Adaptomes, learning systems, and convergence: Exploring frontiers in dissemination and implementation research

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Session Outline

- A Brief Orientation to Implementation Science
- Challenging classical assumptions
- The Adaptome
- The LHCS
- Continuing the Discussion

Balas & Boren, 2000

Original research

18%

Dickersin, 1987

Negative results

variable

Submission

46%

Koren, 1989

0.5 year

Kumar, 1992

Acceptance

Negative results

0.6 year

Kumar, 1992

Publication

Expert

35%

Bates, 1995

0.3 year

Boyer, 1992

Lack of numbers

Bibliographic databases

50%

Poynard, 1985

Antman, 1992

Reviews, guidelines, textbook

9.3 years

Inconsistent indexing

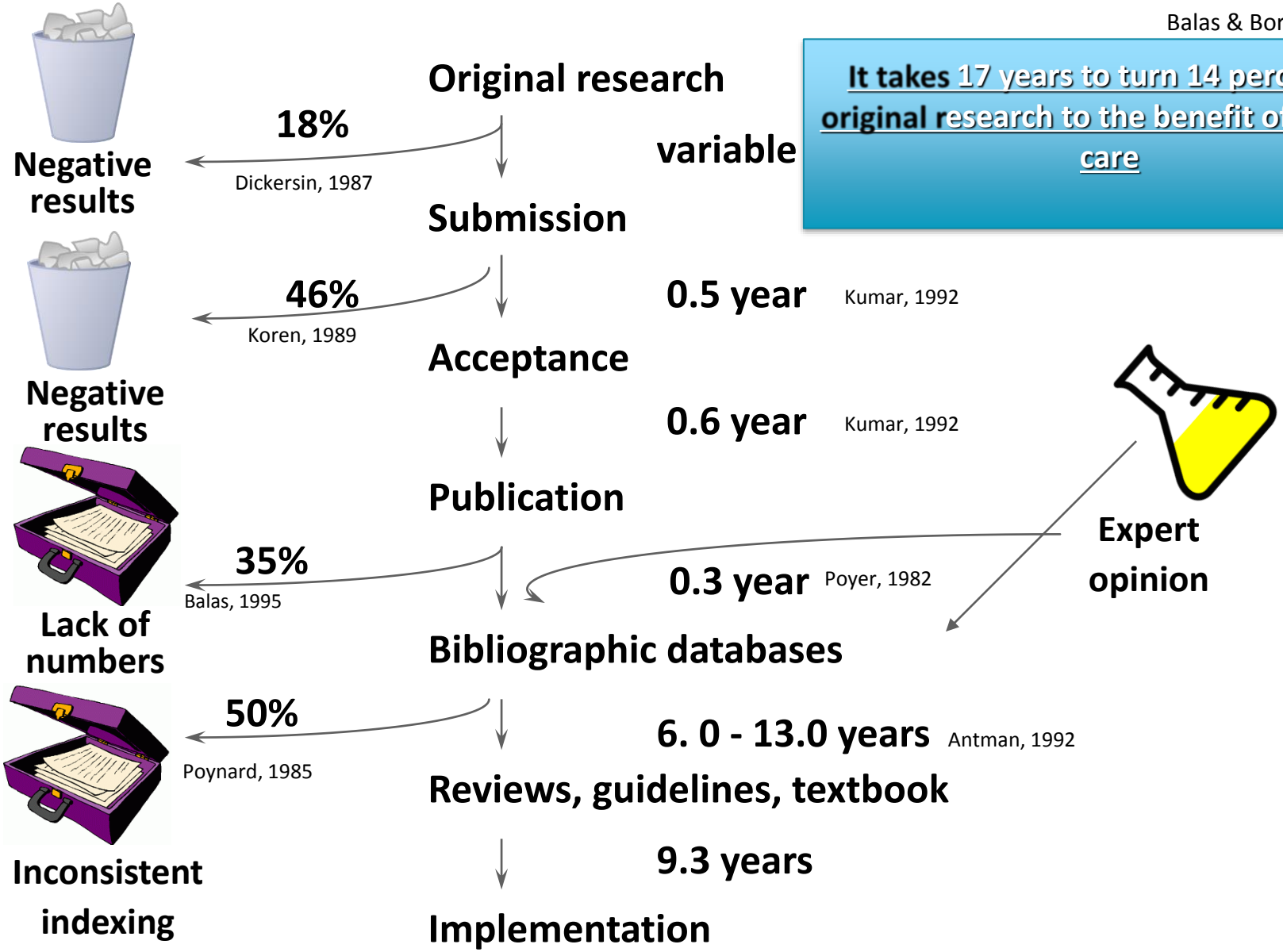
Implementation

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

"PUBLICATION PATHWAY"

Balas & Boren, 2000

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



"PUBLICATION PATHWAY"

We assume… “If you build it…”

…It might take 108 years for this

An Evidence-Based Health Intervention

Is only so good as how and whether…

- It is adopted?
- Providers are trained to deliver it?
- Trained providers choose to deliver it?
- Eligible patients receive it?

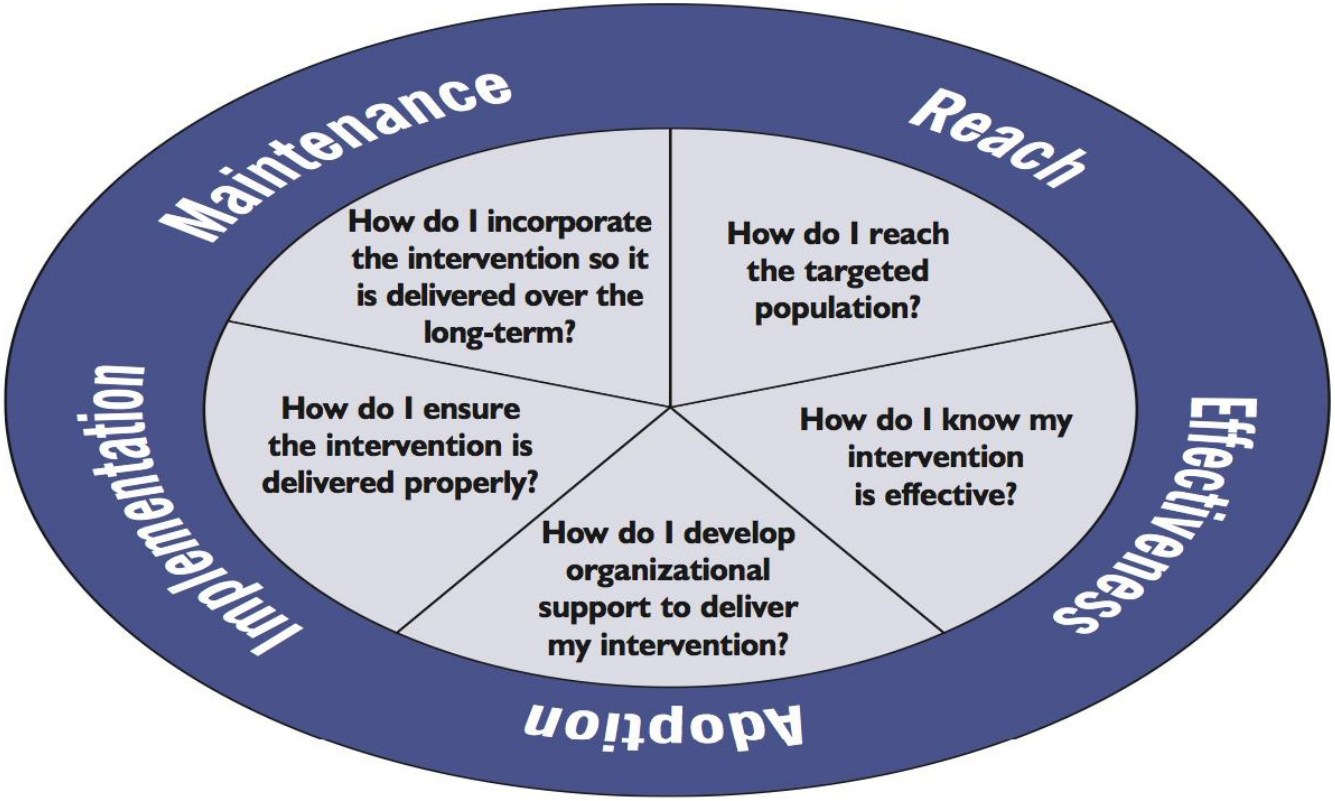
If we assume 50% threshold for each step…

(even w/perfect access/adherence/dosage/maintenance)

Impact: .5*.5*.5*.5 = 6% benefit

Beyond efficacy/effectiveness

FIGURE 1. Elements of the RE-AIM Framework



Glasgow, RE-AIM

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Context Counts…

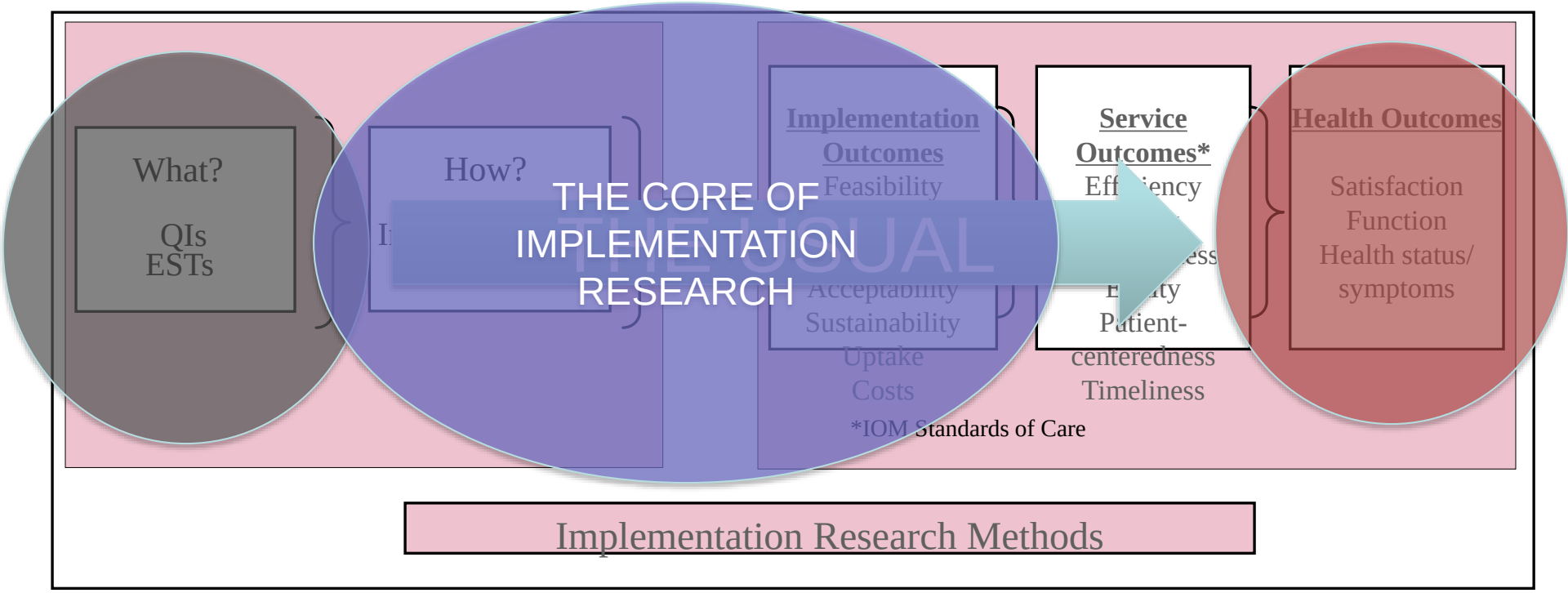
Key Terms

- ***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.

Dissemination Research focuses on the process from:

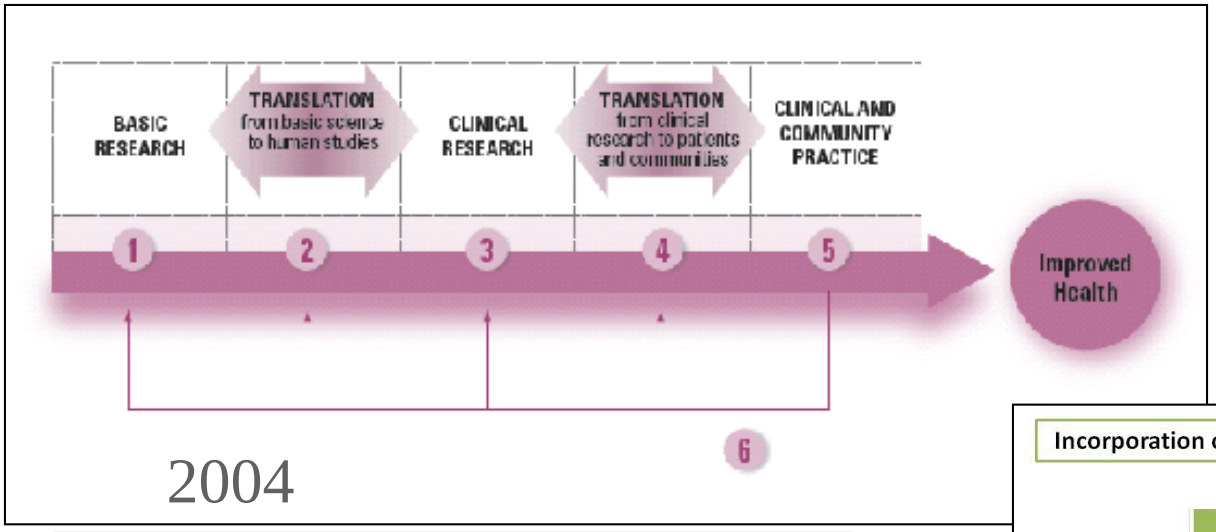
- How the “evidence” is created?
- Packaging
- Transmitting
- Receiving
- Turning Information into Action

Studying Implementation



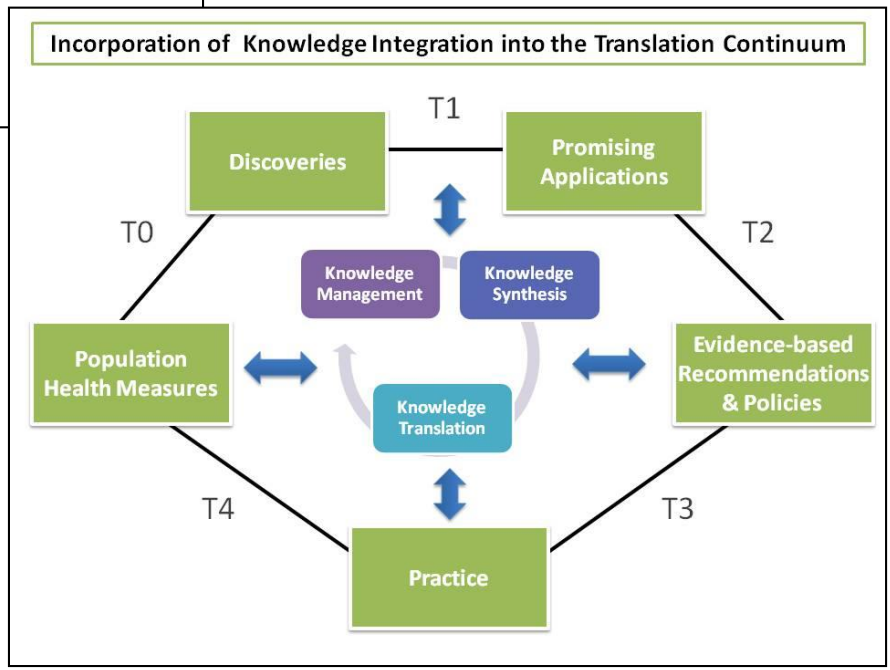
Proctor et al, 2009, *APMH&MHSR*

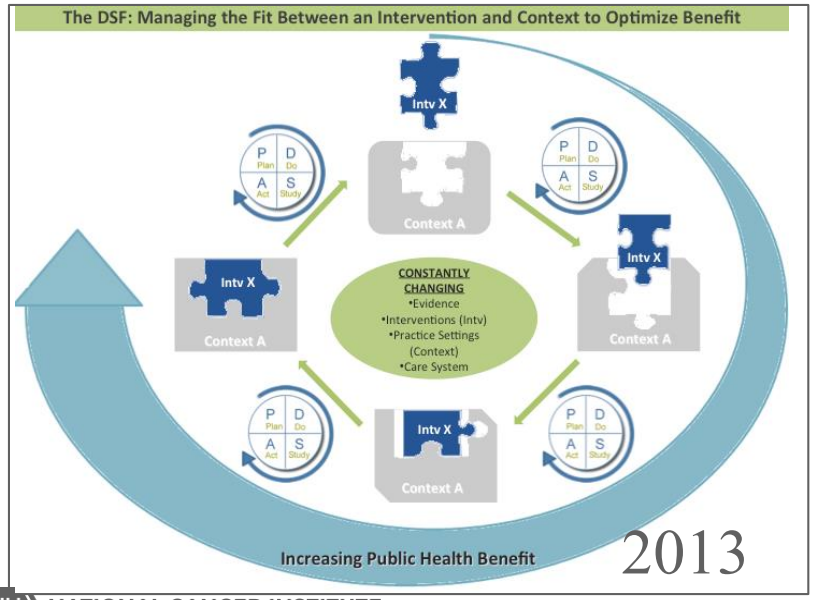
The Current Paradigms for D&I Science



2004

2012





2013

Traditional Assumptions

- Evidence and Evidence-based practices are static
- System is static
- Implementation proceeds one practice or test at a time
- Consumers/Patients are homogeneous
- Choosing to not implement is irrational

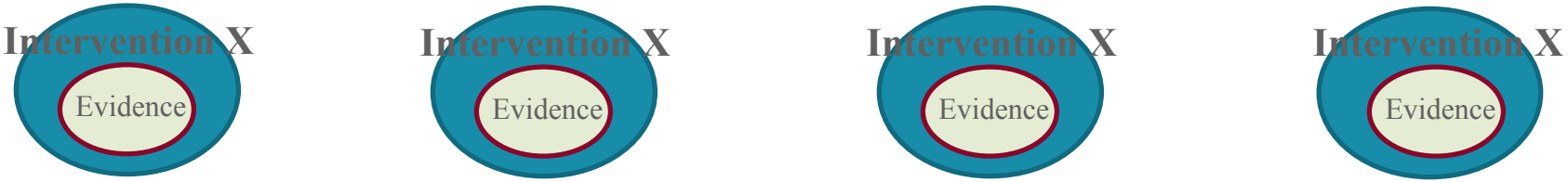
How well do these relate to the implementation of evidence-based programs?

Choosing not to implement is irrational… (Does it fit?)

- POPULATION FIT?
- WHAT IS REIMBURSED?
- APPROPRIATE STAFF?
- HOW STRONG IS EVIDENCE VERSUS CURRENT PRACTICE?
- IS THERE A DEMAND FOR THE INTERVENTION?

Valuing Consistency

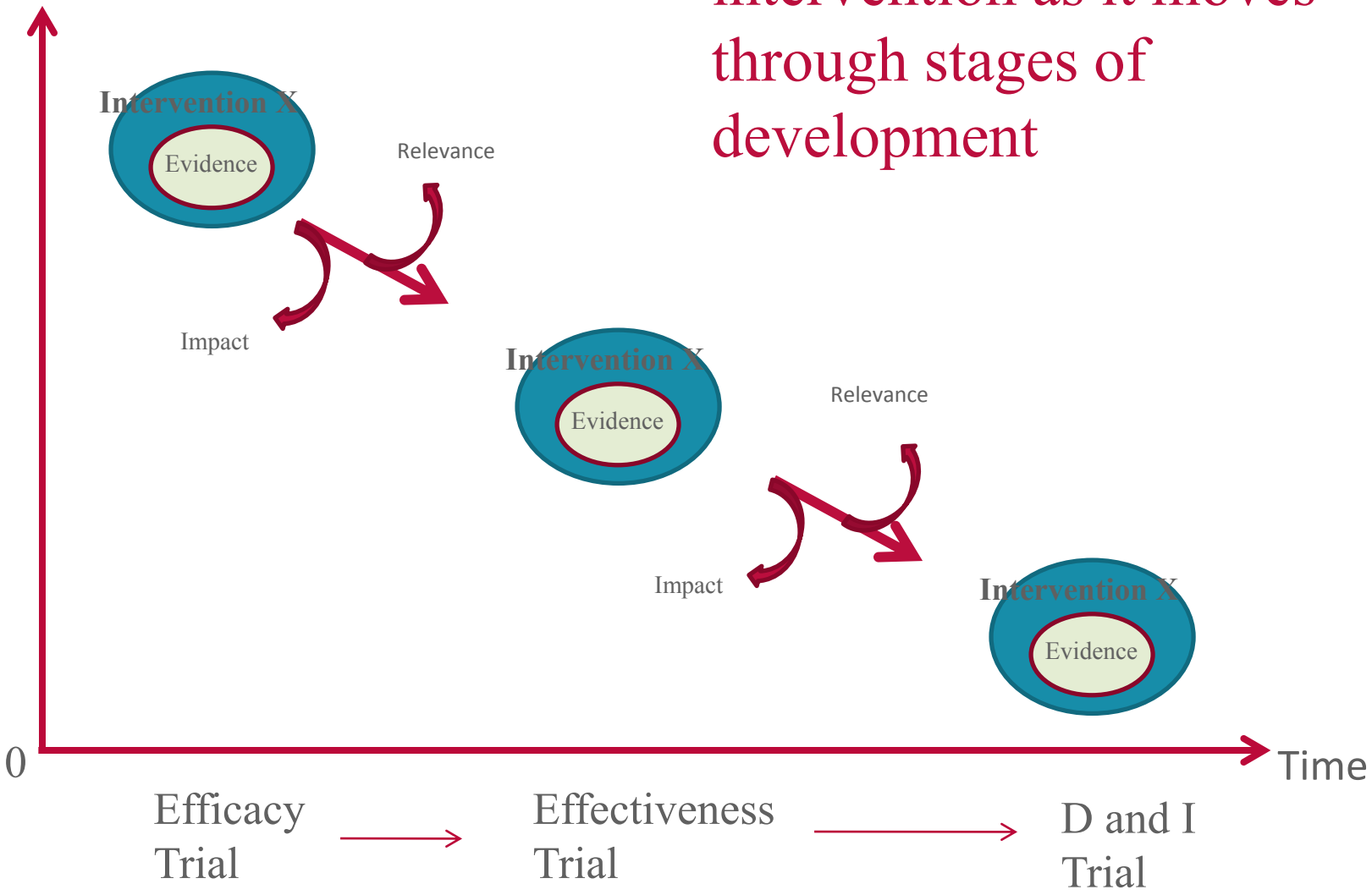
ITV Development → Efficacy → Effectiveness → Implementation



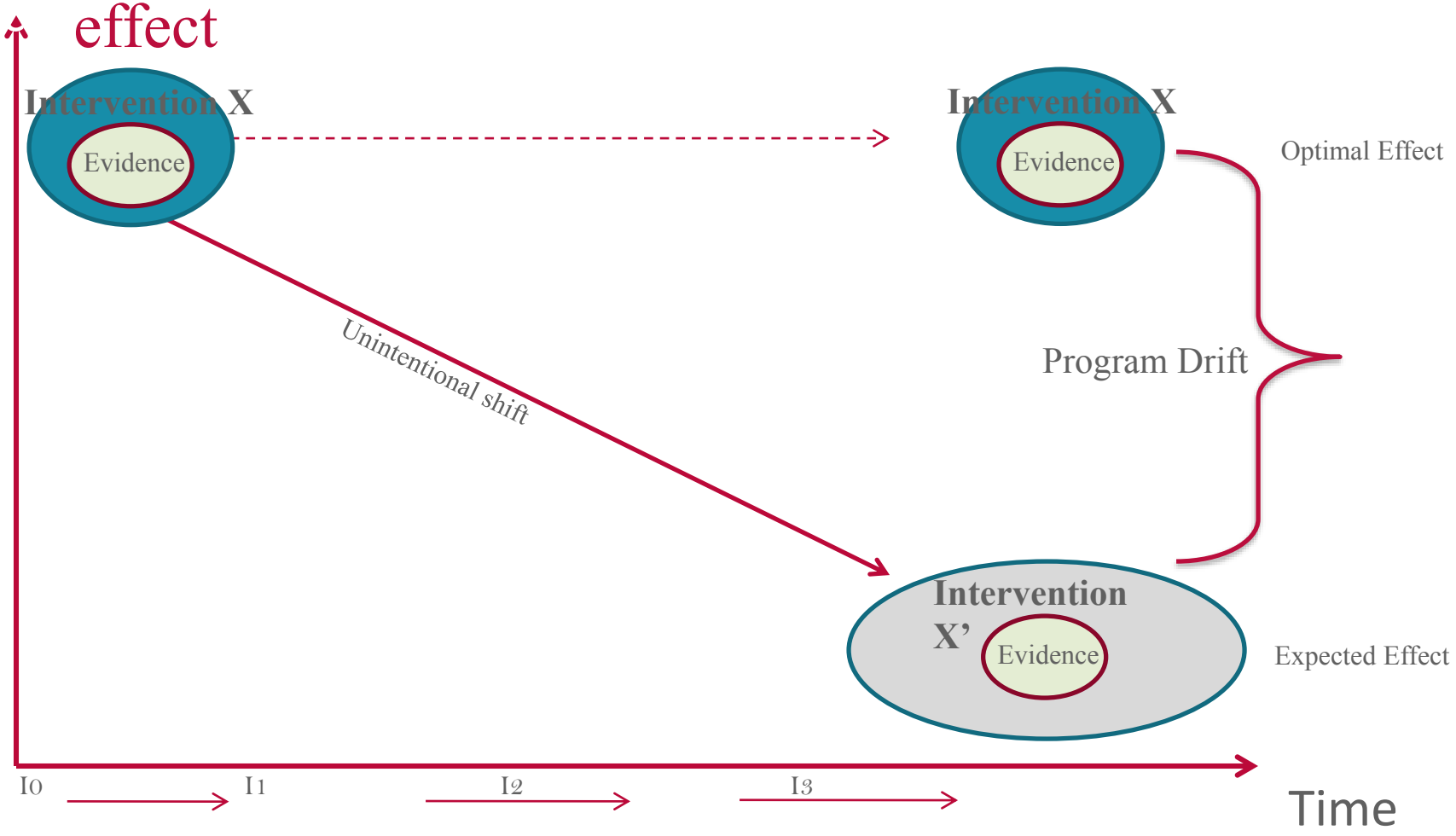
Site 1 Site 2 Site 3 Site 4

Chambers, Glasgow, Stange (2013), The Dynamic Sustainability Framework. *Implementation Science*

"Voltage Drop" of an intervention as it moves through stages of development

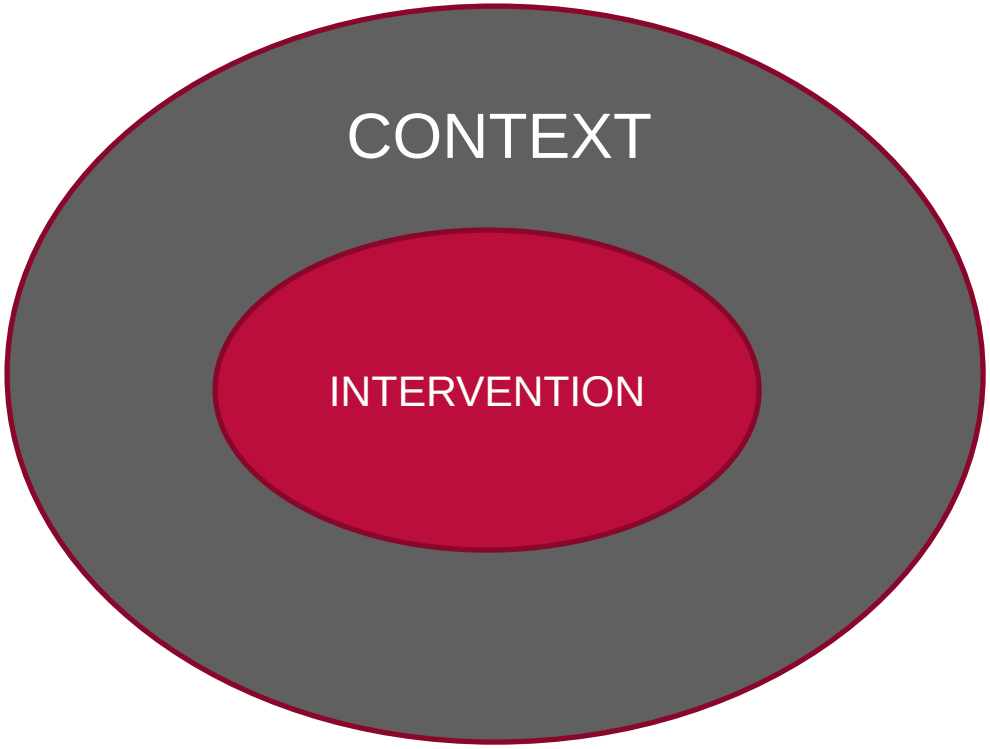


"Program Drift" of a fielded intervention (ITV) over time, with expected decrease of effect

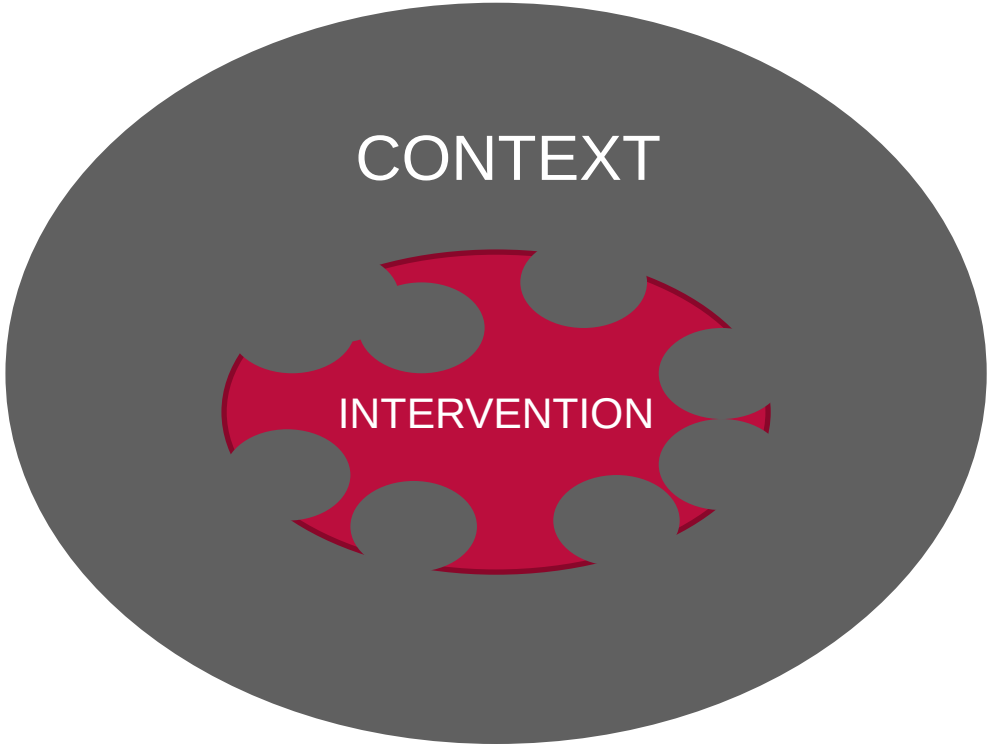


Chambers, Glasgow, Stange (2013), The Dynamic Sustainability Framework. *Implementation Science*

Relative Weights?



A Natural Process

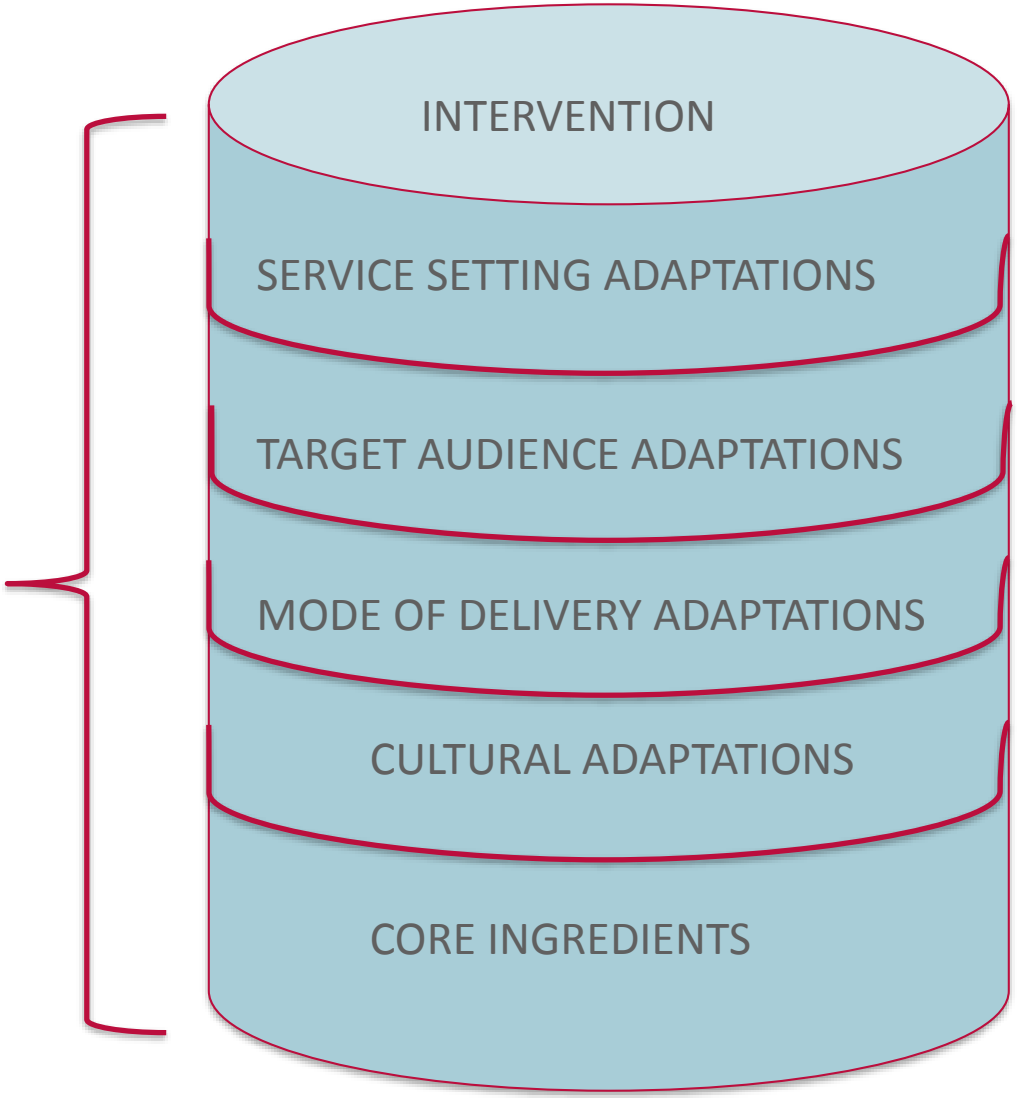


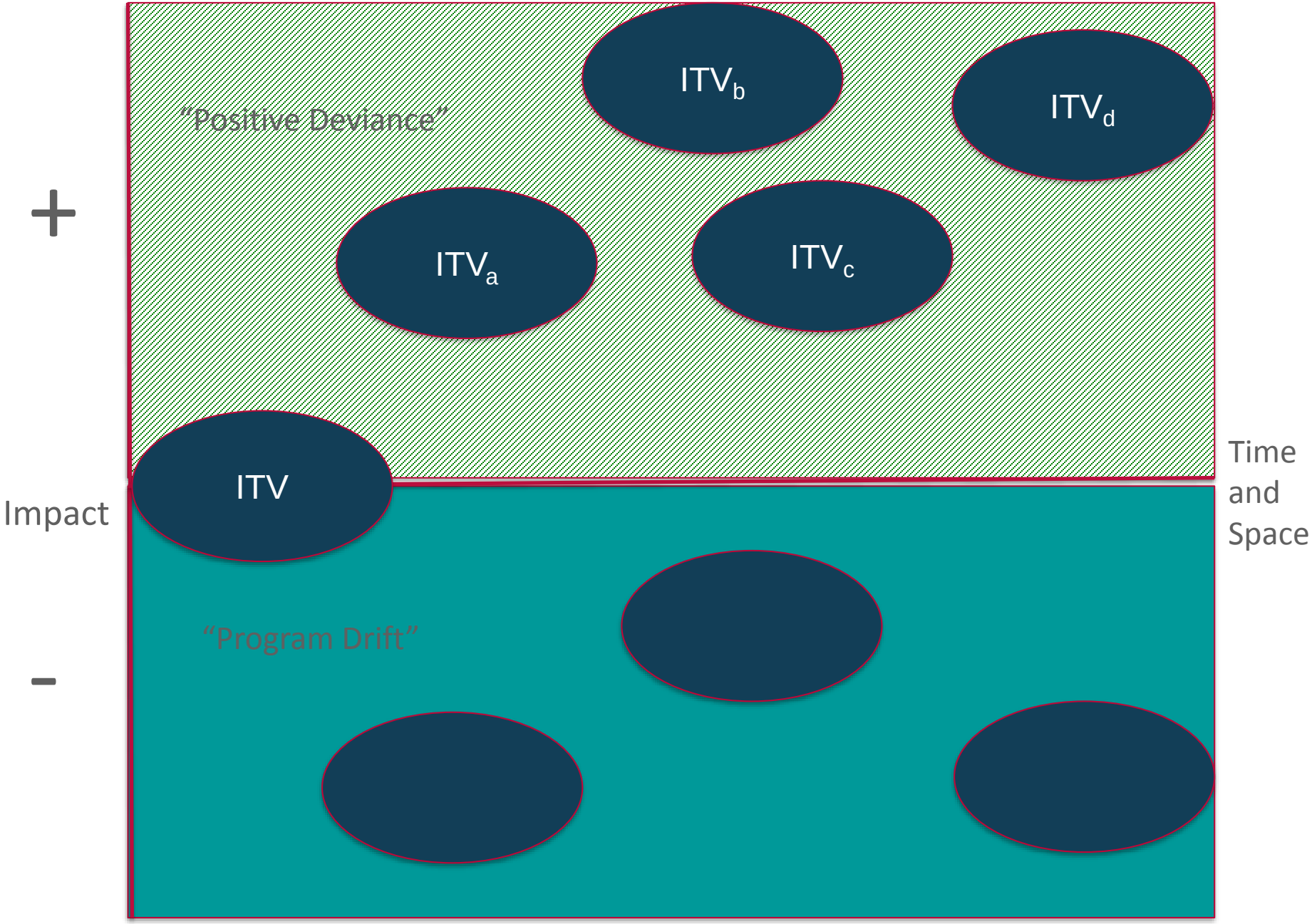
Adaptation is Inevitable…

Fidelity vs Adaptation?

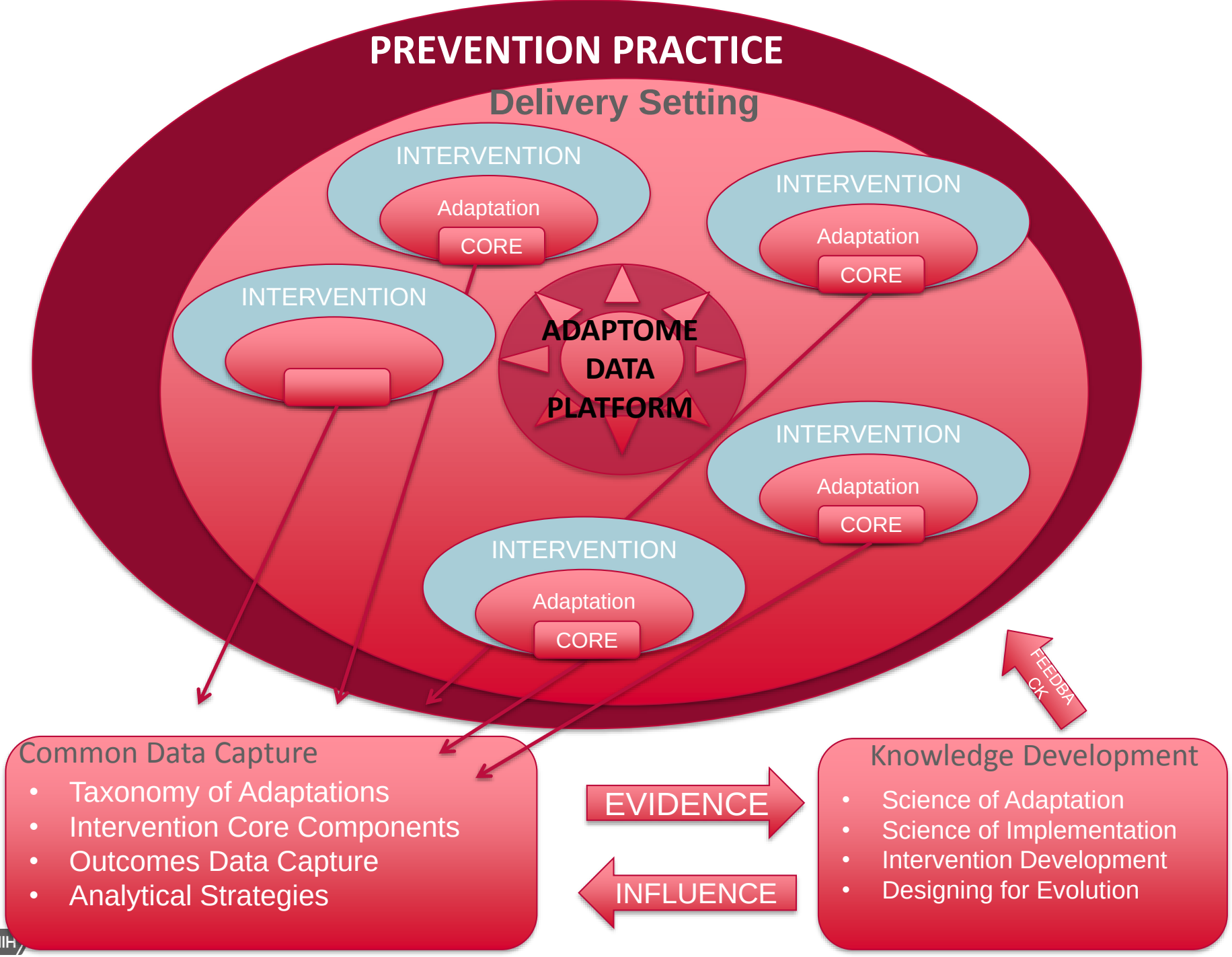
Variable use for variable populations, settings, and purposes…

Sources Of Intervention Adaptation



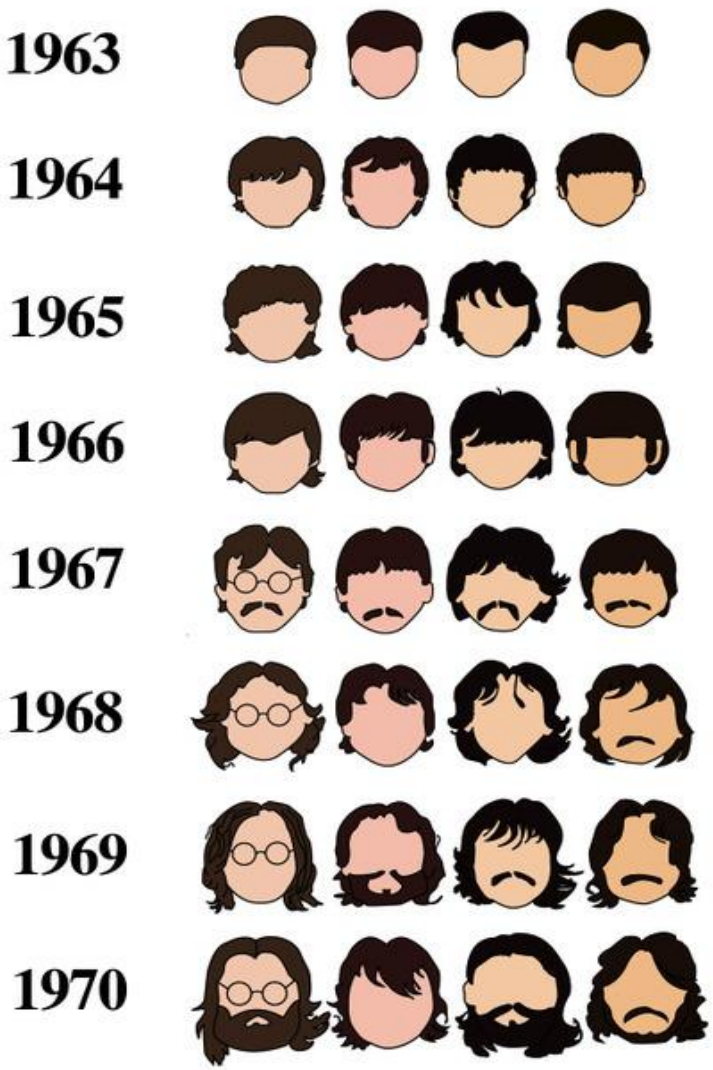


KEY: ITV = Intervention, Time and Space = variability of intervention characteristics over time and setting


PREVENTION PRACTICE
Delivery Setting
INTERVENTION
Adaptation
CORE
INTERVENTION
Adaptation
CORE
INTERVENTION
ADAPTOME
DATA
PLATFORM
INTERVENTION
Adaptation
CORE
INTERVENTION
Adaptation
CORE
FEEDBACK
Common Data Capture
Taxonomy of Adaptations
Intervention Core Components
Outcomes Data Capture
Analytical Strategies
EVIDENCE
INFLUENCE
Knowledge Development
Science of Adaptation
Science of Implementation
Intervention Development
Designing for Evolution

Embracing Dynamism

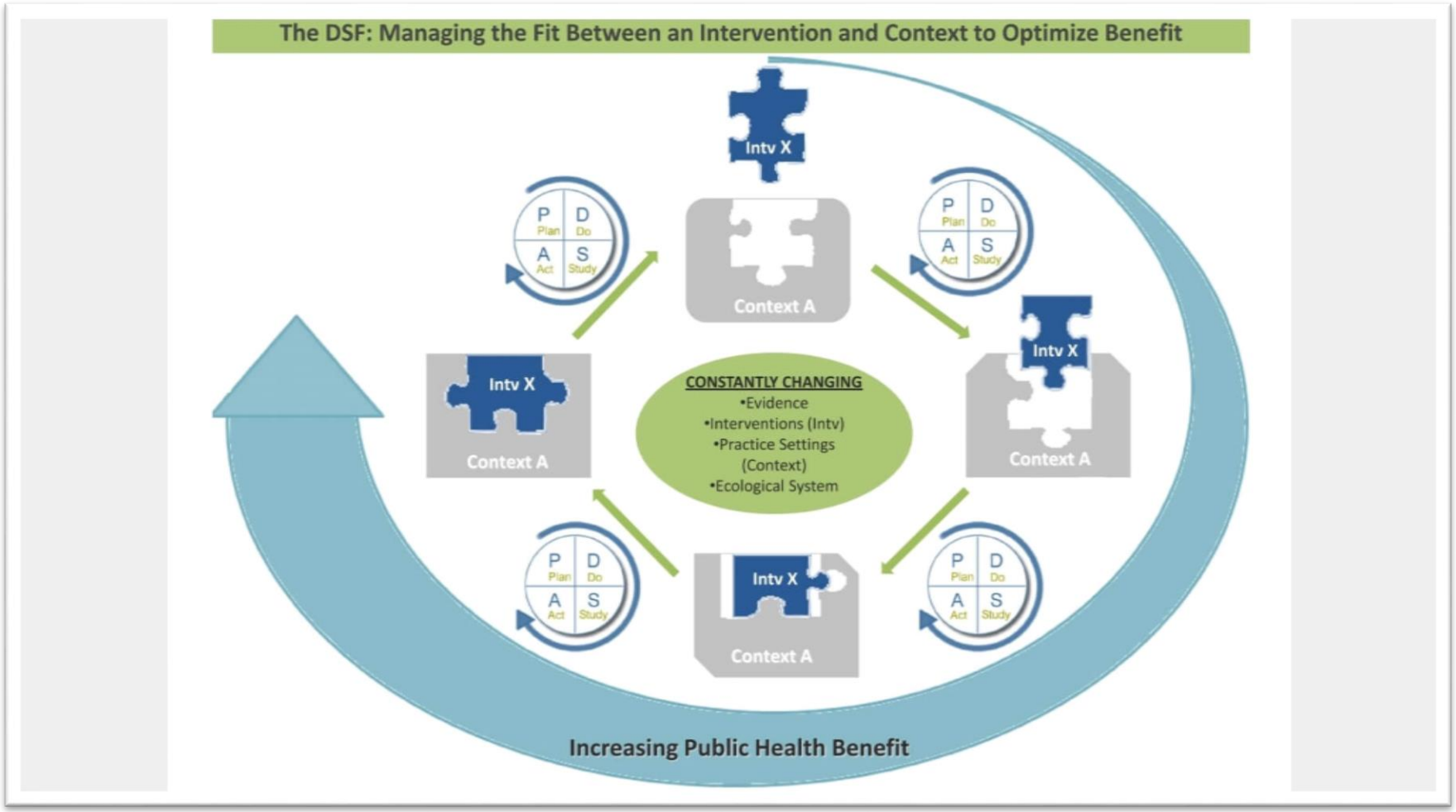
Sustainability or Evolution?



- IF EBPs CONTINUE TO EVOLVE, SHOULD EXISTING INTERVENTIONS BE SUSTAINED IN THE SAME FORM THAT WE'VE CREATED THEM?
- HOW DOES THE SYSTEM COPE WITH A DYNAMIC FIELD THAT IS CONSTANTLY CHANGING?
- WHERE DO WE GO FROM HERE?

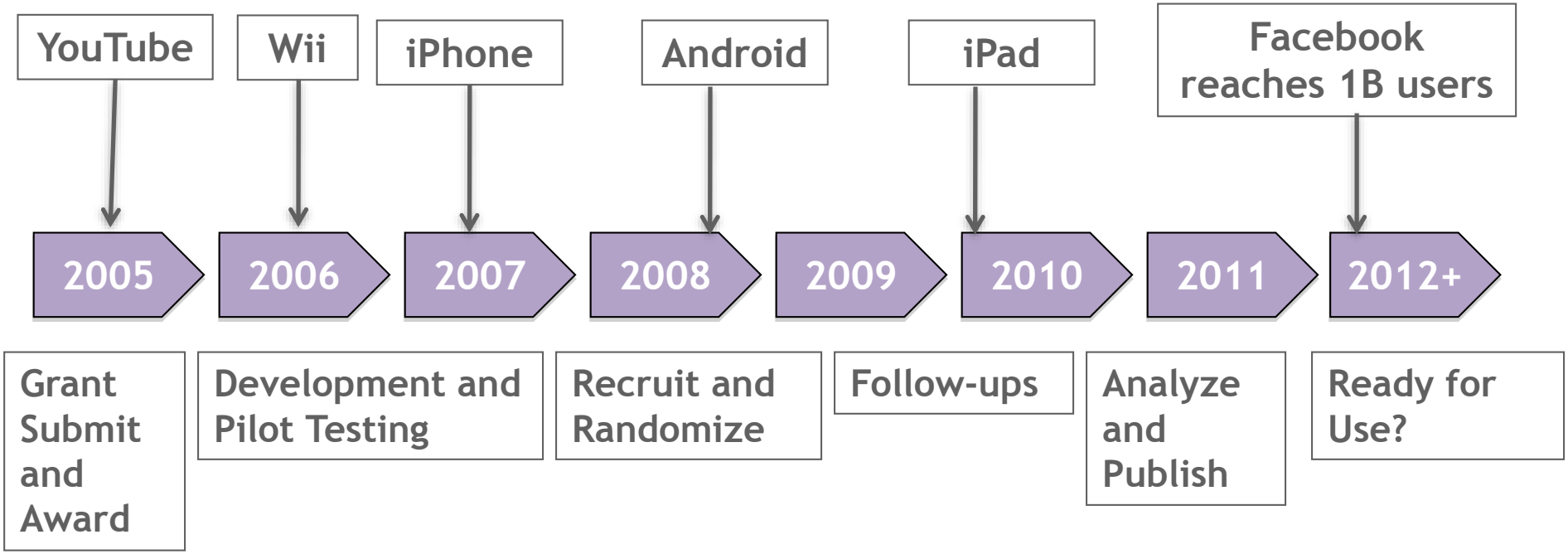
http://www.thestrut.com/2012/12/19/the-evolution-of-the-beatles-hair/

A Dynamic Approach to Sustainability…



Chambers, Stange, & Glasgow, *Implementation Science,* 2013

How to Evaluate Innovations that Outpace Usual Research Timelines?



Adapted from Riley et al, 2013

Imagine a health care system where…

- Decision-making is based on data
- Iteration/ongoing improvement of practices exists
- Shared learning across providers, patients, networks is fostered
- Patients/Consumers are centered and engaged
- Dynamism and complexity is assumed

The planks are being built by researchers…

- Outcome management systems (are the clients/patients/consumers getting better?)
- Quality measurement systems (is the ITV being delivered in a high-quality way?)
- Adaptation Monitoring (How is the delivery of the ITV changing?)
- HC setting monitoring (How is the organization changing over time?)

Enter the learning health care system…

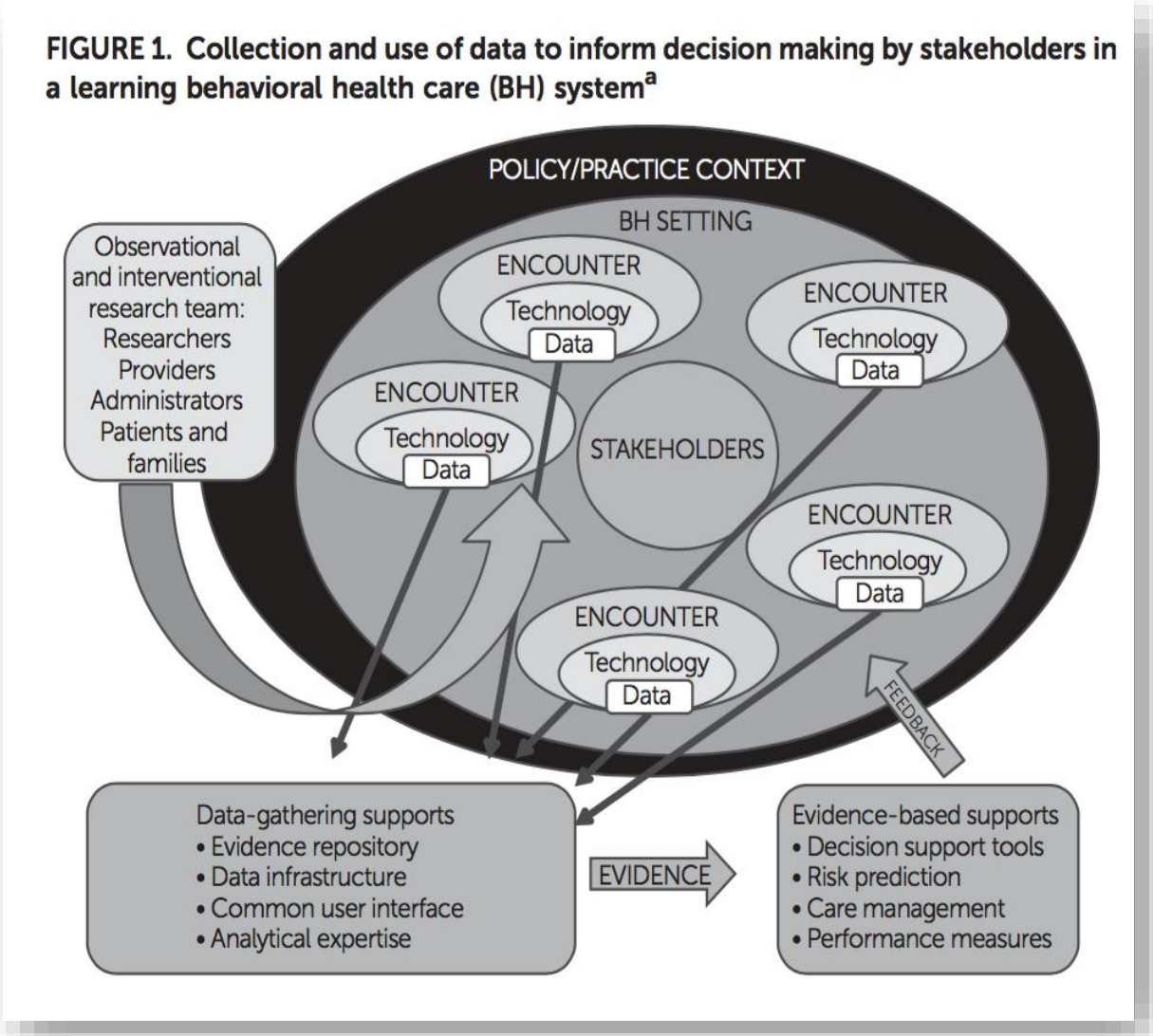
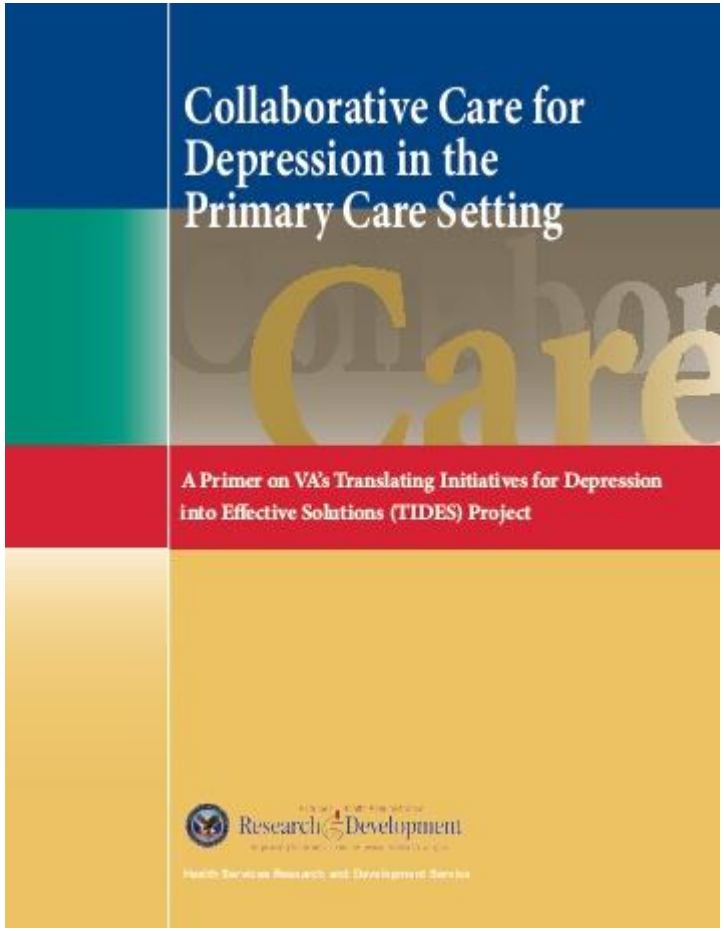


FIGURE 1. Collection and use of data to inform decision making by stakeholders in a learning behavioral health care (BH) system[a]

Stein, Adams, Chambers. *Psychiatric Services,* 2016.

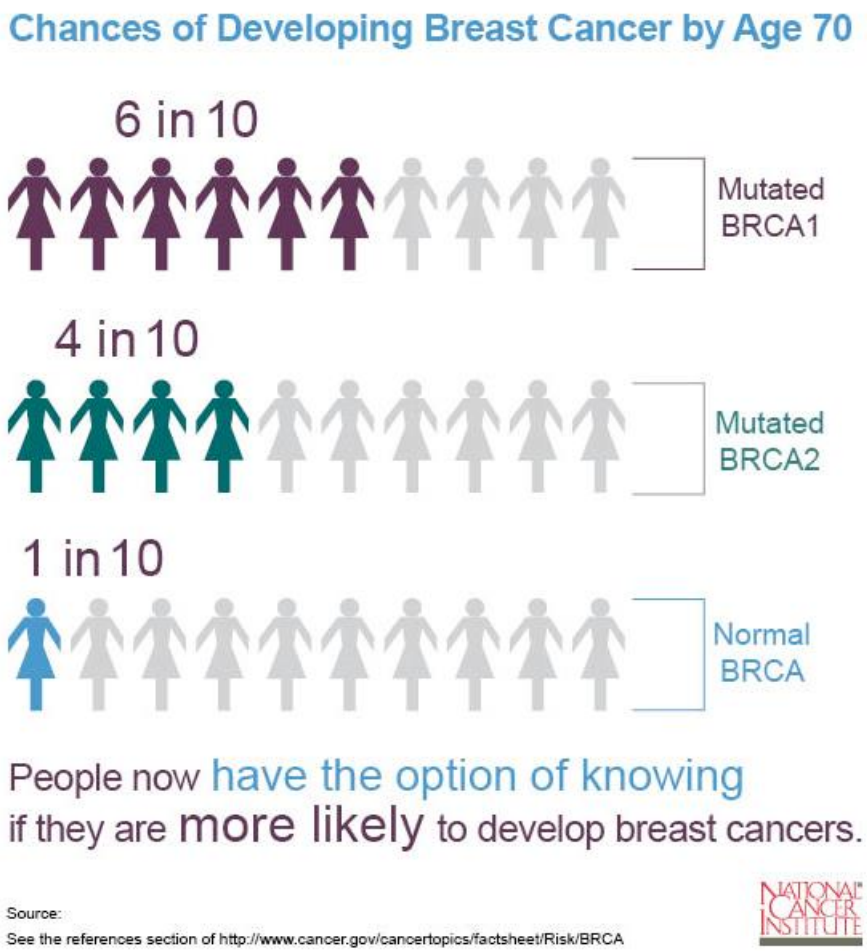
Example: Collaborative Care for Depression



Learning System Opportunities:

- Studying variations in dosage/staffing/monitoring /treatments
- Comorbidities
- Personalizing care based on preferences
- Variable risk prediction

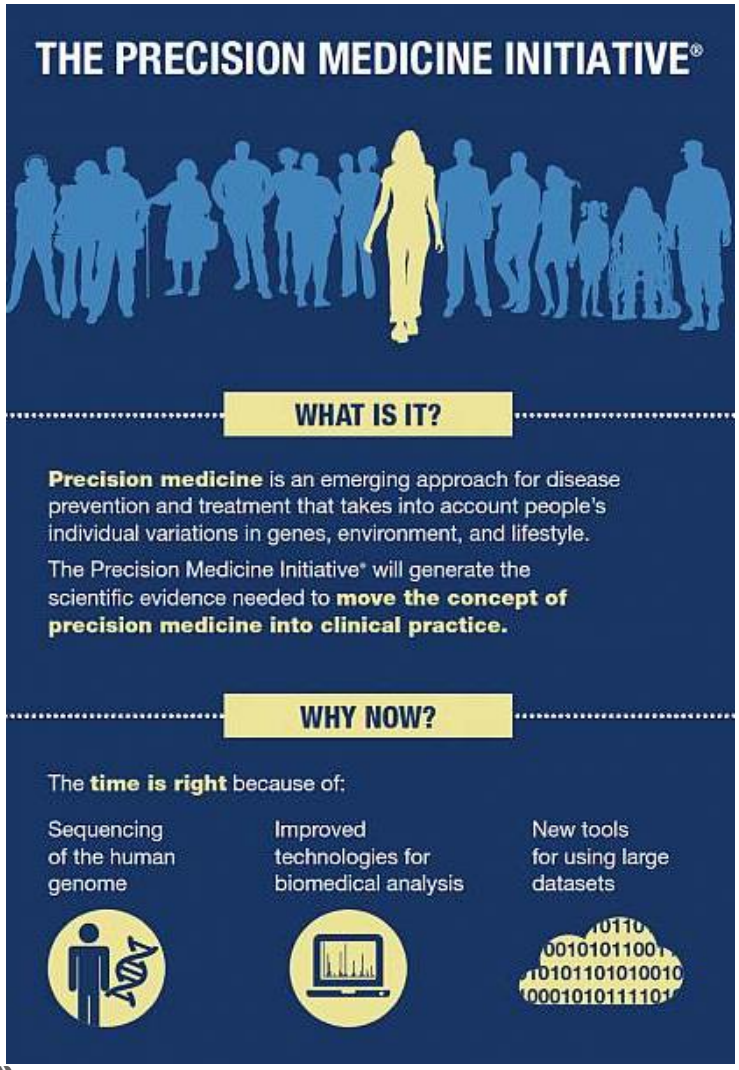
Example Two: BRCA1/2



Learning System Opps:

- ID of BRCA1/2 at pop level
- Family member scale-up
- Implementing screening/ monitoring/ pre-emptive Tx
- Optimizing follow-up
- Integrating other risk factors for decision-making
- Studying variability across systems (e.g. who provides counseling)

Example Three: PMI



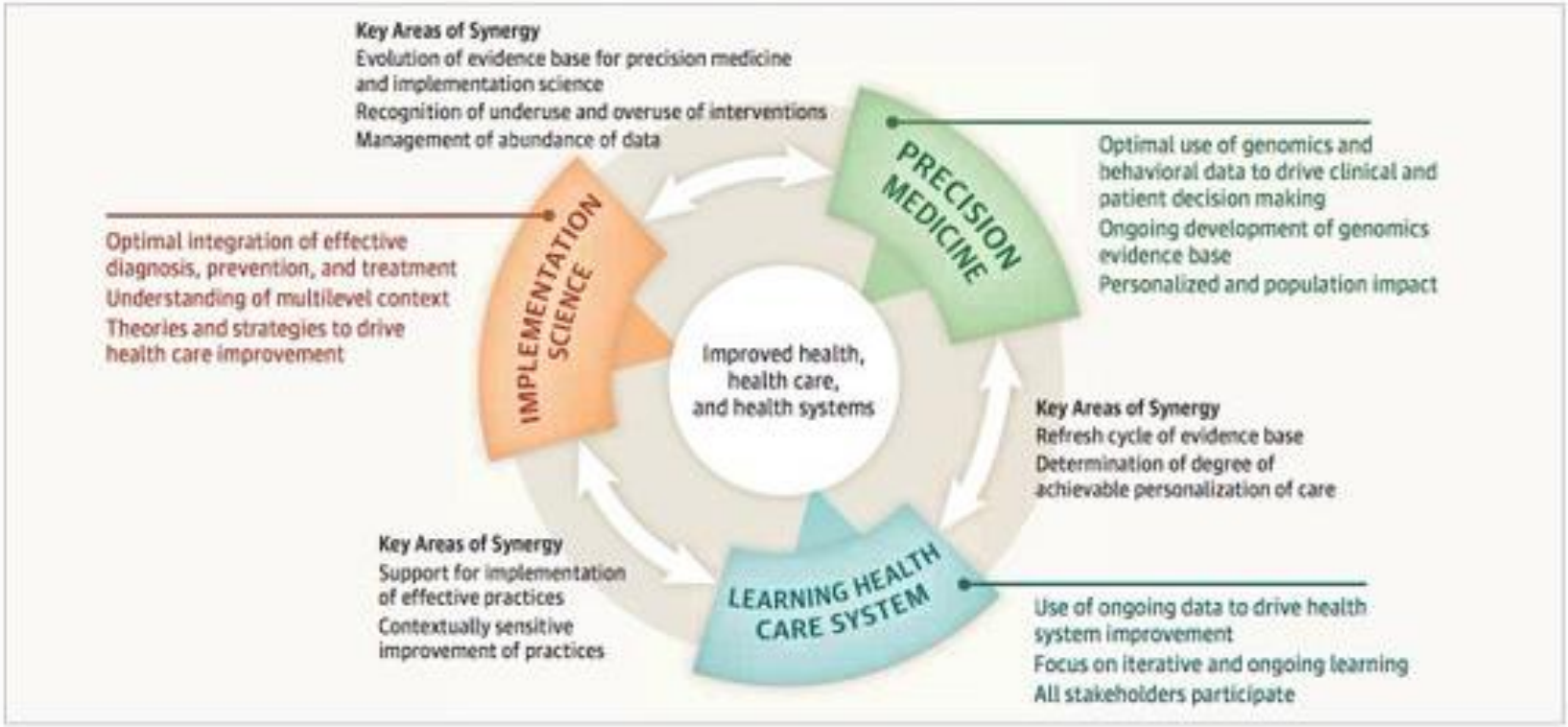
Learning System Challenges

- 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?

- What do you think?

Hope for the future…

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



Chambers DA, Feero WG, Khoury MJ. Convergence of Implementation Science, Precision Medicine, and the Learning Health Care System: A New Model for Biomedical Research. JAMA. 2016 May 10;315(18):1941–2.

OPPORTUNITY

Current Funding Announcements

- NIH: PAR-16-237; 13-238;13-236 (R03, R01, R21)
- NCI leads (16 ICs total, including FIC, NIMH, NHLBI, NHGRI, as well as OBSSR and ODP)
- Organizes the D&I research agenda across NIH
- >150 grants funded through NIH since 2006
- 2010 CSR standing review committee
- Modal Grant—Randomized trial of an implementation strategy for an effective intervention

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

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RESEARCH TO REALITY

JOIN LOGIN

MENU

On De-Implementation

Happy Spring everyone!

After a long and winding wintery season, it's nice to see some generally springy weather reaching many of our communities. As the remnants of record cold and snowfalls start to fade from memory, we find increasing discussion of an area of the implementation life cycle much less represented in our collective research portfolios—de-implementation. De-implementation has been defined as "stopping practices that are not evidence-based" (Prasad & Ioannidis, 2014), but perhaps more comprehensively can be considered the removal of interventions that do not appear to provide optimal care to the population and settings in which they are delivered. This distinction may be

- Overuse of evidence-based practices
- Any use of harmful practices
- Mis-use of evidence-based practices

Learn More

DATE & TIME
December 4-6, 2017

LOCATION
Marriott Crystal Gateway,

Quality research generates the evidence needed to optimize health and health care in the United States and elsewhere. However, the full potential of evidence can only be realized if it is effectively incorporated into health practice and policy.

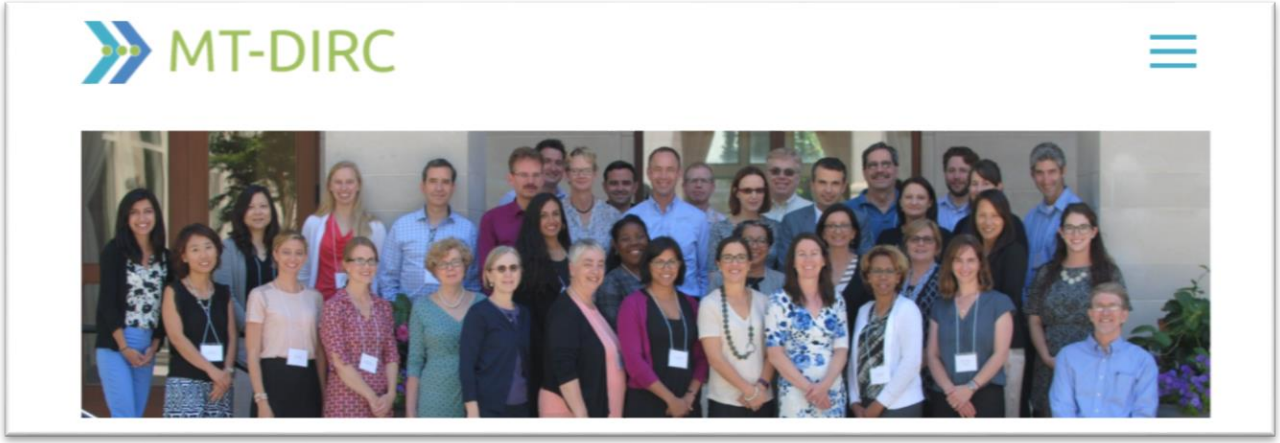
A decade since its inception, the Annual Conference on the Science of Dissemination and Implementation in Health (D&I), co-hosted by the National Institutes of Health (NIH) and AcademyHealth has become the pre-eminent event to bridge the gap between evidence, practice, and policy in health and

10th Annual Conference on the Science of Dissemination and Implementation in Health

2017 D&I Call for Abstracts

http://www.academyhealth.org/events/site/10th-annual-conference-science-dissemination-and-implementation-health

Implementation Science Training…



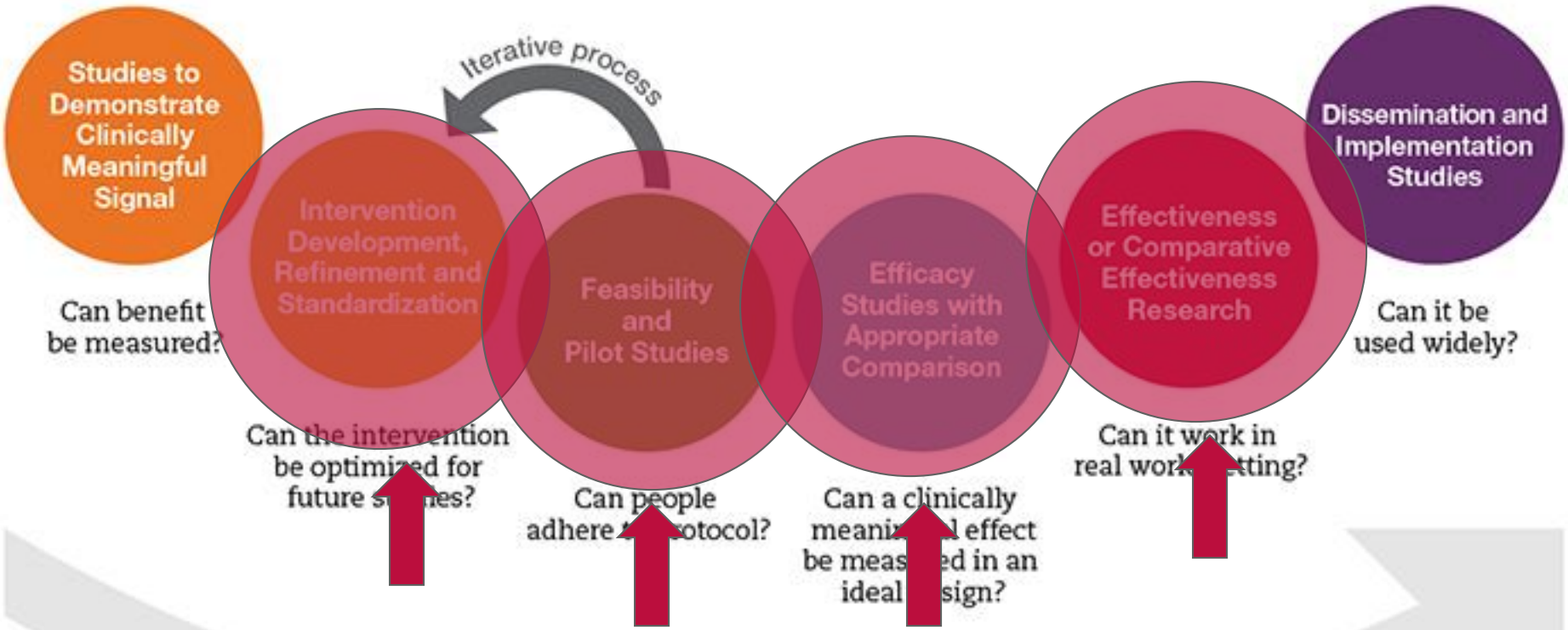
Middle East and North Africa (MENA)
Implementation Science (IS) Training Course - Principles and Practice

Apply Now

Application Opens: 5 July 2016
Application Closes: 1 August 2016 11:59 PM EDT
Questions? Email PEER@nas.edu

Participants form Bangkok 2015 Training Course present the "abc's" of implementation science. (Photo courtesy of Robert Gasior)

Considering D&I earlier



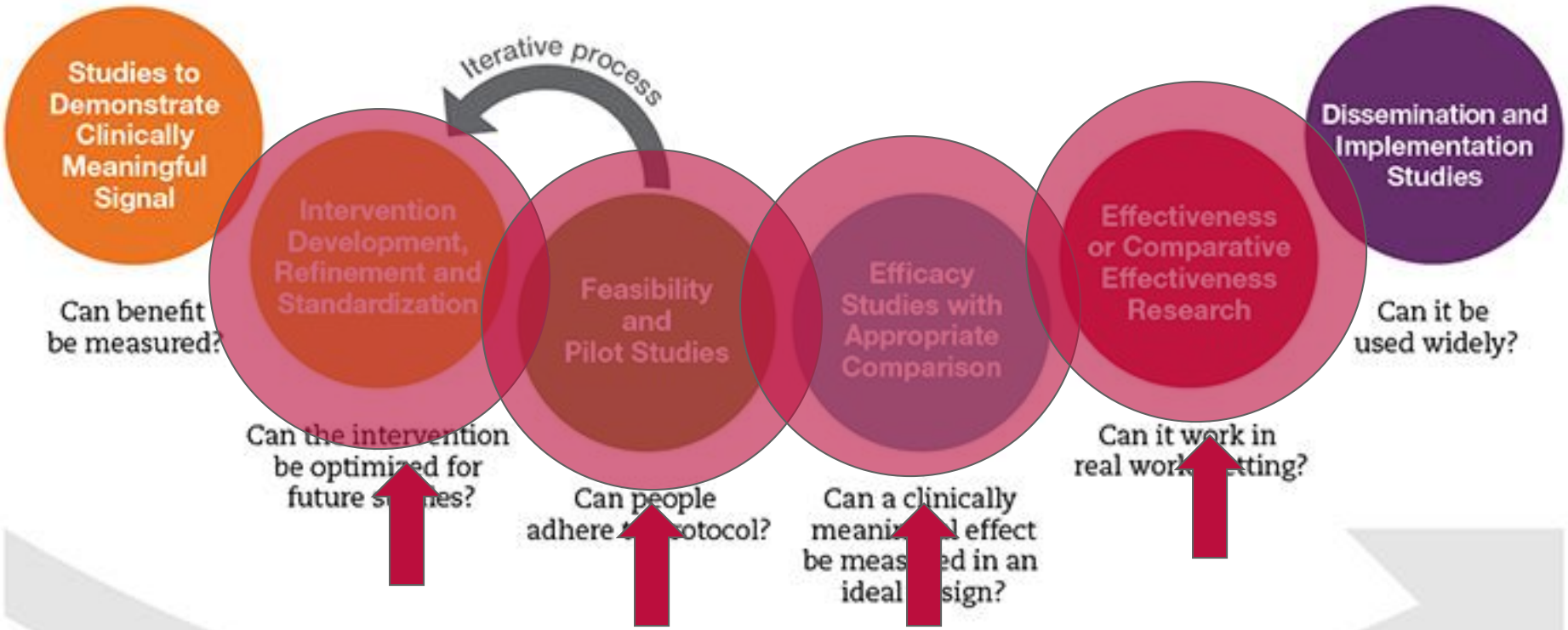
An earlier focus on…

- Who's going to deliver it?
- Fit with ultimate patient population
- Building in tests of training, support, adherence, mediators and moderators to high quality delivery
- Hybrid designs

https://nccih.nih.gov/grants/innovation/framework

Considering D&I earlier

https://nccih.nih.gov/grants/mindbody/framework



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“Designing for Dissemination and Implementation”

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HOME ABOUT THE TEAM PROGRAM APPLICATION BENEFITS

SPeeding Research-tested INTerventions (SPRINT)

What is SPRINT

Discover how this program will expedite the transfer or commercialization of your intervention into practice

LEARN MORE

Ready to Apply?

Apply to be in the first cohort

PROGRAM APPLICATION

On Line
Resources

cancercontrolplanet.cancer.gov

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Cancer Control P·L·A·N·E·T

Plan, Link, Act, Network with Evidence-based Tools

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Cancer Control P.L.A.N.E.T. portal provides access to data and resources that can help planners, program staff, and researchers design, implement and evaluate evidence-based cancer control programs.

DATA

State Cancer Profiles (CDC, NCI)

COLLABORATION

Research to Reality (NCI)

RESEARCH SYNTHESIS

Guide to Community Preventive Services
(Federally Supported)

U.S. Preventive Services Task Force
(Federally Supported)

Evaluation of Genomic Applications

TOPICS

- Breast Cancer
- Cervical Cancer
- Colorectal Cancer
- Diet / Nutrition
- HPV Vaccination
- Informed Decision Making
- Obesity
- Physical Activity
- Public Health Genomics
- Sun Safety
- Survivorship/Supportive Care
- Tobacco Control

WHAT'S NEW

State Cancer Profiles 2013 cancer data
CRC and HPV Learning Communities

E-NEWSLETTER

rtips.cancer.gov

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Research-tested Intervention Programs (RTIPs)

RTIPs - Moving Science into Programs for People

RTIPs Home | RTIPs Archive | Frequently Asked Questions | Fact Sheet | Contact Us | Cancer Control P.L.A.N.E.T. Home

Use the link below to select a number of criteria, and see a list that contains evidence-based programs from several topics.

Select from 171 Evidence-Based Intervention Programs

RTIPs is a searchable database of evidence-based cancer control interventions and program materials and is designed to provide program planners and public health practitioners easy and immediate access to research-tested materials.

Register your program now and be part of the RTIPs Community.

For more information on how to participate in a RTIPs review, read the **RTIPs Submission and Review Process: A Guide for Program Developers**

Search Research to Reality (R2R), NCI's online community of practice that links cancer control practitioners and researchers, for discussions, cyber-seminars, and much more.

New programs on RTIPs:

- Colorectal Cancer Screening
  - ★ -Smart Options for Screening (SOS) (Post date: September, 2016)
- Physical Activity
  - -Increasing Park-Based Physical Activity Through Community Engagement (Post date: August, 2016)
- Survivorship/Supportive Care
  - -Meaning-Centered Group Psychotherapy for Patients with Advanced Cancer (Post date: July, 2016)

★ New evidence-based programs are released periodically. Please check for updates.

News and Announcements About RTIPs

- RTIPs highlighted in the University of Kentucky News

RTIPs and Research Reviews

The Guide to Community Preventive Services evaluates the effectiveness of types of interventions (as opposed to individual programs) by conducting systematic reviews of all available research in collaboration with partners. The Task Force on Community Preventive Services then uses the systematic review

Tools Available:

- Putting Public Health Evidence in Action: The Cancer Prevention and Control Research Network (CPCRN) has created an interactive training curriculum to support community program planners and health educators in developing skills in using evidence-based approaches.

Research to Reality: NCI's online community of practice. A "living lab" for implementation science.

R2R engages its community in a **collaborative effort to implement evidence-based interventions.**

- Learning Communities
- Monthly cyber-seminars
- Discussions
- Cross-walks with RTIPs
- Research/Practice/Policy Connections

Robust community of more than 2,300 cancer control practitioners, researchers, students and clinicians.

In 2014, R2R had 80,000 page views (3,200 average monthly views)

- **33% of discussions are community-driven;**
- **73% of discussion posts generate comments**

https://researchtoreality.cancer.gov

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