

Practice Based Collaboration to Improve the Use of Immediate Intravesical Therapy after Resection of Nonmuscle Invasive Bladder Cancer

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Purpose: Perioperative instillation of intravesical chemotherapy after bladder tumor resection is supported by level I evidence showing a 30% decrease in tumor recurrence. However, studies of administrative data sets show poor use in practice.

Materials and Methods: We prospectively evaluated the use of perioperative intravesical chemotherapy in a multipractice quality improvement collaborative. Cases were categorized as ideal for intravesical chemotherapy (1 or 2 papillary tumors, cTa/cT1 and completely resected) and nonideal. The reasons for not administering intravesical chemotherapy in ideal cases were classified as appropriate or modifiable. Before and after comparative feedback and educational interventions we calculated judicious use of intravesical chemotherapy (nonuse in nonideal cases plus use in ideal cases plus appropriate nonuse in ideal cases) and quality improvement potential (use in nonideal cases plus nonuse in ideal cases attributable to modifiable factors).

Results: We accrued a total of 2,794 cases at the 5 sites in 22 months. The rate of use in ideal cases was 38% before and 34.8% after intervention ($p = 0.36$), while use in nonideal cases decreased from 15% to 12% ($p = 0.08$). Overall, intravesical chemotherapy was used judiciously in 83.0% to 85.7% of cases, while the remaining 14.3% to 17.0% represented quality improvement potential.

Conclusions: Judicious use of perioperative intravesical chemotherapy is relatively high in routine practice. Most instances of nonuse represent appropriate clinical judgment. Utilization did not change after quality improvement interventions, suggesting that there may be a ceiling effect that makes it difficult to improve care that is high quality at baseline. Moreover, decreasing unnecessary use of an intervention may be easier than encouraging appropriate use of potentially toxic therapy.

Key Words: urinary bladder; urinary bladder neoplasms; administration, intravesical; drug therapy; quality improvement

THE natural history of NMIBC is characterized by frequent recurrences (approximately 45% within 1 year) and

occasional progression (3% to 15%) to muscle invasive or metastatic BC.¹ These concerns as well as the expense

Abbreviations and Acronyms

BC = bladder cancer

NMIBC = nonmuscle invasive BC

IVC = intravesical chemotherapy

TURBT = transurethral bladder tumor resection

MMC = mitomycin C

QI = quality improvement

QIP = QI potential

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Study received institutional review board approval.

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and risk of lifelong surveillance² led to the development of therapies designed to decrease recurrence and progression. One such strategy is immediate IVC after TURBT. Existing data indicate that IVC, predominantly with MMC, decreases the recurrence risk approximately 30%.^{3–5}

As a result of its proven benefit in randomized trials, IVC is supported by clinical guidelines.^{1,6,7} However, some studies, particularly those using administrative data, show that perioperatively IVC is administered in as few as 0.3% to 3.2% of patients,^{6,8} suggesting that there may be a wide margin for QI in this area. Accordingly, we initiated a project to better understand the QIP for administering IVC in real world practice. The project was performed by the Urological Surgery Quality Collaborative (USQC) (www.urosurgqc.com), a collaborative of 7 large urology practices that engage in physician led QI projects through shared data collection, comparative performance feedback and educational intervention.⁹

MATERIALS AND METHODS

Urological Surgery Quality Collaborative

The USQC was established in 2009 and includes almost 200 urologists from practices in Indianapolis, Indiana; Nashville, Tennessee; Richmond, Virginia; southeast Michigan; and Toledo, Ohio. The administrative, organizational and regulatory efforts involved in establishing the USQC were described previously.⁹ Among the 5 participating practices this project was approved by a local internal review board for the Richmond practice and deemed not regulated by the institutional review boards at University of Michigan and the Toledo practice because of its focus on QI. The Indianapolis and Southeast Michigan practices concluded that the University of Michigan institutional review board waiver also applied to their practices.

Data Collection

From September 2010 through July 2012 we collected a standardized set of clinical data on the use of immediate IVC in patients undergoing bladder biopsy or TURBT. Beginning with phase 1 of data collection, the surgeon recorded the type of procedure (primary or restaging TURBT, or bladder biopsy), disease status (first or recurrent tumor), tumor number and type (ie papillary or nonpapillary), clinical stage, resection completeness, carcinoma in situ and whether immediate IVC (within 24 hours) was administered in each case. Dwell time was not specified. In phase 2 of data collection the urologist also recorded reasons for not administering IVC.

Based on these data we disseminated a comparative feedback intervention in the form of a performance report tailored to each practice. Participants also viewed a standardized educational lecture on practice guidelines addressing IVC for NMIBC. Data collection progressed to phase 3, during which reason(s) for not administering IVC continued to be documented. Phases 1 and 2 refer to the

pre-intervention phases of data collection and phase 3 represents the postintervention phase.

As in prior USQC projects,^{9–11} physician champions at each site used local staff and resources to develop and implement data collection and quality assurance systems. The group at each practice reviewed and approved the variable definitions and data collection forms. Completed data collection forms were faxed to the University of Michigan using commercially available form processing software, where the data were stored on a secure computer. A sample of cases was reviewed manually to ensure that the electronic data matched the written information.

Ideal Patient Definitions and Reasons for Not Administering IVC

To understand IVC use in the patients most likely to benefit from this therapy we reviewed current clinical guidelines to define the ideal patient characteristics for treatment with immediate IVC.^{1,6,7} We reached a consensus definition for ideal patients, that is those with 1 or 2 initial or first recurrence, clinical stage Ta/T1, fully resected papillary tumors.

We used previously developed consensus based definitions to categorize each reason for not administering IVC as modifiable or appropriate (ie nonmodifiable).⁷ Modifiable reasons for nonuse included educationally modifiable (eg clinician not convinced of the clinical benefit) and logistically modifiable (eg not ordered preoperatively) categories. Conversely, reasons for not administering IVC that reflected appropriate clinical judgment were defined as appropriate nonuse, such as the clinician not suspecting malignancy, patient refusal, allergy and deep resection.¹² When appropriate as well as modifiable reason(s) were cited, we classified the reason for not administering IVC as appropriate.

This classification of reasons for nonuse is unchanged from that in prior publications.¹¹ However, we reclassified the reason “medication not available” from logistically modifiable to appropriate, reflecting the national shortage of MMC during phase 3 of data collection, which the physician champions concluded was not actionable.

Judicious Use and QIP

We developed a composite measure to capture instances of appropriate use and appropriate nonuse with judicious use defined as the use of IVC in ideal cases plus nonuse for appropriate reasons in ideal cases plus nonuse in nonideal cases (fig. 1). The term QIP represents the complement of judicious use, including use in nonideal cases and modifiable nonuse in ideal cases.

Statistical Analysis

We generated summary statistics describing the characteristics of patients treated at each practice. We compared use in ideal and nonideal cases across practices using the chi-square or Fisher exact test, as appropriate. We calculated judicious use and QIP in aggregate and by site. We then compared IVC use before and after the feedback and educational intervention, stratified by ideal vs nonideal cases. We also compared the rates of judicious use and QIP before and after the intervention using data from phases 2 (pre-intervention) and 3 (postintervention), in which reasons for nonuse were collected. All statistical

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