Original Contribution

Assessing the Development of Multidisciplinary Care: Experience of the National Cancer Institute Community Cancer Centers Program

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Abstract

Purpose: The National Cancer Institute Community Cancer Centers Program (NCCCP) began in 2007 with a goal of expanding cancer research and delivering quality care in communities. The NCCCP Quality of Care (QoC) Subcommittee was charged with developing and improving the quality of multidisciplinary care. An assessment tool with nine key elements relevant to MDC structure and operations was developed.

Methods: Fourteen NCCCP sites reported multidisciplinary care assessments for lung, breast, and colorectal cancer in June 2010, June 2011, and June 2012 using an online reporting tool. Each site evaluated their level of maturity (level 1 = no multidisciplinary care, level 5 = highly integrated multidisciplinary care) in nine elements integral to multidisciplinary care. Thematic analysis of open-ended qualitative responses was also conducted.

Results: The proportion of sites that reported level 3 or greater on the assessment tool was tabulated at each time point. For all tumor types, sites that reached this level increased in six elements: case planning, clinical trials, integration of care coordination, physician engagement, quality improvement, and treatment team integration. Factors that enabled improvement included increasing organizational support, ensuring appropriate physician participation, increasing patient navigation, increasing participation in national quality initiatives, targeting genetics referrals, engaging primary care providers, and integrating clinical trial staff.

Conclusions: Maturation of multidisciplinary care reflected focused work of the NCCCP QoC Subcommittee. Working group efforts in patient navigation, genetics, and physician conditions of participation were evident in improved multidisciplinary care performance for three common malignancies. This work provides a blueprint for health systems that wish to incorporate prospective multidisciplinary care into their cancer programs.

Introduction

The nature of cancer and its treatment requires the involvement of surgery, radiation and medical oncology, as well as ancillary support services[1-3] to provide optimal care for patients. To improve cancer care delivery, the Institute of Medicine recommends establishing patient-centered, team-based models of care. This includes an adequately staffed and coordinated workforce, use of evidence-based guidelines, and use of national quality reporting programs.[4] Similarly, the 2006 American Society of Clinical Oncology and the European Society for Medical Oncology consensus statement on quality cancer care defined the delivery of multimodality treatment by a multidisciplinary team of appropriately skilled health professionals as an essential component of quality cancer care.[5]

The advent of multidisciplinary clinics and conferences (MDCs) created a structured process for multiple oncologic specialists and ancillary and supportive care providers to diagnose and develop treatment options for a patient with cancer during a single meeting or visit. Conferences offer an opportunity for physicians to review cases with colleagues, discuss cases in real time, and coordinate prospective treatment plans.[2,6,7] Clinics provide patients with the opportunity to be seen by a medical oncologist, radiation oncologist, and surgeon on the same day, and be presented with a coordinated treatment plan. Both conferences and clinics provide a platform for physicians to actively participate in the treatment management process and for patients to make informed decisions about their treatment options. MDCs differ from the traditional retrospective tumor conferences by presenting "a deliberately designed system that creates a common communication platform among different providers of cancer care, enabling complex decision making and resulting in a tailored individual treatment plan."[7(p274)]

MDCs have been associated with improvements in quality of care by helping to inform treatment decision making, enhance coordination of care, and increase adherence to clinical guidelines and use of evidence-based care.[2] MDCs also favorably affect time from referral to evaluation, reduce time from evaluation to the initiation of treatment in breast cancer,[8] improve patient satisfaction scores,[9] and increase access to clinical trials.[10] Furthermore, MDCs have demonstrated improved survival in breast,[11] head and neck,[12] ovarian[13] and colorectal cancers.[14] Despite these advantages, health care systems struggle to implement and sustain MDCs.

The National Cancer Institute (NCI) Community Cancer Centers Program (NCCCP) began in 2007 with a goal of expanding cancer research and delivering quality care in communities.[15] Since its inception, expansion of multidisciplinary care has been a priority for the program. The NCCCP defines multidisciplinary care as prospective, synchronous, collaborative care based on national treatment guidelines. The NCCCP created a self-assessment tool to measure and guide MDC program development.[16] In 2010, NCCCP sites were charged with increasing the number of MDC teams and improving integration of MDC programs. Funding was provided by a contract mechanism to help support development of these programs. Sites used the NCCCP tool (Table 1) to assess program maturation over a 2-year period. Our analysis builds on the limited literature surrounding the MDC development and maturation process; we examine this process over a 2-year period (2010-2012) at NCCCP sites for three of the most common cancers in the United States.

Methods

Sample

This analysis focuses on a cohort of 14 sites in the NCCCP network participating in a performance improvement project. These sites were geographically distributed across the United States (south, two; west, three; midwest, five; and east, four). Our institutions included urban settings (four sites), small urban settings also serving rural communities (six sites), and rural settings (four sites). Sites reported an average of 2,394 patient cases (range, 822 to 4,669). Thirty percent of the site-affiliated physicians were in private practice, and 70% were employed or had a contract with the health care system.

Data Collection

The MDC assessment tool was developed as a consensus project by the NCCCP sites, designed to benchmark performance improvement and aid in developing strategies for advancing MDC initiatives. The tool measured levels of maturation for nine assessment areas: case planning, physician engagement, treatment team integration, integration of care coordinators, infrastructure, financial, clinical trials, medical records, and quality improvement. Each area was assessed on a scale of 1 to 5, ranging from “evolving MDC” to “achieving excellence,” respectively.

Level 1 involved retrospective case review and educational conferences, and level 5 represented a highly integrated MDC. As MDC structures and processes matured, the institutions moved to prospective case planning, and increased integration of care coordinators and allied health professionals. Levels 2 through 4 included increasingly sophisticated and coordinated care. Level 5 was defined as the highest level for each MDC assessment area. Four of the nine areas used only a 3-point scale (level 1, 3 and 5). These areas did not require the detailed differentiation between levels that was deemed necessary in the other assessment areas.

The NCCCP sites used tool version 3.0 (Table 1) to assess their respective MDCs. Sites submitted their assessment level ratings for breast, colon, and lung MDCs at three time points: 2010 (retrospective baseline), 2011 (midpoint), and 2012 (final).

They also answered the following question for all nine areas: “For each assessment area in which the level increased over time, what actions did you implement which resulted in those advancements (eg, engaged a navigator, identified a physician leader)?” Before each data collection period, Quality of Care subcommittee staff provided educational sessions to help sites standardize reporting and facilitate proper use of the tool. Quantitative self-assessment data and qualitative open-ended text were recorded on an Excel spreadsheet and submitted to the NCI contractor, Leidos Biomedical Research, (formerly known as Science Applications International Corporation-Frederick, Frederick, MD).

Data Analysis

Descriptive quantitative analysis was conducted for the nine assessment areas to examine change over time. Univariable statistics were used to examine the level at which sites were functioning for each of the assessment areas. Change over time was defined as the percentage of sites at level 3 or greater at the final time point compared with those at level 3 or greater at baseline. Because most of the sites were already at level 3 in 2010 for integration of care coordinators, our baseline in this area was defined at level 4 or greater.

Qualitative content analysis examined the sites’ self-reported descriptions of the strategies and actions they used to increase the MDC level in the assessment areas. Qualitative data were reported throughout the 2-year assessment period. Open-ended text responses were analyzed through an iterative process to discern emerging themes within each assessment area. Three reviewers independently analyzed and coded the qualitative information and compared resultant themes until consensus was reached.[17] All data analyses were determined to be exempt from institutional review board review by the National Institutes of Health Office of Human Subjects Research.

Results

Each of the assessment areas are defined in the MDC assessment tool (Table 1). Quantitative and qualitative results are presented for each of the assessment areas for the three malignancies. Table 2 shows the percent change in the number of sites reporting a level 3 or greater between baseline and final time periods for all assessment areas. We highlight six assessment areas that demonstrate the highest percentage of change over time: case planning, physician engagement, treatment team integration, integration of care coordinators, quality improvement, and clinical trials. Table 3 presents a summary of the qualitative themes identified for improvements in the six assessment areas and the site-reported comments associated with the underlying reasons for the level advancements.

Case Planning

At baseline, a greater percentage of NCCCP sites reported breast MDCs at level 3 or above for case planning (71%) compared with either colorectal (29%) or lung (57%). By 2012, the percentage of sites at level 3 or greater had increased for all three

Table 1. MDC Assessment Tool, Version 3.0

Assessment Area	Educational Conference (tumor board)*	Elements of the MDC Continuum (prospective review of cases)†			
	Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Case planning	Case planning and treatment are performed by individual physicians without input from a multidisciplinary conference. Patients present to multiple physician offices on different days.	< 25% of case planning is done through a multidisciplinary conference that occurs on a recurring basis.	25%-75% of case planning is done through a multidisciplinary conference that occurs on recurring basis.	> 75% of case planning is done through a multidisciplinary conference that occurs on recurring basis.	All case planning is done through a multidisciplinary conference which occurs as the patient encounters care.
Physician engagement	Diagnostic and treatment physicians belong to multiple independent groups, with little interaction.	Diagnostic and treatment physicians belong to multiple independent groups, and each group is actively engaged with the cancer center.	The cancer center is implementing a Conditions of Participation agreement, and physicians are actively engaged in developing treatment standards.	Same as prior, with the addition of engagement for strategic direction. Majority of physicians have signed Conditions of Participation.	Same as prior, with the addition of physicians who have clinical operational authority for the MDC. All physicians have signed Conditions of Participation.
Treatment team integration	Sporadic integration of diagnostic and treating physicians (< 80%)	Consistent integration (≥ 80%) of case-appropriate diagnostic and treating physicians.	Same as prior; integration of additional allied health practitioners (eg, nutrition, PT/OT, palliative care, genetic counselors, mental health practitioner).	Same as prior; all members of MDC team participate in treatment planning by consensus.	Same as prior; primary care physician is consistently notified of treatment plan.
Integration of care coordinators‡	Patient care is episodic. Patient has to present to multiple locations on different days for treatment and or diagnostic modalities. Information is stored in multiple locations, and difficult to coalesce. No care coordinators.	A care coordinator is available if needed to arrange treatment and diagnostic modalities to make care less episodic. Information is coordinated and is readily available to physicians and staff.	Same as prior, with a care coordinator engaging < 25% of patients at least once during their treatment.	Same as prior, with a care coordinator engaging 25%-75% of patients at least once during their treatment.	Multiple care coordinators are used for > 75% of patients from the point of initial contact through survivorship. A system to track interventions that lessen barriers to efficient care is used by care coordinators.
Infrastructure	Limited physical infrastructure. Hospital, physician office model.	N/A	Some dedicated physical facilities that do not cover the full spectrum of care.	N/A	Dedicated cancer center with ability to provide the full spectrum of care to patients.
Financial	Billing is episodic based on encounter with facility or physician. No facility fee is applied.	N/A	Physicians bill separately. Facility fee for MDC. Prospective financial counseling available to patient.	N/A	Global bill for MDC billing inclusive of facility fee. Prospective financial counseling available to patient.
Clinical trials	Patients not screened for eligibility for clinical trials. Patients not informed about clinical trial options.	N/A	All patients screened for trial eligibility and availability; clinical trials staff present at MDC.	N/A	Same as prior; clinical trials staff reviews all eligible charts, engages care coordinators and treating physicians prior to initial treatment.
Quality improvement	National care guidelines not used to guide treatment.	National care guidelines are used as a framework for decision making.	Same as prior, with QOPI and/or RQRS data used to guide quality improvement initiatives in the hospital and physician offices.	Same as prior, with patient survey data (any type) used to guide quality improvement initiatives.	Same as prior, with a structured compliance review process in place to measure guideline adherence and guide quality improvement initiatives.
Medical records	Medical records are not integrated. Little to no sharing. Mixture of paper and EMR.	N/A	> 50% of cancer physicians have an integrated EMR and/or major IT functions shared with the cancer center.	N/A	> 75% of cancer physicians have an integrated EMR and/or major IT functions shared with the cancer center to provide access to information across the care continuum.

NOTE. Data adapted.[16a]

Abbreviations: EMR, electronic medical records; IT information technology; MDC, multidisciplinary care; N/A, not applicable; OT, occupational therapy; PT, physical therapy; QOPI, Quality Oncology Practice Initiative; RQRS, Rapid Quality Reporting System.

* Does not impact treatment planning. Retrospective review of cases.

† Elements of the multidisciplinary care continuum present may reflect institutional variability of site-specific disease burden and patient volume. Prospective cases include but are not limited to: newly diagnosed and treatment not yet initiated; newly diagnosed and treatment initiated, but discussion of additional treatment needed; previously diagnosed, initial treatment completed but discussion of adjuvant treatment or treatment for recurrence or progression needed; or previously diagnosed, and discussion of supportive or palliative care needed.

‡ Includes, but is not limited to, nurse navigators, navigators, survivorship nurses, social workers, and case managers.

Table 2. Number and Percentage of Sites That Reported Level 3 or Greater Multidisciplinary Care in Nine Assessment Areas, 2010 to 2012 (N = 14)

	Breast			Colon			Lung		
Assessment Area	**2010**	**2012**	**Change Over Time**	**2010**	**2012**	**Change Over Time**	**2010**	**2012**	**Change Over Time**
Case planning									
No.	10	13		4	8		8	12	
%	71	93	22	29	57	28	57	86	29
Physician engagement									
No.	4	14		2	9		3	10	
%	29	100	71	14	64	50	21	71	50
Treatment team integration									
No.	6	13		4	10		5	12	
%	43	93	50	29	71	42	36	86	50
Integration of care coordinators*									
No.	7	14		3	8		4	12	
%	50	100	50	21	57	36	29	86	57
Infrastructure									
No.	13	14		12	12		12	12	
%	93	100	7	86	86	0	86	86	0
Financial									
No.	9	10		5	6		6	8	
%	64	71	7	36	43	7	43	57	14
Clinical trials									
No.	11	14		8	11		10	14	
%	79	100	21	57	79	22	71	100	29
Quality improvement									
No.	7	12		6	11		7	11	
%	50	86	36	43	79	36	50	79	29
Medical records									
No.	9	10		8	10		9	11	
%	64	71	7	57	71	14	64	79	15

* Indicates sites that reported level 4 or greater.

disease-type MDCs, though more sites included case planning in breast MDCs compared with tumor types: breast (93%), colorectal (57%), and lung (86%). Themes associated with improvement in case planning included increasing the number of patients identified for MDC presentations and increasing the frequency of team participation in MDCs. Navigators were reported to be instrumental in helping to identify eligible patients for MDCs.

Physician Engagement

At the end of the assessment period, all sites showed substantial improvement in physician engagement. Breast MDCs showed the greatest change (71%) over time, reaching 100%, followed by colorectal and lung (50% change for each). Sites reported that increases in physician engagement were largely attributable to the implementation of the NCCCP Conditions of Participation (COP), which requires clinicians to participate in the initiative's research and quality improvement initiatives, and the identification of physician champions for the MDC.

Treatment Team Integration

At baseline, a greater percentage of sites reported integration of allied health professionals into the treatment team for breast MDCs than for colorectal or lung MDCs, and the percentage of sites reporting a level 3 or greater for breast MDCs increased from 43% to 93% over the study period. The percentage of colorectal and lung MDCs with treatment team integration at level 3 or greater more than doubled between 2010 and 2012 (colorectal increased from 29% to 71%, and lung increased from 36% to 86%). Qualitative themes most commonly associated with improvement in this assessment area were integration of allied health practitioners and engagement of primary care physicians.

Integration of Care Coordinators

Between 2010 and 2012, the percentage of sites at level 4 or greater for integration of care coordinators for each tumor type more than doubled. By 2012, 100% of breast MDCs had a maturity level of 4 or 5 in this area, an increase from 50% in

Table 3. Qualitative Themes From Site-Reported Data Associated With Improvements in Six Assessment Areas of Multidisciplinary Care for Breast, Colon, and Lung Cancers

Qualitative Theme	Illustrative Quote
Assessment Area: Case Planning	
Increase number of patients identified for MDC	Increased referral to cancer center from primary care. Dedicated navigators for upper and lower GI cancer who triaged the MDC. Navigator developed mechanism to identify and contact new patients with lung cancer.
Encourage team members' active participation	Increased physician and staff engagement and organizational support. Engaged a navigator, educated care team on preferred patient pathways through MDC. Increased nurse navigator services to allow full-time navigation for breast cancer. Also used other NCCCP paid staff to develop and implement a Cancer Care Specialty Center in which more than 75% of patients with breast cancer are actually seen by all disciplines on the day of the MDC conference.
Increase frequency of conferences/meetings	Site-specific tumor board for colorectal cancer moved from monthly to weekly. Frequency of lung conferences increased.
Assessment Area: Physician Engagement	
Implement conditions of participation	Implemented COP agreement: 82% of physicians have signed it. COP offered to all applicable subspecialists. Implemented COP agreement with radiation oncologists in breast MDC.
Identify physician champions	Focused efforts of physician leader. Hospital hired a breast surgeon to lead program, and the NCCCP principal investigator is working with her to ensure treatment standards are adhered to and that all cases are reviewed in MDC.
Assessment Area: Treatment Team Integration	
Integrate allied health practitioners	Engaged navigator, invited multiple new disciplines (physical therapy, navigator, social worker) to MDC. Hired bilingual navigators for Spanish-speaking patients and increased coordination of the supportive care team. Implemented breast cancer rehabilitation program and patient navigators.
Engage primary care providers	Primary care providers consistently notified through electronic medical record technology.
Assessment Area: Integration of Care Coordinators	
Hire new staff	MDC coordinator began February 2011; now engaged in each MDC. Addition of GI cancer MDC coordinator. Nurse navigator hired; involved with 100% of patients with colorectal cancer. Hired additional breast navigator; now contacting patients several times during course of treatment.
Integrate navigators	Navigator increased volume and now interacts with 100% of patients using MDC. Oncology navigator assigned to lung MDC; early referral process established with Lung Clinic; additional navigators follow patient through treatment and survivorship. Process change allowed navigator to coordinate more than 25% of cases.
Engage social workers and nurses	Social worker and nurses engaged with 15%-20% of patients. Research nurse functioned as care coordinator for more than 25% of patients.
Assessment Area: Quality Improvement	
Use national quality reporting data	Multiple performance improvement opportunities identified through QOPI. Improved RQRS reporting; implemented initiative to increase referrals to genetic counseling. Used QOPI and CP3R measures to guide quality improvement.
Use guidelines	Navigators facilitated discussion of NCCN guidelines at the MDC. NCCN guidelines reviewed for every patient in MDC.
Encourage patient feedback	Implemented patient survey into MDC, which provides targets for improvement. Identified (quality improvement) opportunities through patient experience surveys.
Assessment Area: Clinical Trials	
Integrate clinical trial staff	Clinical trials staff became able to attend the MDC, and full-time nurse navigator for breast MDC was actively engaged in clinical trials recruitment. Clinical trials staff present in Cancer Center, screening all patients and discussing prospectively with physicians. Clinical trial opened for prevention; all high-risk patients with breast cancer who attend the clinic were screened; clinical research nurse was present at the clinic if potential patient was attending.
Integrate navigators and clinical research nurses	Engaged lower GI cancer navigator in screening for clinical trials. Navigator engaged before treatment decisions and discussed clinical trials options with eligible patients Research nurse engaged before treatment decisions, discussed clinical trials with 100% of potentially eligible patients Breast cancer navigators better integrated with clinical research nurses.

Abbreviations: COP, Conditions of Participation; CP3R, Cancer Program Practice Profile Reports; MDC, multidisciplinary care clinic and conference; NCCCP, National Cancer Institute Community Cancer Centers Program; NCCN, National Comprehensive Cancer Network; QOPI, Quality Oncology Practice Initiative; RQRS, Rapid Quality Reporting System.

2010. The percentage of sites with colorectal MDCs at level 4 or 5 in this area increased from 21% in 2010 to 57% in 2012. Sites with lung MDCs at level 4 or 5 in this area improved from 29% in 2010 to 86% in 2012. Qualitative data from sites indicated that hiring new staff such as navigators, nurses, and social workers was the most common strategy for integrating care coordinators.

Quality Improvement

In 2010, 50% of sites reported level 3 or greater in quality improvement for breast and lung MDCs, and 43% of sites reported level 3 or greater in this area for colorectal MDCs. In 2012, 79% of sites for both colorectal and lung cancer and 86% of sites for breast cancer were at level 3 or greater in quality improvement. The common qualitative themes associated with the higher percentage of sites showing improvement in quality improvement were use of national quality data for benchmarking and feedback, use of national guidelines, and feedback from patients through cancer center patient satisfaction surveys. For example, sites reported increased participation in national quality reporting initiatives, such as the Commission on Cancer Rapid Quality Reporting System and the American Society of Clinical Oncology Quality Oncology Practice Initiative.[18,19]

Clinical Trials

At baseline, 79% of sites assessed the eligibility of patients with breast cancer to enroll onto clinical trials. Eligibility of patients for colorectal clinical trials was assessed in 57% of sites, and 71% of sites assessed eligibility for enrollment in lung cancer trials. By 2012, 100% of breast MDCs, 79% of colorectal MDCs, and 100% of lung MDCs had achieved level 3. Key themes that emerged as reasons for improvement were integration of clinical trials staff into the MDC and inclusion of navigators and clinical research nurses as members of the teams.

Discussion

The NCCCP was given a unique opportunity to create the groundwork for the development of multidisciplinary care in the community setting. Qualitative themes highlighted the underlying reasons for the maturation of MDC programs at NCCCP sites, and these themes aligned closely with the Quality of Care efforts within the network. Three key strategies implemented by the network promoted maturation of MDCs; prospective case planning, the NCCCP COP agreement, and care coordination.

Multiple sites reported that a fundamental component of MDC maturity was the progressive increase in the percentage of patient cases presented prospectively. This allowed treatment planning to occur in real time. The network used a definition of prospective case planning consistent with the Commission on Cancer 2012 Cancer Program Standards to develop a self-assessment tool. This enabled sites to measure progress and set annual performance improvement goals. Sites increased the number of MDCs for all three cancer sites, with the largest increase in colon (from eight at baseline to 12 at study end), providing the institutions with the opportunity to review more cases prospectively, develop comprehensive treatment plans, and begin therapy with minimal delay. Early identification of patients appropriate for MDC planning increased the number of patient cases presented at MDCs and encouraged more active participation from the care delivery team. The prospective review provided a forum for the MDC to focus on the use of evidence-based guidelines. Sites could also monitor their adherence to quality measures by participating in national quality reporting initiatives.

The NCCCP network mandated the implementation of COP at each site, which facilitated physician engagement in the MDC.[20] The NCCCP created a COP template and distributed it to each site, which in turn, adopted locally determined requirements for the COP within their care delivery setting. These requirements included professional affiliations, expertise in specific tumor types, continuing education, involvement in research and clinical trials, and programmatic obligations. Physician champions led the effort to promote MDCs and served as the institution's experts by remaining current with literature and latest developments in the field. This expertise was recognized by their colleagues, thereby inspiring a cooperative, noncompetitive relationship in which the patients' best interest was the ultimate goal. In addition, strict COP empowered the institutions to ensure the expertise of the physicians participating in the MDC.

Full integration of the COP required a commitment from hospital administration, recognizing that a physician's participation in MDCs decreases available clinical time, and translates to lost revenue for both the health system and the physician. The administration would therefore need to support physician participation in an effort to offer optimal patient care, enhance programmatic development, maximize clinical outcome, and increase patient satisfaction.[20,21,22] Several sites embedded the COP into medical staff privileges, adding accountability to the process. The difference in the percentage of hospital-employed physicians and private physicians who signed the COP is not available.

Care coordinators were increasingly integrated in the MDC in response to the network's desire to engage patients throughout the care continuum. The care coordinators provided a structured approach in arranging treatment plans and diagnostic modalities. Sites within the network used a variety of strategies to integrate care coordinators, including assigning staff to oversee coordination functions, hiring navigators, engaging social workers and specialty nurses (eg, research nurses), and adding administrative support.

Paramount to the successful maturation of MDCs was the ability to integrate and coordinate members of the multidisciplinary team into prospective treatment planning. MDCs are designed to actively support and incorporate team members into the care delivery process and acknowledge the valuable information they provide to both the team and the patient.[23] Sites within the NCCCP network found that the patient navigator role was an effective strategy for the promotion of care coordination. The development of navigation programs has been a focus of NCCCP since its inception and is the strategy most likely responsible for increased use of care coordination by the network. Navigators identify cases, coordinate MDCs, and engage patients throughout the process. Numerous staffing approaches were used to support navigation, including hiring new personnel or training existing personnel in the navigator role. Navigators also identify patient needs and coordinate appropriate ancillary services and individualized care (financial counseling, physical therapy, psychosocial services). Two specific examples of this coordination include referrals to genetics counseling and palliative medicine. NCCCP sites focused on increasing referrals to genetics counselors; increased integration of genetics counselors was most apparent in our breast and colorectal MDCs. In addition, several sites added palliative medicine referrals to lung MDCs based on data from Massachusetts General Hospital demonstrating improved survival and quality of life for patients who receive palliative care referrals at the outset of their treatment.[24]

The NCCCP MDC assessment tool is noteworthy for several reasons. It was created using a novel collaboration process fostered by this NCI-sponsored program, whereby clinicians in community care settings across the United States shared observations related to MDCs. This cultivated the identification of distinct MDC performance characteristics and ultimately led to the creation of a tool with high field applicability. The NCCCP sites used the tool to assess their MDC program development and set local performance improvement goals via benchmarking against other sites, as well as to gain better understanding of how to advance along the assessment scale. Although the NCCCP cohort participating in this project comprised only14 sites, the geographic distribution and demographic heterogeneity of the sites allowed our study team to assess the MDC development in diverse community cancer centers regardless of location or population served. Our study findings also offer insights and directions for future research; the tool can be used in other care delivery settings, with appropriate additions of ancillary services as dictated by the specific needs of the patient and disease type.

It should be acknowledged that the tool was not validated and that data were self-reported. However, a structured review process was in place to examine the data for inconsistencies. In addition, NCCCP sites were contractually obligated to develop MDCs and focused significant attention and resources toward this goal. Therefore, these findings may not be easily replicated in centers with limited resources. NCCCP sites were all community-based cancer centers, and findings may not be generalizable to other cancer care delivery settings. In addition, not all nine areas demonstrated equal improvement over the 2-year period. Infrastructure, financial counseling, and medical records were more likely to require organizational forces beyond the control of the care providers, therefore making advancement in these areas more difficult.

In conclusion, this study provides insights into MDC development that could potentially serve as role models for other community-based cancer care delivery settings. Our data illustrate overall quantitative improvements in several areas and qualitative themes that shed light on the underlying reasons for assessment level increases. The NCCCP is exploring whether changes in outcomes are associated with variation in the organization of MDCs. Future research could assess how these processes are tied to patient outcomes as well as demonstrate an economic advantage of multidisciplinary care over standard, compartmentalized care. We encourage future research to validate the MDC assessment tool and to explore its utility in guiding quality improvement efforts in diverse community cancer settings.

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