

Building an oncology community of practice to improve cancer care

W. Fingrut MD,* L.A. Beck, and D. Lo MD MHA*†

ABSTRACT

Background Communities of practice (COPs) have been shown to be effective models for achieving quality outcomes in health care.

Objective Here, we describe the application of the COP model to the Canadian oncology context.

Methods We established an oncology COP at our urban community hospital and its networks. Goals were to decrease barriers to access, foster collaboration, and improve knowledge of guidelines in cancer care. We hosted 6 in-person multidisciplinary meetings, focusing on screening, diagnosis, and management of common solid tumours. Health care providers affiliated with our hospital were invited to attend and to complete post-meeting surveys. Likert scales assessed whether COP goals were realized.

Results Meetings attracted a mean of 57 attendees (range: 48–65 attendees), with a mean of 84% completing the surveys and consenting to the analysis. Attendees included family physicians (mean: 41%), specialist physicians (mean: 24%), nurses (mean: 10%), and allied health care providers (mean: 22%). Repeat attendance increased during the series, with 85% of attendees at the final meeting having attended 1 or more prior meetings. Across the series, most participants agreed or strongly agreed that the COP reduced barriers (mean: 76.0% ± 7.9%) and improved access to cancer care services (mean: 82.4% ± 8.1%) and subject matter experts (mean: 91.7% ± 4.2%); fostered teamwork (mean: 84.5% ± 6.8%) and a culture of collaboration (mean: 94.8% ± 4.2%); improved knowledge of cancer care services (mean: 93.3% ± 4.8%), standards of practice (mean: 92.3% ± 3.1%), and quality indicators (mean: 77.5% ± 6.3%); and improved cancer-related practice (mean: 88.8% ± 4.6%) and satisfaction in caring for cancer patients (mean: 82.9% ± 6.8%). Participant feedback carried a potential for bias.

Conclusions We demonstrated the feasibility of oncology COPs and found that participants perceived their value in reducing barriers to access, fostering collaboration, and improving knowledge of guidelines in cancer care.

Key Words Communities of practice, quality, collaboration, partnerships, knowledge management

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INTRODUCTION

Practitioners in cancer care face numerous challenges today. Patient volumes are increasing, demographics are shifting to older and more medically complex patients, and financial and administrative barriers are increasing¹. Moreover, as treatment options for tumour sites expand, treatment plans are becoming increasingly complex¹. Treating cancer patients increasingly requires a multidisciplinary approach to management. Also, successful implementation of improvements requires buy-in and support from a large number of stakeholders.

One strategy that has been successfully used to collaboratively improve outcomes is the establishment of communities of practice (COPs). A COP is formally defined as a group of people who share a concern or a passion for something that they do and who learn how to do it better as they interact regularly². The COP model has been applied in business, government, and education communities, and has also been shown to be an effective model for achieving quality outcomes in health care^{3,4}. The utility of a COP has been seen in closing practice gaps in emergency care⁵, increasing adoption of evidence-based practice by nurses⁶, and implementing interventions to reduce central line

Correspondence to: Warren Fingrut, c/o St. Joseph's Health Centre, 30 The Queensway, Toronto, Ontario M6R 1B5.
E-mail: warren.fingrut@utoronto.ca ■ DOI: <https://doi.org/10.3747/co.25.4087>

infections⁷. Outcomes that are important specifically to cancer care have also been achieved with the use of a COP. Some examples include bringing breast cancer treatment into line with regional guidelines⁸ and improving breast, cervical, and colorectal cancer screening rates⁹. The model has been applied successfully in the Canadian oncology and surgical oncology contexts, where it has been shown to improve quality outcomes in cancer care, including compliance with provincial evidence-based clinical guidelines^{10–12}.

At our urban community hospital, medical oncologists collaborate with other specialist physicians, nurse practitioners, nurses, and allied health care practitioners to treat patients referred from family doctors in the community. Here, we describe the development and evaluation of an oncology COP at our community hospital and its networks. The COP was spearheaded by the medical oncology group at our centre, who had initially identified the need for the initiative. They then formed a coordinating executive committee that ran and maintained the COP and decided on its goals. The principal objectives were to decrease barriers to access in cancer care, foster collaboration in cancer care, and improve practitioner knowledge of guidelines and services relevant to cancer care.

METHODS

Building the COP

To realize the goal of improving practitioner knowledge of guidelines and services relevant to cancer care, we structured our COP as a continuing medical education (CME) series focused on the screening, diagnosis, and management of common solid tumours. Our COP adopted that learning focus based on the U.S. Institute of Medicine's learning networks model, which argues that a main function of a COP is to foster learning and knowledge-sharing for and by the participants¹³. The Institute's model also highlights COPs as enablers of health care improvement. Structuring our COP as a CME series allowed us to advance those goals by identifying and addressing knowledge and process gaps.

The COP was supported by the hospital, which provided the venue for meetings. To facilitate the goal of decreasing barriers to access, we invited speakers in active practice in cancer care. Supporting the objective to foster collaboration in cancer care, our series began with a general roundtable discussion, inviting participants to "tell us anything, ask us anything" related to cancer care in our community. Subsequent meetings focused on specific tumour sites and included both didactic and roundtable discussion components. At the subsequent meetings, each speaker discussed content related to their area of expertise and relevant to the community. During the disease management discussions, speakers were asked to provide guidance about patient referrals and to outline cancer care services. We also collaborated with the Toronto Central Regional Cancer Program and invited its participants to share their work in health education publications, screening guidelines and programs, and primary care leadership. Each meeting concluded with a roundtable discussion moderated by family medicine physicians practicing in cancer care. The roundtable discussions served as an important element of community-building,

providing a forum for participants to ask questions, identify issues and barriers, and propose solutions.

COP Framework

Wenger *et al.*² argued that the COP can be viewed as a combination of three fundamental elements: a domain of knowledge; a community of people who care about the domain; and a shared practice. They posited that those elements make the COP an ideal knowledge structure, which can assume responsibility for developing and sharing knowledge². Our initiative contained those fundamental elements. Our shared practice was the care of cancer patients. Our domain of knowledge was that necessary for quality care of those patients; our community, the practitioners throughout our community hospital and its local networks.

We adapted the COP framework described by Fung-Kee-Fung *et al.*¹⁴ to the urban community oncology context. Those authors proposed 5 tools necessary for the development of multi-professional COPs in quality improvement:

- Access to relevant data
- Access to evidence and methodologic support to evaluate knowledge gaps
- Access to CME activities, including CME accreditation for work in identifying practice gaps
- Project management support to crystallize innovations and ideas into actionable processes
- Communication strategies to enable community building

We applied those tools to develop our COP. Our community collected data relevant to cancer care at our hospital and its networks, which was shared and discussed at meetings. The knowledge and practice gaps identified through roundtable discussions were addressed in real time at meetings. The COP encouraged and supported individual members to launch projects to improve identified process gaps. Furthermore, each meeting was registered for CME credit.

Fung-Kee-Fung *et al.* also proposed 4 important intermediate outcomes of COPs, based on Nonaka's "knowledge spiral" theory^{14,15}:

- Innovations in care
- Knowledge transfer (closure of evidence or practice gaps)
- Social capital (development of interdisciplinary trust and social ties, as well as development of a new identity for the group)
- Organizational memory (establishment of infrastructure to support learning, mentorship, and leadership)

We evaluated our success through the lens of those outcomes. Fung-Kee-Fung *et al.*¹⁴ argue that the framework supports the assessment of key components of collaboration and community development.

COP Attendance

Attendance at COP meetings was tracked using sign-in sheets. Repeat attendance was tracked by comparing the names on the sign-in sheets at the various meetings.

COP Evaluation

The COP coordinating executive committee designed a feedback survey to evaluate participant perspectives about the COP. The aims of the survey were to provide insights into building the COP and improving cancer care in our community. Completion of our institutional research ethics board's "research versus quality improvement" guideline and checklist determined that the survey was a quality improvement project¹⁶. After each meeting except the first, participants were asked to complete the survey. It was emphasized that survey completion was optional and that survey responses were anonymous.

The first item on the survey provided participants with the option to exclude their survey data from data analysis or scholarship, but still to provide feedback. No personal data were collected from the surveys, except for the participant's clinical role and years of practice in cancer care. Likert-scale questions were used to assess whether the COP's goals had been realized. Surveys from participants who did not consent to participate in the scholarship aspect of the COP were removed from the analysis. Survey data were entered independently by two research assistants and analyzed in aggregate. In an attempt to minimize bias, the analysis was performed separately by each research assistant. Results (meeting attendance, breakdown by professions, breakdown for individual professions by years of practice in cancer care, and Likert-scale answers) were obtained from each survey, and then averaged to generate the mean and standard deviation for those outcomes across the entire series.

RESULTS

The COP

From June 2015 to June 2016, we hosted 6 in-person multidisciplinary meetings. After a general roundtable session, the remaining 5 sessions covered breast cancer, colon cancer, prostate cancer, lung cancer, and hepatobiliary and pancreatic cancers. (Hepatobiliary and pancreatic cancers are not often considered common, but patients with those diagnoses are not uncommon at our local hospital.) Speakers at each meeting included a panel of physicians practicing in cancer care, including from the fields of medical oncology, radiation oncology, thoracic surgery, urology, radiology, gastroenterology, hepatobiliary surgery, and family medicine. Meeting attendance was tracked and surveys were administered at the end of each meeting except the first.

Meetings 2–6 attracted 148 unique attendees, with 43% of them attending 2 or more meetings [Figure 1(A)]. The meetings attracted a mean of 57 ± 6 attendees (range: 48–65 attendees; Table 1). Repeat attendance increased during the series, with 85% of attendees at the final meeting having attended 1 or more prior meetings [Figure 1(B)]. Across all sessions, attendees included family physicians (mean: $41\% \pm 3\%$), specialist physicians (mean: $24\% \pm 4\%$), nurses (mean: $10\% \pm 3\%$), nurse practitioners (mean: $3\% \pm 1\%$), and other allied health care providers (mean: $22\% \pm 6\%$; Figure 2). Figure 3 breaks down the mean meeting attendees in the professions by years of practice. Across all sessions, a mean of $84\% \pm 6\%$ of the attendees completed the survey and gave consent to be included in the analysis (Table 1).

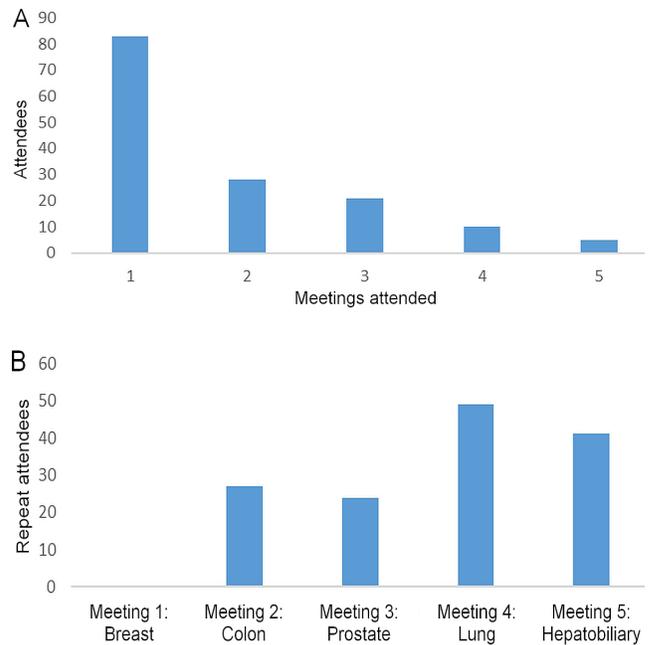


FIGURE 1 Repeat attendees (A) at the series and (B) at each meeting. Repeat attendance was assessed using meeting sign-in sheets.

COP Evaluation

For the theme of reducing barriers and increasing access in cancer care, most participants at the meetings agreed or strongly agreed that the COP decreased barriers or challenges in cancer care (mean: $76.0\% \pm 7.9\%$), improved access to cancer care services for patients (mean: $82.4\% \pm 8.1\%$), and improved participant access to subject matter experts [mean: $91.7\% \pm 4.2\%$; Figure 4(A)]. With respect to the COP's objective to foster collaboration in cancer care, most participants at the meetings agreed or strongly agreed that the COP helped them feel part of the team and fostered teamwork (mean: $84.5\% \pm 6.8\%$) and that the COP contributed to a culture of collaboration in cancer care [mean: $94.8\% \pm 4.2\%$; Figure 4(B)]. For the COP's objective to improve knowledge related to cancer care, most participants at the meetings agreed or strongly agreed that the COP improved participant knowledge of cancer care services (mean: $93.3\% \pm 4.8\%$) and helped with understanding standards of practice (mean: $92.3\% \pm 3.1\%$) and quality indicators (mean: $77.5\% \pm 6.3\%$) in cancer care [Figure 4(C)]. Finally, in evaluating the COP's overall effects, most participants agreed or strongly agreed that the COP improved their cancer-related practice (mean: $88.8\% \pm 4.6\%$) and their satisfaction in caring for cancer patients [mean: $82.9\% \pm 6.8\%$; Figure 4(D)].

DISCUSSION

Here, we describe the successful launch and evaluation of an oncology COP at our urban community hospital and its networks. To the best of our knowledge, only one other oncology COP within the Canadian health care system has been described in the literature. Fung-Kee-Fung *et al.*¹¹ described a surgical oncology COP that set out to improve the

TABLE 1 Community-of-practice attendees and survey response rate

Variable	Session						Mean
	1 Roundtable	2 Breast	3 Colon	4 Prostate	5 Lung	6 HPB	
Total attendees ^a (n)	Not tracked	55	65	62	57	48	57±6
Surveys returned ^b (n)	Not applicable	51	49	50	48	41	48±4
Survey participation rate ^c (%)	Not applicable	93	75	81	84	85	84±6

^a Tallied from attendance sheets, which all participants signed at the start of each session.

^b Only from participants who consented to be included in the analysis.

^c Calculated by dividing the surveys returned by the attendees at the session.

HPB = hepatobiliary.

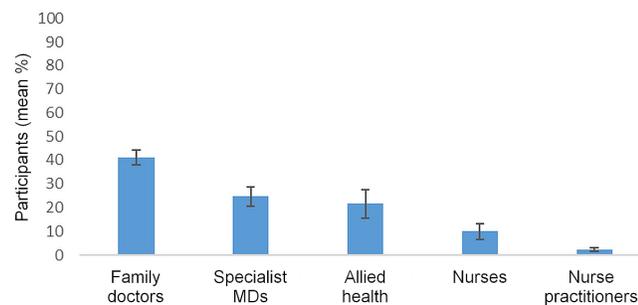


FIGURE 2 Mean meeting attendance by profession. Values were calculated by determining the mean attendance of survey participants at each meeting and then averaging for the series. Error bars show the standard deviation.

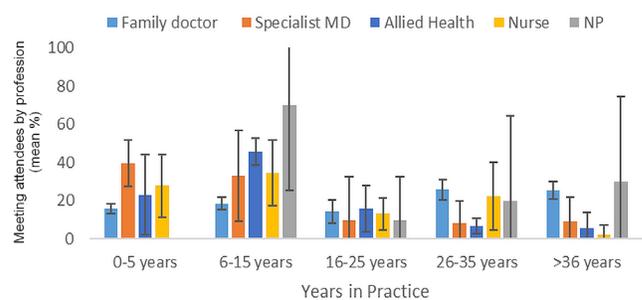


FIGURE 3 Mean meeting attendance for professions by years of practice. Values were calculated by determining the attendees at each meeting by self-reported profession and years of practice and then averaging for the series. Error bars show the standard deviation.

effectiveness or efficiency of surgical cancer care. In their model, a tertiary care hospital served as the regional hub for the COP, acting as the gateway for access to cancer care services. To launch our COP, we adapted the COP framework described by Fung-Kee-Fung and colleagues¹⁴ to the urban community oncology context.

Assessing our COP through the lens of the COP outputs proposed by Fung-Kee-Fung *et al.* (knowledge transfer, social capital, innovation, and organizational memory)¹⁴, our survey results demonstrate a participant perspective that the COP improved knowledge transfer. Specifically, data supported a participant perspective that the COP had a positive impact on cancer care knowledge and cancer-related practice [Figure 4(C,D)]. Survey results also demonstrated the participant perspective that the COP generated social capital through improved collaboration [Figure 4(B)] and improved organizational structure by decreasing barriers and improving access to subject matter experts [Figure 4(A)]. We hypothesize that the perception by participants about closure of knowledge and practice gaps through participation in the COP contributed to their perspective that the COP decreased barriers in cancer care and improved access to cancer care services for patients. Participant perception of improved access to subject matter experts might have been facilitated by the wide range of practitioners in cancer care who were invited to participate in the COP.

In addition to that quantitative data, we also directly observed achievement of outputs at the meetings. The COP

served as a networking opportunity for practitioners in our community who do not usually interact closely, including family doctors and medical oncologists. We saw those interactions as an opportunity to build social capital through establishment of trust and collaboration. Furthermore, roundtable discussions at our meetings identified practice gaps that were addressed through innovations. For example, early on, members of our COP identified that referral processes for specific tumour sites were unclear and that specialists in the community were difficult to access. The coordinating executive committee addressed those issues by working with specialist physicians within the COP to develop a physician-specialist directory to support patient referrals. That resource was shared with the community at subsequent meetings, yielding positive feedback. Multiple other innovations were proposed, including an oncology rapid referral clinic.

Finally, we viewed the establishment of the COP coordinating executive committee as an opportunity to build organizational memory. The committee was empowered to develop several resources to meet identified needs, and it is also well positioned to work closely with health care administration to advance issues important to the community.

Communities of practice have been established as tools for knowledge management¹⁷. They provide a social learning platform for individual knowledge conversion into collective organizational learning^{18,19}. The focus on practice generates idea-sharing dialog²⁰. A COP supports participants in relating their work to the context of the

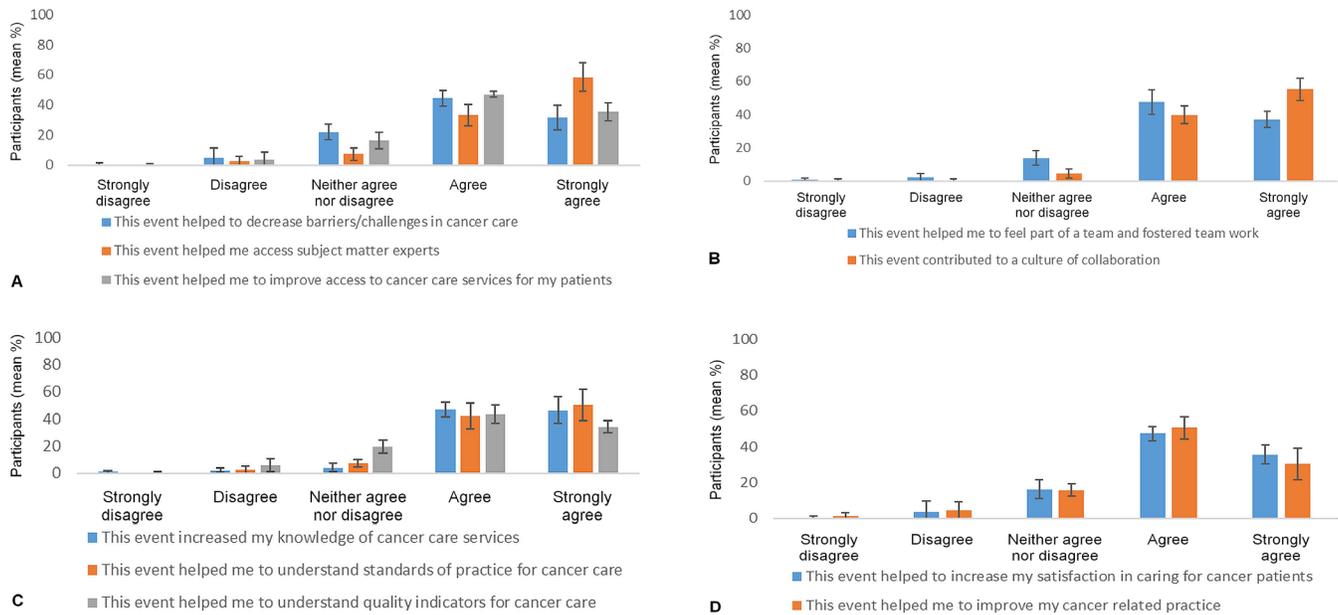


FIGURE 4 Qualitative assessment of community-of-practice goals. After each meeting, Likert scales were used to assess the perspectives of survey participants about whether the goals of the community of practice had been realized. (A) Reducing barriers and improving access to cancer care. (B) Fostering collaboration in cancer care. (C) Improving knowledge relevant to cancer care. (D) Improving cancer-related practice. Data were averaged for the series. Error bars represent standard deviation.

whole system and to deepen their domain of knowledge^{10,18}. Communities of practice have been especially useful for the preservation and dissemination of tacit knowledge, which is informal and therefore hard to document in databases or manuals²¹. Such information can be better communicated by sharing experiences of practice. In our COP, tacit knowledge was shared for all topics and sessions, including the timing of referrals from family practitioners to specialists, pre-referral work-up, and referral approach.

Traditional CME events, which consist of didactic lectures presented by experts, are considered to be a major source of learning that maintains and improves physician performance. However, in his 2002 paper, Parboosingh²² outlined a number of barriers inherent to the CME format that can be addressed through the establishment of a COP. He argued that, in CMES, learning is episodic in nature; in the COP, a continuous process of learning is achieved. In COPs, mentors are more readily available, and our COP achieved that goal by improving access to subject matter experts. Further, in our COP, the themes of collaboration, decreased barriers to access, and realizing use of guidelines in cancer care were emphasized throughout the series. In terms of content, Parboosingh²² suggested that traditional CME events tend to be designed to update physician medical knowledge and to increase awareness of practice guidelines; in contrast, learning in the COP can also help physicians acquire the practical wisdom to deal with uncertainties in the implementation of guidelines. At each of our COP sessions, content experts and members of the community participated in a roundtable discussion. Topics discussed included screening and referral guidelines, and supporting optimal use of, and access to,

resources. Additionally, participants discussed barriers to care, specific challenges facing the community, including knowledge and process gaps, and steps that could be taken to solve those issues and improve care. The discussions offered opportunities for community-building that are not present at traditional CME events.

Elements that facilitated the success of our COP included the invitation to each of the meetings of a panel of experts in cancer care to discuss the tumour site from their own area of expertise. The construction of the COP as a series of in-person meetings supported our objective of making connections and allowed for repeat attendees to learn the format. Moreover, the facilitation of roundtable discussions by general practitioners in cancer care helped to ensure that topics discussed were relevant to the broader community. The format also allowed for open discussion, including discussion about areas for improvement (related to referral processes and Web site content), which were addressed and corrected during the series. Finally, in addition to fostering teamwork between frontline clinicians practicing in cancer care, our COP also supported collaboration with government services (the Toronto Central Regional Cancer Program) and the hospital's health care administration, both of whom participated actively in our COP.

Limitations

In the COP described by Fung-Kee-Fung *et al.*¹¹, the community collaboratively developed quality indicators to assess and improve the quality and value of cancer care in the region. However, our analysis examined only the participant perspective, a subjective metric. Additional subjective metrics that could be collected include assessment of patient and

provider satisfaction with the quality of cancer care before and after implementation of the COP. Further, our analysis lacked analysis of objective data to support achievement of the goals and outcomes. Objective assessment of the effect that the COP had on access to care could include metrics such as patient wait times and number and quality of patient referrals. Assessment of quality of care could include patient symptom assessment and quality-of-life scores. Those data would ideally include comparisons of results before and after implementation of the COP. One of the main outcome values of COPs is their assistance with practitioner learning and simultaneous provision of system improvements^{11–13}. Collection of objective measures would be useful not only to support the occurrence of quality improvement, but also to support the creation of a learning cycle of audit and improvements that can foster further collaboration.

Other limitations of the study include the difficulty in concluding, based on self-report surveys from attendees at a small number of meetings (most participants in the COP attended only 1 or 2 meetings), that the COP decreased barriers to care. Further, our survey data captured participant perspectives at 5 in-person COP meetings spaced throughout 1 year, with only 1 meeting per tumour site. The durability of our results is unclear (that is, participant perspectives could change over time). Additionally, the COP participants self-selected to attend and might therefore have been less willing to rate questions negatively.

Finally, our COP was set in an urban community hospital and used in-person meetings to build the community with the aim of improving cancer care at our institution and its networks. The results of our analysis might not be generalizable to COPs with a different structure or geographic location, or to COPs spanning multiple different institutions or situated in different health care systems. In a systematic review of the literature, Ranmuthugala *et al.*⁴ examined COPs that had been adopted in the health care sector. The authors noted that the structure and delivery of COPs depend on the intended purpose. Further research is warranted to understand the optimal structure for COPs with different objectives and in different clinical and geographic contexts.

CONCLUSIONS

We have demonstrated the feasibility of oncology COPs. Furthermore, we have documented participant perceptions of the value of COPs in reducing barriers to access, fostering collaboration, and improving knowledge of guidelines in cancer care. Our analysis was limited by a lack of objective data supporting achievement of the COP goals and by unclear durability of the subjective results (the present analysis includes participant perspectives only from the first year after launch of the COP). Further research is needed to better understand how to effectively apply the COP model to meet the needs of the community served. Moreover, qualitative studies are needed to examine participant perspectives about the utility of the COP and on how it can be improved. Such feedback will also guide potential expansion of the COP.

Our COP is currently at an early stage of development. The COP will continue to run, focusing on addressing

knowledge and practice gaps identified during our round-table discussions at meetings and by COP coordinating executive committee members between meetings. Individual COP members will continue to launch projects to address the needs of the community, and the COP coordinating executive committee with work closely with the hospital and regional health care administrations to support quality improvement. Over time, we predict that our COP will evolve beyond the CME format and will host meetings to address specific challenges or issues facing the community. Future avenues of development for our COP include collection of objective metrics to assess how well the COP's goals are achieved (that is, measurement of quality improvement outcomes at the patient and provider levels).

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CONFLICT OF INTEREST DISCLOSURES

We have read and understood *Current Oncology's* policy on disclosing conflicts of interest, and we declare that we have none.

AUTHOR AFFILIATIONS

*Faculty of Medicine, University of Toronto, and †Division of Hematology and Oncology, St. Joseph's Health Centre, Toronto, ON.

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