

Contemporary patterns of multidisciplinary care in patients with muscle-invasive bladder cancer

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Conflict of Interest:

Lauren C. Harshman:

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Running title: Multidisciplinary clinics in bladder cancer

Micro abstract:

Multidisciplinary care is crucial for optimal management of patients with muscle-invasive bladder cancer. We surveyed practitioners regarding the multidisciplinary care models currently employed in their practices. Most providers used some form of multidisciplinary care with sequential clinic visits on different days being the most common approach. However, most providers preferred an integrated multidisciplinary care involving same day concurrent or sequential clinic visits.

Abstract

Background: Multidisciplinary clinics integrate the expertise of several specialties to provide effective treatment for patients. This exposure is especially relevant in the management of muscle-invasive bladder cancer (MIBC), which requires critical input from urology, radiation oncology, and medical oncology among other supportive specialties.

Objective: To catalogue the different styles of multidisciplinary care models used in the management of MIBC and identify barriers to their implementation.

Methods: We surveyed providers from academic and community practices regarding their currently implemented multidisciplinary care models, available resources and perceived barriers using the Bladder Cancer Advocacy Network (BCAN) and the Genitourinary Medical Oncologists of Canada (GUMOC) email databases .

Results: Of the 101 responding providers, most practiced at academic institutions in the US (61%) or Canada (29%) and only 7% were from community practices. Sequential visits on different days was the most commonly used model (57%), followed by sequential same day (39%) and concurrent (one visit with all providers, 22%) models. However, most practitioners preferred a multidisciplinary clinic involving sequential same day (41%) or concurrent (26%) visits. Lack of clinic space (58%), funding (41%), staff (40%), and time (32%) were the most common barriers to implementing a multidisciplinary clinic.

Conclusions: Most surveyed practitioners at academic centers utilize some form of a multidisciplinary care model for patients with MIBC. Major barriers to more integrated multidisciplinary clinics were limited time and resources rather than a lack of provider enthusiasm. Future studies should incorporate patient preferences, further evaluate practice patterns in community settings and assess their impact on patient outcomes.

Key words: Bladder cancer, multidisciplinary clinic, surgery, cystectomy, chemotherapy, radiation, bladder preservation therapy, urothelial cancer, chemoradiation

Abbreviations:

TURBT: Transurethral Resection of Bladder Tumor

MIBC: Muscle Invasive Bladder Cancer

BCAN: Bladder Cancer Advocacy Network

GUMOC: Genitourinary Medical Oncologists of Canada

NCI: National Cancer Institute

SEER: Surveillance, Epidemiology and End Results

Background:

Globally, bladder cancer comprises approximately 450,000 new cases and 165,000 deaths every year¹. A third of patients present with muscle-invasive disease for which radical cystectomy remains a cornerstone for curative treatment^{2,3}. Complementing cystectomy with cisplatin-based perioperative chemotherapy can further improve outcomes by enhancing local control and eliminating micro-metastatic disease⁴⁻⁸. In carefully selected patients without high risk features, an alternative approach is bladder preservation which often incorporates a tri-modality strategy of maximal transurethral resection of bladder tumor (TURBT) followed by induction and/or concurrent chemotherapy and radiation which can result in outcomes comparable to radical cystectomy⁹⁻¹¹.

Management of patients with muscle invasive bladder cancer (MIBC) can be challenging. Treatment decisions must take into account the often-older age of bladder cancer patients (median ~ 73 years), with their resultant competing co-morbidities. Patient preferences can have a significant influence on treatment decisions as well especially in terms of the importance of preserving their bladder. Factors that may influence patient choice include the potential morbidities of the different treatments and the impact on quality of life, sexual function and changes in body morphology and body image. Shared decision making which takes into account the patient's individual priorities has become increasingly integrated into the creation of treatment plans. A multidisciplinary clinic can be instrumental in fostering open communication regarding the potential risks and benefits of different treatment modalities and can facilitate critical informed and collaborative decision making between patients and their providers.

Prior population based studies have shown that only half of patients with MIBC are treated with curative modalities such as cystectomy or curative intent radiation therapy¹². Amongst the patients who are treated with curative intent, incorporation of neoadjuvant chemotherapy has been low in the USA with contemporary studies reporting utilization in only 21% of newly diagnosed MIBC patients despite level 1 evidence of its benefit^{13, 14}. Lack of timely referral between specialties has been recognized as a barrier to the uptake of neoadjuvant chemotherapy in several prior studies¹⁵⁻¹⁷. Institution of a multidisciplinary clinic, where patients are evaluated by multiple providers on the same day, can potentially mitigate the challenges involved in the referral process between different specialties thereby increasing the utilization of curative treatments, including neoadjuvant chemotherapy and timely application of local therapies.

Optimal management of patients with MIBC mandates an informed discussion with the patient about the risks and benefits of the various options and clear communication between the different oncologic specialties in a multidisciplinary fashion. Achieving this goal requires well integrated care where patients are evaluated by providers from different specialties either concurrently or through sequential visits. The specific model used varies considerably across institutions. In this study, we sought to characterize the diverse multidisciplinary care models implemented across different institutions or to capture their absence. Secondary goals were to investigate the degree of physician interest in executing a multidisciplinary clinic for managing MIBC and to identify potential barriers to delivering preferred models of multidisciplinary care.

Methods:

We conducted an online survey of providers treating patients with MIBC. We targeted radiation oncologists, urologists, and medical oncologists. Email databases of the Bladder Cancer Advocacy Network (BCAN) and Genitourinary Medical Oncologists of Canada (GUMOC) were utilized to reach out electronically to clinicians in both academic and community practice settings during July and August 2015. The survey consisted of 10 multiple choice questions addressing the multidisciplinary clinic models currently in place, individual provider preferences, available resources, and potential barriers to effectively implementing a multidisciplinary care model (Figure 1; Full survey provided in the Supplementary Material). Providers were allowed to choose multiple options when applicable. Additional free text space was provided for comments if felt necessary by the responders. Data was populated from the online survey into an Excel file, which was used for descriptive analyses. Only de-identified information was used. Response to the survey was considered implied consent and a formal consent process was not used.

Results:

Email surveys were sent out to 344 providers through BCAN and GUMOC. Most were from US or Canadian academic institutions and only 5% (n=16) practiced in the community setting. Close to 30% of providers (n=101/344) completed the survey. Most of the respondents (45%) were from academic National Cancer Institute (NCI) designated comprehensive cancer centers in the United States and 29% practiced at Canadian academic institutions (Figure 2). Providers practicing at US or Canadian community based practices accounted for only 7%. The median number of MIBC patients seen by the participating responders every month was 5 (range: 0-40).

In the survey, providers were asked to note all types of multidisciplinary care models used in their clinics as well as their preferred type. Two providers were excluded from the final analysis due to lack of responses for the majority of the survey.

Among the 99 providers included in the final analysis, sequential visits on separate days was the approach employed by the majority of responders (57%; Table 1). Fully integrated multidisciplinary clinics were defined as care models that employed sequential same day or concurrent visits with different specialties and were incorporated by 39% and 22% of providers respectively. Several providers endorsed using more than one multidisciplinary clinic model at their institution and overall, 95% of responders reported incorporating visits from multiple specialties in some form. Other less common non-integrated approaches included informal (“curbside”) consults either in clinic (19%) or by email (14%). In terms of preference, most practitioners favored multiple visits on the same day either sequentially (41%) or concurrently (26%). The majority of providers endorsed having access to urologic and medical oncology services within the same clinic (61% and 62% respectively; Table 2). Radiation oncologists were part of the multidisciplinary clinic in 44% of cases and were available for consultation either in the same building (52%) or based on referral (41%). Similarly, most practitioners had access to pathology review, real time radiology review, and supportive services such as wound/ostomy care, psychology and social work either in the same clinic, same building, or by referral.

Restricted clinic space was the most commonly reported barrier to implementation of a multidisciplinary clinic (58%) followed by a lack of funding (41%), inadequate number of staff/coordinators (40%) and time constraints (32%; Figure 3). Other less common reasons

reported by 23% of physicians included low patient volumes, physical separation of the different oncologic specialties, perceived inefficiency of the approach, difficulties in communicating the complexities of the decision-making process, and concerns over overwhelming the patient and their families with large volumes of information from multiple providers all at the same time. Per the responses, mechanisms for preparing patients and their families about their upcoming visits appeared to be lacking in most practices. Despite these limitations and possible barriers, the survey demonstrated a strong overall interest towards a team-based multidisciplinary clinic model, and most practitioners believed that it had enriched their practice and enhanced the patient experience.

Discussion:

Increasingly, multidisciplinary clinics are being employed in the management of malignancies including bladder cancer. Ideally, this team-based approach permits providers from multiple oncologic specialties to lend their insight regarding the advantages of one treatment modality over the other in real time on the same day, while promoting a patient centric decision-making process that balances evidence-based guidelines with individual patient preferences. Specifically, it allows the patients to meet with physicians from different oncologic specialties and learn about the relative advantages and disadvantages of each therapeutic approach with the ultimate goal of enhanced understanding and individualization of the treatment plan. For the physicians involved, it can foster interdisciplinary communication and education, thought-provoking discussion, and improved coordination of care. It is key to distinguish between a truly integrated multidisciplinary clinic in which the patient receives input from different specialties at the same time (concurrent consult) or same day versus a less integrated form in which it spans multiple

days or is communicated through only one or two providers. The majority of respondents in our analysis (61%) employed such an integrated multidisciplinary clinic.

While more effective communication and coordination of care appear to be the most obvious advantages, multidisciplinary care has the ability to potentially impact practice patterns and improve patient outcomes. Levine et al compared management of colorectal cancer patients treated in their multidisciplinary clinics to a cohort treated by the same physicians, but in their specialty private offices where there was no concurrent input by other specialties¹⁸. Patients treated in the multidisciplinary setting were more likely to undergo a more complete preoperative evaluation and receive multimodality therapy in the perioperative setting. However, improvements or differences in outcomes based on the incorporation of multidisciplinary therapy were not reported in that study.

Real time radiology and institutional pathology review can complement multidisciplinary clinics and can ensure proper staging and histologic diagnosis, which can have significant impact on treatment recommendations. In a study evaluating the influence of a single day multidisciplinary clinic on management of pancreatic carcinoma patients, changes in disease staging and pathologic diagnosis were noted in 19% and 3% of patients, respectively, and resulted in a change in treatment recommendations in 24% of cases¹⁹. Pathologic staging is especially critical in bladder cancer given significant differences in degree of treatment needed between non-invasive and muscle-invasive disease. The potential power of concurrent pathologic and multidisciplinary input was illustrated by a study of a single institution multidisciplinary clinic

where changes in diagnosis and treatment plan were observed in 23% and 44% of bladder cancer patients respectively²⁰.

A prime example of how a multidisciplinary model can influence treatment recommendations is the increase in the utilization of neoadjuvant chemotherapy in MIBC. Despite level 1 randomized clinical trial data supporting its clinical benefits, preoperative systemic therapy has traditionally had poor uptake in contemporary studies^{13, 14}. This low usage has been attributed to patient related factors (e.g., age, co-morbidities and stage), physician disbelief in the degree of benefit, and referral patterns at non-academic institutions^{15, 17}. A previous survey of genitourinary medical oncologists in Canada revealed that the referral rates for neoadjuvant chemotherapy were the highest in the setting of an established care pathway or a multidisciplinary clinic¹⁶. Supporting this observation, other studies have demonstrated a significant increase in adherence to guidelines and utilization of neoadjuvant chemotherapy with the initiation of a multidisciplinary bladder cancer clinic²¹.

Finally, multidisciplinary clinics can provide an opportunity for critical review of existing literature between the different specialists. They can foster an environment where outstanding questions and challenging clinical issues can be identified and research studies, which address them can be developed. The impact of multidisciplinary clinics on outcomes has not been evaluated in patients with MIBC. Gomella et al reported improved survival in patients with prostate cancer who were treated in their multidisciplinary clinic compared to outcomes reported in Surveillance, Epidemiology and End Results (SEER) database²². Although it has not been

evaluated in MIBC patients, it makes sense that multidisciplinary care could have a significant impact on outcomes in patients with bladder cancer too and should be prospectively evaluated.

There are certainly disadvantages to multidisciplinary clinics. They are resource intensive and time consuming. Coordinating schedules of two to three busy specialists with patient preferences is no small feat. Same day appointments risk overwhelming the patient and their families with information overload. While a comprehensive presentation of all available options seems ideal, for some patients it can be confusing, especially if there is lack of consensus or no uniform message among the involved specialties.

In our sampling, most respondents felt lack of adequate space, funding and support staff were the most significant barriers to their implementation of multidisciplinary care. While most providers had access to radiation, medical and urologic oncologists in the same clinic, real time access to radiology, pathology, wound care, psychologists and social workers was somewhat limited and only available by referral in the majority of cases. These are modifiable factors and by potentially increasing access or more efficient utilization of available resources, the multidisciplinary care model could be implemented in a much larger scale across different institutions and settings.

While our study provides important insights into the current practice patterns, it has several limitations. The majority of practitioners who received the survey and who responded practiced in academic or NCI designated institutions and community providers were underrepresented. It is possible that providers from academic institutions with multidisciplinary clinics already in place

were more likely to respond compared to community practitioners. However, the response rate among the 16 community providers invited to participate in the survey (n=7; 43%) was higher than that among the 328 providers from NCI designated, non-NCI designated US and Canadian academic institutions (n=94; 29%), making such a bias unlikely. However, there was a significantly larger sampling of non-community based practices. As such, the results of this survey reflect practice patterns in academic institutions and further characterization of the use of multidisciplinary clinics is needed in community settings. Our study did not survey patients and gathering their input is critical to designing effective interventions and is a planned component of future investigation by our group. Specifically, while most providers preferred same day concurrent or sequential visits, it remains unclear if such an approach would be desirable for patients as they may be overwhelmed and fatigued by multiple provider visits on the same day. Ultimately, it is unlikely that a one size fits all model will work for all patients and institutions, and these approaches will need to be tailored to the individual practice and patient preferences.

Most importantly, prospective study of multidisciplinary clinics and approaches is required to prove that they enhance clinical outcomes and are worthy of the intensive resource utilization. Future objectives of our working group include gauging patient preferences, developing strategies to overcome potential barriers, identifying examples of successful multidisciplinary clinics in both academic and non-academic settings, and integrating these results with patient preferences to optimize patient care and outcomes.

Clinical Practice Points:

- Most academic practitioners treating patients with muscle invasive bladder cancer incorporate a multidisciplinary clinic.
- Sequential visits with different specialists over multiple days was the most common form of multidisciplinary clinic employed. However, most practitioners preferred a sequential same day or concurrent approach.
- Lack of clinic space, staff and time constraints were the major perceived barriers to implementation of a multidisciplinary clinic.
- Future studies should focus on surveying patient preferences, evaluating practice patterns in the community setting and assessing the impact of these approaches on outcomes.

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Table 1: Existing and preferred multidisciplinary clinic models as reported by participating providers

| | Existing multidisciplinary model* | Preferred multidisciplinary model** |
|---|--|--|
| Sequential with same day appointments between the different specialties | 39% | 41% |
| Sequential but with different day appointments between the different specialties | 57% | 15% |
| Concurrent (one time slot where multiple doctors see the patient at once) | 22% | 26% |
| Corridor curbside | 19% | 0% |
| Email curbside | 14% | 0% |
| None | 5% | 2% |
| *Existing could include multiple different types of models so adds up to >100% ** Preferred model does not add up to 100% as not all respondents answered | | |

Table 2: Institutional resources available as part of the multidisciplinary models

| | Available | | | Not available |
|--------------------------------|---------------------------|-----------------------------|--------------------|----------------------|
| | Within same clinic | Within same building | By referral | |
| Urologic oncologist | 62% | 41% | 44% | 2% |
| Medical oncologist | 62% | 44% | 39% | 1% |
| Radiation oncologist | 44% | 53% | 41% | 1% |
| Pathology | 16% | 56% | 47% | 0% |
| Radiology | 22% | 60% | 43% | 1% |
| Clinical nurse | 56% | 35% | 28% | 14% |
| Wound/Ostomy care nurse | 25% | 45% | 47% | 3% |
| Psychologist | 16% | 45% | 58% | 5% |
| Social worker | 29% | 52% | 52% | 2% |