Title Slide:State of the Art and Future Directions in Multilevel Interventions across the Cancer Control Continuum

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Slide 2: Methods

- Multidisciplinary team
- Multiple iterations of literature searches
    - Designed to include the breadth of the field
    - Concentrated on cancer control continuum
    - Included other fields (particular cardiovascular disease studies)
- Developed a matrix of article types
- Immersion at O'Hare Airport hotel
    - Characterize how multilevel research currently is conceptualized and implemented
    - Described illustrative examples
    - Identified opportunities for MLI to advance cancer control

Slide 3: Threads of Shared Thinking & Research

- Contextualized single-level studies
    - intervene at the person/patient or provider/practice, but consider other contextually-important levels
- Health care systems research
    - includes individual, practice & system levels, and sometimes considers community or policy factors
- Community-wide studies
    - public health perspective, often including nested
    - health care system, practice, family, person levels
    - Community heart studies

- Community cancer control studies

Slide 4: Observations from the Literature

- Multilevel interventions are context-dependent, but context is reported inadequately in most reports
- Typically, less than 3 levels are reported
- Theory, models and interventions are not well integrated in reports/studies
- Most focused on prevention and screening; seldom on diagnosis, treatment, survivorship
- Reporting of temporal issues is limited
- Many glimmers of potential of MLI
  - Thought pieces
  - Theory
  - Empirical

Slide 5: Opportunities

- Design
- Analysis
- Dissemination

Slide 6: Design

Greater attention to:

- Contextual factors across
  - Levels
  - Time
- Rapid learning designs that evolve over time
  - Dynamic
  - Adaptive
  - Emergent
- Interfaces across and within levels
- Specifying levels affecting the phenomena under study (even if they are not the focus of the study)

Slide 7: Analysis

Greater attention to:

- Evaluate both process and outcomes

- Capture, but move beyond measures of central tendency
- Use multi-method approaches that
    - Integrate *quantitative modeling* across multiple levels where relevant quantitative data can be generated, and
    - *Qualitative methods* to evaluate levels with small numbers, and to identify key inter-level processes
- Complex systems and dynamic simulation modeling may provide additional insights where data are sparse

Slide 8: Translation

Greater attention to:

- Transparent reporting of contextual factors
- Moving beyond fidelity to
- Local adaptation / reinvention / evolution
- Participatory approaches
- How multiple levels interact in context, (vs. in isolation)
- Move beyond sustainable to evolvable interventions

Slide 9: An Example

Design: Observational / intervention
Focus: Preventive services & health behavior

Level	**Who/What**
Individual and Family	Low income, pregnant mothers, and their children <2
Practice	Primary care and home visits
Healthcare System	Multilevel advisory committee included Medicaid representatives
Community	Community organization and town and state government

Margolis PA, Stevens R, Bordley WC, et al. From concept to application: the impact of a community-wide intervention to improve the delivery of preventive services to children. *Pediatrics.* 2001;108(3):E42.

Slide 10: Challenges

- The future is multiple (conditions, behaviors, interactive modalities)
- The future is complex (and we ignore complexity at our peril)[1]
- "All models (and designs) are wrong" [2] – tolerance, respect, & creativity are needed
- We may need to UN-learn much of what we have been taught to answer the tough questions

[1]Glasgow RE, Emmons KM. *Annual Review of Public Health* , 2007
[2]StermanJD. *Syst Dynam Rev* 2002;18:501-531

Slide 11: Discussion Questions

- How do we develop MLI that
  - Create synergy across multiple levels?
  - Continually pay attention to context?
  - Adapt and learn over time?
- How do we develop designs and analytic techniques that reflect the complexity of the phenomena we are studying?
- How do we disseminate to foster
  - Informed adaptation or re-invention?
  - Continued evolution and learning?

Slide 12: Blank slide

Slide 13: Extra Slides

- Not for handout
- May be used for discussion

Slide 14: Integrated Dynamic, Multilevel Research-Practice Partnerships Systems Approach

[image]

Broader Health Policy and Cultural Context

Two concentric circles directly connected to each other with a bidirectional line called 'FIT'. At the bottom of the circles is 'Research Deign Team and Adaptive Design' which has directional connection to each circle.

The first circle has 3 concentric circles. The inner most circle is "Critical Elements". The middle circle has "Program as Tested" at the top of the circle and "Non-critical Marketing" at the bottom. The outer circle has "Evidence-Tested Program" at the top and "program as Marketed" at the bottom. The circle group is connected to 'Research Deign Team and Adaptive Design' with a bi-directional line called "Design Appropriate for Question"

The other circle has 3 concentric circle. The inner most circle is called "Program Delivery Staff". The middle circle has "Clinic(s)" at the top of the circle and "Delivery site(s)" at the bottom. The outer circle has "Health Care System" at the top and "Organization" at the bottom. The circle group is connected to 'Research Deign Team and Adaptive Design' with a bi-directional line called "Partnership".

Adapted from Estabrooks et. al. AJPM, 2005, 31: S45
[End image]

Slide 15: Opportunities for Integrating Across Levels

[image]

Showing the influence of "Breadth of Impact" and "Malleability in Short Timeframe" on "Integrating Levels".

At the top:

(1) Cultural, Historical, Social-Environmental Factors, (Fundamental "distal" Determinants) is connected to (2) Health Care System, Priorities, Resources, Guidelines, etc. and Patient-Provider Encounters, Shared Decision-making via a bidirectional connection called "Incentives, coverage".

(2) Health Care System, Priorities, Resources, Guidelines, etc. and Patient-Provider Encounters, Shared Decision-making is connected to (3) 'Individual Level, Malleable Factors: Self-efficacy, activation, problem-solving, etc. and “Trait” Factors: Preferences, illness Representations, emotions' via a bidirectional connection called "Tracking monitor Progress and Action Plans".

At the bottom:
(3) 'Individual Level, Malleable Factors: Self-efficacy, activation, problem-solving, etc. and “Trait” Factors: Preferences, illness Representations, emotions' is connected to (4) 'Sub-personal/Biological Genomics' via a bidirectional connection called 'Genetic Counseling'.

On the left side of the hierarchy is called "Breadth of Impact". There is a box called 'Social-Community Context , Work, built environment, environmental exposures, family, friends'. This is connected to the different 4 areas described in the above hierarchy (1 through 4).

- (1) Cultural, Historical, Social-Environmental Factors via a bidirectional connection called 'Community Building Infrastructure' and ' Regulations, resources on food, tobacco, transportation'
- (2) Health Care System via a bidirectional connection called 'Feedback Monitoring'.
- Individual Level via a bidirectional connection called 'Community programs' and ' Social Norms
  (3) Transportation Programs'.
- (4) Sub-personal/Biological via a bidirectional connection (no name is used).

On the left side of this hierarchy is " Malleability in Short Timeframe " is a box called 'Ubiquitous Media and Technology, Work, built environment, environmental exposures, family, friends' . This is connected to the different 4 areas described in the above hierarchy (1 through 4).

- (1) Cultural, Historical, Social-Environmental Factors via a bidirectional connection called ' Monopolies vs. Open Access '
- (2) Health Care System via a bidirectional connection called ' Interoperable EMRs and PHRs' and ' Public Reporting'
- (3) Individual Level via a bidirectional connection called ' mHealth (mobile) devices' and ' Personal Health Records (PHR) '
- (4) Sub-personal/Biological via a bidirectional connection called ' Personal Health Records (PHR); Social Media '

[End image]

Slide 16: No title

“The significant problems we face cannot be solved by the same level of thinking that created them.”

A. Einstein

Slide 17: No title

[image]
Don Quixote, stylized from Picasso print, with windmills in background
[End image]

Slide 18: Implementation and Dissemination Research Characteristics

- Contextual
- Complex
- Multi-component programs and policies
- Non-linear
- Transdisciplinary
- Multi-level

Slide 19: The End

[End Presentation]