

# Chapter 12

## Implementation Science to Enhance the Value of Cancer Research in Latinos: A Perspective from the National Cancer Institute



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### Introduction

The goals of *Advancing the Science of Cancer in Latinos* as set forth by the conference chairs, Drs. Amelie Ramirez and Edward Trapido, are to “develop actionable goals to translate basic research into clinical best practices, effective community interventions, and professional training programs to eliminate cancer disparities in Latinos” [1]. Over the course of the meetings, a variety of clinical practices and effective community interventions were described, which can improve cancer outcomes in Latino populations. However, these programs are not sufficiently implemented in practice. In the proceedings from the first conference held in 2018 [1], Dr. Anna Napoles noted that clinical practices and effective interventions are not reaching Latino populations to the same degree as the general public. Furthermore, she indicated that although there are platforms for the dissemination of evidence-based interventions, they are primarily used by researchers. The goal of implementation science is to bridge the gap between research and practice by understanding methods to promote the adoption and integration of evidence into a variety of settings where people are seeking care, including clinical, public health, and community settings.

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## Implementation Science

Implementation science has been defined as the “scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice” [2]. At the National Cancer Institute (NCI), we describe implementation science as the study of “identifying, understanding, and developing strategies for overcoming barriers to the adoption, adaptation, integration, scale-up and sustainability of evidence-based interventions, tools, policies, and guidelines,” highlighting the various aspects of implementation to ensure patient and population health benefit [3]. Within the scope of implementation science, NCI also highlights the value of studying strategies to stop or reduce (“de-implement”) the use of practices that are ineffective, unproven, low value, or harmful.

Why focus explicitly on studying implementation? In a 2000 review, Balas and Boren [4] delineated the pathway from original research to the implementation of scientific findings in practice. They included research on health interventions for a variety of diseases and defined implementation as 50% uptake in eligible populations. They accounted for the various steps in the pathway from research to implementation, including the submission, acceptance, and publication of findings; the use of evidence in systematic reviews; the development of guidelines and recommendations; and the ultimate uptake of those guidelines and recommendations in practice. They estimated the time it takes for each of these steps, as well as ways that evidence is lost in the process (e.g., small studies not getting published or incorporated into reviews, poor indexing). They found that it takes approximately 17 years for 14% of original research to benefit patients. As a public health community addressing urgent health needs, implementation science can provide a valuable tool to bridge that research to practice gap.

To ensure that evidence and evidence-based interventions are used and reach the relevant populations, implementation efforts should:

1. Determine whether the intervention can be adopted by the different health systems or communities who can benefit. Is it feasible, acceptable, and appropriate for those settings and populations?
2. Identify and train practitioners who can deliver the intervention.
3. Make certain that trained practitioners can incorporate the intervention into their routine practice by providing the necessary supports, which might be technical assistance, clinical reminders, staff resources, or financial incentives.
4. Ensure that the intervention can reach everyone who could potentially benefit from it.

If we do not account for each of these steps (as well as challenges with equitable access, adequate adherence, appropriate dosage, and maintenance), our interventions are unlikely to benefit the populations we aim to serve [5]. Implementation science seeks to build the knowledge base on how best to address these critical steps.

In contrast to traditional clinical trials, which often focus on understanding *what* evidence or evidence-based intervention can improve specific health outcomes,

implementation science focuses on understanding *how* those evidence-based interventions can be adopted, implemented, and sustained to ensure their value in practice [6]. Without understanding the strategies that will support the capacity for cancer control interventions to be delivered in a variety of settings, including health care and community settings, interventions cannot be guaranteed to have the intended health benefits. Implementation science focuses on understanding which strategies can ensure that our interventions are deemed *feasible* to be delivered, that they are *acceptable* to populations using them, that they *penetrate* into the systems and communities using them, that they can *reach* all eligible populations, that they are *sustained* over time, and that they have high rates of *uptake*. These implementation outcomes, defined by Proctor and colleagues [7], are what the field seeks to maximize. By focusing on the strategies to meet these implementation outcomes, we can ensure that our interventions have the intended population health impact.

Several reviews have been published about strategies [8, 9] that enhance the adoption, implementation, and sustainability of an intervention. Some examples include strategies to educate or train practitioners to effectively adopt and deliver an intervention; strategies to ensure practitioners can incorporate interventions into their work flow or integrate them into their community settings; evaluative and iterative strategies to ensure implementation fidelity; and strategies to adapt interventions for a specific context. Which strategy to select depends on the barriers to be overcome, the resources that can be leveraged, and the stakeholders who will be involved [10].

Implementation science hinges on understanding the multilevel context in which implementation occurs and engages stakeholders to ensure that strategies address the critical barriers; are feasible, acceptable, and appropriate; and are likely to be integrated, sustained, and scaled. We need to consider all the levels that may influence implementation beyond the interaction between a consumer and practitioner. The clinic, organization, system, or community where that practitioner works is critical to understanding and supporting implementation efforts. Without accounting for these broader contexts, we risk exacerbating disparities and health delivery gaps, potentially ignoring populations with less access to care and fewer resources. Strategies that support implementation at these broader levels should be used, including strategies to support organizational change and strategies to get communities and municipalities, states, and nations to support the implementation of evidence and evidence-based interventions.

Implementation science relies on several core components. First, theories and frameworks are used to help understand factors that influence implementation processes and how best to address challenges to the adoption, implementation, and sustainability of effective interventions. An interactive webtool (<https://dissemination-implementation.org/>) can help researchers and practitioners select and use appropriate theories or frameworks to address a given practice gap. Second, stakeholder engagement at multiple levels (i.e., clinic, organization, community, state) to address a practice problem can ensure that the development, selection, and implementation of an effective intervention will be a good fit for the relevant populations and settings. Furthermore, stakeholders can help to inform the necessary

adaptations that may be needed, while still maintaining the integrity or “core” components of the intervention. Third, valid and reliable measures of implementation outcomes provide a means for evaluating the success of our efforts. These include measures of acceptability, adoption, appropriateness, costs, feasibility, fidelity, penetration, and sustainability [7], and they can be measured at multiple levels including at the provider, organization, community, and policy levels. Fourth, rigorous methods and study designs allow us to make generalizable observations about our implementation efforts. Brown et al. [11] have described a variety of study designs and methods used in the field.

NCI has been soliciting implementation studies since 2003 through a range of funding opportunity announcements. At first, NCI-funded grant supplements focused on the implementation of tobacco control programs. However, the challenges of implementing evidence-based interventions span across cancer control and other health areas. Thus, beginning in 2005, NCI worked with other institutes and centers across the National Institutes of Health (NIH) to issue funding opportunities in implementation science [3]. Given that implementation challenges are not unique to a specific area of health, these trans-NIH funding opportunities can help build solutions to overcome the limited use of evidence in practice.

To date, over 300 grants have been funded through these trans-NIH funding opportunities in implementation science, and over 90 of these by the NCI alone. NCI-funded grants span topic areas across the cancer control continuum, including studies of effective training models for implementing health-promoting practices afterschool; the use of technology to scale-up an occupational sun protection policy program; strategies to increase colorectal cancer screening rates in community health centers; and strategies to facilitate and maintain universal lynch syndrome screening programs in different organizational contexts [12]. Historically, most NCI-funded studies in implementation science have focused on the best ways to adopt and implement evidence-based practices in cancer prevention and screening. In recent years, more studies have focused on uptake of evidence-based interventions in cancer treatment and survivorship. However, gaps remain particularly in research on the best ways to sustain and scale evidence-based practices across the cancer continuum, as well as how to de-implement practices that are not evidence-based or are harmful or wasteful.

While implementation science is focused on studying how to implement evidence and effective interventions, researchers can also consider implementation science within the broader translational research continuum, and particularly in intervention development and effectiveness studies. For example, researchers could consider how to design an intervention that is more likely to be implemented. One way to do this is by incorporating research aims around implementation within effectiveness trials. As we design interventions, we can consider who will deliver and receive the intervention, and build in tests of the implementation strategies, alongside tests of their effectiveness, to see whether they can enable the interventions to be used in practice. Curran et al. [13] laid out a road map for how to incorporate implementation aims into effectiveness studies. These effectiveness–implementation hybrid designs include research aims on both the

intervention's effectiveness as well as its implementation. They propose rationales for different types of hybrid studies depending on which aims are the main focus.

With the launch of the Cancer Moonshot in 2016, implementation science has become an increasingly important priority for the NCI. Various Moonshot initiatives have focused on implementation science and the uptake of colorectal cancer screening and follow-up [14], symptom management in cancer survivors [15], and genetic testing and cascade screening in cancer patients and their families [16]. Additionally, seven Implementation Science Centers in Cancer Control have been funded to build infrastructure, develop and improve measures, and support studies across a range of cancer control challenges [17]. And in 2020, NCI for the first time has included implementation science as a strategic priority to advance cancer research and population health in its annual plan [18]. In addition to investing in implementation science through research grants, the NCI also supports training opportunities and initiatives to foster collaborations. One of these, the Implementation Science Consortium in Cancer, seeks to address major gaps in the field, including the integration of a health equity lens into the frameworks, methods, and measures we use. By advancing implementation science and concentrating on the *how* in addition to the *what*, we can ensure that cancer discoveries are able to most effectively reduce the burden of cancer for Latinos.

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