular medication adherence. The type of readmission should be considered in the hospital's quality performance metrics.

Southern and colleagues did explore some patient-related aspects. For example, although it is known that several factors, such as higher age, female sex, longer length of stay, myocardial infarction, diabetes mellitus, heart failure, cancer, and pulmonary and renal disease are presumed predictors of readmission,¹⁰ the authors found significant variation and contradictory results, demonstrating the difficulty of determining predictive models. However, social and cultural determinants of medication adherence, response to health-related symptoms, and psychosocial issues are further aspects that could impact on readmissions.

The Importance of Administrative Data

Availability of large registry with observational and administrative data is becoming increasingly important and valued as health systems become linked and the capacity of technology expands exponentially.¹¹ These developments are providing enormous opportunities for "big data" and analysis of trends and predictors of outcomes. The value and capacity of registries is increasing, and we see national and international cohorts emerging. The APPROACH registry¹² in Canada is one such registry, but there are numerous others in the areas of ACS including the Global Registry of Acute Coronary Events (GRACE) international registry,¹³ the ACTION Registry–GWTG in the United States,¹⁴ Euro Heart Survey,¹⁵ and SNAPSHOT ACS registry from Australia and New Zealand² being only a few examples. These and other similar registries are invaluable in that they record real-world patient outcomes and ultimately identify unmet patient needs as well as verify the safety and efficacy of newly introduced therapies.¹⁶ However, the value and accuracy of data in administrative data sets rely

on the quality of reporting and documentation at the hospital level.¹⁷ Although there are well-developed frameworks and guidelines for data accuracy, it is often difficult to audit the quality of data over such large numbers of centers.^{17,18} In reality, the data rely on the accuracy of data entry as well as the validity and coding of diagnosis. These limitations are often acknowledged, but there is a real need to implement strategies that optimize coding systems and the accuracy of data collection. As a consequence, there are often documentation and reporting errors as well as problems with coding definitions.¹⁷ Increasing the accuracy, validity, and reliability of administrative data will ultimately drive more accurate analyses and interpretations as technology advances even further.

Summary

We are faced with an environment where more people are surviving after an ACS, but we are left with a system that is facing increasing readmissions at huge costs. The system for classification of which types of admissions are avoidable and which are not, combined with more detailed understanding of the relationship of each admission with an index event, will improve our ability to quantify the burden associated with repeat ACS admissions. Ultimately, a deeper understanding of these factors and how they interact may even help inform development of strategies aimed at reducing avoidable readmissions. The need for optimizing documentation and reporting of diagnosis is also becoming increasingly important. As we move to a world where administrative data are informing health policy and health service delivery, it is essential that records be accurate and therefore enable accurate analysis of trends, opportunities, and limitations.

Disclosures

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