

A smoking cessation program as a resource for bladder cancer patients

Daniel Vilensky, MD; Nathan Lawrentschuk, MB BS, PhD, FRACS; Karen Hersey, RN;
Neil E. Fleshner, MD, FRCSC

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Abstract

Background: Continued tobacco use following a bladder cancer (CaB) diagnosis puts patients at risk for other tobacco-associated diseases and has also been associated with heightened risks of treatment-related complications, tumour recurrence, morbidity and mortality. Our aim was to determine if patients with CaB who continue to smoke warrant a smoking cessation program as a resource for improving their prognosis and long-term health.

Methods: A cross-sectional quantitative questionnaire-based study was performed between January and April 2009. We surveyed patients with a pathologically confirmed diagnosis of CaB during their cystoscopy appointments at a single cancer centre.

Results: One hundred patients completed the survey with 72% of them admitting to smoking in their lifetime. A third of respondents smoked at the time of their diagnosis; 76% of patients who had been active smokers at the time of their diagnosis (n = 33) reported smoking at some point thereafter and 58% continued to smoke. Among continued smokers, they were classified in the following categories: 26% were in "precontemplation," 5% in "contemplation," 16% in "preparation," and 53% in "action;" 37% of patients who continued to smoke were interested in a hospital-based smoking cessation program. Overall, 70% reported smoking as a risk factor for a poor CaB prognosis. The two most common barriers to quitting were "trouble managing stress and mood" and "fear of gaining weight."

Conclusion: Based on the data from our centre, patients with CaB who continue to smoke after their diagnosis warrant a smoking cessation program as a resource for improving prognosis and long-term health. Further research should focus on establishing an efficacious and cost-effective program that provides these patients with the resources they need to quit smoking.

Résumé

Contexte : L'usage continu du tabac après un diagnostic de cancer de la vessie fait courir aux patients un risque de contracter d'autres maladies associées à l'usage du tabac, et a aussi été associé à des risques accrus de complications liées au traitement, de récurrence de la tumeur, de morbidité et de mortalité. Notre but était de déterminer si les patients atteints de cancer de la vessie qui continuent de fumer ont besoin d'un programme d'abandon du tabac pour améliorer leur pronostic et leur santé à long terme.

Méthodologie : Une étude transversale quantitative par questionnaire a été réalisée entre janvier et avril 2009. Nous avons sondé des patients ayant reçu un diagnostic de cancer de la vessie confirmé par examens pathologiques pendant un rendez-vous pour cystoscopie dans un seul centre de traitement du cancer.

Résultats : Cent patients ont rempli le sondage, dont 72 % qui ont avoué avoir fumé pendant une période de leur vie. Un tiers des répondants fumait au moment du diagnostic; 76 % des patients qui étaient des fumeurs actifs au moment de leur diagnostic (n = 33) ont signalé avoir continué à fumer par après et 58 % fumaient toujours. Ceux qui continuaient à fumer ont été répartis dans les catégories suivantes : 26 % étaient en « précontemplation », 5 % étaient en « contemplation », 16 % en « préparation » et 53 % en « action ». Trente-sept pour cent des patients qui continuaient de fumer souhaitaient participer à un programme d'abandon du tabac en milieu hospitalier. De façon globale, 70 % ont signalé le tabagisme comme un facteur de risque de mauvais pronostic pour leur cancer de la vessie. Les deux principaux obstacles à l'abandon du tabac étaient la « difficulté à gérer le stress et l'humeur » et la « crainte de prendre du poids ».

Conclusion : Selon les données provenant de notre centre, les patients atteints d'un cancer de la vessie qui continuent de fumer après leur diagnostic ont besoin d'un programme d'abandon du tabac pour améliorer leur pronostic et leur santé à long terme. D'autres études devraient porter sur l'établissement d'un programme efficace et rentable fournissant à ces patients les ressources nécessaires pour cesser de fumer.

Introduction

Bladder cancer (CaB) remains a significant public health concern. In 2009, there were an estimated 6900 new cases of CaB in Canada, with more men affected than women.¹ The incidence and burden on the health care system are increasing.²⁻⁶ It is well-established that tobacco use is the cause of bladder cancer in one-third to one-half of CaB cases,⁷⁻⁹ yet CaB related to tobacco use is still rising.⁹⁻¹¹ Continued tobacco use following a CaB diagnosis has also been associated with worse disease-associated outcomes, such as tumour recurrence, progression to invasive disease and metastases, and the acquisition of secondary urinary tract carcinomas.¹²⁻¹⁴ In addition, smoking is a well-known cause of chronic lung disease, heart disease, cerebrovascular disease and other malignancies.¹⁵ It has recently been

suggested, even by urologists, that patients with CaB should be targeted to undergo screening for lung cancer.¹⁶ In terms of cancer screening, smokers are also less likely to present to the doctor's office, thereby potentially worsening their long-term prognosis.¹⁷ Finally, patients with CaB, particularly superficial stages of the disease, can often survive for many years after treatment and therefore should be advised on the importance of smoking cessation as a primary preventive measure for other tobacco-related illnesses. However, the degree to which urologists provide these smoking cessation services is unknown.

Helping patients diagnosed with CaB quit smoking has been considered a strategy to mitigate the extensive impact of this disease. There are many factors to consider when determining the need to initiate a smoking cessation program for this population. Firstly, the significant number of smokers with bladder cancer necessitates the initiation of a smoking cessation program. In a recent review, Strobe and Montie concluded that current data on tobacco smoking prevalence among CaB patients are lacking.⁸ The data on the high prevalence of smokers and the willingness of CaB patients to quit smoking are over 12 years old and from a single centre.¹⁸ Secondly, the patient's understanding of smoking's impact on disease-related outcomes must be established; patients who perceive a higher risk of cancer recurrence with continued smoking are more likely to abstain.¹⁹ When patients at a urology clinic in the United States were surveyed about smoking as a risk factor for cancers, only 36% recognized bladder cancer as a risk of smoking, whereas 98% of patients recognized lung cancer as a risk.²⁰ In the United Kingdom, one study demonstrated that only 13% of CaB patients with a history of smoking were aware that continued smoking could potentially worsen their prognosis, yet no similar studies have been done in North America.²¹ Lastly, it would be valuable to determine if there are common characteristics among smokers with CaB as well as commonly experienced barriers to quitting to elucidate how the needs of this subset of smokers differs from the average tobacco-user. The purpose of this study was to determine if patients with CaB who continue to smoke after their diagnosis warrant a smoking cessation program as a resource to improve their prognosis and long-term health.

To our knowledge, no study has empirically tested the effectiveness of smoking cessation interventions in this population. Nonetheless, this study demonstrates that tobacco addiction is a common comorbidity in CaB patients and these patients deserve a smoking cessation program. It must be accepted that such an addiction is a chronic, relapsing disease with many of the harmful secondary effects, such as CaB, which take decades to manifest themselves. As such, programs for smoking cessation should encompass nicotine replacement products, pharmacotherapy and long-term behavioural support, which are all evidence-based treat-

ments which have been extensively researched in the general population.

Methods

Study design

This is a single centre, cross-sectional study which used a quantitative questionnaire and retrospective chart review approved by the Research Ethics Board.

Subjects

Patients seen by urologic oncologists in the CaB clinic from January and June 2009 for follow-up cystoscopy of previously diagnosed or treated CaBs were screened consecutively for study eligibility. Requirements were pathologically confirmed CaB, ≥ 18 years age and written consent.

Data collection

Patients were approached, offered participation in the study and given the informed consent form to review and complete. Patients who completed the consent form were administered a validated questionnaire by a research team member. The questionnaire was a compilation of questions regarding risk perception, smoking and smoking cessation history and demographic data; the questionnaire was derived from 3 previously validated questionnaires used to investigate similar research questions.^{18,20,22} The compilation was adapted to meet the specific needs of this study. Stage and grade data for each patient was gathered using the University Health Network's CaB Informatics System (BLIS).

Outcome measures

For the purpose of this study, patients were classified as smokers (lifetime history of smoking >100 cigarettes) or non-smokers. Smokers were further classified as quitters or continued smokers. Quitters were even further classified as having quit prior to their CaB diagnosis, immediately after (within 1 week) CaB diagnosis, or sometime after (>1 week after) CaB diagnosis.

All patients were asked whether or not they perceived smoking and other factors to affect the course of their CaB and other malignancies. This study reports the percentage of CaB patients who are aware that continued smoking leads to a poorer prognosis of their CaB.

Patients who continued to smoke at the time of assessment were categorized according to Prochaska's Model of Change.²³ Patients were classified as being in "precontem-

Table 1. Study sample demographic data

Overall	No. patients who have never smoked	No. patients who have quit smoking	No. continued smokers	Total no. patients	<i>p</i> value ^b
Sex	(28)	(53)	(19)	(100)	
M	20	41	9	70	<i>p</i> < 0.05
F	8	12	10	30	
Age					
19-39	0	3	1	4	<i>p</i> < 0.75
40-49	1	0	2	3	
50-59	7	13	5	25	
60-69	7	13	4	24	
70-79	6	13	4	23	
80-89	7	11	3	21	
Race/ethnicity^a					
Caucasian	23	47	18	88	<i>p</i> < 0.10
Black	0	3	0	3	
Asian	5	1	0	6	
Middle Eastern	0	1	1	2	
Interracial	0	1	0	1	
Education					
High school or less	7	18	13	38	<i>p</i> < 0.005
Some college/vocational training	10	27	4	41	
Graduate/doctoral degree	11	8	2	21	
Family income					
Less than \$49,999	7	11	6	24	<i>p</i> < 0.50
\$50,000 to 99,999	10	15	2	27	
\$100,000 or more	5	14	6	25	
Prefer not to answer	5	9	3	17	
Doesn't know	1	4	2	7	
Marital status					
Never married	6	2	0	8	<i>p</i> < 0.05
Married/marriage-like relationship	16	42	16	74	
Divorced/separated/widowed	6	9	3	18	
Second primary cancer diagnosis	8	16	6	30	<i>p</i> < 0.97

a = race/ethnicity statistics were determined by having the patients classify themselves; b = *P* values were determined by Chi squared analysis which was used to assess the significance of differences in smoking status between demographic variables.

plation" (not currently thinking about quitting), "contemplation" (thinking about quitting in the next 6 months), "preparation" (planning on quitting within 1 month) or "action" (currently taking action to quit).

In addition, this study examined common characteristics among smokers with CaB. For each patient, the following data were documented: first language, age, gender, barriers to quitting, ethnicity, education, family income, interest in a hospital-based smoking cessation program and experiences with attempts at quitting. Chi-squared analysis was used to test for associations between quitting and patient demographics (Microsoft Excel, Microsoft Corporation and GraphPad Prism 4.0, GraphPad Software Inc., San Diego, CA).

Results

The study samples' demographic data are summarized (Table 1). Of the 100 eligible study participants, 70% were male, 88% were Caucasian and 74% were married or in a marriage-like relationship. At the time of data collection, the median time since diagnosis was 3 years; 30% of patients had a second primary cancer diagnosis in their lifetime, 55% had carcinoma in situ or \geq T1 disease, with 67% of these patients with high-grade disease.

Smoking status and intention to quit data are summarized (Table 2). Of all the participants, 72% admitted to smoking in their lifetime and 33% smoked at time of diagnosis. At the time of data collection, 19% of patients continued to smoke. Moreover, 76% of patients who had been active smokers at the time of diagnosis ($n = 33$) reported smoking at some point after the diagnosis and 58% continued to smoke at

Table 2. Smoking status and intention to quit data

Overall	No. patients (N)	Patients who continue to smoke (%)	Patients with history of smoking (%)	Total patients (%)
History of smoking (>100 cigarettes)	(100)			
Yes	72	100	100	72.0
No	28	-	-	28.0
Smoked at time of diagnosis	33	100	45.8	33.0
Quitters	53	-	73.6	53.0
Quit before diagnosis	39	-	54.1	39.0
Quit immediately after diagnosis	8	-	11.1	8.0
Quit sometime after diagnosis	6	-	8.3	6.0
Continue to smoke everyday	19	100	26.4	19.0
Precontemplation	5	26.3	6.9	5.0
Contemplation	1	5.3	1.4	1.0
Preparation	3	15.8	4.2	3.0
Action	10	52.6	13.9	10.0
Interest in a hospital-based smoking cessation program ^a	7	36.8	-	-

a = Only asked to continued smokers. Of the 7 patients who were interested in a hospital-based smoking cessation program, 6 were in action and 1 was in preparation.

the time of assessment. Twenty-four percent of patients who smoked at diagnosis ($n = 33$) quit immediately after. Those who admitted to smoking in their lifetime averaged 31 pack/years and patients who continued to smoke at the time of their assessment averaged 37 pack/years; this difference, however, was not significant ($p < 0.25$).

Among patients who continued to smoke daily at the time of study ($n = 19$), 26% were in "precontemplation," 5% were in "contemplation," 15.8% were in "preparation," and 53% were in "action." In addition, 7 (37%) patients who continued to smoke at the time of study expressed an interest in a hospital-based smoking cessation program.

With regard to the perception of smoking as a risk factor for a poor cancer prognosis, 70% of respondents knew that smoking is a risk factor for a poor CaB prognosis compared to 93% for poor lung cancer prognosis, 51% for colon cancer prognosis, 50% for prostate cancer prognosis and 45%

for renal cancer prognosis (data not shown). Among patients who continued to smoke at the time of assessment ($n = 19$), the risk perception of smoking was similar to the overall group (68%) for a poor CaB prognosis (data not shown). Patients without post-secondary education were less likely to perceive smoking as a risk factor for a poor CaB prognosis; the difference, however, was not significant (odds ratio [OR] = 0.89; $p < 0.8$). Similarly, patients with a family income $< \$100,000$ were less likely to perceive smoking as a risk factor for poor CaB prognosis; again, the difference was not significant (OR = 0.53; $0.2 < p < 0.3$) (data not shown).

We documented the common barriers to quitting smoking for continued smokers with CaB (Table 3). The 2 most common barriers identified by patients were "trouble managing stress and mood" (21%) and "afraid of gaining weight" (21%). "Trouble affording cessation aids or medications" was also expressed (11%). Patients without post-secondary education were significantly more likely to continue smoking than those with post-secondary education at the point of assessment (OR = 4.21; $0.001 < p < 0.01$). Conversely, having a family income $< \$100,000$ was not significantly associated with continuing to smoke at assessment (OR = 0.79; $0.50 < p < 0.70$).

We also outlined the common smoking cessation methods used by quitters and continued smokers (Table 4). Overall, 72 respondents tried 98 smoking cessation methods. Quitting "cold turkey," without the

Table 3. Barriers to quitting tobacco use reported by bladder cancer patients who continue to smoke

	Patients who continue to smoke, N (%)
	19
Lack of social support	1 (5.3)
Lack of access to resources	1 (5.3)
Language barriers	0 (0.0)
Not interested in quitting	1 (5.3)
Trouble managing stress and mood	4 (21.1)
Trouble affording cessation aids or medications	2 (10.5)
Afraid of gaining weight	4 (21.1)
Other ^a	5 (26.3)

a = Other answers given included: "started smoking at a funeral as a cigarette was being passed around - a reflex action to an old habit;" "habit;" "addiction was too strong;" "wanted to start again;" "helping mother after accident, mother smokes."

Table 4. Smoking cessation methods used

	Number of smokers	Cold turkey	Self-help material	Formal cessation program	Consult with doctor	Nicotine replacement therapy	Medication: bupropion hydrochloride	Medication: varenicline	Other
Total	(72)	59	6	1	3	12	7	4	6
Quitters	53	46	3	0	1	5	3	1	5
Quit before diagnosis	39	33	2	0	1	4	2	0	5
Quit immediately after diagnosis	8	8	0	0	0	0	0	0	0
Quit sometime after diagnosis	6	5	1	0	0	1	1	1	0

Other answers included: "quit when diagnosed with lung cancer," "chewed regular gum or life savers," "transitioned to smoking a pipe and then quit cold turkey," "acupuncture," "medications to relax" and "acupuncture/hypnosis."

use of any aids or support, was by far the most commonly tried method.

Discussion

The benefits of smoking cessation are substantial.^{15,24} Today, patients diagnosed with CaB, especially non muscle-invasive disease, can live longer lives, yet are at risk of other tobacco-associated diseases. In addition, continued tobacco use in CaB patients has been associated with heightened risks of tumour recurrence, progression and secondary urinary tract carcinomas.¹² Further, preoperative smoking has been shown to increase surgical mortality risk intraoperatively, as well as postoperative complications.²⁵ While there is evidence that smoking cessation likely benefits individuals in this population, a recent review concluded that current population-based data on the prevalence of tobacco smoking among CaB patients is needed to fully assess the potential of smoking cessation as a health improvement strategy in this population.⁸ The goal of this present study was to determine if patients with CaB who continue to smoke after diagnosis warrant a smoking cessation program by establishing the prevalence of smoking among CaB patients and documenting their intention to quit, their perception of the risk of smoking on CaB outcomes and common characteristics among smokers with bladder cancer.

The prevalence of a positive smoking history (>100 cigarettes per lifetime) within our population was 72% and the prevalence of smoking at the time of diagnosis was 33%. These results are relatively consistent with past studies and imply that there are many newly diagnosed patients who continue to smoke.¹⁸ Furthermore, these rates are higher than in the general population in Canada, in which the prevalence of tobacco users is about 17%.³⁰ However, smoking rates among CaB patients are representative of rates of patients with other malignancies.^{26,27} While giving a cancer diagnosis is considered by many to be a "teachable moment" to counsel smoking cessation strategies, unfortunately 76% of patients who had been active smokers at the time of

diagnosis (n = 33) reported smoking at some point after their diagnosis and 58% continued to smoke at the time of assessment. Ostroff and colleagues investigated a population 12 years ago using a similar inclusion criteria and published somewhat more optimistic results; their patients, however, were assessed slightly longer after their diagnosis on average and therefore had more opportunity to quit.¹⁸ Nonetheless, nicotine addiction is a common comorbid condition among CaB patients and therefore warrants the provision of evidence-based treatments like any other disease entity.

Understanding a smoker's willingness to quit is helpful in recommending the appropriate cessation interventions and ensuring retention and compliance.¹³ This study used Prochaska's Model of Change to categorize continued smokers with CaB.²³ About a quarter of continued smokers expressed no interest in quitting within 6 months ("precontemplation"). Traditionally, these patients do not adhere to most interventions, but efforts can be focused on increasing motivation and education. The Canadian Cancer Society offers "One Step at a Time," a program which provides patients in the "precontemplation" and "contemplation" stages with educational material to help them quit.²⁸ A similar approach may benefit "precontemplative" smokers with CaB. This highlights one of the weaknesses of Prochaska's Model of Change in that patients currently not actively seeking to quit (i.e., in the "precontemplative" stage) have the potential to be ignored, even unintentionally, in favour of those expressing a desire to quit. In reality, such patients can be considered more worthy of smoking cessation resources. For example, the Canadian Cancer Society also offers the "Smoker's Helpline Quit Connection," a referral program which is accessible to physicians to connect their patients with smoking cessation counselling in their communities.³¹ Moreover, 16% and 53% of continued smokers with CaB are in "preparation" and "action" stages, respectively. These patients are more likely to adhere to conventional and better-studied approaches to cessation (e.g., nicotine replacement therapy, pharmacotherapy and behavioural support) and represent most continued smokers.²⁹

It has been well-established that there is poor public perception that smoking is a risk factor for developing CaB, but this is only the second study to investigate CaB patients' perception of the risk of smoking on the prognosis of their disease.^{20,21} On our cross-sectional analysis, 70% of all patients with CaB and 68% of continued smokers with CaB were aware that smoking was a risk factor for poorer CaB diagnosis. These groups were much more likely to be aware of smoking as a risk factor for a negative lung cancer prognosis, suggesting that the status quo approach to counselling patients with CaB on the risks of continued smoking at our cancer centre is insufficient. Patients who perceive a higher risk of cancer recurrence with continued smoking are more likely to abstain from smoking.¹⁹ Better education for patients at the time of a diagnosis of CaB may encourage smoking cessation. A second indicator of insufficient patient education is that most patients who attempt to quit do so "cold turkey," despite evidence that this approach is less effective than nicotine replacement, pharmacotherapy or behavioural support.³⁰ Particular attention should be paid to patients with less formal education, as they were more likely to continue to smoke. It must also be recognized that smoking cessation, as part of disease management, cannot be considered an isolated event (e.g., a hospital treatment program), but must be provided in a longitudinal fashion that includes counselling to increase readiness and prevent relapse. In summary, quitting smoking is not a one-time event; the treatment goal should be sustained abstinence. Finally, expecting CaB patients to quit smoking altogether because of their frightening diagnosis or expecting a pamphlet to be an effective intervention are not realistic and may actually further marginalize this vulnerable population.

Currently, our cancer centre does not have a formal policy on managing smoking cessation in patients with CaB. The support offered by urologists in our centre varies, but typically includes brief advice and seldom involves referral to specific community-based resources beyond their family physician. Despite current efforts, this study has shown that many patients with CaB continue to smoke and few patients who have attempted to quit are successful. A more intensive approach is an in-hospital smoking cessation program, which may be beneficial in larger cancer centres, such as ours. In this study, 37% of patients who continued to smoke at the time of assessment expressed an interest in such a program. While this percentage is not convincingly high, all of the interested patients were either in the "preparation" or "action" stages and represented a clear majority of patients in these two stages. In Ontario, the most notable hospital-based program was developed by the University of Ottawa Heart Institute.³¹ Its protocol assesses the smoking status of every patient admitted regardless of their disease; patients are visited by a nurse visit during the hospital stay who offers them assistance, including cessation medications with

patient follow-up and educational resources post-discharge. Remarkably, the success rate with this model is about 50%,³² resulting in its expansion across Canada.

Our study has several limitations. Data were obtained from patients with CaB presenting to the cystoscopy clinic at a single centre. Participants were not randomly selected, therefore the generalizability of our findings to other samples may be questioned. In addition, we did not record who was offered the survey, but did not complete it and thus, we could not calculate the response or participation rate. Our questionnaire was only offered in English and no translator was available; as such, we may have introduced a selection bias. Some patients who were not fluent in English used a family member as a translator which may have skewed their answers.

Conclusions

In the cancer centre, in which this study was performed, patients with CaB who continue to smoke after diagnosis warrant a smoking cessation program as a resource for improving prognosis and long-term health. Among patients with CaB who were seen for cystoscopy, there was a high prevalence of continued smoking, a moderate perception of risk of continued smoking and a high willingness to quit. Moreover, difficulty with managing stress and mood and fear of gaining weight were the most commonly identified barriers to quitting in this population. Further research should focus on establishing an efficacious and cost-effective program that provides patients with CaB the resources they need to quit.

Department of Urology and Surgical Oncology, University Health Network, Princess Margaret Hospital and Toronto General Hospital, Toronto, University of Toronto, ON

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Correspondence: Dr. Neil Fleshner, Division of Urology, Department of Surgical Oncology, Princess Margaret Hospital, 610 University Ave 3-130, Toronto, ON M5G 2M9; fax: 416-598-9997; neil.fleshner@uhn.on.ca