Brief Report

Feasibility of assessing two cardiac rehabilitation quality indicators

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Abstract

Purpose: The Canadian Cardiovascular Society initiated a pan-Canadian process for development of quality indicators (QIs) for Cardiac Rehabilitation (CR). Before implementation, the QIs underwent pilot testing to ensure they were acceptable and feasible for field implementation. The objectives of this test were to assess: (1) the technical feasibility of measuring the QIs, (2) the workload required to measure the QIs, and (3) acceptability of measuring the QIs and issues in their implementation.

Methods: The 2 indicators chosen for field testing were QI-1 (% of eligible in-patient referred) and 2b (median wait time from CR referral receipt to enrollment). The approach consisted of 3 steps: (1) data extraction to test technical feasibility, (2) completing a workload diary, and (3) providing input through a semi-structured interview regarding acceptability and implementation issues. Three academic CR sites were selected to undertake the field test.

Results: QI-1 ranged from 51.0% to 68.4%, and QI-2b was reported as 27 days (median) by one site, and 22 days (mean) by another. It was not considered feasible for CR programs to assess all potentially CR-eligible in-patients for CR referral exclusions. Compilation required 4.2 hours for QI-1, and 1.8 hours for QI-2b. QI assessment was acceptable to the programs, but changes in practice would be needed at each site to implement the QIs.

Conclusions: CR programs may require enhancement of information-tracking processes to enable QI measurement. It was recommended that the QIs be implemented, but should undergo minor revisions to enhance feasibility.

50 word summary

Two Canadian cardiac rehabilitation (CR) quality indicators (QI) underwent pilot-testing for acceptability and implementation feasibility, namely inpatient referral and wait time. QI assessment was highly acceptable to the academic CR community. There were issues raised regarding inclusions and exclusions for the former QI which should be addressed before national roll-out.

Introduction

Cardiac rehabilitation (CR) is a comprehensive, outpatient chronic disease management program designed to improve cardiovascular health through the delivery of individualized secondary prevention.[1] While meta-analyses demonstrate CR participation lowers morbidity and mortality,[2] some "real-world" studies demonstrate CR delivery may not always be of the highest quality.[3]

The ability to quantify the quality of CR critically depends on the translation of evidence-based recommendations into the measurement of CR care. This is achieved through performance measures, or quality indicators (QIs). Indeed, performance measures have been developed by the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR),[4,5] as well as the European Association of Cardiovascular Prevention and Rehabilitation.[6] More recently, the Canadian Cardiovascular Society (CCS) initiated a development of QIs for CR.[7] Through their Best Practice Methodology,[8] the CCS CR QI working group developed 30 indicators.[9] They were asked by the CCS Steering Committee to identify the "top 5", incorporating the care dimensions of structure, process, and outcome as per the Donabedian model,[10] as well as safety.

Before these indicators are implemented, the CCS methodology delineates testing to ensure they are acceptable, feasible and valid "in the field". Indeed, one of the AACVPR performance measures has been field-tested.[11] Thus, as part of the third phase of the QI development process,[8] the working group field tested 2 of the "top 5" QIs. The objectives were to assess the: (1) technical feasibility, (2) workload required, and (3) acceptability of measuring the QIs, and issues in their implementation.

Method

Two process QIs were field tested between March-April 2013, namely QI-1 (% of eligible in-patients referred) and 2b (median wait time from CR referral receipt to enrollment). Full specification of these QIs is found in Supplemental Table 1. Research ethics exemption approval was received from each participating institution's research ethics board, as this was a study on quality.

The field testing methodology was informed by stage 2 of the framework and protocol for the United Kingdom Quality and Outcomes project.[12] The field test consisted of mixed-methodologies to test the QI attributes: (1) data extraction to test technical feasibility, (2) completion of a workload diary, and (3) participation in a semi-structured interview regarding acceptability and implementation. Based on the results obtained, one of the following recommendations was to be made: (1) There are no major barriers/risks/issues/uncertainties; (2) There are some barriers/risks/issues/uncertainties but these can be addressed before national roll-out; or (3) There are major barriers/risks/issues/uncertainties that preclude the indicators from recommendation.

Field Test Sites

CR sites were chosen through the members of the QI chapter working group or identified through the list of CR programs who contribute data to the Canadian Cardiac Rehab Registry. Sites were provided a modest stipend to undertake the work. One site in Alberta and 2 in Ontario participated (75% response). Each site was affiliated with a teaching hospital, and had some form of electronic records. Each site was asked to identify a "most responsible" field-tester to participate in the interview, who was a member of the CR staff and who ideally engaged in clinical charting as part of their role.

Materials

The study sites were provided with the 2 QIs (Supplemental Table 1) and instructed to collate their data during the defined 6-month period from July 1 to December 31, 2012. They were provided with a workload diary. For each QI, field-testers were instructed to enter the date and duration of activity, the type of activity undertaken (e.g., computer query searching, meetings), whether the activity was planned or scheduled (yes/no), and whether the activity required not doing other planned work (yes/no).

After the QIs were extracted and the workload diary had been received, the semi-structured interviews were conducted by telephone by the first author. The interview guide was informed by the protocol developed by Campbell et al.,[12] and input was solicited from members of the CR QI working group. The interview guide addressed feasibility, acceptability, uncertainties, exception-reporting or gaming, changes in practice, potential barriers, perceived workload, unintended consequences, and specific recommendations to revise the technical specification of the QIs. Calls were scheduled for one hour, and interviewees were provided with the interview guide in advance of the call. Consent was obtained from participants to audio-record the interviews.

Analyses

A descriptive examination of the QI results and workload diaries was performed. The semi-structured interviews were coded using an interpretive-descriptive approach, to create categories.[13] Coding was facilitated through NVIVO software. Coding was performed by YWL, and reviewed by SLG and YT.

Results

Table 1 displays the QI values remitted by the sites. Some challenges in feasibility were identified through email correspondence by the field-testers to the investigators. For QI-1, they reported difficulty ascertaining the total number of eligible in-patients, because their CR programs were arm's length from the inpatient setting. Site B was able to merge inpatient censuses with their CR database to cross-reference who was referred. However, although this method was fast and accurate, they did not ascertain inclusion and exclusion for each patient individually. Another site (A) required extra time to report their QIs as they realized patients were being double-counted (i.e., patients with unstable angina and who underwent percutaneous coronary intervention). With further consultation in their institution, the site was able to provide the QI data. Finally, another site (C) noted difficulty in identifying heart failure and valve surgery patients from the inpatient setting.

For QI-2b, one site (A) had different processes for intake of low-risk versus other patients.[14] Non-ST elevation myocardial infarction patients waited a median of 15.68 days, versus 39.68 for patients with other indications. They were hesitant to aggregate the wait times across all indicated patient groups. Another site (B) regularly computed the mean but not median wait. Overall however, the field testers perceived the QI data was accurate and reliable.

Workload

Table 2 displays the workload findings. As shown, more time was required to compile QI-1. This was due to the need to solicit data from an acute care site or in-patient unit to cross-reference with CR site data.

Based on the email correspondence received from the field-testers, it was evident that the values reported under-estimated the true workload required to compile each QI. However, the field-testers also noted that assessment would require less time once the initial process was established. Responses from the interviews, which are outlined below, indicate that sites did not find initial planning of their activities disruptive, but to execute data collection required unexpected need for follow-up activities. Overall, the workload was considered manageable. It was highlighted that they "just need to find the right people to do the work".

Interview Results

Key themes were identified through analysis of the semi-structured interviews. With regard to acceptability, field-testers reported that QI assessment was "the right thing to do", but would only be acceptable as a practice if measurement was easy to undertake. With regard to uncertainties, the field-testers perceived some of the exclusions, namely "serious mental illness" and "inability to ambulate" to be open to interpretation. This was an area they perceived could be "gamed". Another field-tester was uncertain about the definition of program enrolment as attendance at first program visit. Their first visit was a cardiopulmonary stress test, not what they consider the initiation of the program.

Field-testers identified a few changes in practice that would either facilitate easier QI capture, or improve the quality of their CR programs. One site reported they would no longer capture what type of healthcare provider referred the patient as an indicator of referral event, but instead also capture the referral event or procedure (A). Another program was working towards systematic referral, and they perceived this would facilitate ascertainment of QI-1 and also improve their performance. Another program

reported that the exercise increased their awareness of the weak linkage they have with inpatient care, and the program team was working to forge a better partnership (C). Finally, two programs (A,C) reported they would adopt better practices in charting exclusions.

Some potential barriers to QI assessment were reported. The test sites were academic, and the field-testers perceived that assessment would be more difficult for programs that did not have a database, for programs that were not in a hospital setting and hence are removed from their referral source, and for programs without personnel with some research or data expertise. Another barrier was lack of motivation to review individual charts to ascertain exclusions. Finally, two (A,C) field-testers reported difficulty identifying the appropriate person who could provide them with the denominator data for QI-I. Even when the correct party was identified, that person had to be persuaded to provide the information to the CR program in a context of competing priorities.

Only positive unintended consequences were reported. Field-testers reported they were more cognizant of the performance of their program and had heightened desire to improve their performance. Another field-tester reported improved communication across the inpatient-outpatient continuum of care.

A specific recommendation for revision to QI-1 was first to reduce the number of indicated conditions. In particular, there was a request to delete diagnoses of heart failure and chronic stable angina as they are variably charted. Second, the field-testers recommended deleting the exclusions as they were difficult to ascertain and could be biased due to subjectivity. One field-tester suggested instead using the benchmark of 85%

from the national policy statement on referral,[15] which takes into consideration that not all patients would be eligible for CR. There were no specific recommendations for revision to QI-2b.

Discussion

Results of this field test suggest that QI assessment is highly acceptable to the academic CR community. It is recommended that the QIs be implemented (2). However, minor revision should be considered for QI-1. In addition, given it was not feasible to assess a large number of individual charts for exclusions, therefore a shorter time interval than 6 months should be applied to reduce the number of charts to be individually reviewed. Some changes in data collection and management practices would be needed at each site to implement the QIs.

The results herein have been considered by the Canadian Cardiovascular Society in their development of a Best Practice Methodology for field-testing all cardiovascular QIs. Their process to date involves 6 phases (personal communication, Phil Astles, April 7, 2014). They have developed a data collection tool listing all the components of specific QIs with an accompanying interview script. Data on availability of the components is then sought from representatives at organizations that collect the data elements of interest, and used to inform QI refinements. This includes practical considerations such as data release procedures and required data linkage processes. Further phases include assessment of adoption, whether the QIs are sensitive to change, and the extent to which they predict patient outcomes.

This field test did not consider reliability or cost-effectiveness. Our colleagues at the AACVPR recently undertook a reliability test for a performance measure similar to

our QI-1.[11] This field test involved individual chart extraction, which required an average of 7 minutes / outpatient chart. Thirty-five patient charts from 7 hospitals and 6 outpatient programs were reviewed by 2 extractors twice, 1 week apart. Intra-abstractor reliability reflected excellent reproducibility for indication, exclusions, and referral. The inter-abstractor agreement ranged from good to excellent. Whether this is applicable to our context and for other QIs, remains to be assessed.

The study suffers from several limitations. First, while there was some consistency in the "themes" raised in the interviews, saturation of coding was not achieved. Therefore there are likely other factors not identified herein that need to be considered for a national roll-out. Second, only 3 sites participated and therefore conclusions should be generalized with caution. Moreover, these results are only generalizable to academic programs. Field-testers identified some additional barriers that non-academic programs may face in implementing the QIs. Non-academic sites should be solicited to undertake this field-testing exercise to determine whether feasibility holds. Furthermore, non-academic programs may also have a lower volume of patients during a 6 month reference period. Capturing the volume of patients / charts assessed, and specification of the reference period should be considered in future QI feasibility tests. Third, in future more QIs should be tested, as different issues may be raised. Finally, no structure or outcome QIs were tested. It is recommended that non-process QIs be field-tested in future, particularly the 3 other "top" QIs. In future, the sampling methods used by Thomas et al. should be applied.[11]

In conclusion, results of this field test support the adoption of the QIs. There are some revisions recommended to the inclusion and exclusion criteria for QI-1 on referral

prior to implementing nationally. Programs will require data collection, management and analytic support to undertake the initial QI assessment, however feasibility thereafter is high.

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Table 1. QI results by site

	QI-1 (%)	QI-2b (median days)
A	51.0%	Not reported†
B	68.4%	mean = 22
C	Not reported*	27

*The site had difficulty in identifying heart failure and valve surgery patients from the inpatient setting.

†The site had different processes for intake of low-risk versus other patients. They were hesitant to aggregate the wait times across all indicated patient groups.

Table 2. Total number of minutes required to compile each indicator, overall and by site

	QI-1	**QI-2b**
A	195	45
B	130	2
C	435	270
Mean ± standard deviation	252±161	108±145