



Seminars Article

Implementing risk-aligned bladder cancer surveillance care

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Abstract

Implementation science is a rapidly developing field dedicated to the scientific investigation of strategies to facilitate improvements in healthcare delivery. These strategies have been shown in several settings to lead to more complete and sustained change. In this essay, we discuss how refined surveillance recommendations for non-muscle-invasive bladder cancer, which involve a complex interplay between providers, healthcare facilities, and patients, could benefit from use of implementation strategies derived from the growing literature of implementation science. These surveillance recommendations are based on international consensus and indicate that the frequency of surveillance cystoscopy should be aligned with each patient's risk for recurrence and progression of disease. Risk-aligned surveillance entails cystoscopy at 3 and 12 months followed by annual surveillance for low-risk cancers, with surveillance every 3 months reserved for high-risk cancers. However, risk-aligned care is not the norm. Implementing risk-aligned surveillance could curtail overuse among low-risk patients, while curbing underuse among high-risk patients. Despite clear direction from respected and readily available clinical guidelines, there are multiple challenges to implementing risk-aligned surveillance in a busy clinical setting. Here, we describe how implementation science methods can be systematically used to understand determinants of care and to develop strategies to improve care. We discuss how the tailored implementation for chronic diseases framework can facilitate systematic assessment and how intervention mapping can be used to develop implementation strategies to improve care. Taken together, these implementation science methods can help facilitate practice transformation to improve risk-aligned surveillance for bladder cancer. © 2018 Published by Elsevier Inc.

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Bladder cancer is a common and expensive disease

Bladder cancer is the third most prevalent noncutaneous cancer in the United States, with a prevalence of ~600,000

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and only surpassed by prostate cancer (in men), breast cancer (in women), and colorectal cancer (in both sexes) [1]. It is expected to become even more common over the next decade [2], because it primarily affects older patients (median age at diagnosis 73 [1]) and the US population is aging. The majority of bladder cancer patients—approximately 75%—are diagnosed with early stage non-muscle-invasive bladder cancer (NMIBC) [3] and live many years with their disease (median survival after diagnosis of NMIBC >9 y [4]).

Patients with NMIBC are at risk for recurrence and progression of disease. Thus, they undergo an intensive surveillance regimen of cystoscopy, cytology, office visits and, in many cases, upper tract imaging. Furthermore, a

high recurrence rate often necessitates repeat surgical resections and intravesical therapies. Within the Department of Veterans Affairs (VA) healthcare system, cystoscopy is the most common surgical procedure performed with approximately 80,000 procedures annually [5]. Thus, it is not surprising, that bladder cancer is an expensive cancer to diagnose and treat when considering per patient spending from diagnosis to death [6]. Given its high prevalence and cost, providing the most appropriate and efficient care for each patient is a high priority for patients, urologists, and healthcare systems.

Risk-aligned bladder cancer surveillance care

All patients with NMIBC are at risk for recurrence and progression of disease. However, this risk varies widely. For example, 5-year risk for recurrence ranges from less than 30% for a patient with a solitary newly diagnosed low-grade noninvasive urothelial carcinoma to more than 50% for a patient with recurrent, multifocal high-grade noninvasive carcinoma [7,8]. Similarly, risk for progression ranges from a few percent at 5 years for patients with newly diagnosed low-grade noninvasive carcinoma to ~20% at 5 years for those with recurrent multifocal high-grade disease [7].

Over the last decade, guidelines for NMIBC bladder cancer have refined their recommendations to better align the frequency of cystoscopic surveillance with each patient's risk for recurrence and progression of disease. The National Comprehensive Cancer Network (NCCN) guidelines have recommended to perform surveillance cystoscopy for low-risk patients "at 3 months initially and then at increasing intervals" and for high-risk patients "at 3-month intervals for the first 2 years" dating back to at least 2000 (Table 1) [9]. The first specific recommendation for a risk-aligned surveillance approach was from the First International Consultation on Bladder Tumors in 2005. This consensus conference was convened by the World Health Organization (WHO) and the Société Internationale d'Urologie (SIU), and included experts from 3 continents and 7 countries [10]. They recommended cystoscopy at 3 and 12 months for low-risk patients and then annually thereafter, and cystoscopy every 3 months during the first 2 years for high-risk patients (Table 1) [10–12]. One year later, the European Association of Urology adopted these recommendations in their bladder cancer guidelines [13]. Since then, similar recommendations have been issued in the United Kingdom and in the United States (Table 1). Based on these recommendations, risk-aligned surveillance consists of cystoscopy at 3 and 12 months followed by annual surveillance for low-risk cancers, with surveillance every 3 months reserved for high-risk cancers.

There is now broad international consensus that risk-aligned surveillance care should be provided. Three international panels have met over the last decade and all of them have recommended risk-aligned surveillance. This includes

the First International Consultation on Bladder Tumors in 2005 [10–12], the International Bladder Cancer Group in 2011 [14], and the International Bladder Cancer Network in 2016 [15]. Over time, the language used by these experts has become stronger, with the International Bladder Cancer Network stating that "a risk-based approach [to surveillance] is paramount" [15].

Despite these recommendations, the care that patients with NMIBC receive is frequently not risk-aligned. This is demonstrated by the fact that tumor characteristics such as stage and grade are only minimally associated with intensity of surveillance [16,17]. Instead, there is substantial variation in surveillance among providers [16,17], suggesting both overuse and underuse of optimal care, and therefore an opportunity to utilize implementation science to better align practice patterns with risk-aligned surveillance recommendations.

Both overuse among low-risk and underuse among high-risk patients have several undesirable consequences for patients. Among low-risk patients, unnecessary surveillance cystoscopy procedures lead to more anxiety, discomfort, travel, and opportunity costs [18]. Additionally, unnecessary cystoscopy procedures lead to more bladder biopsies and, subsequently, more complications [19–21]. They are also associated with excessive resource use and cost. Among high-risk patients, underuse of surveillance can be dangerous, as delays in timely diagnosis and treatment have been associated with increased mortality [22,23].

Given these undesirable consequences, there is a need to systematically develop strategies that make it easier to get the right care to the right patient every single time. These strategies would lead to reduction of overuse among patients with low-risk cancer and of underuse among those with high-risk cancer, contributing to higher value and more patient-centered care.

What are the determinants of risk-aligned bladder cancer surveillance?

To develop strategies to get the right care to the right patient, we need a clear understanding of the determinants of risk-aligned surveillance. Historically, implementation strategies for healthcare settings were based on a variety of approaches, such as continuing medical education, educational conferences, physician professionalism, employer mandates, and reimbursement structures. While these are still important drivers of staying "up to date," concerted and organized efforts to change practice patterns often relied on best guesses, a method humorously referred to as the "ISLAGIATT principle," that is "It seemed like a good idea at the time" [24]. This often led to interventions that may not have addressed the most important problem in a given setting. For example, a systematic review of 15 cluster randomized trials of clinical reminders found a median improvement in process measures of 14% but with a wide range from 1% deterioration to 34% improvement [25]. Thus, the lack of a full understanding of which strategy

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