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Editorial

Why We Need More and Better Cardiovascular Disease Quality Indicators

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Health system performance has become an increased focus worldwide.[1-3] Its measurement is increasingly commonplace,[4-9] with institutions such as the World Health Organization and the Organisation for Economic Co-operation and Development having taken an international lead in promoting its adoption.[10-12] Motivating factors include variations and inequalities in practice, uptake of interventions before clear evidence of benefit has been gathered, medical errors resulting in patient harm, rapidly aging populations threatening already overburdened health care systems, concerns about quality and variation in practice, and a historic lack of accountability.[3,10-14]

Another major reason for the increased focus on measuring health care performance is the matter of rising health care costs that are ever more challenging to sustain.[5,13,15,16] Despite a recent and much needed moderation in its rate of growth, health care spending in Canada was nonetheless an estimated $214 billion in 2014, or 11% of the national gross domestic product.[17] Between 33% and 46% of provincial budgetary allocations are directed toward health care.[17] According to the Public Health Agency of Canada (PHAC), expenditures on cardiovascular disease (CVD) amounted to $22.2 billion in 2000.[18] The Conference Board of Canada estimates that total CVD costs will increase to $28.3 billion in 2020.[19] There is growing concern, including from the public at large, that the money spent on health care is not realizing commensurate benefit.[11,20] A 2013 ranking of health care systems in 11 countries across several measures of health outcomes, quality, and efficiency by The Commonwealth Fund put Canada in 10th position overall.[21] Not surprisingly, pressure is increasing for public health care sectors, especially, to ensure that the money and effort spent are meeting expectations.

Clinical Guidelines and Health Care Improvement

Clinical practice guidelines provide recommendations for diagnostic/therapeutic interventions requiring clinical judgment in application. They are drafted with the aim of improving the quality of care delivered for specific diseases by establishing and then promoting what is considered to be best practice.[22] The expectation is that their broad implementation will lead to better processes of care and outcomes. However, these results should not be assumed. In a US analysis of 171,393 patients with atrial fibrillation (AF), warfarin was given to only 42.1% of patients at high risk of stroke ($CHADS_2$ [**C**ongestive **H**eart Failure, Hypertension, **A**ge, **D**iabetes, **S**troke/Transient Ischemic Attack] score of 3-6), and it was used in a similar percentage of patients with moderate (43.5%) or low stroke risk (40.1%).[23] Worse yet, only 29.6% of high-risk, 33.3% of moderate-risk, and 34.1% of low-risk patients who were given warfarin received uninterrupted therapy over the subsequent 6 months. Thus, although fundamental guideline-directed treatment was poor across risk cohorts, it was particularly bad among those patients at greatest hazard for stroke. Guidelines represent only 1 component in a broader strategy required to improve health care. They need to be combined with an approach to assess the effectiveness of their application and thereby quantify the quality of health care provided to patients, which is ultimately their intent.

Quality Indicators—Key Metrics in the Assessment of Quality Care

Quality of care has been defined as the degree to which health services consistent with up-to-date professional knowledge increase the likelihood of desired health outcomes for both individuals and populations.[10] Initiatives such as "continuous quality improvement" have been developed to measure and monitor health care systems, identify and eliminate inappropriate variation, and ultimately improve health care performance, costs, and clinical outcomes and are

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increasingly being implemented.[3,22-24] One means of assessing health care quality is through its measurement, using metrics such as performance measures or quality indicators (QIs).[3,24,25] The former evaluate care without any necessary inference about quality; the latter are used to assess quality, especially by revealing potentially unacceptable variations in care.[25] In particular, QIs provide a quantitative basis to achieve health care improvement by evaluating suggested domains such as structures, processes, and outcomes.[26] Specific issues of interest are underuse, overuse, and misuse.[13,27-29]

The development of quality measures has typically been led by regulatory, oversight, and payer organizations.[3,10,13,28,30-32] These groups have, and increasingly are, using such metrics to hold health care institutions, services, and providers accountable. In the United States, pay-for-performance programs are increasingly emerging, wherein QIs are monitored and success or failure at attaining quality targets directly impacts reimbursement.[3,7-9] Health care providers need to engage fully in the identification and definition of appropriate QIs; otherwise they will be set independently by governments and payers, groups that are often lacking insight into those factors at the patient, clinic, or hospital level that most impact performance.[5] Although there had previously been a dearth of such engagement,[27] physician professional organizations are becoming more visibly involved in the development of QIs as well as in the measurement, analysis, and interpretation of the data obtained.[33-36]

The Challenges of QI Development

Although the goal of improving health care effectiveness using quality performance metrics seems logical, significant technical challenges exist. It would be reasonable to assume that the use of QIs would promote, among other things, appropriate knowledge translation of guideline-recommended management; suitable, equitable, and cost-effective use of treatments; and overall improvement in system performance and quality.[3,34,37] However, although there is an expectation that reported QIs measure attributes of health care excellence, they are too often chosen pragmatically on the grounds of what can be measured rather than on the basis of what should be measured.[5] In Canada, health care assessments have conventionally relied on administrative data sets designed to measure health care use rather than its quality and outcomes, issues that must be imputed using surrogate diagnostic or procedural codes whose accuracy often is not audited.

Any health care indicator should be evidence based and defined by consensus; specific, sensitive, valid, and reliable; related to clearly identifiable events relevant to clinical practice; and able to discriminate well, thereby permitting useful comparisons.[34] Quite simply, methods will need to be developed to record accurately and follow those indicators required to monitor health care quality and any barriers to its access. Ideally, such indicators should also be comparable and similarly defined across health care sectors, but too often this is not the case. A study that examined the development and selection of acute stroke care QIs in 6 European countries found so much variety in performance measurement that the validity of any comparisons of such care in Europe was hampered.[38] Even when QIs have been meticulously developed, promoted, and regularly updated,[39,40] there can be challenges in ensuring their system-wide application. Ultimately, mandatory and accurate documentation of disease-specific QIs needs to be established, especially if cross-hospital let alone regional comparisons are to be made and, more importantly, care is to be optimized and standardized.

The Canadian Cardiovascular Society's Pan-Canadian Cardiovascular Data Definitions and Quality Indicators Project

The aim of medical guidelines is to establish by expert consensus what is considered to be best practice for the disease or intervention in question, and effective promotion of guideline recommendations carries the expectation that better processes of care and outcomes will result. However, as already discussed, these results should not be assumed, because knowledge translation is too often poorly realized.[41] Thus, guideline development should ideally involve the identification and definition of the QIs needed to assess the implementation and anticipated outcomes of the guideline recommendations. Indeed, a coordinated linkage between the development of guidelines and the development of QIs has been advocated.[36,42] Proponents argue that such an exercise would benefit from the expertise of guideline panels to identify those QIs anticipated to measure what they perceive as being the most fundamental of their guideline recommendations.[42] Moreover, this approach would convey professional consensus for the merit of the QIs and thereby leverage their adoption.[27,36] Such a strategy could also enable the exploration of barriers to guideline adherence and the identification of any resultant adverse consequences, which should then foster the development of programs that might help to overcome them and thereby optimize the uptake of the guideline recommendations.[22,42-44]

In 2010, the Canadian Cardiovascular Society (CCS), following a recommendation from the Canadian Heart Health Strategy and Action Plan and with initial funding support from PHAC, began an initiative to develop pan-Canadian data definitions and QIs for cardiovascular care with the intent of taking a leadership role in facilitating improvements in the cardiovascular health and care of Canadians.[45] This was a response to the lack of accord around clinical QIs to measure and report on the quality of cardiovascular care in Canada; indeed, even when monitored, specific indicators were often defined differently across data sets, thereby hampering attempts to improve and ensure the sustainability of such care.[46] A quality indicators committee was tasked with establishing a national electronic catalog of QIs. The initial focus was on AF and heart failure, partly because these were rapidly growing disease burdens with unique health care challenges but also because the clinical guideline process for these 2 conditions already included guideline development, education, and implementation functions[45]; it was thought that these capabilities would be well suited to the definition of QIs that could ultimately be monitored. Subsequently, QIs have been developed for cardiac rehabilitation, cardiac surgery, percutaneous coronary intervention, and more recently, transcatheter aortic valve implantation (TAVI).