
Melding the Study Question and Implementation Model Selection

The active interplay between the study question and implementation model selection is necessary early in the study process to guide implementation efforts. What is the socio-ecologic level target for the implementation model selection is necessary early in the study process to guide implementation strategy? Is this a dissemination- or implementation-focused cancer-related activity? Is the purpose of the study to translate national campaigns. The results of efforts to clarify characteristics of theories, models, and frameworks in terms of their aims, taxonomy, socioecologic level, focus along the dissemination to implementation spectrum, flexibility of constructs, and determinants of clinical practice are now available to help practitioners and investigators with regard to their study questions (see Figure 3.2).

Guiding Study Design

After defining the study question and identifying candidate models for a study, learning more about the possible models and their use can help clarify possible study designs. For example, if the study question pertains to dissemination of an evidence-based colon cancer screening program among primary care practices in an integrated delivery system, learning more about dissemination models with operational-focused constructs and prior studies using these models can inform study design (e.g., the Blueprint for Dissemination and the Conceptual Model for the Diffusion of Innovations in Service Organizations). Indeed, a review of four national quality campaigns to improve evidence-based practices in cardiology, home health, and patient safety informed the Blueprint for Dissemination framework and its eight strategies. In addition to helping tailor implementation strategies based on lessons learned from the studies informing this framework, study design and who to include in the study sample can also be informed. For example, there was continuous enrollment in the aforementioned national campaigns.

Choosing Outcomes

Implementation outcomes as distinctly defined by Proctor et al. (acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability) are commonly used in implementation science and practice. However, primary and secondary outcomes should also be based on what the model states is important to consider—for example, using the TDF to measure determinants of adjunct hormonal therapy in a study of breast cancer survivors or using the Health Belief Model domains to understand cervical cancer screening patterns in anticipation of interventions. Study outcomes can also be related to processes, from the number of enrolled organizations to adoption of recommended practices. Moreover, implementation outcomes can be more or less the focus in combination with other service-related and clinical outcomes using hybrid study designs, as discussed elsewhere in this book.

Selection and Tailoring of Implementation Strategies

As alluded to previously, one of the major implementation challenges is selection and tailoring of implementation strategies to context. Characterizing this context and the potential problematic areas facing implementation using theories, models, and frameworks to guide strategy selection and tailoring offers a structured means to address this complicated process. Moreover, as highlighted by Grol et al. and in the Medical Research Council guidance statements, robust pilot work and planning are necessary for the formative evaluation and implementation strategy development very early on in implementation efforts. Basing this activity in theoretical approaches, as suggested by Nilsen and others, can facilitate planning for dissemination and sustainability. In addition, using these models can help identify pitfalls and effective evidence-based strategies to address the most important barriers. In essence, an implementation model can identify areas that might be problematic and help select strategies to address those challenges. As discussed next, a growing experience with cancer-related interventions in implementation science provides unique resources and perspectives for implementation across the cancer control continuum.
Cancer-Focused Implementation Studies Across the Continuum

This section discusses examples of how various theories, frameworks, and models have been used within cancer-focused implementation studies.

Skin Cancer Prevention

The use of multiple theories, models, and frameworks to design, disseminate and implement a cancer prevention trial is demonstrated by the Pool Cool Diffusion Trial. Glanz et al. developed this three-level cluster-randomized study grounded in individual and organizational theoretical constructs to understand implementation, maintenance, and sustainability of the program, changes to organizational context, and child sun protection patterns and sunburn in outdoor swimming pools. In the experimental condition, implementation strategies to increase use of Pool Cool included incentives, reinforcement, feedback, and skill building. The study was positive for the enhanced condition, which demonstrated greater program maintenance during three summer participation periods and indicated that higher intensity, theory-based implementation strategies can improve implementation and maintenance of cancer prevention activities. A process evaluation evaluated the implementation strategies and outcomes, including those related to staff training, a toolkit regarding program implementation, use of laminated lesson cards and cartoons to support sun protection activities, as well as environmental changes such as the use of a large sunscreen dispenser and tips signs. The toolkit, ease of implementation, and enjoyment of the program by children and staff supported program diffusion.

Colon Cancer and Lynch Syndrome Screening

Lynch syndrome is the most common cause of hereditary colorectal cancer, and universal tumor screening for this syndrome is increasingly endorsed. However, variation exists in subsequent genetic counseling and germ line testing after a positive screening result. Using two complementary frameworks, RE-AIM and CFIR, to guide the survey and interview guide content, Cragun et al. conducted a multiple case study with qualitative comparative analysis examining adoption, implementation, and effectiveness of universal tumor screening programs across several institutions. The results were mapped to RE-AIM dimensions and indicated that involvement of genetic counselors in the testing process and reducing barriers to patient contact can increase patient follow-through with this recommended practice.

Addressing Disparities in Mammography Screening

Given Korean American women have low rates of breast cancer screening with mammography, Maxwell et al. developed a theory-based Korean-language print intervention to increase mammography screening with a plan for scale-up through the National Breast and Cervical Cancer Early Detection Program (NBCCEDP). After formative evaluation and development based on constructs from the Health Behavior Framework, the Health Belief Model, and the theory of planned behavior, the intervention was pilot tested in a community clinic in Koreatown, Los Angeles County, where mammograms were provided free of charge through support from the NBCCEDP. Using the RE-AIM framework to examine implementation outcomes, the investigators identified a slight increase in annual screening of 6%, and a post-intervention survey indicated one-third of patients remembered getting the brochure and slightly more than half had appropriate addresses documented. The pilot study indicated that using NBCCEDP to disseminate print materials was feasible; however, the incorrect address information limited the intervention's reach and effectiveness. This study underscores the importance of intervention planning, pilot testing, and using an evaluation framework to help the oncology and implementation communities better understand barriers with respect to decreasing disparities in breast cancer screening, as well as promote generalizable implementation knowledge.

Using the Theoretical Domains Framework to Understand Cancer Staging and Survivorship Care Plans

Overuse in cancer care is increasingly relevant given costs and the expanding resources to stage and treat cancer as well as to conduct cancer surveillance. Implications of overuse include incidental findings...
leading to further testing in asymptomatic patients. To better understand overuse in prostate cancer staging, Makarov et al. used TDF to explore linkages between themes from interviews with prostate cancer patients and their providers and TDF domains with respect to imaging (e.g., computerized tomography scan and bone scan) to search for metastatic disease spread at diagnosis. The investigators found that patient goals focused on disease treatment rather than staging and that many lacked knowledge about whether staging was performed. Patients’ beliefs about capabilities tended to rely on the providers to make decisions about staging, and their emotions and anxiety about prostate cancer outweighed fears of radiation exposure from excessive staging. On the other hand, physician interviews were distilled into five TDF domains, including knowledge about the guideline recommendations for staging and their clinical experiences supporting their beliefs about capabilities with regard to recommended testing. Physicians also noted beliefs about consequences of not staging with respect to medicolegal implications, social influences of colleagues who tended to overuse staging imaging, and the environmental context of their facility. Based on this work, the investigators concluded that physicians are the primary decision-makers with regard to prostate cancer staging, indicating physician-targeted implementation strategies targeting the identified domains may improve concordance with prostate cancer staging and imaging guidelines to minimize overuse.

Survivorship care plans (SCPs) are increasingly recommended as part of quality oncologic care and required to meet the American College of Surgeons Commission on Cancer accreditation standards. These clinical documents include cancer treatment summaries, plans for cancer surveillance, and information on long-term and late effects of cancer and its treatments for patients and their providers. However, SCP uptake in clinical practice has been poor, with a variety of barriers and determinants examined. Using TDF to better characterize these barriers and inform implementation strategy development through mapping to evidence-based behavior change techniques, Birken et al. discovered a variety of domains and constructs that could be targeted to promote SCP use moving forward. Relevant domains included health care professionals’ beliefs about the consequences of SCP use, the motivation and goals of SCP implementation, how environmental context and resources enable use, and the social influences prompting SCP use. Using qualitative analyses, the investigators mapped beliefs onto TDF constructs, including outcome expectations, intrinsic motivations, goal priority, resources, leadership, and teamwork. Taken together, these comprehensive approaches serve as prototypes for theory-based barrier assessment using a determinants framework to explain current challenges and to inform future implementation efforts.

Improving Implementation of Palliative Care

Using an integrative literature review approach, van Riet Paap et al. examined implementation strategies to improve palliative care across 68 experimental and quasi-experimental studies. Although most studies demonstrated positive effects (n = 53), a variety of implementation strategies were found to be effective, including education, process mapping, feedback, multidisciplinary meetings, and multifaceted implementation strategies. The results of this review were used to inform the European Union’s Seventh Framework IMPACT (Implementation of quality indicators for Palliative Care sTudy) study across 40 palliative care services in Europe according to the implementation of change model characterized by preparation, planning, and executing an implementation process.

RESOURCES AND FUTURE EFFORTS

Building Implementation Science Capacity in Cancer Care and Use of Theories, Models, and Frameworks

Although there are examples of using theories, models, and frameworks to guide implementation activities in cancer control and care, much more needs to be done to build our evidence base and advance the field. One barrier is expertise in implementation science given it is an emerging field with the majority of experience outside of cancer-related interventions, with exceptions in tobacco control and other public health prevention strategies loosely tied to the cancer delivery system. Fortunately, leaders in implementation science have developed a program to build capacity in cancer prevention and control with the support of NC1 and the Veterans Health Administration. The Mentored Training for Dissemination and Implementation Research in
no broad standards for development or implementation of PRO measures into clinical care. Planning for dissemination and implementation will be critical to the successful downstream efforts to implement these measures and conduct comparative effectiveness studies not only of their impact on clinical delivery system and patient outcomes but also of different theory-based interventions and implementation strategies on implementation outcomes. In particular, opportunities include add-on studies to PRO-based clinical trials to examine and potentially compare different implementation strategies, as well as formative and process evaluations based on the current cadre of theories, models, and frameworks to build our understanding of the best approaches to effective PRO implementation.

De-implementation to Decrease Low-Value Cancer Care

Unlearning routinized clinical practices is challenging even if they are no longer or never were considered effective. This is particularly true with regard to treating patients with cancer, where provider reluctance to hold off on treatments is often a significant barrier to stopping or not initiating treatments, even when there are no symptoms. De-implementation, or stopping practices that are not evidence-based, has tremendous potential to improve patient outcomes and mitigate rising health care costs. This is important given recent campaign attempts, including Choosing Wisely, to curb overuse of services. However, the best theories, models, and frameworks for de-implementation strategies in cancer care remain a work-in-progress with tremendous potential to improve quality and cost of care.

Measurement Across Models in Cancer Care Implementation

As discussed in Chapter 4, solidifying our understanding and systematic use of implementation measures and constructs is vital to advancing implementation science and practice. As the cancer community increases use and documentation of theories, models, and frameworks, we will be able to increase our understanding of the relationship to clinical and implementation outcomes across the cancer continuum and guide next-generation implementation efforts.

SUMMARY

In this chapter, we described implementation theories, models, and frameworks and justified their systematic use to build our understanding of implementation across the cancer care continuum and ultimately facilitate our stewardship of effective cancer care and spending across complex clinical and public health contexts. We offered several previously developed taxonomy and categorization schemes as well as resources to aid implementation researchers and practitioners in their implementation efforts. We discussed the importance of precision implementation using systematic theoretical approaches to coincide with precision oncology efforts and funding. After providing concrete examples of theory, model, and framework use across the continuum from prevention to palliative care, we highlighted relevant implementation science opportunities for collaboration, patient-reported outcomes research, de-implementation, and measurement with respect to these models as future directions. As our implementation science capacity builds in the oncology community, we construct a case for systematic use of theories, models, and frameworks in implementation science and practice.

REFERENCES

7. Tabak RG, Khoong EC, Chambers DA, Brownson RC. Bridging research and


