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Original article

Bladder-sparing radiotherapy for muscle-invasive bladder cancer: A survey of providers to determine barriers and enablers

Melanie Walker [a,d], Simon D. French [d,e], R. Christopher Doiron [c], Kelly Brennan [a], Deb Feldman-Stewart [a,b], D. Robert Siemens [b,c], William J. Mackillop [a,b,d], Christopher M. Booth [a,b,d,*]

[a] Division of Cancer Care and Epidemiology, Queen's University Cancer Research Institute; [b] Department of Oncology; [c] Department of Urology; [d] Department of Public Health Sciences; and [e] School of Rehabilitation Therapy, Queens' University, Canada

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ABSTRACT

Background: To understand barriers and enablers to use of curative-intent radiotherapy (RT) for muscle-invasive bladder cancer using the Theoretical Domains Framework (TDF).
Methods: Canadian urologists, radiation oncologists (ROs) and medical oncologists (MOs) participated in a web-based survey to assess barriers and enablers to use of RT. Survey questions were thematically mapped to TDF domains. Logistic regression was used to identify TDF domains associated with high referral/use of RT.
Results: 64 urologists, 29 ROs and 26 MOs participated. Participants reported comparable survival at five years with cystectomy (51%) and RT with concurrent chemotherapy (50%). Despite this, participants reported low RT referral/treatment rates: Urologists referred a median of 2/10 patients to RO; ROs treated a median of 5/10 patients referred; and MOs referred a median of 2/8 patients not referred to RO by urology. Among urologists, the TDF domains *'beliefs about consequences'* (OR = 8.1, 95% CI 1.5–44.9), *'social and professional role'* (OR = 11.2, 95% CI 2.3–53.6) and *'environmental context and resources'* (OR = 5.9, 95% CI 1.5–23.3) were associated with higher rates of RO referral.
Conclusions: We have identified factors associated with referral for RT among patients with bladder cancer. These factors should be addressed as part of a concerted effort to increase utilization of RT.
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Cystectomy or radiotherapy (RT) are primary treatment options for patients with muscle-invasive bladder cancer (MIBC). There is no level 1 evidence to support one modality over the other, however population-based data suggest that cancer-specific survival is comparable [1]. Given the lack of evidence it is therefore not surprising that practice patterns vary widely with cystectomy being the dominant modality used in the United States while RT is the preferred treatment in parts of Europe and Asia. Recent guidelines encourage multidisciplinary care for patients with MIBC [2,3]. UK guidelines stipulate that all patients with MIBC for whom radical therapy is suitable, should be offered a choice of cystectomy or RT with a radiosensitizing chemotherapy. We have previously described low utilization rates for RT in the general population of Ontario, Canada [1]. We have also reported low rates of referral from urology to radiation oncology which may be partially responsible for low uptake of RT; only 10% of patients treated with cystectomy were seen by a radiation oncologist before surgery [4].

Limited literature exists that evaluates barriers and enablers around the use of RT for patients with bladder cancer and, to our knowledge, there are no studies that use a knowledge translation (KT) conceptual framework. We recently completed a qualitative study using a KT framework to identify underlying knowledge, attitudes and beliefs among urologists, radiation oncologists (ROs) and medical oncologists (MOs) about RT for MIBC (In Press, Clinical Oncology 2017). The predominant enablers to the use of RT identified across specialists in the qualitative study included: (a) the presence of local RT 'champions'; (b) urologists who believe all patients should see a RO, and (c) patient-driven consultations seeking alternatives to cystectomy. The predominant barriers to use of RT identified included: (a) a belief that RT has inferior survival; (b) a belief that RT has a high rate of local failure, and (c) environmental factors including inadequate multidisciplinary collaboration.

Using a KT conceptual framework to guide investigation of barriers and enabler means the framework is then positioned well to guide development of future intervention studies based on the investigation results [5,6]. The Theoretical Domains Framework (TDF) is a comprehensive framework to identify barriers and enablers of implementation of evidence into practice. The TDF

* Corresponding author at: Division of Cancer Care and Epidemiology, Queen's University Cancer Research Institute, 10 Stuart Street, Kingston, ON K7L 3N6, Canada.
E-mail address: boothc@kgh.kari.net (C.M. Booth).

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can facilitate design of KT interventions as it offers broad coverage of potential change pathways [7].

We undertook this quantitative study to determine the prevalence of barriers and enablers identified in our earlier qualitative work among practicing urologists, ROs and MOs across Canada. Barriers and enablers identified within the relevant theoretical domains can subsequently be mapped to appropriate behaviour change interventions in an effort to increase RT utilization for MIBC.

Methods

Study design, participants, and procedure

Results from an earlier qualitative study (In Press, Clinical Oncology 2017) informed the development of a web-based survey for each specialist group. All practicing urologists, MOs and ROs who treat patients with bladder cancer in Canada were invited to participate. The Canadian Urological Association disseminated our survey to all members. A comprehensive list of all Canadian MOs and ROs treating bladder cancer was compiled through contact with the Canadian Association of Medical Oncologists and the Canadian Association of Radiation Oncologists. The study was approved by the Research Ethics Board of Queen's University. The survey was distributed electronically using Fluid Surveys© software. A modified approach of Dillman's Total Design Method [8] was used to maximize response rates. After initial survey distribution a reminder was sent at 4 weeks.

Survey design and content

The survey was designed based on thematic analysis of our recently completed qualitative study. Question development for each survey was based on specialty-specific targeted health behaviours: (1) Are urologists referring MIBC patients to RO?; (2) Are ROs treating patients with RT?; and (3) Are MOs referring patients to RO if not already done by urology? The surveys included questions informed by domains of the TDF [6] (Appendix 1) pertaining to (a) the knowledge, attitudes and beliefs of the clinicians about their referral for or use of RT in clinical practice; and (b) the potential barriers and enablers of RT delivery. Responses to the majority of survey questions were in the form of categorical (yes/no; multiple choice) and ordinal variables (5-point Likert scale).

Questions were developed for each TDF domain. Responses to ordinal survey questions were collapsed into three categories for analysis purposes: strongly disagree/disagree, neutral, strongly agree/agree. In addition, a composite summary mean score of all questions relevant to each of the identified TDF domains was created. Higher scores are more conducive to achieving the targeted health behaviours (i.e. increased referral/use of RT). This approach has previously been adopted by others using the TDF [9,10].

The surveys included questions about contraindications for RT and the presentation of a hypothetical case for which participants were asked to provide survival estimates. Open-ended survey questions were used to ask participants about the greatest successes and challenges in promoting bladder-sparing therapy. The surveys were developed by a multidisciplinary team with clinical expertise in bladder cancer, survey research methodology, and implementation science. The surveys were piloted and subsequently revised based on feedback from a convenience sample of 4 clinicians.

Statistical analysis

We used the following questions to classify respondents as high adopters of RT: Urologists – *'Of the last 10 MIBC patients that you have seen for curative intent treatment, how many of them did you refer to radiation oncology for a discussion about radiotherapy?'; ROs – 'Of the last 10 MIBC patients that you have seen for curative intent treatment, how many of them did you treat with RT?'; and MOs – 'Of the last 10 MIBC patients that you have seen for curative intent treatment, how many would NOT already have been referred to radiation oncology?; and 'Of those patients not referred by urology, how many of them did you refer to radiation oncology?*' Respondents whose reported values were greater than or equal to the median were considered to be high adopters. Logistic regression was used to identify TDF domains associated with high adoption of RT referral/use in practice. Results were considered statistically significant at p-value < 0.05. All analyses were performed using SAS version 9.4 (SAS Institute, Cary, NC).

Results

Study participants

Survey response rates were 11% for urologists (64/562), 21% for ROs (29/139), and 20% for MOs (26/131). The majority of participants were male (83% of urologists; 90% of ROs; 58% of MOs).

Table 1
Survival estimates from urologists, medical oncologists and radiation oncologists for a hypothetical case scenario.

Estimated 5 year overall survival (%)						
Case scenario: MIBC patient pre cystectomy with no clinical node involvement^						
		Cystectomy alone	NACT + Cystectomy	Cystectomy + ACT	Radiotherapy alone	Radiotherapy + concurrent chemotherapy
Urologists $N = 64$	*Mean*	53	63	57	41	49
	Median	50	60	55	40	50
	Range	(10–80)	(40–85)	(40–82)	(15–80)	(10–75)
Radiation Oncologists $N = 29$	*Mean*	48	57	53	44	53
	Median	45	55	50	45	50
	Range	(25–70)	(40–80)	(40–70)	(25–70)	(35–80)
Medical Oncologists $N = 26$	*Mean*	47	56	53	36	47
	Median	45	55	50	35	45
	Range	(30–70)	(35–80)	(34–75)	(20–60)	(30–65)
All specialists combined $N = 119$	*Mean*	51	60	55	40	50
	Median	50	60	55	40	50
	Range	(10–80)	(35–85)	(34–82)	(15–80)	(10–80)

Note: Two medical oncologists and six urologists did not respond to all survival estimate survey questions.

^ A 60 year old man presents to review the pathology from his recent transurethral resection of a bladder tumor. At the time of resection, the Urologist noted a single area of high-grade urothelial carcinoma in the bladder. Pathology of the resected specimen reveals muscle invasion with no CIS present. Imaging does not show any signs of metastatic disease or regional adenopathy. On CT scan the tumour involves the perivesical fat (cT3). There is no hydronephrosis and renal function is normal. The patient has no lower urinary tract symptoms and is otherwise healthy. He is interested to learn about his treatment options. What are the medically acceptable treatment options for this patient?

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