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Seminars article

Implementation science theories to inform efforts for de-implementation of urologic oncology care practices resulting in overuse and misuse

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Abstract

The field of implementation science has been conventionally applied in the context of increasing the application of evidence-based practices into clinical care, given evidence of underusage of appropriate interventions in many settings. Increasingly, however, there is recognition of the potential for similar frameworks to inform efforts to reduce the application of ineffective or potentially harmful practices. In this article, we provide some examples of clinical scenarios in which the quality problem may be overuse and misuse, and review relevant theories and frameworks that may inform improvement activities.

Keywords: Implementation science; Deadoption; Overuse; Harm reduction

Background

Implementation science is the rigorous study of approaches to integrating evidence-based interventions (EBIs) into practice [1]. The field developed in response to concerns about the failure of many EBIs to produce their intended benefits (e.g., improved health) because they are not used proficiently or consistently in practice, and because EBIs often do not reach people who could benefit from them [1,2]. Examples of this "knowing/doing" gap familiar to urologic oncologists include unexplained variation in usage of perioperative chemotherapy for patients with bladder cancer [3,4] and nephron-sparing or minimally invasive surgical approaches for kidney cancer [5]. Implementation science approaches may have use for addressing these problems of apparent underusage of recognized best practices, drawing on methods from disciplines within and beyond health services research to provide frameworks [6,7] and strategies [8] intended to facilitate the integration of EBIs into practice. Increasingly, however, scholars recognize the potential benefits of the methods, frameworks, and strategies that implementation science offers to address the overuse and misuse of services.

Overuse refers to the provision of services that are ineffective or have harms that outweigh benefits [9], such as the usage of androgen deprivation monotherapy among men with localized prostate cancer [10]. Misuse refers to the provision of services that may be beneficial for some patients but is unlikely to benefit others. For example, staging imaging with bone scan and computed tomography (CT) has a stronger clinical rationale among the minority of men with newly diagnosed higher risk localized prostate cancer, but its use is limited among the majority of men diagnosed with relatively lower risk disease [11]. In the report *Best Care at Lower Cost*, the Institute of Medicine estimated that if state-level variation in quality of care, primarily stemming from overuse and misuse, were brought to the level of the highest-performing state, 75,000 fewer deaths would have occurred in 2005. Furthermore, current waste in the system, related in large part to overuse and misuse, resulted in an estimated $750 billion loss in 2009 [12].

The root causes of overuse and misuse are complex, and efforts to mitigate these problems require a thoughtful

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approach addressing multiple interrelated issues. Emanuel and Fuchs [13] described the US health system as being "a perfect storm of overutilization," driven by at least four physician-related factors and at least three patient-related factors. Physician culture emphasizing thoroughness often translates into an imperative to do more, fueled by fee-for-service reimbursement, aggressive marketing of new, often expensive technologies, and defensive medicine [13]. Patients' gravitation towards high technology is bolstered by direct-to-consumer marketing and insulation from the true costs of care by a byzantine third-party payment system [13].

The financial costs of overuse and misuse tend not to resonate with physicians at the bedside. A recent survey of US physicians found that over three out of four respondents believed they "should be solely devoted to individual patients′ best interests, even if that is expensive [14]." Against this backdrop, a number of organizations have reframed the overuse problem as one resulting not only in potentially avoidable costs, but also potentially avoidable harms [15–17].

PSA screening for prostate cancer has been one of the more controversial areas of care related to urologic oncology, with criticism primarily couched in terms of potentially avoidable harms of treatment rather than arguments about the costs associated with this practice. In this context, urologic oncologists, have, in many respects, been at the vanguard of de-implementation efforts motivated by the focus on harms. Active surveillance of prostate cancer has become widespread practice over the past 2 decades [18], arguably motivated to a much greater extent by the potential to safely avoid harmful side effects in men with lower risk screen-detected prostate cancer rather than physician concerns about the costs of treatment. Analogous opportunities have been identified in other cancer types, including ductal carcinoma in situ of the breast [19] and papillary thyroid cancer [20], inspired by the successful de-implementation of uniform aggressive treatment in prostate cancer. Although we recognize that the adoption of active surveillance in prostate cancer was not a direct result of explicit application of implementation science methods, these methods and conceptual models may nonetheless have use in furthering the uptake of this important practice innovation.

The focus on harms includes but is not limited to complications and adverse events associated with medications, diagnostic tests, and surgical procedures. Increasingly, additional dimensions of harm beyond conventional side effects and complications in cancer screening, diagnosis and treatment are gaining prominence. Gaps in evidence informing cancer surveillance programs have been identified as a major research priority [21]. In addition to potentially avoidable costs, testing incorporated in the initial diagnostic evaluation and surveillance programs following definitive treatment, in particular imaging, may expose patients to potentially avoidable anxiety and distress [22], frequent incidental findings [23], and potentially significant burdens of ionizing radiation [24]. Across the continuum of care, medical expenses are a leading cause of bankruptcy in the United States [25], an issue particularly salient in cancer care, with a growing body of literature recognizing the burden of "financial toxicity [26,27]."

To address the overuse and misuse of services, scholars increasingly recognize the potential of implementation science approaches. A growing body of scholarship from implementation scientists provides theories (e.g., conceptual frameworks) and approaches that may inform activity oriented towards the de-implementation of ineffective or potentially harmful care inherent in overuse and misuse. The objective of this paper is to present two representative theories that are useful for conceptualizing the de-implementation of ineffective or harmful practices with the broader goal of improving practice and research in urologic oncology.

Unlearning and substitution theory

Helfrich and Au [28] propose a theory to guide de-implementation based on the dual-process model of cognition (reflective and automatic). The theory hypothesizes that reflective cognition is required to unlearn overuse and misuse behaviors, and automatic cognition can be harnessed to replace overuse and misuse behaviors with mutually exclusive alternative behaviors. Reflective cognition requires conscious processes of evaluating various approaches to addressing a given problem. In contrast, automatic cognition is largely unconscious, driven by previously learned, ingrained knowledge. The model suggests that reflective cognition can be leveraged to unlearn ingrained behaviors, and automatic cognition can be leveraged to substitute overuse and misuse behaviors with alternative behaviors. Specifically, Helfrich and colleagues suggest, unlearning overuse and misuse behaviors requires a conscious process of questioning the legitimacy and appropriateness of ingrained knowledge for a given practice. Further, they propose, once overuse and misuse behaviors are unlearned, they must be substituted with an alternative behavior that either precludes overuse and misuse behaviors or diminishes their likelihood of occurring.

Do no harm framework

Parchman et al. [29] conducted a mixed-method study that included a literature review, an environmental scan, and interviews with leaders of quality improvement efforts, to identify constructs thought to address overuse and misuse. The constructs that they identified included prioritizing efforts to address overuse and misuse; building a culture of trust, innovation and improvement; establishing a shared language and purpose; and committing resources to measuring change. Prioritizing efforts to address overuse and misuse involved communicating the importance of the