## An Introduction to Implementation Science

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## **Presentation Outline**

- What is Implementation Science and How Does it Relate to Genomic Medicine?
- Key IS Activities/Resources
- Where the field is moving...
- Summary: Exciting times ahead!

#### "PUBLICATION PATHWAY"

Balas & Boren, 2000



50%

# It takes 17 years to turn 14 percent of original research to the benefit of patient care



Poynard, 1985

Inconsistent indexing



9.3 years

Reviews, guidelines, textbook

Implementation

## The fish-bicycle conundrum...



Ref: Paraphrased from Irina Dunn, 1970



### Beyond The Test Itself...

- Even if a genetic test can identify optimal treatment for a specific illness or reduce risk for health problems, if:
- Only half of insurers choose to provide it
- Half of health systems choose to train clinicians to prescribe it
- Half of the clinicians at those systems prescribe it
- Half of their patients get tested:

(Assuming perfect access/testing/follow-up)

### Impact: $.5^*.5^*.5 = 6\%$ benefit

## **Beyond efficacy/effectiveness**







- Implementation Science is the study of methods to promote the integration of research findings and evidence into healthcare policy and practice.
- Dissemination research is the scientific study of targeted distribution of information and intervention materials to a specific public health or clinical practice audience. The intent is to understand how best to spread and sustain knowledge and the associated evidence-based interventions.
- Implementation research is the scientific study of the use of strategies to adopt and integrate evidence-based health interventions into clinical and community settings in order to improve patient outcomes and benefit population health.

## Example: Lynch Syndrome



Sample IS Challenges:

- ID of Lynch
  Syndrome within
  CRC pop
- Family member scale-up
- Implementing screening/ monitoring/
- Workforce capacity/training needs

## **Example: Precision Medicine**



National Institutes of Health ABOUT ~

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# The future of health begins with **All** of **Us**

The *All of Us* Research Program is a historic effort to gather data from one million or more people living in the United States to accelerate research and improve health. By taking into account individual differences in lifestyle, environment, and biology, researchers will uncover paths toward delivering precision medicine.

WATCH VIDEO 🕟

- How does clinical practice incorporate PMI findings?
- How do you implement evidence that will be evolving?
- How do you train and support the workforce?
- What services will be covered/paid for?

### Example: Personalized Medicine (Life?)



### Who is ultimately in charge of implementation?



## Implementation Challenges Abound...



## The Importance of What...

What is the intervention that needs to be implemented?

- A. Genetic/genomic tests
- B. Information Dissemination/educational intervention
- C. Monitoring and Follow-up
- D. Preventive Care
- E. Treatment
- F. All of the above?

## **Studying Implementation**



## The Current Paradigms for D&I Science



### Tabak et al. review of Implementation Science Models

Identified 109 models

### Exclusions

- 26 focus on practitioners
- 12 not applicable to local level dissemination
- 8 end of grant knowledge translation
- 2 duplicates
- Included 61 models
- Across Construct Flexibility, SEF, D/I

Tabak, Khoong, Chambers, Brownson, AJPM, 2012

IH NATIONAL CANCER INSTITUTE

#### **EXPLORATION**

#### **OUTER CONTEXT**

Sociopolitical Context Legislation Policies Monitoring and review Funding Service grants **Research grants** Foundation grants Continuity of funding **Client Advocacy** Consumer organizations Interorganizational networks Direct networking Indirect networking Professional organizations Clearinghouses Technical assistance centers

#### **INNER CONTEXT**

Organizational characteristics Absorptive capacity Knowledge/skills Readiness for change Receptive context Culture Climate Leadership Individual adopter characteristics Values Goals Social Networks Perceived need for change

#### ADOPTION DECISION / PREPARATION

#### OUTER CONTEXT

Sociopolitical Federal legislation Local enactment Definitions of "evidence" Funding Support tied to federal and state policies Client advocacy National advocacy **Class action lawsuits** Interorganizational networks Organizational linkages Leadership ties Information transmission Formal Informal

#### **INNER CONTEXT**

Organizational characteristics Size Role specialization Knowledge/skills/expertise Values Leadership Culture embedding Championing adoption

#### **ACTIVE IMPLEMENTATION**

#### **OUTER CONTEXT**

Sociopolitical Legislative priorities Administrative costs Funding Training Sustained fiscal support Contracting arrangements Community based organizations. Interorganizational networks Professional associations Cross-sector Contractor associations Information sharing Cross discipline translation Intervention developers Engagement in implementation Leadership Cross level congruence Effective leadership practices

#### **INNER CONTEXT**

Organizational Characteristics Structure Priorities/goals Readiness for change Receptive context Culture/climate Innovation-values fit EBP structural fit EBP ideological fit Individual adopter characteristics Demographics Adaptability Attitudes toward EBP

#### SUSTAINMENT

#### **OUTER CONTEXT**

Sociopolitical Leadership Policies Federal initiatives State initiatives Local service system Consent decrees

Funding Fit with existing service funds Cost absorptive capacity Workforce stability impacts

Public-academic collaboration Ongoing positive relationships Valuing multiple perspectives

#### **INNER CONTEXT**

Organizational characteristics Leadership Embedded EBP culture Critical mass of EBP provision Social network support Fidelity monitoring/support EBP Role clarity Fidelity support system Supportive coaching Staffing Staff selection criteria Validated selection procedures

Aarons, G.A., Hurlburt, M. & Horwitz, S.M. (2011). Advancing a Conceptual Model of Evidence-Based Practice Implementation in Public Service Sector (NTA) Attaining the Advised Metal Health and Mental Health Services Research. 38, 4-23.

## Current Funding Announcements

- NIH: PAR-18-007; 18-017;16-237 (R01, R21, R03)
- NCI leads (16 ICs total, including FIC, NIMH, NHLBI, NHGRI, as well as OBSSR and ODP)
- Organizes the D&I research agenda across NIH
- >200 grants funded through NIH since 2006
- 2010 CSR standing review committee
- Program staff (contacts) happy to review concept papers, specific aims, answer questions at any time



# **Selected Priority Areas for PARs**

- Studies of the local adaptation of evidence-based practices in the context of implementation
- Longitudinal and follow-up studies on the factors that contribute to the sustainability of evidence-based interventions
- Scaling up health care interventions across • health plans, systems, and networks
- **De-Implementation** of ineffective or suboptimal care



## Implementation Science Training...









APPLICATIONS NOW BEING ACCEPTED!



ALL MATERIALS DUE FEB.9,2018

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https://www.academyhealth.org/events/site/11th-annual-conference-science-dissemination-and-implementation-health

## **CANCER MOONSHOT**



http://www.cnn.com/2016/11/30/politics/joe-biden-cancer-moonshot-congress/



### **IMPLEMENTATION SCIENCE & GENOMICS RFA**

Prevention and Early Detection: Implementation Science	Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes (U01)	RFA-CA-17-041	12/9/2017	1/10/2018
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Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes

### Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes



NCI Board of Scientific Advisors and the National Cancer Advisory Board June 2017



cancer.gov

## Hope for the future...

Figure. Contributions of Implementation Science, Learning Health Care System, and Precision Medicine



Chanters DA, Feero WG, Knowy MJ, Convergence of Implementation Science, Precision Medicine, and the Learning Health Care

### The Implementation Journey Continues...





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www.cancer.gov/espanol

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