

# A call for theory-informed approaches to knowledge translation studies: an example of chemotherapy for bladder cancer

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There is a clear evidence-to-practice gap in bladder cancer care. International guidelines recommend that patients with muscle-invasive bladder cancer (MIBC) receive some form of perioperative chemotherapy, with stronger evidence for the use of neoadjuvant (NACT) than of adjuvant (ACT) chemotherapy<sup>1</sup>. Delivery of perioperative chemotherapy involves close collaboration and communication between at least two physician subspecialties: the urologist who makes the initial diagnosis of bladder cancer and undertakes surgery, and the medical oncologist who delivers the chemotherapy. Urologists are the “gatekeepers” to NACT or ACT because they make the upstream decision about whether to refer the patient to a medical oncologist. We recently described very low concordance with the guideline recommendations for patients with MIBC in Ontario: 4% and 18% of patients in Ontario received NACT or ACT respectively<sup>2</sup>. We also found that only 18% of patients were referred to a medical oncologist for consideration of NACT, with 25% of that group subsequently receiving treatment. Of the 39% of patients who were referred to a medical oncologist after surgery, 51% received ACT<sup>3</sup>. Those findings suggest the presence of barriers to treatment at both the upstream level of the urologist and the downstream level of the medical oncologist, and yet there is a critical lack of information about *why* urologists and medical oncologists do not recommend the use of chemotherapy. Similarly, the literature concerning why patients might decline referral to medical oncology or recommended NACT or ACT is sparse.

Most existing studies about the barriers and enablers to the use of NACT or ACT for bladder cancer are brief surveys that describe self-reported practice patterns, but that do not investigate the underlying knowledge, attitudes, and beliefs of clinicians about this clinical decision<sup>4,5</sup>. Based on the existing literature, we identified a number of potential reasons for low utilization at the levels of the urologist, the medical oncologist, and the patient<sup>6</sup>. Physicians, for example, might be unaware of the evidence; or aware of the evidence, but of the belief that their patients are not medically eligible for perioperative chemotherapy; or of the perception that the magnitude of benefit is not clinically important. To our

knowledge, no studies have used a knowledge translation (KT) conceptual framework to describe the barriers and enablers to utilization of perioperative chemotherapy. The use of such a framework would guide a systematic approach to barrier and enabler identification and subsequent development of a targeted KT strategy at the physician level. In this commentary, we use our own program of research in bladder cancer to illustrate how a KT framework can be used to investigate the barriers and enablers to knowledge use, thus potentially informing the development of a behaviour change intervention.

The ultimate goal of a research program that identifies evidence-to-practice gaps in cancer care is to improve concordance with guidelines and patient outcomes. However, intervention studies designed to improve the uptake of evidence into clinical practice is known, in several disease settings, to have had limited and varied effects—a result that could be, in part, the result of a lack of explicit rationale for the intervention choice and the use of inappropriate methods to design the interventions<sup>7,8</sup>. By using a systematic approach guided by well-grounded theory to study barriers and enablers, study results can be linked to effective behaviour change techniques, hence increasing the potential for sustainable change.

Having identified gaps in care delivered to patients with bladder cancer in routine practice, we are now initiating a study funded by the Canadian Cancer Society Research Institute to understand the knowledge, attitude, and beliefs of urologists and medical oncologists. A four-step systematic approach for the development of theory-based behaviour change interventions has been described in the literature (Table 1)<sup>7</sup>. The process<sup>7</sup> guides

- identification of the gap in evidence-based practice and of the health professionals whose behaviour needs to change.
- systematic identification, using qualitative or quantitative methods (or both), of the specific barriers and enablers to implementation of evidence into practice.
- identification of behaviour change techniques and optimal modes of delivery that can modify barriers and enhance enablers for relevant health professionals.

**TABLE 1** Steps for developing theory-informed knowledge translation interventions<sup>a</sup>

Step	Question	Need
1	Who needs to do what, differently?	Identify the gap in evidence-based practice and the health professionals whose behaviour needs to change.
2	Using a theoretic framework, which barriers and enablers have to be addressed?	Use qualitative or quantitative methods, or both, to identify the specific barriers to and enablers of implementation of evidence into practice.
3	Which intervention components could overcome the modifiable barriers and enhance the enablers?	Identify behaviour change techniques and optimal modes of delivery to modify barriers and enhance enablers for relevant health professionals.
4	How can behaviour change be measured and understood?	Evaluate the behaviour change intervention that was implemented.

<sup>a</sup> Modified from French *et al.*, 2012<sup>7</sup>.

- evaluation of the behaviour change intervention that is implemented.

Work by our group in Ontario has addressed components of step 1 of this process and revealed both low patterns of referral from urologists to medical oncologists for consideration of NACT or ACT and subsequently low use of chemotherapy by medical oncologists in patients with bladder cancer<sup>2,3</sup>. Accordingly, the groundwork for step 1 as laid by our work illustrates an important gap between evidence and practice. What is lacking in the current literature are studies that address step 2. To understand why urologists and medical oncologists underutilize standard chemotherapy and how future initiatives might improve practice requires answers to these questions:

- Are physicians aware of existing guidelines for NACT or ACT in MIBC? If so, do they agree with the recommendations, and have they themselves adopted the relevant guidelines into their clinical practice? Why or why not?
- What are the beliefs and attitudes of urologists and medical oncologists regarding the efficacy and toxicity of NACT or ACT? Do those beliefs and attitudes act as a catalyst or a deterrent to use?
- Using a KT framework, what are the barriers and enablers to implementation of evidence-based guidelines for bladder cancer for these physicians?
- From the perspective of the physicians, what factors at the provider, patient, and health system level are associated with the barriers and enablers?

The Theoretical Domains Framework (TDF) is a well-grounded and thorough KT framework that can be used to identify the barriers and enablers to the implementation of evidence-based practice guidelines. Many theories about KT and behaviour change exist, but the TDF is a comprehensive framework for designing KT interventions targeted at behaviour change, offering broad coverage of potential change pathways<sup>9</sup>. Table 11 lists the relevant domains in the TDF, together with some sample items from a questionnaire for clinicians that will provide insight into barriers and enablers to the use of perioperative chemotherapy for bladder cancer. The themes that emerge will allow us to link specific barriers and enablers in each relevant theoretical domain with appropriate behaviour change techniques and delivery modes for an intervention at

the level of these health care practitioners designed to improve care for patients<sup>7</sup>.

A critical aspect of step 2 in the framework relates to who has to be consulted about barriers and enablers to perioperative chemotherapy for bladder cancer. In our example, urologists and medical oncologists who provide care to patients with bladder cancer have to be studied in parallel, but separately, because these two groups of physicians likely have their own cultures, beliefs, and practices that influence clinical decision-making. Initial qualitative methods using individual interviews will provide insight into knowledge, attitudes, and beliefs about chemotherapy for MIBC and will shed light on the perceived barriers and enablers to referral and use of NACT or ACT at the individual practitioner level.

We will also be exploring factors potentially associated with barriers and enablers at the patient and health system levels from the perspective of urologists and medical oncologists. The TDF has several domains that will aid in focusing questions related to the health system level, including Environmental Context and Resources, Social Influences, Social/Professional Role and Identity, and Behavioural Regulation<sup>7,9</sup>. We will also be exploring patient factors associated with barriers and enablers to treatment from the provider perspective, and again, several domains of the TDF, including Knowledge, Beliefs About Consequences, Social Influences, and Emotion, will help to frame questions at that level<sup>7</sup>. It will also be important to obtain direct patient input as an addition to the clinician's perspective on the issues that they believe patients have with respect to the use of NACT or ACT as part of their treatment. After themes related to the barriers and enablers in the two physician groups have been explored, patients with MIBC who are or were eligible for perioperative chemotherapy will be invited to participate. Information obtained directly from patients could provide a different, yet equally important, viewpoint on the reasons for acceptance or refusal of NACT or ACT as part of their treatment. Potential reasons might include concerns about delaying their cancer surgery, concerns about toxicity, the presence of active symptoms (such as hematuria and pain), and uncertainty about the magnitude of benefit. Patient perspectives could help to further elucidate the barriers and facilitators relevant to clinical behaviour with respect to treatment.

Themes that emerge in the qualitative work will next be studied quantitatively using survey methodology. A

**TABLE II** Sample questionnaire items for health care clinicians providing care to patients with muscle-invasive bladder cancer (MIBC), by domain of the Theoretical Domains Framework<sup>a</sup>

Domain	Sample themes for qualitative or quantitative work
Knowledge	<ul style="list-style-type: none"> <li>■ Are you aware of the evidence recommending the use of neoadjuvant (NACT) or adjuvant (ACT) chemotherapy for patients with MIBC?</li> </ul>
Skills	<ul style="list-style-type: none"> <li>■ I have the skills necessary to determine whether a patient with MIBC is medically eligible or ineligible for NACT or ACT.</li> <li>■ I (urologist) know how to refer my patients to medical oncology.</li> <li>■ I have the skills necessary to identify whether a patient is likely to benefit from NACT or ACT.</li> </ul>
Social or professional role and identity	<ul style="list-style-type: none"> <li>■ It is my responsibility as a urologist to refer all patients with MIBC to medical oncology.</li> <li>■ It is my responsibility as a medical oncologist to present all chemotherapy options to patients with MIBC.</li> </ul>
Beliefs about capabilities	<ul style="list-style-type: none"> <li>■ I am confident that I can appropriately assess whether a patient with MIBC is medically eligible for NACT or ACT.</li> <li>■ I (medical oncologist) am confident in my ability to provide MIBC patients with all chemotherapy options.</li> <li>■ I (medical oncologist) am able to make decisions about the risks and benefits of NACT or ACT for my patients with MIBC.</li> <li>■ I (medical oncologist) feel confident in my ability to deliver appropriate chemotherapy to patients with MIBC.</li> </ul>
Beliefs about consequences	<ul style="list-style-type: none"> <li>■ I believe the published evidence about the benefits of NACT or ACT in MIBC.</li> <li>■ If I (urologist) refer my patients to medical oncology, surgery could be delayed, which might compromise outcomes.</li> <li>■ My (urologist) referral to medical oncology for chemotherapy will increase the patient's likelihood of cure.</li> <li>■ I am concerned about toxicity from chemotherapy in patients with MIBC, which affects my decisions to refer or treat patients.</li> <li>■ I believe the magnitude of benefit with NACT or ACT is clinically important.</li> </ul>
Reinforcement	<ul style="list-style-type: none"> <li>■ Having a close colleague in urology or medical oncology increases the likelihood of my recommending NACT or ACT.</li> </ul>
Intentions	<ul style="list-style-type: none"> <li>■ I do not believe that I can identify whether patients with MIBC will benefit from chemotherapy, and so it is unlikely that I will refer to medical oncology or recommend NACT or ACT.</li> <li>■ I intend to discuss NACT or ACT with the next (medically eligible) patient with MIBC that I see.</li> </ul>
Goals	<ul style="list-style-type: none"> <li>■ I have sufficient time to access and review the latest evidence about the treatment of MIBC.</li> <li>■ I plan to review the evidence recommending NACT or ACT for MIBC patients after taking part in this survey.</li> <li>■ I do (do not) plan to change my practice in light of the evidence on NACT or ACT for the treatment of MIBC.</li> </ul>
Memory, attention, and decision processes	<ul style="list-style-type: none"> <li>■ Deciding whether to refer my (urologist) patient for chemotherapy is sometimes difficult.</li> <li>■ Deciding whether my patient is medically eligible for NACT/ACT is sometimes difficult.</li> <li>■ It is difficult to decide whether my patients with MIBC will benefit from NACT or ACT.</li> <li>■ I sometimes forget that peri-operative chemotherapy is an option for my patients with MIBC.</li> </ul>
Environmental context and resources	<ul style="list-style-type: none"> <li>■ I do not have access to medical oncology.</li> <li>■ My community or academic institution has a system to prompt providers to discuss chemotherapy options with MIBC patients.</li> <li>■ My community or academic institution has barriers that make communication between urology and medical oncology difficult.</li> <li>■ My centre has regular multidisciplinary case conferences (including urologists and medical oncologists) to discuss the care of patients with MIBC.</li> </ul>
Social influences	<ul style="list-style-type: none"> <li>■ My patients do not want to delay surgery and are therefore not interested in hearing about chemotherapy options.</li> <li>■ My colleagues are knowledgeable about the use of NACT or ACT for MIBC patients.</li> <li>■ My colleagues are unaware of the evidence for treatment options in MIBC patients.</li> <li>■ I respect a colleague or thought leader who does not feel that the magnitude of benefit of NACT or ACT is clinically important.</li> </ul>
Emotion	<ul style="list-style-type: none"> <li>■ Learning more about the evidence recommending NACT or ACT for MIBC will make me feel useful to patients.</li> <li>■ I find talking to patients about chemotherapy for MIBC to be frustrating because I am unsure which patients will benefit.</li> </ul>
Behavioural regulation	<ul style="list-style-type: none"> <li>■ I (urologist) will monitor how many patients I refer to medical oncology for NACT or ACT in future.</li> <li>■ I (medical oncologist) will monitor how many patients I recommend for NACT or ACT in future.</li> <li>■ I do not plan to change my behaviour when treating patients with MIBC.</li> </ul>

<sup>a</sup> Modified from Patafio *et al.*, 2014<sup>6</sup>, and French *et al.*, 2012<sup>7</sup>.

survey designed to capture input from all urologists and medical oncologists in many jurisdictions will help to determine the prevalence of specific barriers and enablers across the province.

Once barriers and enablers have been identified, steps 3 and 4 will involve designing and implementing a behaviour change intervention and subsequently evaluating practice so as to understand if practice patterns were modified as a result. Identification of the appropriate evidence-based behaviour change techniques and delivery modes will depend on the identified barriers and enablers that have to change to close the evidence-to-practice gap<sup>10</sup>. The behaviour change technique matrix developed by Michie and colleagues<sup>10</sup> maps more than 50 effective interventions to the domains of the TDF and will be used to guide step 3. For example, if we find that knowledge of the guidelines is a primary barrier to referral or use of NACT or ACT, we might consider developing an education session or a decision aid for urologists and medical oncologists that will provide information on the behaviour and its associated outcomes. If the barrier is related to social influences, the matrix suggests interventions of encouragement, pressure, support, and modelling of the behaviour by others. It will also be important to discern at which level or levels—any one or a combination of patient, clinician, and organization—the barrier is occurring, and consideration will have to be given to the behaviour change techniques that are likely to be acceptable and effective in the physician groups. We recognize that improvement in health care can be facilitated at various levels of the health system, but we are focusing on the level of the individual health practitioners who are directly involved in the delivery of patient care. This is the level at which we will tailor, implement, and evaluate an intervention aimed at changing clinical behaviour.

In this commentary, we have suggested that use of a KT framework underpinned by behaviour change theory will result in a more systematic understanding of an implementation problem. Improved rates of perioperative chemotherapy utilization is a critical unmet need in the care of patients with bladder cancer. Having completed a comprehensive study of practice and outcome, we have identified gaps in care that suggest the presence of barriers at the level of the upstream urologist and the downstream medical oncologist<sup>2</sup>. Although countless editorials call for improved utilization of NACT or ACT in bladder cancer, we are not aware of any studies that have used a validated KT framework to systematically look at barriers and enablers<sup>6</sup>. Understanding the barriers and enablers to use of NACT or ACT in clinical practice will provide novel information that can help to close the gap between what is known and what is done with that knowledge. Results from this work will be essential to informing the development, implementation, and evaluation of a theory-informed behaviour change intervention at the level of referring and treating physicians with the aim of improving the quality of care and

outcomes of patients with bladder cancer. We encourage other researchers with an interest in bridging the evidence-to-practice gap to consider a theory-informed approach when designing future KT intervention studies.

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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.

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