



ISCC

Implementation of Complex/Multilevel Interventions Overview



Implementing Multilevel and Complex Interventions

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Mentimeter support from our NCI partners: Annabelle Uy & Sarah Kobrin

Goals of our Action Group

- TOPIC: Implementation of multilevel and complex interventions in cancer control.
- EXPECTED OUTCOME:
 - Develop projects/products over the next year.
 - Materials may target range of expertise (novice to experts) in the field.
 - Goal: Help the implementation science community significantly **advance research on and understanding of** implementation and dissemination of multilevel and complex interventions in cancer control.
- TODAY'S TASK(s): Identify projects/project priorities - brainstorm ideas, choose topics, identify leads.

The Process

- Welcome/gather [5 min]
- Brief presentation [10 min]
- Brainstorming potential ideas via Mentimeter [20 min]
- Identify themes/idea clusters [5 min]
- Comment and discussion via Chat [35 min]
 - Discuss ideas – what are the needed next steps?
 - Identify top ideas
 - Who would like to lead and/or participate?
- Summarize decisions and identify next steps [5 min]

Note: We will review ideas, synthesize and report out on Day 2 (tomorrow). Day 2 breakout attendees will build on this work.

Definitions

Multilevel Interventions:

Interventions at two or more levels of individuals, providers, clinical teams, healthcare systems, and/or community settings that measure outcomes at three levels.

Complex Interventions:

Interventions that have a number of interacting components, require new behaviors by those delivering or receiving the intervention, or have a variety of outcomes.

Complex interventions are non-standard, having different forms in different contexts, while still conforming to specific, theory driven processes.

NIH PA-17-495 Multilevel Interventions in Cancer Care Delivery: Follow-up to Abnormal Screening Tests (Posted date September 29, 2017); Multi Level Interventions Training Institute, with Drs. Breslau & Mittman.

Craig P, Dieppe P, Macintyre S, *et al.* Developing and evaluating complex interventions: the new medical Research Council guidance. *BMJ* 2008;337; Mark Petticrew, When are complex interventions 'complex'? When are simple interventions 'simple'?, *European Journal of Public Health*, Volume 21, Issue 4, August 2011, Pages 397–398



Multiple Levels of Influence

Local Community
 Community Level Resources
 Medical care offerings
 Population SES
 Lay support networks
 Private cancer organizations
 Local Hospital & Cancer Services
 Market
 Market structure
 Level of competition
 Third party payers/insurance
 Pay for performance initiatives
 HMO / managed care penetration
 Percent non-profit
 Specialty mix
 Local Professional Norms
 MD practice organizations
 Use of guidelines
 Practice patterns

National Health Policy
 Medicare reimbursement
 Federal efforts to reform healthcare
 National cancer initiatives
 Accreditations
 Professional standards

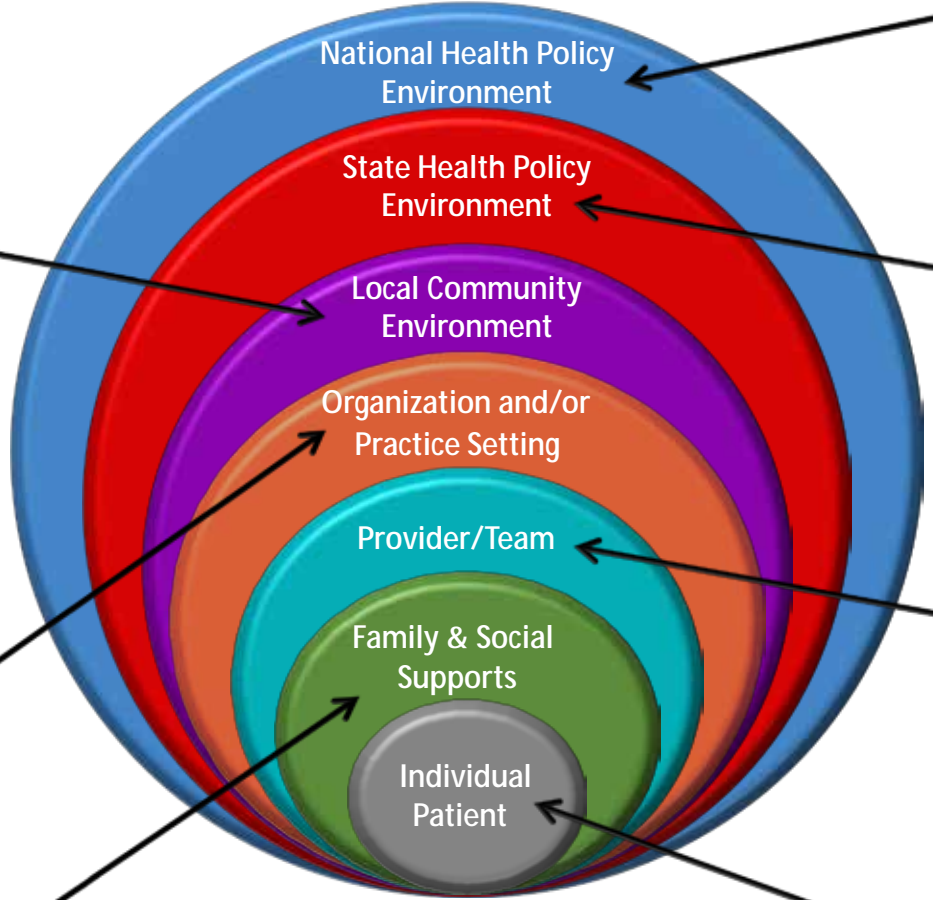
State Health Policy
 Medicaid reimbursement
 Hospital performance data policies
 (dissemination, visibility, etc.)
 State cancer plans/programs
 Regulations/limitations on
 reimbursement of clinical trials
 Activities of state-wide advocacy
 groups

Provider / Team
 Knowledge, communication skills
 Perceived barriers, norms, test efficacy
 Cultural competency
 Staffing mix & turnover
 Role definition
 Teamwork

Organization / Practice Setting
 Leadership
 Organizational structure, policies
 and incentives
 Delivery system design
 Clinical decision support
 Clinical information systems
 Patient education & navigation

Family / Social Supports
 Family dynamics
 Friends, network support

Individual Patient
 Biological factors
 Socio-demographics
 Insurance coverage
 Risk status
 Co-morbidities
 Knowledge, attitudes, beliefs
 Decision-making preferences
 Psychological reaction/coping



Improved Quality of Cancer Care

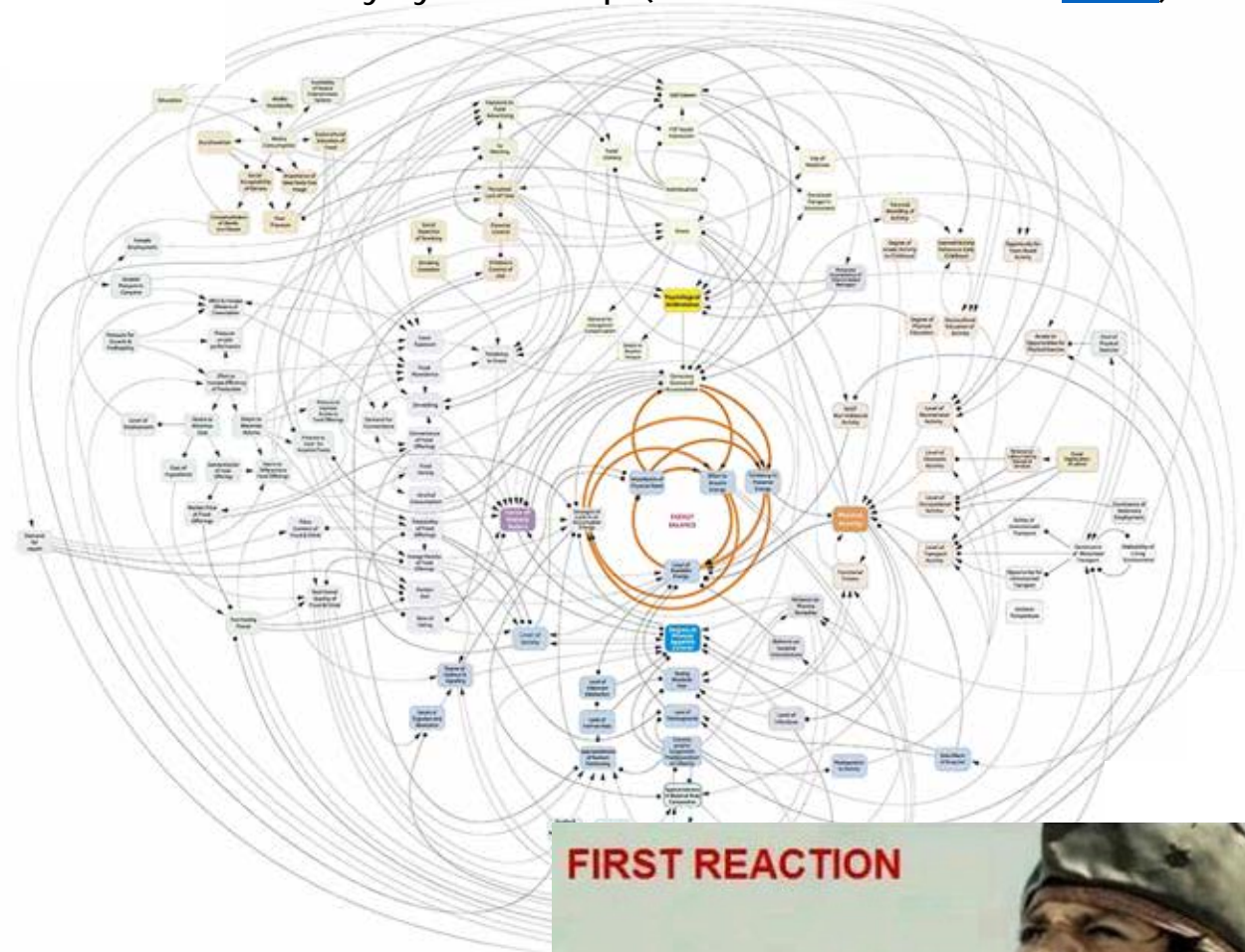
Improved Cancer-Related Health Outcomes

(Bronfenbrenner, 1979; Taplin, et al., 2012)

Cancer Control in a Complex Adaptive System

Obesity system map (Vandenbroeck et al., [2007](#)).

- Diverse components and actors that interact with each other and with the external environment.
- Property of both the intervention and the context.
- Unpredictability of effects.
- Invites new approaches to addressing the issue.

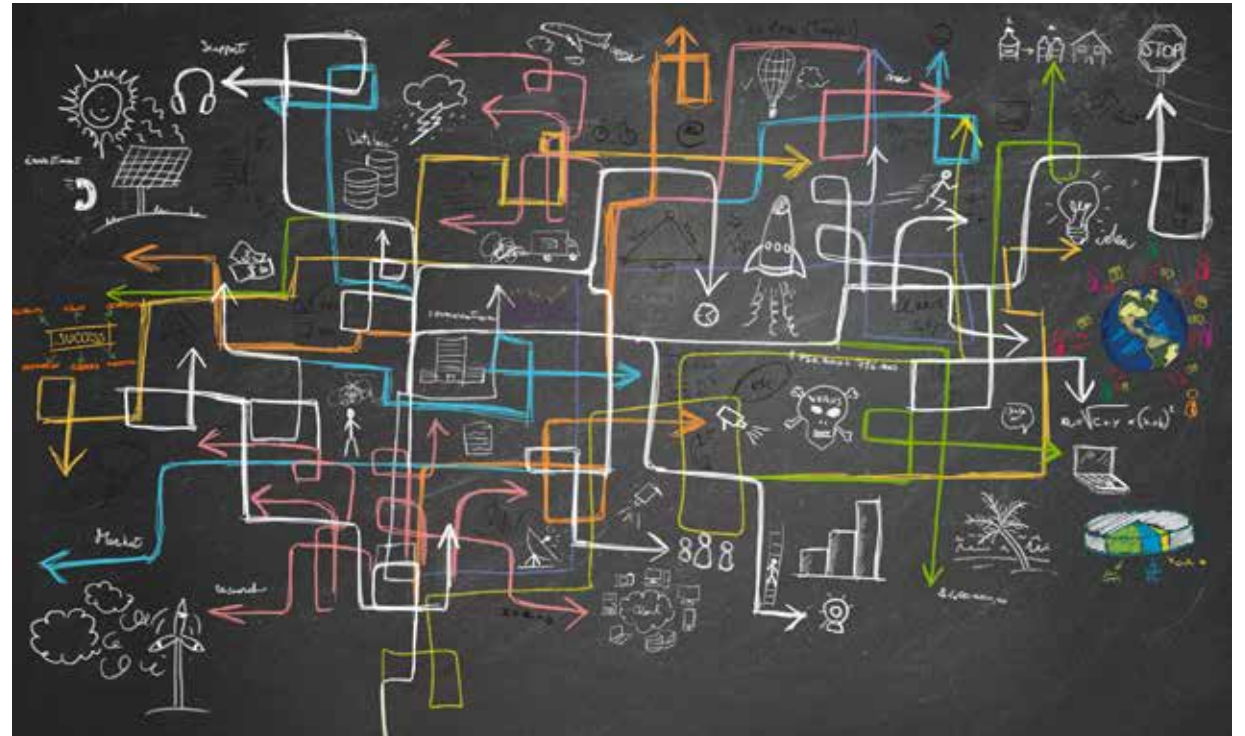


How do we improve dissemination and implementation of complex interventions for cancer control?

I trust my gut,
Our project is too complex
for logic and evidence.

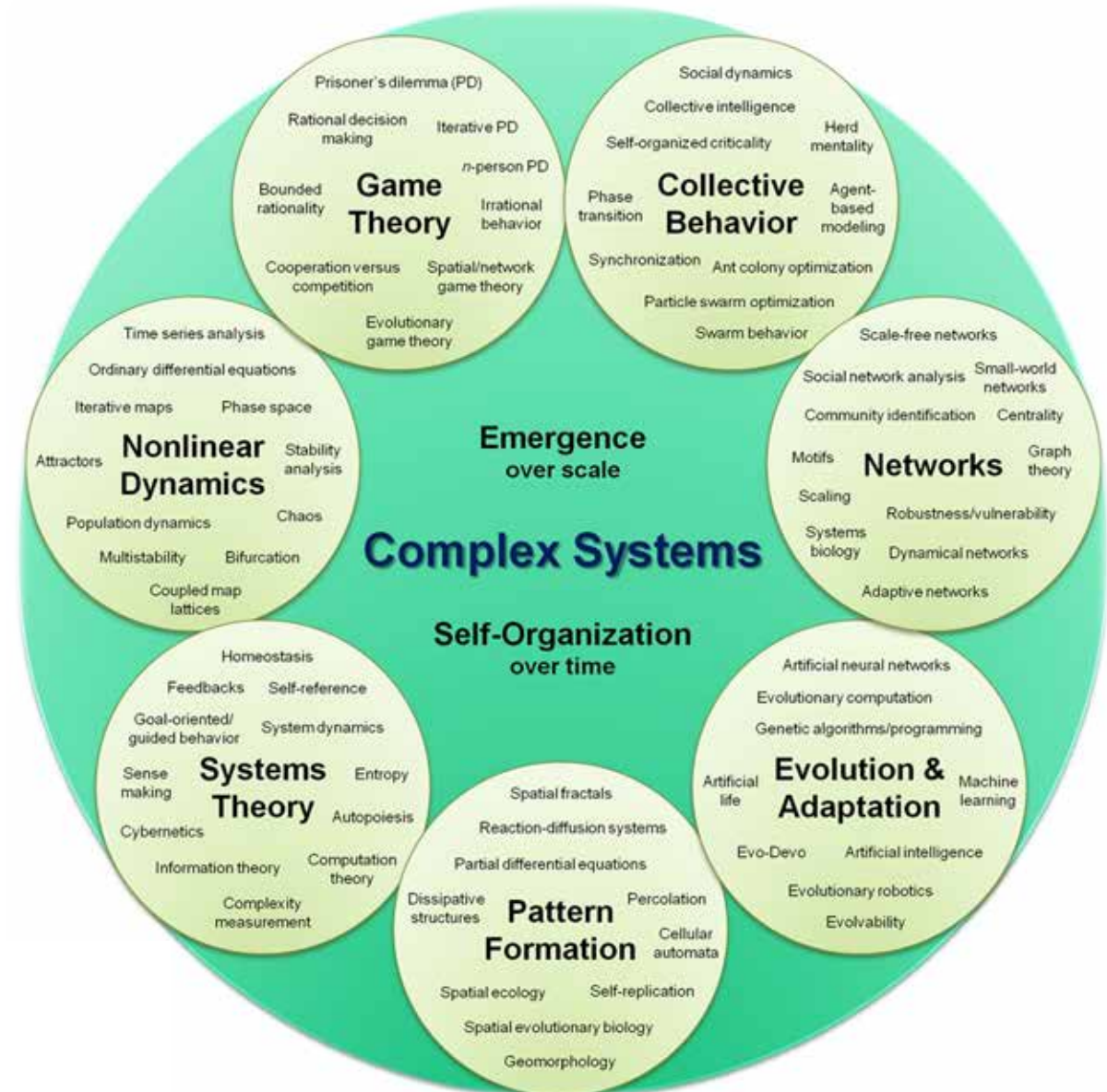


freshspectrum.com



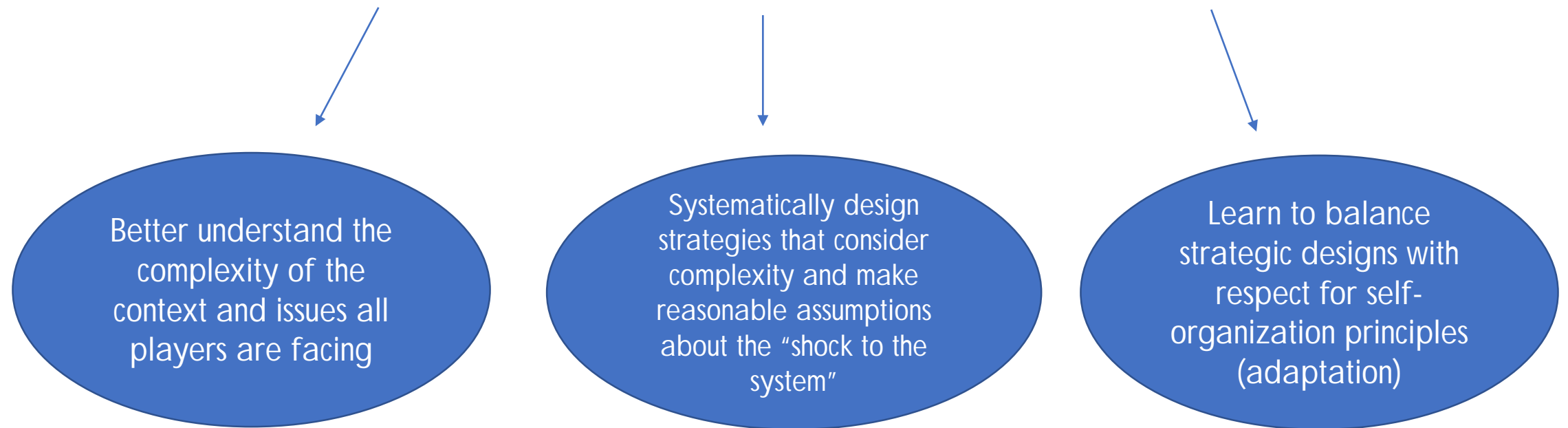
Applying Methods from Complex Adaptive Systems to D&I in Cancer Prevention & Control

- Apply the tools of complex systems analyses for improving implementation and dissemination of EBI.
- Engage key stakeholders at multiple levels to better understand and intervene.
- Use systematic processes for developing D&I strategies using theory, empirical evidence, and advances in implementation science.



Addressing Complexity

To address complexity, intervention (or implementation strategy) planners must:



Reference:

Sarriot, E., & Kouletio, M. (2014). Community Health Systems as Complex Adaptive Systems: Ontology and Praxis Lessons from an Urban Health Experience with Demonstrated Sustainability. *Systemic Practice and Action Research*, 28(3), 255–272. doi: 10.1007/s11213-014-9329-9

Implementation and Dissemination Strategies

Methods or techniques used to enhance the adoption, implementation, sustainment, and scale-up of a program or practice.

Do we need different types of implementation strategies to deliver “simple” vs multilevel vs complex interventions?

What implementation strategies work best to address what barriers at what levels?

Proctor, Powell, & McMillen (2013);
Petticrew (2011). When are complex interventions 'complex'? When are simple interventions 'simple'? *European Journal of Public Health*, 21(4):397-399



Development/selection of implementation strategies to deliver multilevel and complex interventions: How can we get there from here?

- Study design? Program evaluations? Funding mechanisms?
- Research agenda for implementation strategies
 - 1) Improve description, tracking, and reporting
 - 2) Increase economic evaluations
 - 3) Enhance methods for developing, selecting and tailoring strategies (e.g. Group model building, conjoint analysis, concept mapping, Implementation Mapping)
 - 4) Specify & test mechanisms

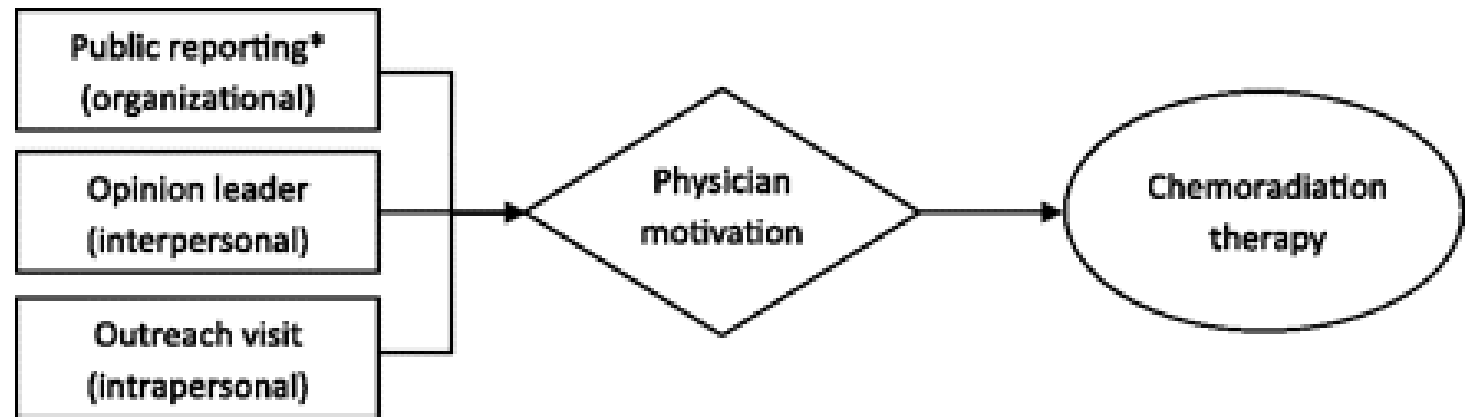


Powell BJ, Fernández ME, Williams NJ, Aarons GA, Beidas RS, Lewis CC, McHugh SM, Weiner BJ, Enhancing the Impact of Implementation Strategies in Healthcare: A Research Agenda. *Frontiers in Public Health*, 2019, 7:3

Fernández ME, ten Hoor GA, van Lieshout S, Rodriguez SA, Beidas RS, Parcel G, Robert A.C. Ruiter AC, Markham CM, Kok G. Implementation Mapping: Using Intervention Mapping to Develop Implementation Strategies, *Frontiers in Public Health*, 2019, 7:158.

Understanding mechanisms of action and causal logic of MLIs and Implementation Strategies

- How intervention components and/or implementation strategies at different levels could be combined to produce complementary or synergistic effects.
- Wiener et. Al examined mediation and moderation and identified 5 potentially useful strategies for combining interventions at different levels.
 - Accumulation
 - Amplification
 - Facilitation
 - Cascade
 - Convergence



Is it a MLI or a ML Implementation Strategy? It depends...

Types of Evidence-Based Interventions (EBIs) that can be implemented :

- Clinical Practice Guidelines
- Clinical Innovations (e.g. new screening technology)
- Interventions (Packaged programs) – including MLIs
- Policies
- Strategies (USPSTF Community Guide Recommendation; e.g. mass media, one on one, provider reminders)

What HPV Vaccination Research Products Can be Implemented?

- HPV Vaccination Guidelines
- General intervention approaches for increasing HPV vaccination (e.g. CDC *community guide* recommended approaches)
 - Enhancing Access
 - Increasing Community demand
 - Provider or System-Based Interventions
- Specific evidence-based intervention programs specific protocols, materials

Designing implementation strategies in concert with multiple contextual realities:

Interweaving strategies into environments and settings

Designing and implementing multilevel interventions and implementation strategies to fit within, complement, and build from existing settings and environments.

- “Coupling” & “Embedding” (Hawe et al. '09; May et al.'16)
- ü Embraces an indigenous health intervention development perspective: Interventions and implementation strategies build from site-specific knowledge, practices and values (Miller & Shinn, 2005)
- ü Moves from a conceptualization of context as a backdrop to intervention, to one that recognizes context as integral to the intervention design



Potential areas of interest...

1. **Designing** multilevel and complex interventions in ways that enhance its potential for being adopted, implemented, and sustained (designing for dissemination).
2. **Understanding** factors influencing the implementation of multilevel interventions.
3. **Describing** connections between organizational, multilevel and implementation theories and frameworks and how they can be used to inform MLI implementation.
4. **Adapting** multilevel and complex interventions to fit new contexts and populations.
5. **Planning** implementation and dissemination strategies to influence adoption, implementation and maintenance.
6. **Identifying** how implementation of interventions at different levels of could be combined to produce complementary or synergistic effects.

Strong Overlap With Other Workgroups...

- Community Participation
- Technology
- Context & Equity
- Policy
- Learning Healthcare Systems
- IS Study Designs
- Global Health

Now it's your turn...Example Ideas

- Manuscript highlighting challenges of implementation and dissemination of ML and complex interventions and suggesting potential ways to address these challenges.
- Realist review exploring the relationship between multilevel and complex interventions..
 - Are multilevel models ways of being able to digest and plan approaches to deal with complex problems? What do you lose in distilling that complexity?
 - Are all multilevel interventions complex interventions?
- Qualitative study exploring the role of adaptation across levels?
 - Proactive vs reactive adaptation and planned vs spontaneous adaptation.
 - How adaptation in one level may/may not affect the need for adaptation in another.
- Toolkit to review/clarify the blurred boundary between multilevel interventions and implementation strategies

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Implementation of Complex/Multilevel Interventions Recap



Implementing Multilevel and Complex Interventions

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Brief Overview Action Group Topic

- Topic: Implementation of Multilevel and Complex Interventions
- What do we believe is the problem(s) that need to be addressed?

Lack of understanding about how to best develop, implement, and disseminate MLIs to have maximum public health impact?

There is inherent complexity in the implementation of MLIs and Complex Interventions- we need tools, resources, and examples to help us navigate this complexity to better develop and deliver MLIs.

Ideas for “Public Goods” from yesterday

- Article (thought piece) that serves as an intro to implementation of MLIs

Implementation of Multilevel Interventions: Challenges and Opportunities

- Include definitions
- Discuss differences between multi-level interventions and implementation strategies
- Discuss challenges raised and articulate a research agenda
- Development or selection of implementation strategies at different levels with an emphasis on the importance of defining and describing (not just naming) strategies
- Include making decisions about intervention and implementation strategies considering synergy and interactions- prioritizing intervention components and IS at multiple levels (processes for doing so)
- Measurement considerations
 - Defining and measuring levels and synergies between levels
 - Role of qualitative research
- Best practices for engaging stakeholders at multiple levels
- Designing for dissemination
- Considerations for implementation of MLIs in both healthcare (primary care and specialty care) AND other settings (community, schools, churches) and improving these linkages

Ideas for “Public Goods” from yesterday

- Resources and tools to help researchers conduct studies related to implementation of MLIs and Complex cancer control interventions
 - Toolkit to review/clarify the blurred boundary between multilevel interventions and implementation strategies
 - Measurement toolkit
 - Guidance on measuring outcomes at multiple levels
 - Measures for outer context
 - Measures to assess financial/business impact
 - Packet with information on MLIs (provide examples).
 - Tool to guide the user in better understanding and documenting components of an existing multilevel intervention to improve adaptation and/ or plan implementation
 - Toolkit to approach health systems about engagement with MLI implementation
 - Tools to help guide the selection of IS frameworks and models to inform implementation of MLIs
 - Guidance or frameworks on how to plan implementation strategies to deliver MLIs

Ideas for “Public Goods” from yesterday

Case Studies to illustrate best practices for planning and implementing MLIs and complex interventions

- Case examples of well-designed multilevel interventions
 - Include processes for “interweaving” MLIs and implementation strategies into contexts)
 - Selection of implementation strategies – considerations of synergy and interaction – use for prioritizing
- Engagement strategies – how to start working/building relationships with different settings
- Measurement- cases examples of measurement of IS and outcomes across levels
- Difference between MLI vs Implementation Strategies with examples
- Examples of strategies that work at multiple levels – e.g. program champion at multiple levels – including at the senior most level
- Case studies highlighting considerations for designing efficacy studies---(efficacy studies begin to consider implementation including multi-level considerations)
 - factors need to be examined in subgroups for example, that would inform subsequent multi-level interventions

Additional Ideas to Explore in Day Two (not covered in Day 1)

- Fidelity and adaptation of multilevel interventions
- Scale up and sustainability of MLIs
- Implementation of MLIs in low and middle income countries
- Designing MLIs for dissemination
- Do we consider “form and function” of the multilevel intervention and/or the implementation strategies?
- Recommendations for funders to advance the science of implementation of MLIs
- How to identify, encourage, and support natural experiments that often include examples of MLI implementation?
- Community engagement for implementation of MLIs
- Collaboration with other groups- e.g. Implementation of MLIs to increase health equity.
- What else?