



Improving cancer control in Canada one case at a time: the “Knowledge Translation in Cancer” casebook

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ABSTRACT

Purpose

In-the-field projects aiming to improve quality in cancer control provide a valuable complement to health services and knowledge translation (KT) research studies. The present paper describes the methods used to develop the *Knowledge Translation for Cancer Control in Canada: A Casebook* and its results.

Methods

Nominations for in-the-field projects were accepted from individuals and organizations across Canada. The nominations had to demonstrate that a specific cancer control problem was identified; that a deliberate and organized effort was developed and implemented to address the identified problem; and that an evaluation—formal or informal—was used to assess the effort. A selection of nominated cases were chosen for more comprehensive analysis.

Results

Thirty nominations were received. Most tackled problems related to treatment or diagnosis. Challenges related to breast, gastrointestinal, and genitourinary cancer were most common among the disease-specific projects, and most projects were regional in scope, with strategies targeting organizational solutions. Of the 30 nominations, 19 were chosen for further analysis. Of those 19, 5 were influenced by a KT model or theory, and 16 reported formal evaluation strategies. Surveys were the most common evaluation method, and process outcomes and clinical surrogate outcomes were the most frequently cited. Financial and administrative challenges were most often cited as key barriers. The key lessons learned concerned the need for a collaborative high-functioning team, project management, and support.

Conclusions

The casebook provides tangible examples of in-the-field efforts to improve cancer control and provides practical direction for other individuals and institutions facing similar challenges. We discuss the interface between field projects and research projects in the KT arena and how mutual learning can help to optimize the value of each approach.

KEY WORDS

Knowledge translation, practice, research, cancer control, casebook

1. INTRODUCTION

Across the cancer-control continuum, several research advances have emerged that can result in a reduction in disease incidence, mortality, and morbidity. These include the introduction of innovative screening and early detection maneuvers, effective new treatments, and strategies to improve quality of life¹⁻⁹. However, uptake and application of any clinical advancement or system improvement can be challenging and variable, with rates that are less than ideal^{10,11}.

Knowledge translation (KT) research can be used to help address those challenges. The Canadian Institutes of Health Research defines KT as a “dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system”¹². Scientific advances within the KT field have led to new understandings of the determinants of knowledge use, methods to measure knowledge use, and interventions to increase the uptake of knowledge, among others^{13,14}. For example, sound research principles have led to a better understanding of which interventions within cancer control are more and less effective at improving the application of knowledge by patients or clients, health care providers, and organizations^{14,15}.

Indeed, a suite of high-quality knowledge synthesis strategies and qualitative and quantitative research methods are available for use in advancing the field. Although necessary and important, exploration of improvements in cancer control strictly through the lens of what can be learned from a research paradigm will miss other key sources of knowledge that are relevant to advancing that goal.

As a complement to research studies, quality improvement activities aim to solve a specific clinical or organizational problem¹⁶. The goal of research is to generate new knowledge or to test specific hypotheses posed by the investigators. In contrast, quality improvement activities aim to solve a specific problem in a specific context. Quality improvement initiatives can be valuable by providing useful direction to groups and individuals who face similar problems and challenges in other contexts. It is acknowledged that quality improvement projects and KT efforts share some of the same goals and processes¹⁷.

A comprehensive KT research initiative, the Knowledge Translation to Improve Quality of Cancer Control in Canada: What We Know and What is Next (that is, the “KT in Cancer Project”) examined both published KT literature in cancer control and in-the-field projects that aimed to find solutions to practical cancer-control challenges faced by various organizations, regions, and provinces—in other words, both the science and the practice of KT in cancer control. By considering both the science and the practice of KT, the goal of the initiative was to develop a comprehensive profile of the state of KT in cancer control. To that end, we organized our research activities into three modules:

- Review of systematic reviews: A review and analysis of systematic reviews in the published scientific literature
- KT models and frameworks: A review and analysis of selected KT models and frameworks that would be useful in guiding KT activities in cancer control
- Casebook: An overview of in-the-field projects within Canada aiming to improve cancer control

The present paper describes the methods used to develop the casebook, its results, its interface with the KT research environment, and its potential use as an integral part of improving the quality of cancer care and cancer system performance.

2. METHODS

Casebook development represented one component of the overall KT in Cancer Project, a research initiative funded by the Ontario Institute for Cancer Research and the Canadian Partnership Against Cancer. Design, execution, and reporting of the initiative

was editorially independent from the funders. The Canadian Institutes of Health Research casebook report served as the initiative’s methodologic and reporting foundation¹⁸.

2.1 Defining Eligible Projects

The goal was to collect in-the-field projects from across Canada. To mitigate potential barriers in the nomination process that may emerge when labels or language are used, specific terms such as “knowledge translation projects” or “quality improvement projects” were avoided in requests to participants. Instead, the focus was on defining features of the in-the-field projects being sought. These were the nomination criteria for projects:

- Identification of a specific cancer control problem
- Development and implementation of a deliberate and organized effort to address the identified problem
- Use of an evaluation—formal or informal—to assess the effort undertaken

Nominations addressing any stage in the cancer continuum or any cancer diagnosis were considered.

2.2 Participants

At the start, the initiative focused on gathering projects in Ontario, but the Canadian Partnership Against Cancer contributed funds to further expand the initiative to include a pan-Canadian perspective. As such, the goal was to ensure that field projects from across Canada were received. To achieve that goal, key leaders from each province and territory (see Appendix A, which can be found online at www.current-oncology.com/index.php/oncology/article/view/831/615) were solicited to self-nominate or to nominate others whose projects met the eligibility criteria already described.

2.3 Developing the Profile

Between February and April 2010, a letter requesting nominations of Canadian in-the-field projects was circulated by e-mail to eligible participants. The letter outlined the objective of the initiative and the 3 criteria to be met for a nomination to be considered. A nomination form was included with the letter, and a maximum of 2 nominations were requested from each participant. The key partners who had been contacted were requested to respond within 2 weeks of receiving the letter; if a response was not received, subsequent reminders were sent by e-mail.

On the nomination form, participants were asked to provide the name of the project, a short description of the project and how it met the eligibility criteria, and the contact information details for the project.

Upon receiving nominations, the research team reviewed them and selected some for a more enhanced profile and more detailed data collection. Criteria for selecting a nomination for further profiling included coverage of the continuum of care, jurisdiction, diagnoses, and stage of implementation or evaluation (or both). Projects further along in the process (implementation or evaluation) were chosen over projects still in development or in their early stages. For the projects selected for further profiling, the research team completed the profile using the information in the nomination form and information uncovered by researching the project using electronic databases and the Internet. Completed profile drafts were sent to the project lead or leads, accompanied by a covering letter containing information about the project and a legend of the profile's data fields. The project lead was asked to review the profile and to provide any additional information to complete the profile. An iterative process was used to reach the final project profile.

2.3 Data and Analysis

All projects were coded for stage in the continuum of care (prevention, screening, diagnosis, treatment, palliative and end-of-life care, follow-up, survivorship, supportive care, and other or not specified), jurisdiction (national, provincial, regional), relevant cancer diagnosis, and scope (professional, consumer, organizational, financial, regulatory). Each project profile included data about the details of the problem that was to be solved, the barriers to solving the problem, the solution (intervention, target, outcomes), whether a model or framework was used to guide the project, the evaluation plan, the impact of the project, implications for resources, the tools and resources developed, and the lessons learned.

In a subsequent thematic analysis, 3 members of the team (MCB, JM, KG) reviewed each project profile and independently identified specific themes related to use of models and frameworks, evaluation processes, barriers to implementation (using the Légaré barriers framework¹⁹), development of tools, and lessons learned. The themes were compared and contrasted between the researchers, and a final interpretation was determined by consensus.

3. RESULTS

3.1 Overall

The initiative received 30 nominations of KT or in-the-field projects²⁰ (see Appendix B, which can be found online at www.current-oncology.com/index.php/oncology/article/view/831/616). Table 1 provides a descriptive summary of the nominations, including details on the stage in the continuum of care, cancer diagnoses, jurisdiction, and focus.

TABLE 1 Summary of nominations

<i>Descriptive criteria</i>	<i>Nominations (n)</i>
Continuum of care	
Prevention	3
Screening	3
Diagnosis	7
Treatment	11
Palliative care/end-of-life	2
Follow-up	0
Survivorship	0
Supportive care	5
Not specified/other	7
Cancer diagnosis	
Breast	10
Gastrointestinal	8
Genitourinary	7
Head and neck	4
Hematology	1
Lung	4
Melanoma	1
Neuro-oncology	1
Sarcoma	1
Other	2
Not specified	16
Jurisdiction—scope	
National	1
Provincial	7
Regional	19
Jurisdiction—location	
Atlantic	4
Quebec	2
Ontario	22
Central Canada	3
British Columbia	3
Focus	
Professional	10
Consumer/patient	8
Organizational	22
Financial	0
Regulatory	1

With respect to stage of the cancer continuum, most nominations addressed a treatment-related ($n = 11$) or diagnosis ($n = 7$) problem (sometimes both), and none addressed a problem of follow-up or survivorship. Stage in the continuum was not relevant to 7 nominations, and 6 nominations targeted an issue relevant to 2 or more stages. Nominations were most likely to address problems associated with breast cancer ($n = 10$), gastrointestinal cancer ($n = 8$), or

genitourinary cancer ($n = 7$) and least likely, problems associated with melanoma and sarcoma ($n = 1$ each) or neurologic and hematologic cancers ($n = 1$ each). Cancer diagnosis was not relevant to 16 nominations; 8 nominations addressed 2 or more cancer sites. Most projects originated in Ontario ($n = 22$), and most were regional in scope ($n = 19$). Finally, most nominations targeted organizational strategies to solve the problem ($n = 22$); none targeted financial strategies to solve the problem. Ten nominations focused on more than one strategy.

3.2 Field Projects

Of the initial 30 projects, 19 were selected for a more detailed analysis and a comprehensive project profile (see Appendix B: www.current-oncology.com/index.php/oncology/article/view/831/616).

3.3 Models and Frameworks

Few of the 19 projects used a theory or framework to guide development and execution of the project. Indeed, such tools were used in only 5 projects. Diffusion of Innovation, Institute for Health Improvement Collaborative Model for Breakthrough Improvement, and educational theories were the identified models and theories cited. Evidence-based medicine and an integrated KT approach were also cited as guiding principles. Three projects reported creating a model that others have used and adapted: the Champlain Model for Improving Access to Quality Cancer Surgery, the Primary Care Atom, and *Hot Spot*, a quarterly palliative care educational publication.

3.4 Evaluation

Of the 19 projects, 16 reported having used formal evaluation methods, 2 reported that their evaluation methods were in development, and 1 reported no formal evaluation method. Among the several evaluation methods used (Table II), surveys and monitoring of a

TABLE II Evaluation tactics

<i>Evaluation tactic</i>	<i>Frequency</i>
Survey	7
Clinical process time interval (for example, wait time)	4
Participation rate (for example, screening rate)	4
Focus group	3
Interview	2
Clinical chart audit	2
Qualitative thematic analysis	1
Volume	1

clinically-relevant time interval were the most common strategies. Table III lists the outcomes considered in the evaluation. As can be seen, outcomes focused mostly on process measures (for example, progress to goal) or clinical surrogates (number of screens, for instance) rather than on patient-relevant outcomes (for example, quality of life, survival).

3.5 Barriers

Using the barrier assessment process described in the Knowledge-to-Action Cycle²¹, and informed by the organizational framework of Légaré *et al.*¹⁸, Table IV outlines the key barriers reported in implementation and evaluation of the projects. Four themes emerged:

- Knowledge-related barriers included a lack of awareness of or familiarity with the problem or the solution to the problem.
- Attitudes and motivational barriers emerged when a disconnect was observed between proposed solutions and the values of the stakeholders or when confidence that the solutions would work was lacking
- Lack of behavioural compliance created a barrier in some projects.
- External barriers included challenges to acceptance by patients, organizational challenges, and incongruence with normative context.

TABLE III Outcomes evaluation

<i>Outcome type</i>	<i>Example</i>
Clinically-oriented rate	Screening rate Recurrence rate
Clinically-oriented frequency	Pain assessments completed (n) ESAS completed (n) Hospital visits (n) Office visits (n)
Wait-time interval	To treatment To referral To diagnosis
Participation rate	By physicians By mentors or mentees By centres
Knowledge	Clinician
Satisfaction	Clinician Study participant
Confidence	Clinician
Process	Progress toward goal? Learning objectives met? Desired effect achieved?

ESAS = Edmonton Symptom Assessment System.

TABLE IV Barriers

<i>Descriptive criteria</i>	<i>Frequency</i>
Knowledge	11
Lack of awareness	
Lack of familiarity	
Forgetting	
Attitudes/motivation	7
Lack of agreement (for example, value of the knowledge)	
Lack of applicability (for example, context or patient factors)	
Lack of expectancy (belief that efforts will not yield desired effects)	
Behaviour	5
External barriers	16
Factors associated with patients (for example, different values or preferences)	
Challenges associated with knowledge use as an innovation (for example, not part of normative context)	
Factors associated with environmental factors (for example, insufficient funding, staff, time)	

Between 2 and 4 barriers were identified for each of the 19 projects. Environmental barriers, organizational barriers such as insufficient financial resources (particularly related to the sustainability of the project and to the education or training of participants), and barriers associated with the inherent challenges of coordination and administration of a project and challenging group dynamics (for example, individuals not motivated to change) were most commonly cited.

3.6 Tools

Tools were developed by 4 projects, including educational materials (*Cancer Word Book*, Early Warning Signs teaching wheel, patient materials) and data collection and reporting tools (Interactive Symptom Assessment and Collection, *INTUITIVE* pathology report module).

3.7 Lessons Learned

Three themes emerged across the projects with regard to lessons learned.

3.7.1 Collaborative High-Functioning Team

Almost all participants indicated the need to bring together the appropriate partners, from the beginning, to facilitate buy-in, encourage commitment, and enable change. The team had to be composed

not only of people responsible for the design, execution, and evaluation of the project, but also of those individuals (patients, health care providers, managers) who would be affected. Further, the need for outstanding leadership (commitment, expertise) and qualified staff support were also considered key defining features of an effective team. Resources to support a high-functioning team included clear terms of reference, a well-articulated and agreed-on communication strategy among and for participants, and a well-articulated and agreed-on dissemination plan to communicate findings to relevant stakeholders.

3.7.2 Project Management

Almost all participants indicated the importance of project planning. Starting with agreement about the problem to solve, the teams learned the value of the explicit articulation of methods, responsibilities, expectations, goals, and a system to evaluate progress toward goals and outcomes. Process mapping and risk mitigation plans were identified as tactics to ensure that duplication was averted, efficiencies were achieved, and alternative strategies were available should the original path prove to be no longer appropriate or viable.

With regard to implementation, pilot-testing was seen as essential, as was incorporation into—or at least minimal disruption of—established work flows.

3.7.3 Support

Participants identified a need for the project to be well supported. Support was conceptualized from several perspectives, including appropriate and predictable funding, access to reliable information technology, ability to engage people with appropriate expertise, access to training and education opportunities for participants, and rewards (including nonfinancial rewards) for work completed. Support from the organization and its leadership were also seen as critical components to enable and sustain change.

4. DISCUSSION

Knowledge Translation for Cancer Control in Canada: A Casebook highlights 30 in-the-field projects, 19 of which are profiled in greater detail, that aim to improve cancer control in Canada. The importance of field projects is that, through them, individuals can see tangible examples of quality improvement work in action. The profiles offer practical direction (including strategies to pursue and to avoid) for other teams and organizations facing similar problems. The complete casebook is now available for the cancer community in Canada, with substantial details about specific projects, processes, lessons learned, and complementary tools and materials²⁰.

Going beyond traditional research studies to consider practical examples and solutions to problems outside of one's own jurisdiction has also entered

into the practice guideline development arena, particularly when the quality and quantity of research evidence is modest and the practice guideline is targeting organizational or system-wide issues²². For example, Cancer Care Ontario's cancer guideline program, the Program in Evidence-Based Care, has used in-the-field cases to inform the development of recommendations for models of diagnostic assessment program requirements²³, systemic therapy²⁴, and others. A casebook approach by the Canadian Institutes for Health Research profiles excellence in the practice of *KT* and acts as an end-of-grant dissemination activity²⁵. The use of the "case" as a teaching tool is quite common in other disciplines such as education²⁶ and business²⁷. Further study into optimizing the value of a field project as a solution for application in other contexts or as a teaching tool is required.

We believe that field projects can be important complements to the knowledge emerging from more traditional research models. However, rather than placing field studies and research studies into individual silos, we would argue that a more purposeful interaction between the two can optimize the value of each. Consider, for example, that although most of the casebook projects were not explicitly driven by the science or practice of *KT*, the results of our analysis demonstrate key features that align with that discipline. For example, defining the features of a *collaborative high-functioning team*, as part of lessons learned, reflects the core principles of an integrated *KT* approach¹⁷. These types of collaborations are discussed extensively within *KT* research contexts and are purposefully integrated into research proposals. Quite similarly, though, the notion that knowledge developers and knowledge users need to work collaboratively to identify and solve problems of interest is also embraced in the context of field projects. Indeed, as discussed by the project leads, this style of collaboration was seen as instrumental to increasing commitment and capacity to change.

Similarly, several of the barriers articulated by the project participants aligned with those recommended by the *KT* field for consideration and management during implementation efforts. Systematic reviews of the literature demonstrate a lack of knowledge about and awareness of problem and solution; beliefs that actions will not result in desired outcomes; lack of motivation; and environments not conducive to or supportive of change. All of those barriers have been shown empirically to hinder the uptake of new knowledge. And those are precisely the findings reported by casebook participants. Indeed, we found good congruity between the barriers reported by casebook participants and by the Légaré systematic review and Knowledge-to-Action Cycle^{19,21}. So too, several of the *process management* and *support* features identified in the lessons learned aligned with enablers that facilitate uptake of new knowledge^{19,21}. However,

in contrast with research findings, barriers associated with self-efficacy were less likely to be reported. Given that many of the projects were organizational in focus, it is not surprising that organizational features (funding, coordination, and leadership, for instance) were the most notable issues reported.

However, a purposeful consideration of key issues supported by *KT* research may enhance the quality of in-the-field projects and increase the likelihood of high-quality planning, smooth execution, and increased effectiveness. The goal here is not to transform local efforts into research exercises, but rather to enable a transfer of what has been learned by the *KT* scientific community into practice and to promote uptake of *KT* research findings by individuals in the field. To that end, the *KT* scientific community has a responsibility to create accessible and useful tools and deliverables that enable its new knowledge to be used. Tools to support the application of field solutions from one jurisdiction to another are also warranted if the potential value of the casebook is to be realized. Resources exist (for example, the Canadian Partnership Against Cancer's Capacity Enhancement Program²⁸), but a more deliberate effort to integrate these resources into practical field projects is warranted.

The relationship between the *KT* research community and the field community is not unidirectional. In-the-field projects and individual case studies of quality improvement projects can provide excellent environments from which to generate hypotheses, to investigate the external validity of new knowledge emerging from the field, and to help guide research priorities and open new directions. More deliberate efforts are warranted to facilitate greater acceptance of the value of field projects.

6. SUMMARY

Knowledge Translation for Cancer Control in Canada: A Casebook provides a potentially valuable resource to facilitate and inspire quality improvement in the oncology field. The complementarity of *KT* practice and *KT* research can help to meet the goal of closing the "know-do" gap, leading to improvements in health care outcomes and health care systems performance.

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MCB, JM, and KG were directly involved in the preparation of this manuscript. SB, TH, and JM were responsible for data collection and compilation of the casebook. MCB, JM, and KG undertook the thematic analysis of the field projects.

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