Quality Improvement in the National Cancer Institute Community Cancer Centers Program: The Quality Oncology Practice Initiative Experience

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Abstract

Purpose: The National Cancer Institute (NCI) Community Cancer Centers Program (NCCCP) began in 2007; it is a network of community-based hospitals funded by the NCI. Quality of care is an NCCCP priority, with participation in the American Society of Clinical Oncology Quality Oncology Practice Initiative (QOPI) playing a fundamental role in quality assessment and quality improvement (QI) projects. Using QOPI methodology, performance on quality measures was analyzed two times per year over a 3-year period to enhance our implementation of quality standards at NCCCP hospitals.

Methods: A data-sharing agreement allowed individual-practice QOPI data to be electronically sent to the NCI. Aggregated data with the other NCCCP QOPI participants were presented to the network via Webinars. The NCCCP Quality of Care Subcom-

mittee selected areas in which to focus subsequent QI efforts, and high-performing practices shared voluntarily their QI best practices with the network.

Results: QOPI results were compiled semiannually between fall 2010 and fall 2013. The network concentrated on measures with a quality score of ≤ 0.75 and planned voluntary group-wide QI interventions. We identified 13 measures in which the NCCCP fell at or below the designated quality score in fall 2010. After implementing a variety of QI initiatives, the network registered improvements in all parameters except one (use of treatment summaries).

Conclusion: Using the NCCCP as a paradigm, QOPI metrics provide a useful platform for group-wide measurement of quality performance. In addition, these measurements can be used to assess the effectiveness of QI initiatives.

Introduction

Although medical oncologists have traditionally focused research efforts on the enhancement of therapeutics, quantifying and assessing the provision of cancer care in clinical practice are relatively new phenomena. The need for such research was highlighted in the recently released Institute of Medicine (IOM) 2013 report “Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis.”¹ The report notes that although progress has been made since the earlier 1999 IOM monograph,^{2,3} new challenges and incentives have emerged that will likely further expand the role and importance of quality measurement and improvement in the oncology research literature. These include the escalating cost of oncology care, the increased complexity in providing cancer care for older adults, evidence that limiting treatment variation provides safer and often less expensive care than less regulated approaches, pay-for-performance initiatives, and the advent of medical home and accountable care organizations. Finally, the National Cancer Institute (NCI) recently restructured its community-based research networks to create the current community-based research structure of the NCI Community Oncology Research Program.⁴ Cancer care delivery research will be a fundamental element of this endeavor and a prerequisite for participating

institutions. In this article, we report the quality measurement and improvement efforts of institutions within the NCI Community Cancer Centers Program (NCCCP). The community hospitals (ie, sites) within the NCCCP network were charged with cooperating in the quality initiatives of the program.

The NCCCP was launched in 2007 to enhance and standardize the provision of cancer care at the community level. Although the NCI has long sponsored university-affiliated comprehensive cancer centers, little national attention had been placed on the community hospital setting, where a majority of US patients with cancer receive their care. To initiate the NCCCP pilot program, NCI selected 10 organizations—a combination of individual hospitals and health systems with multiple hospitals—through a competitive application process and created a network of 16 sites. The program expanded to 30 sites in 2010 and currently has 21 sites. These 21 sites represent 18 organizations (ie, 17 individual community hospitals plus one national health system with four distinct hospitals participating in the NCCCP).

The NCCCP network extends from New England to Hawaii⁵; sites are geographically distributed across the country in urban, suburban, and rural locations. They include a mix of private-practice and employed-physician models, with approx-

imately 40% of physicians at the institutions being in private practice and 60% being contracted or employed by a health care system. The NCCCP network averages more than 39,000 new patients with cancer per year, with a range of 604 to 4,669 per hospital.

Each organization, through its NCCCP funding award, is contractually obligated to participate in program initiatives and satisfy specific deliverables. To support the achievement of program goals, the sites work collaboratively as a network through a series of meetings, teleconferences, and Webinars to formalize and standardize approaches to various aspects of cancer care. The primary focus areas of the network are to improve quality of care, optimize biospecimen collection and retention, reduce health care disparities, enhance survivorship programs, increase accrual to clinical trials, and explore mutually beneficial bioinformatics projects.⁵

When the NCCCP was launched, a subcommittee structure was developed to address a variety of tasks in each of the program focus areas. The Quality of Care (QOC) Subcommittee was co-chaired by clinicians from the constituent practices, with volunteers from each of the sites making up its membership. Among the roles of the QOC Subcommittee for the network were the enhancement of multidisciplinary care, the enrichment of genetics and navigation services, and the performance of a network-wide quality improvement project to enhance clinical effectiveness. Beyond the creation of the subcommittee structure, central administrative support, and the provision of connectivity via teleconference and collaborative Web applications, there was no infrastructure common to all the sites. Each institution organized its staff and prioritized its initiatives in ways unique to that NCCCP member.

In exploring opportunities to measure quality of care across the NCCCP network, the QOC Subcommittee chose to adopt the American Society of Clinical Oncology (ASCO) Quality Oncology Practice Initiative (QOPI) as the mechanism by which each participating organization could report its data.^{6,7} As an assessment process, QOPI provided flexibility by offering a choice of quality measures available to all of the practices. In addition, it simplified reporting by providing a standard process and secure Web-based interface to enter data and receive performance reports. Given the geographically dispersed nature of the NCCCP network, it was critical to find standardized measures of quality that were meaningful and acceptable to all the participants. In 2009, we reported our preliminary use of QOPI as a mechanism for quality assessment within the NCCCP.⁸ The use of QOPI metrics proved an effective and efficient method for measuring and comparing institutional performance across the NCCCP network. Ultimately, however, quality measurement by itself is a necessary but insufficient condition for improved performance. The NCCCP chose to take QOPI performance reports further and use them as a template for monitoring and measuring data-driven quality improvements. We now report the results of that effort.

Methods

Beginning in 2010, all NCCCP organizations were required to have a minimum of one affiliated oncology physician practice participating in QOPI as a subcontract deliverable (previously, QOPI participation was voluntary, with eight to 11 practices participating in each data collection round). All data analysis was determined to be exempt from institutional review board review by the National Institutes of Health Office of Human Subjects Research.

In an effort to compile consistent reports among the sites during the semiannual data abstraction periods, the NCCCP required that each QOPI practice participate in the same modules. The selection of modules was determined by QOPI participants but largely reflected conditions seen in high-enough volume by all the practices to allow for adequate sample size. Therefore, in addition to collecting data on the QOPI core measures (ie, pain management, smoking cessation, staging, consent documentation, and treatment summaries) at each abstraction, the NCCCP also completed breast cancer and symptom/toxicity management modules during the spring abstraction and colon cancer and end-of-life care during the fall abstraction. (In 2010, data on lung cancer were abstracted, but colon cancer was later substituted to better conform to institutional disease incidence of NCCCP organizations and better align with QOPI certification requirements.)

Normally, the performance of each QOPI practice is not shared with anyone other than the practice itself. These individualized data are meant to be compared internally with aggregated data for the entire QOPI pool for that abstraction period. As outlined previously,⁸ the NCCCP participants have signed a data-sharing agreement, allowing ASCO, in its role overseeing QOPI, to share their results with the NCI. Performance reports with blinded practice results are then compared with other NCCCP-affiliated practices and the QOPI and NCCCP aggregate. This level of comparison identified sites with participants that excelled on individual quality measures and created the opportunity to share best practices with the network at their discretion. The comparative data from performance reports examined in relation to the network aggregate and QOPI national of each abstraction period were shared with the group in the form of a semiannual Webinar, which was also attended by ASCO QOPI staff. After discussing and analyzing best practices of the individual high-performing organizations, a consensus was reached regarding the implementation of various interventions across the NCCCP network. None of these were binding recommendations, and each practice was free to implement the suggested intervention or not.

Figure 1 is a generic example of how data are made available to the NCCCP network after participation in a QOPI abstraction period. It shows the performance of each participant in comparison with other individual NCCCP participants, the NCCCP aggregate, and the QOPI aggregate nationally on a parameter in that abstraction period. On this particular standard, the highest-performing NCCCP participant had a quality rating of 1.0 and the lowest of 0.33 (numerator, No. of medical records appropriately addressing

Figure 1. Generic data example. NCCCP, National Cancer Institute Community Cancer Centers Program; QOPI, Quality Oncology Practice Initiative.

quality indicator; denominator, No. of medical records analyzed for quality indicator). The NCCCP aggregate score was 0.76, and the QOPI national aggregate was 0.68. After analyzing our initial data from the fall 2010 collection, we opted to concentrate on those quality measures for which the group scored a quality rating of ≤ 0.75 . These measures were then subsequently reanalyzed for impact of the voluntary group-wide interventions. Our period of analysis extended from fall 2010 through fall 2013.

Results

From fall 2010 through spring 2012, QOPI participation was at its highest (38 to 50 NCCCP-affiliated practices). Participation dropped in fall 2012, after budgetary changes at the NCI resulted in a contraction of the program and reduction in the number of organizations participating in the NCCCP, thus reducing the number of affiliated practices participating in QOPI. The number of medical records abstracted ranged from a low of 1,434 in fall 2012 to a high of 2,757 in fall 2010. Review of our reports from fall 2010 identified several areas where quality could be improved based on our predetermined threshold of a quality rating of ≤ 0.75 . These areas, within the categories of QOPI core and symptom management measures, included the following: chemotherapy intent documented in medical record, chemotherapy intent discussed with patient, signed consent form in medical record, provision of smoking-cessation counseling, assessment of emotional well being, documented plan to address problems with emotional well being, discussion of infertility risks before chemotherapy with patients of reproductive age, and completion of treatment summaries within 3 months of the end of treatment. Within the end-of-life module, the following fell below the established quality threshold: pain intensity quantified on either of the last two visits before death, hospice enrollment, hospice or palliative care enrollment, hospice enrollment more than 7 days from death, and

hospice enrollment, palliative care referral, or documented discussion. We identified no disease-specific module quality measures that fell at or below our 0.75 quality threshold. Table 1 lists all of the QOPI measures for which the NCCCP had a quality score of ≤ 0.75 in fall 2010. The average of all QOPI participants for that abstraction period is included for contextual reference.

Although the network proposed common strategies to address these deficiencies based on consensus, how each strategy was implemented at the different sites varied based on staffing and other programmatic issues unique to the individual institution. Each site was free to adapt any strategy suggested by the subcommittee and adopt it based on its own timeline. Specifically, some of the strategies that evolved from the teleconferences were the development of a sample chemotherapy (both oral and parenteral) consent form template, use of a distress thermometer to document emotional distress, implementation of processes to increase assessment of pain, and incorporation of these assessments into a data field within the electronic medical record. Many of the NCCCP sites enhanced their relationships with local fertility experts and became more familiar with Web site resources, such as <http://www.myoncofertility.org>,⁹ after an educational Webinar on fertility preservation. QOPI data prompted sites to develop smoking-cessation programs. A separate subcommittee was formed to optimize and simplify the integration of treatment summaries into the practices.

After the gradual implementation of these program enhancements, we tracked and documented the performance scores of the NCCCP QOPI participants for the suboptimal measures from fall 2010 through fall 2013. These are summarized in Table 1. With the exception of one parameter, there was a measurable increase in reported performance. Improvements were seen in virtually all measures, with the exception of the routine adoption of treatment summaries, a measure in which performance actually declined over the time period. This

Table 1. QOPI Measures With NCCCP Quality Score of ≤ 0.75

Measure No.	QOPI Measure	Fall 2010		Fall 2013		NCCCP Variance (2010 to 2013)
		NCCCP	QOPI	NCCCP	QOPI	
10	Chemotherapy intent (curative v palliative) documented	0.75	0.84	0.89	0.90	0.14
11	Chemotherapy intent discussion with patient documented	0.75	0.83	0.85	0.86	0.10
14	Signed patient consent for chemotherapy	0.65	0.67	0.79	0.76	0.14
17	Chemotherapy treatment summary completed within 3 months of chemotherapy end	0.39	0.49	0.22	0.35	-0.17
22a*	Smoking/tobacco use—cessation counseling recommended to smokers/tobacco users in past year	0.32	0.30	0.58	0.54	0.26
24	Patient emotional well being assessed by second office visit	0.74	0.75	0.80	0.77	0.06
25	Action taken to address problems with emotional well being by second office visit	0.73	0.74	0.84	0.78	0.11
33	Infertility risks discussed before chemotherapy with patients of reproductive age	0.18	0.26	0.37	0.32	0.19
36a	Pain intensity quantified on either of last two visits before death (including documentation of no pain)	0.73	0.65	0.76	0.83	0.03
42	Hospice enrollment	0.61	0.55	0.68	0.61	0.07
43	Hospice enrollment or palliative care referral/services	0.67	0.62	0.79	0.72	0.12
45a	Hospice enrollment and enrolled > 7 days before death (defect-free measure, 42; inverse, 45)	0.38	0.36	0.43	0.39	0.05
47	Hospice enrollment, palliative care referral, or documented discussion (combined measure, 43 or 46)	0.75	0.70	0.84	0.78	0.09

Abbreviations: NCCCP, National Cancer Institute Community Cancer Centers Program; QOPI, Quality Oncology Practice Initiative.

* Fall 2010 measure: Smoking-cessation counseling recommended to cigarette smokers by second office visit.

paralleled a similar decrease in the QOPI national aggregate (Table 1). Figure 2 highlights the incremental improvement in NCCCP performance on selected measures annually for the fall abstraction period over 4 years.

Discussion

By adopting QOPI participation as a fundamental backbone of the quality improvement efforts of the NCCCP, we attempted to create a universally accepted definition of quality across the NCCCP network. The NCCCP QOC Subcommittee established QOPI as the essential language through which each of the organizations could convey its adherence to quality measures and any changes over time after implementation of new initiatives. This was critical to the program, with sites so widely

distributed geographically and made up of physicians in a variety of practice environments.

By collaborating with ASCO to measure QOPI performance at NCCCP-affiliated practices, in addition to enhancing quality within the group, we also attempted to answer two related process questions. The first of these questions was whether such a network could create a workable procedure through which the QOPI performance reports could be analyzed, best practices discussed, and interventions proposed and initiated. The second question was whether the creation of this process would allow for more effective and efficient quality improvement projects for the NCCCP participants, perhaps not as easily achievable were they to have enrolled in QOPI as individual sites.

Figure 2. National Cancer Institute Community Cancer Centers Program performance from fall 2010 to fall 2013.

The combination of teleconferences, Webinars, extensive use of listservs, and collaborative Web applications for knowledge sharing and information gathering substituted effectively for face-to-face contact during the evolution of the QOC projects. The NCCCP is one of several groups that has committed to using QOPI metrics as a quality standard across a network.¹⁰⁻¹² Most of these, however, are locoregional initiatives and do not share the logistic difficulties of incorporating practices from across the United States and over several time zones.

The iterative development of our system over time effectively met the needs of our constituents and resulted in some measurable gains in quality across the consortium. Demonstrable improvements were noted in measures related to addressing chemotherapy intent, provision of consent forms, assessment and management of emotional well being, and several parameters related to end-of-life care. All of these quality measures had an NCCCP network quality score of ≤ 0.75 , and most exceeded this quality threshold over the analysis period.

Despite consensus-based efforts to improve rates for the provision of fertility counseling and formal smoking-cessation programs, the network fell short of its 0.75 goal. These results largely parallel the results reported by Neuss et al¹³ describing national QOPI trends. In our experience, the ability to increase the performance of the group on fertility preservation measures has been limited by the availability of expertise to some of our more rural members and by the presence of several faith-based institutions within the NCCCP network; many of the fertility preservation techniques are in direct conflict with the beliefs of these institutions. Smoking-cessation efforts have lagged nationally despite studies demonstrating their benefits to patients with cancer.^{14,15} Many of our members have cited a sentiment that for some of our patients, smoking cessation is a low priority with a new diagnosis of cancer, whereas for others with widely metastatic disease, it is an intervention with potentially limited benefit.

The group also has been slow to adopt treatment summaries, despite this having been a suggested initiative for many years.¹⁶ Feedback from most of the participants was fairly uniform in the assessment that the creation of the treatment summary requires a significant amount of work on the part of the physician, support staff, and information technology services. For many sites, the capital for such an endeavor is prioritized for other interventions felt to be of higher impact. Nationally, this may have also been true for non-NCCCP members participating in QOPI whose scores also dropped (Table 1).

We believe that the NCCCP QOC structure was not only a success but potentially a model to emulate in other initiatives. Without the NCCCP infrastructure, which created a learning collaborative, we believe that quality improvements would have been difficult in so large a group. Admittedly, this is difficult to prove. In the absence of randomized data, it is difficult to make any definitive statements about the quantitative impact of the NCCCP collaborative on the quality improvement noted in this project. Each of the sites and affiliated practices were highly motivated by virtue of their NCI funding and institutional stake in the NCCCP and thus likely different from the typical

QOPI participant. The issue of the Hawthorne effect^{17,18} (ie, temporary increase in productivity associated with act of observing process) must similarly be addressed in accounting for the improvements seen within the group. As has been noted in the analysis of national QOPI efforts,¹³ the Hawthorne effect seems unlikely for two reasons. The impact of observation tends to wane over time, which was not the case here. In fact, on many parameters, there was a continued improvement in performance over time. In addition, improvements were not universal, and areas remain where there have not been substantive improvements despite the ongoing observation and analysis. Self-reporting is an essential underpinning of QOPI and could be considered an additional flaw in our analysis, because no practice was independently audited. One cannot evoke this argument without impugning the entire QOPI process, which has served ASCO and its members well for years. In addition, 11 NCCCP sites have QOPI-certified practices, a process that further legitimizes their quality credentials by submitting to intermittent ASCO staff audits, which of late have been mandatory.

Could quality improvement efforts have occurred independently at each of our constituent sites without the network consortium and QOC Subcommittee structure? Our belief is that although each of our sites might have gotten to the same place on its own, the NCCCP QOC model provided an arena in which that evolution could happen much more efficiently. By leveraging the efforts and best practices of one or two member practices, the approach could be disseminated to all NCCCP sites without each having to singularly struggle through that process. A similar effect was noted with the participation of the NCCCP in the Rapid Quality Reporting System initiative.¹⁹ The unique collaborative nature of the NCCCP streamlined the quality improvement process for all practices, while the investments made by the NCI in support of this program further reduced the personnel and time investments at each practice.

In conclusion, the focus of the NCCCP on quality improvement and the use of QOPI metrics created a successful mechanism of repeated cyclic standard measurement and reporting of quality among a large, diverse network of cancer programs. The efforts of our group highlight that quality measurement through QOPI can guide and facilitate improvement efforts, but there remain several parameters for which there are a variety of professional and institutional obstacles that prevent uniform adoption of all care recommendations assessed through QOPI metrics.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST**Quality Improvement in the National Cancer Institute Community Cancer Centers Program: The Quality Oncology Practice Initiative Experience**

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Appendix

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