Precision Health & Big Data

Mindy Clyne, Muin Khoury, Alanna Rahm

Advances in precision medicine and precision public health (or "precision health" for short) are producing extremely large and varied sources of data ("big data") such as genomic and other 'omics' markers, as well as sociodemographic, geographic and environmental data. Such advances, evidence, and methods in precision health and big data are evolving faster than traditional effectiveness and implementation studies can manage; promising a new era of challenges and opportunities for implementation science. Within the area of cancer, an implementation science consortium can drive precision health and big data forward by guiding and supporting efforts around existing cancer-related evidence-based practice guidelines for identification of Lynch syndrome and hereditary breast and ovarian cancer, as well as other hybrid effectiveness-implementation research on emerging precision health activities along the cancer care continuum. Furthermore, an implementation science consortium can meet the needs of this new era by: 1) facilitating capacity building by establishing implementation science training programs focused on precision health researchers, clinicians and communities and 2) by establishing network-style collaborations for the development of implementation measures and analytic tools specific to precision health and big data, and 3) by conducting pragmatic studies utilizing learning healthcare system models.

Economics & Costs

Gila Neta, Jasmin Tiro, Heather Taffet Gold

There is a paucity of economic and cost-effectiveness analyses within the implementation science research portfolio, highlighting a need to focus on methodological, field capacity, and measurement issues. We need to better understand what the implementation costs are and who bears them, and to distinguish between the intervention vs. implementation costs.

Rapid Cycle Design of Implementation Studies

Wynne Norton, Donna Shelley, Brian Mittman

Implementation science utilizes a range of qualitative, quantitative, and mixed methods study designs. In recent years, there has been increased interest in using rapid cycle designs in implementation studies, including (but not limited to) Plan-Do-Study-Act cycles from quality improvement, rapid ethnographic studies, rapid qualitative data collection, analysis, and feedback, and some MOST and SMART designs. Advancing methodology related to rapid cycle designs is critical for studying and guiding implementation processes and the ongoing adaptation and tailoring required to respond to heterogeneous and changing local contexts. Guidance is needed to balance internal and external validity in studies designed to develop high-quality, useful evidence in the face of extreme heterogeneity and complexity.

An implementation science consortium can advance this important area of research by 1) clarifying the issues and features of implementation phenomena requiring rapid cycle designs, 2) identifying the range of rapid cycle designs that are best suited to study implementation processes characterized by high levels of heterogeneity and complexity, 3) classifying what types of rapid cycle designs are best suited for answering which categories of implementation research questions, 4) developing best practices and guidance for using these designs, and 5) highlighting additional research designs and methods needed to fully capture complexity and variability in implementation studies.

Implementation Laboratories

David Chambers, Russ Glasgow

While the implementation science community continues to advance the field through the development and conduct of a range of studies in community and clinical settings, the field lacks sufficient enduring capacity in those settings to iteratively and continuously launch studies reflecting the dynamism and variation of real-world implementation. Recent calls for the development of "implementation laboratories" that can function as learning implementation systems suggest a new approach to conducting implementation science, but limited work has been done to identify optimal ways to build these laboratories for the range of cancer implementation studies. An implementation science consortium can advance field thinking toward implementation laboratories through 1) identifying common standards for data capture and analysis, 2) leveraging existing networks where implementation studies may be conducted, 3) building capacity in new community and clinical sites interested in implementation, and 4) improving methods and measurement for conducting studies within a laboratory.

Policy and Implementation Science

Cindy Vinson, Karen Emmons, Bob Vollinger

As an emerging field, this workgroup will focus on generating ideas on how to move evidence-based policy implementation forward, specifically focused on cancer control. The implementation science consortium can advance this important area of research by addressing a variety policy-related topic. Topics that might be discussed include (but are not limited to):

- How to develop policy-relevant evidence
- Identification of policy research data resources
- Theoretical frameworks that can guide policy implementation
- Identification and testing of policy implementation strategies and methods to improve use of evidence by policymakers
- Development of measures/metrics specifically focused on evidence-based policy implementation
- Participatory methods in policy implementation

Context and Equity in Implementation Science

Prajakta Adsul, Rachel Shelton

This breakout session will address the focus of dissemination and implementation research on achieving health equity when understanding and addressing the context in which implementation takes place. We will discuss the extent to which equity and context are currently addressed in the field of implementation science and identify opportunities for more explicitly addressing and measuring equity and context across various phases of implementation. This will include during the exploration/selection of evidence-based interventions (EBIs) as implementation needs are determined, adaptation of EBIs based on context/population, determination of specific dissemination and implementation strategies, and as we plan for sustainability. In addition, we will look at various research methods, measures, D&I outcomes, and frameworks that allow implementation researchers to better understand context and consider equity. Presentations and discussions will set the agenda for researchers working to identify implementation determinants and implement evidence-based interventions, keeping in mind the context while incorporating a focus on health equity. Small group meetings will work towards developing specific project deliverable's (papers, future meetings, workshops, research concepts) that will support the implementation science community in improving the incorporation of health equity and context across the cancer prevention and control research activities.

Technology and Health Communication in Implementation Science

April Oh, Mike Fiore, Rita Kukafka

Technology (m-health, digital health, EHR, and others) has extended the potential reach and effectiveness of evidence-based programs and practices. Electronic Health Records (EHR) and patient health portals, in particular, are used in health care delivery systems for decision support, behavioral interventions, surveillance and monitoring of cancer prevention behaviors and outcomes, collection of health-related data, risk stratification, predictive modeling, and quality care delivery. The goal of this workgroup is to identify ways to advance the field in technology applications in implementation science through a collaborative consortium, with differentiation along two distinct pathways:

1. Advance understanding of how EHR technology can be used as a strategy to implement a health goal or EBI (e.g. eReferral to an external evidence-based treatment with interoperability); and
2. Implementation strategies to implement EHR technology (e.g. readiness assessment, stakeholder and end user engagement).