

# Multilevel Intervention Research Applications in Cancer Care Delivery

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Federal research institutions are challenged to identify research approaches that facilitate more rapid and effective application of research evidence in clinical and public health practice (1,2). The National Cancer Institute (NCI) has responded to this challenge by establishing a practice-based research consortium dedicated in part to improve our understanding of how evidence is used by health organizations, clinicians, and patients. Ultimately, the goals of these efforts are to build research infrastructures within the context of clinical practice systems to provide data that helps build our understanding and enhance cancer control and treatment in clinical practice. As noted in the conclusion to this monograph by Clauser et al., these include long-standing efforts such as the Breast Cancer Surveillance Consortium, the Cancer Research Network, and the Cancer Consortium for Outcomes and Surveillance Research (3). Emergent initiatives such as the NCI Community Cancer Centers Program (NCCCP) (4) and an initiative to study the effectiveness of screening process and risk-based screening approaches for breast, colon, and cervical cancer are examples of NCI's continuing commitment to this goal (5). These and other health services and outcomes research efforts will continue to build a solid foundation of observational research to inform translational research but have tended to support research designs that are intended to understand the unique and independent contribution of one specific factor, most often at the level of the individual patient. This research design was common in the latter half of the 20th century when advances in understanding the biologic basis for disease led to a focus on understanding the unique effects of specific agents. However, in the early part of the 21st century, many groups considering future research designs to understand complex problems occurring within complex systems, such as infectious disease patterns and global climate change (6); food, energy, and health (7); or health-care delivery (1,2), have called for new research designs that are specifically intended to enhance research capacity in the context of complex multilevel systems. Current research is rarely designed based on in-depth understanding of which factors across these diverse levels are most likely to influence the uptake of evidence-based care within these complex health-care systems. The articles in this final section argue for a pathway forward—multilevel intervention (MLI) research. These articles focus on issues that are internal to health-care delivery systems. One of the challenges for the future—as the proportion of health care that moves from the clinic to the home and community increases—will be to consider how to integrate the broader levels of care that exist outside of the context of such systems.

Stange et al. and Charns et al. clarify that virtually all the intervention research in cancer care delivery has focused on single-level

intervention studies of health practitioners, health consumers, and patients (8,9). This research contributes to the understanding of the mechanisms associated with practice improvement but may be insufficient to meet the new challenges facing contemporary cancer care delivery systems. These contemporary challenges may require a much more comprehensive approach to intervention science that examines behavioral-, clinical-, and policy-level mechanisms at multiple levels of the change process. The authors call to expand our focus beyond patients, families, and health-care practitioners, to include key characteristics of organizational, community, and broader health systems that affect cancer care delivery and are critical to accelerating the translation of research into effective practice. These characteristics include factors that influence performance in both clinical and patient-centered care domains.

What are those contemporary challenges? They range from traditional biomedical assumptions that the answer will be found through application of genetics in health care to debates on health-care policy. Khoury et al. (10) use the genomic laboratory testing process and Lynch syndrome to illustrate how they are influenced at the state health policy, organizational, provider team, and patient and family levels and how multilevel coordination is needed to implement effective genetic screening. Flood et al. (11) point to the passage of the Affordable Care Act as major legislation that will affect the provision of health services in general and cancer care in particular. They address how emergent accountable care organizations and insurance-based reforms to put evidence into practice will impact cancer care delivery on multiple levels and potentially have profound impact on access, cost, and quality of cancer care. MLI research may be useful to organizations adapting to these changes in ways that are beneficial to cancer patients and the health-care system. Finally, Sheinfeld Gorin et al. (12) note the slow progress in reducing disparities in cancer care and examine how MLIs may be effective in some cases in addressing disparities in cancer care arising from growing inequities in the distribution of health resources. However, these reductions are not likely to occur serendipitously but only if an intervention is deliberately planned to accomplish that aim.

These authors are uniformly optimistic about the potential for MLI research to advance our knowledge of how to improve cancer care. Yet, MLI cancer research is hampered with many gaps in knowledge, poor or incomplete measurement, research designs not well suited to the very complex systems they are intended to study, a limited track record in addressing the adoption of interventions within health-care systems and organizations, and few guidelines on how best to implement and sustain interventions once adopted.

Yano notes that as the complexity of these intervention models increases, it will be critical to examine the scalability and sustainability of these approaches in diverse organizations (13). Thus, targets should be carefully selected given the resource intensity of MLI intervention research.

Where should the field start? These articles suggest that research is needed on interventions that go beyond the patient-physician dyad and include examination of mechanisms and measures of the effectiveness of health-care organizations and health systems in improving outcomes. These could be measured by 1) delivery of evidence-based cancer care system processes, such as information technology, that include adherence to guideline-based care, 2) population-based policies and programs that enhance performance within communities where cancer care organizations operate, and 3) system-wide policies and programs that facilitate effective organizational strategies across communities. Another important gap area is research on the adoption of evidence-based organizational, community, and systems-based interventions to enhance organizational performance. While the initial focus of this research may fill in gaps in knowledge where evidence-based practice is established, it also might focus on systems solutions to new innovations such as molecular medicine, genomics, and informatics systems that bridge community care, research, and health reform.

To ensure that this new research initiative is designed to address the specific contributions that NCI could make to this broad field of research, Clauser et al. (3) note the need to develop processes that ensure input from a diversity of stakeholders: key experts in the field, patient advocates, the clinical community, health policy makers, NCI-designated cancer centers leadership, and representatives from NCI center programs, such as NCCCP and the Community Cancer Oncology Program (CCOP). As will all new research initiatives, it will be important to understand how this research initiative can best use existing NCI research infrastructures as well as integrate with other relevant federal and private funding organizations to ensure that NCI's contributions are complementary to those of other organizations. Comprehensive input and buy-in from this range of stakeholders will be essential

to create the support necessary to move this field forward. This monograph is one step to begin that dialog.

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