

# *An Introduction to Implementation Science*

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11<sup>th</sup> Genomic Medicine Meeting, La Jolla, CA

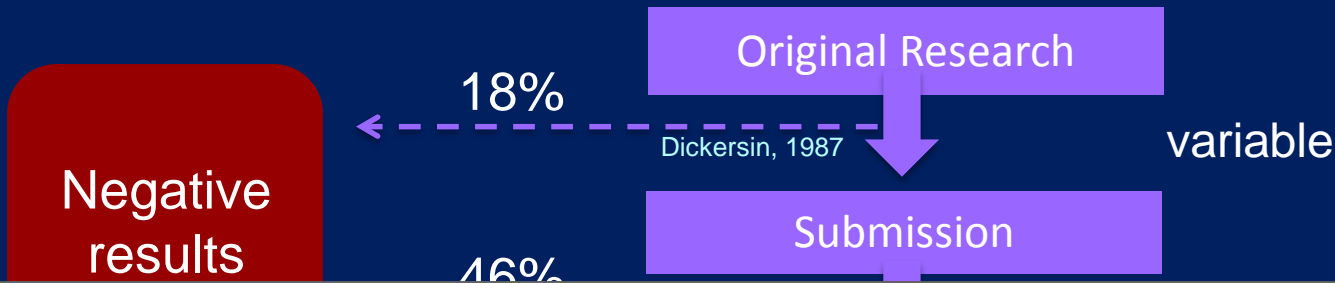
September 5, 2018

# Presentation Outline

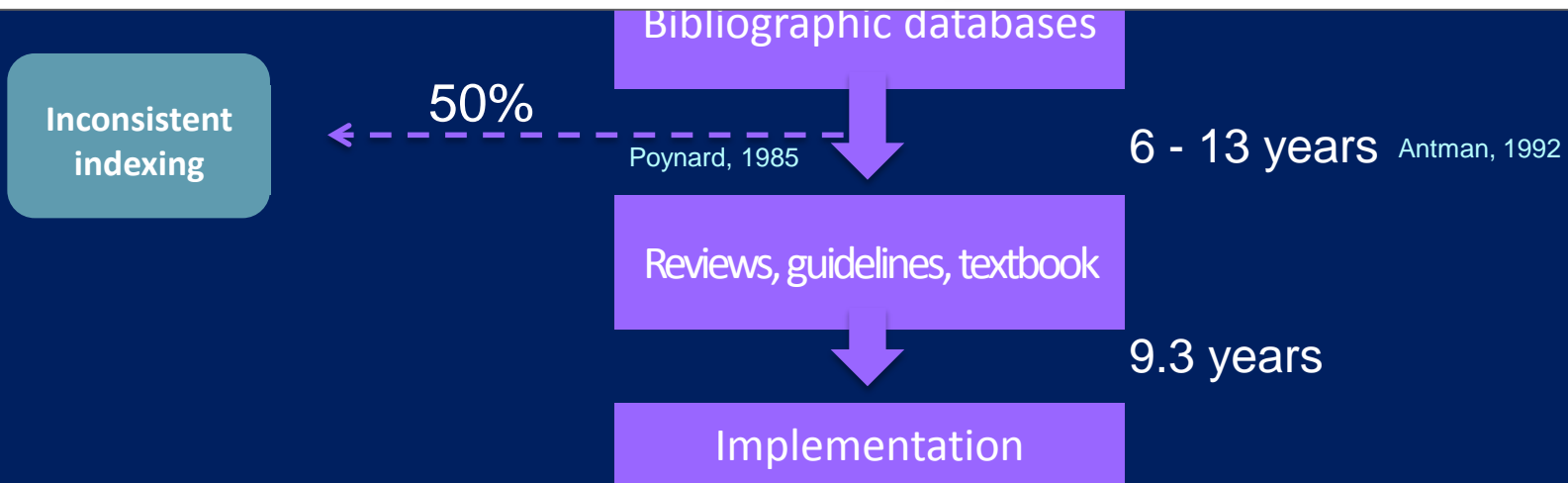
- What is Implementation Science and How Does it Relate to Genomic Medicine?
- Key IS Activities/Resources
- Where the field is moving...
- Summary: Exciting times ahead!

# "PUBLICATION PATHWAY"

Balas & Boren, 2000



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



# The fish-bicycle conundrum...



Ref: Paraphrased from Irina Dunn, 1970

# Beyond The Test Itself...

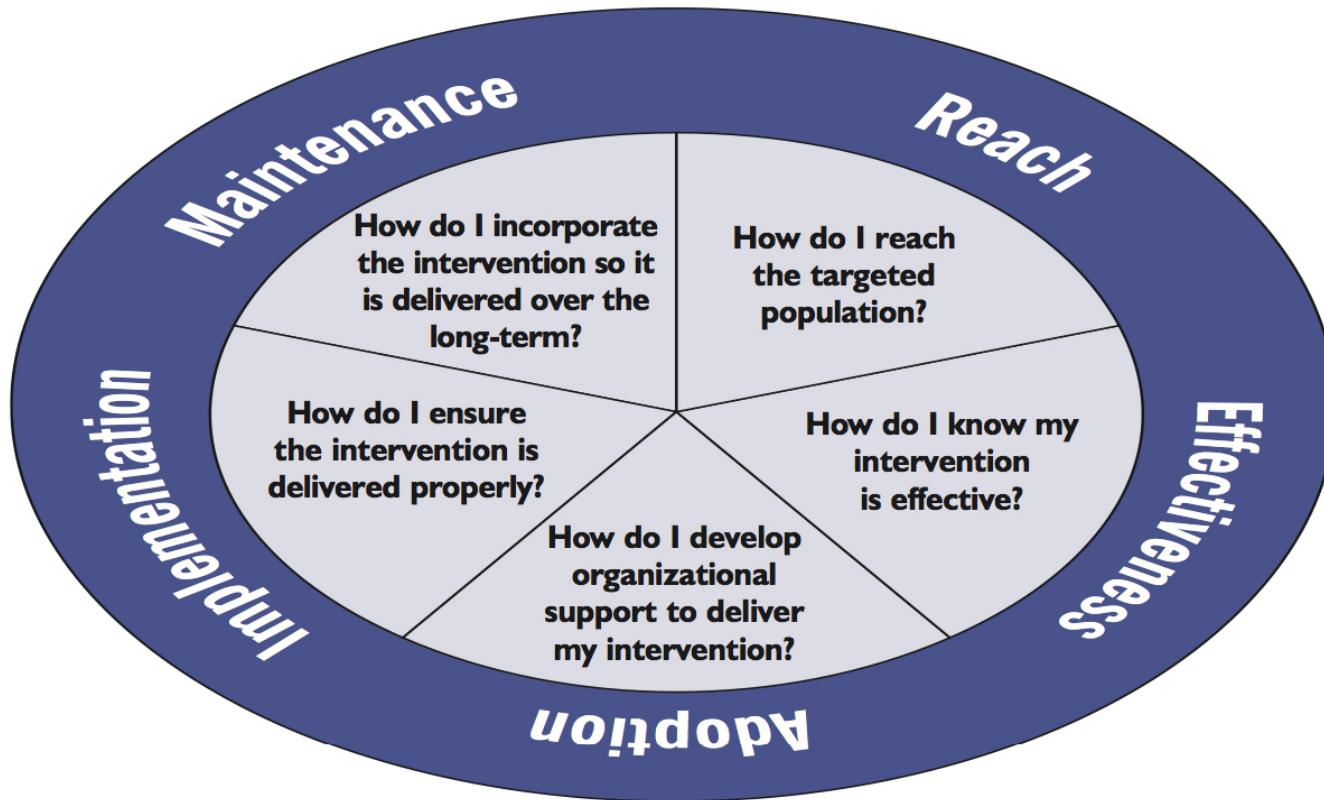
- Even if a genetic test can identify optimal treatment for a specific illness or reduce risk for health problems, if:
  - Only half of insurers choose to provide it
  - Half of health systems choose to train clinicians to prescribe it
  - Half of the clinicians at those systems prescribe it
  - Half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

(Assuming perfect access/testing/follow-up)

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

# Beyond efficacy/effectiveness

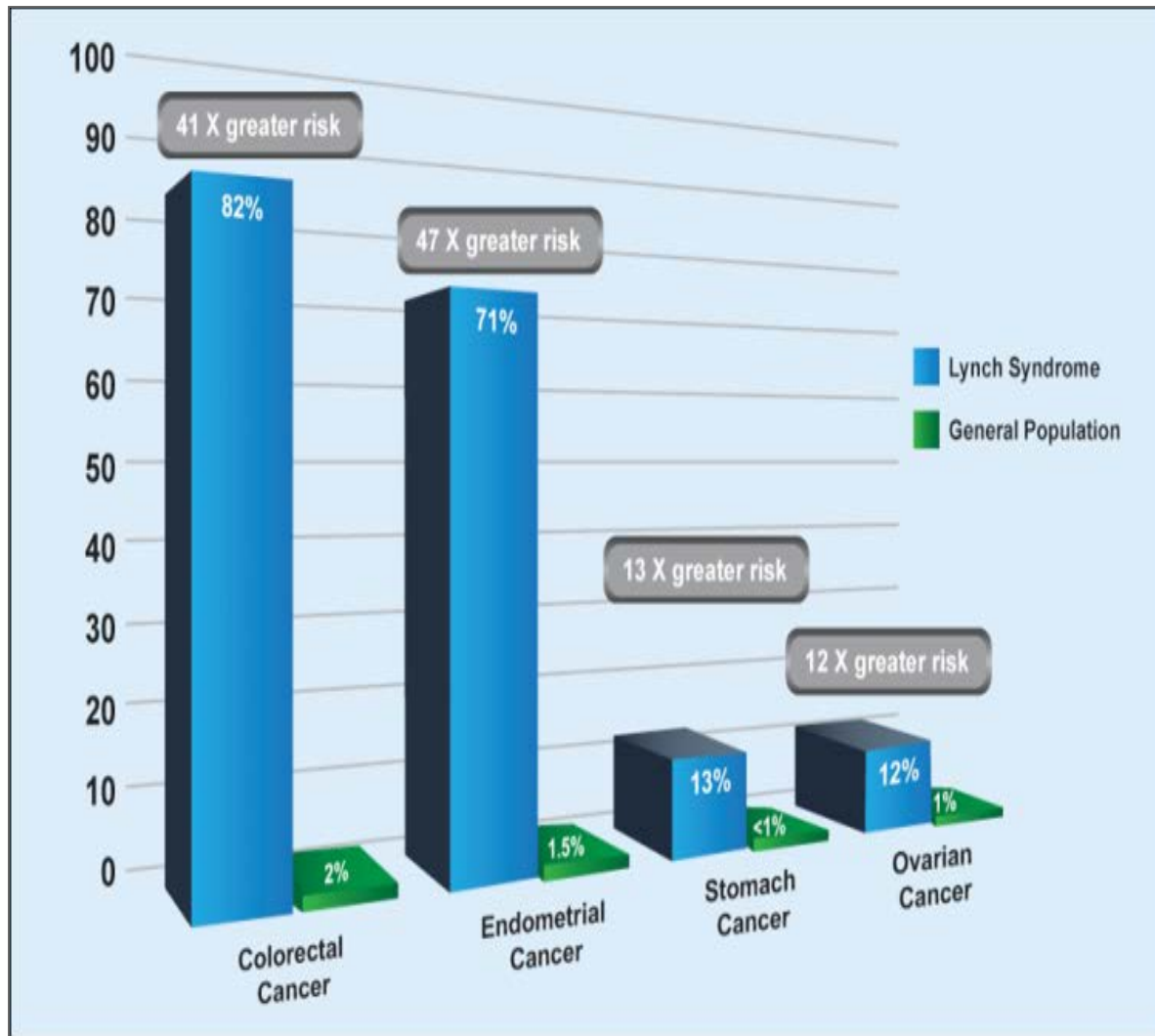
**FIGURE 1. Elements of the RE-AIM Framework**



# 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.

# 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  
All of Us Research Program

ABOUT ▾

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NEWS, EVENTS, & MEDIA

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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?)

Diagnostician(s)

Pediatrics

County Services  
(Infant &  
Toddlers)

Lawyers

Educational  
System

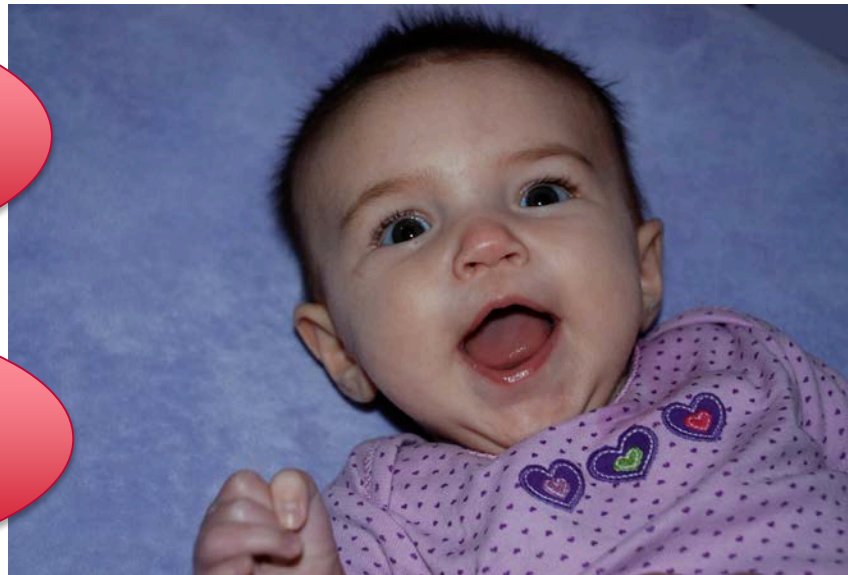
Equipment  
Manufacturers

Behavioral  
Analysts

Public/Private  
Therapist(s)

Physician  
Specialists

Insurance  
Companies



# Who is ultimately in charge of implementation?

Diagnostician(s)

Pediatrics

County Services  
(Infant &  
Toddlers)

Lawyers

Educational  
System

Equipment  
Manufacturers

Behavioral  
Analysts

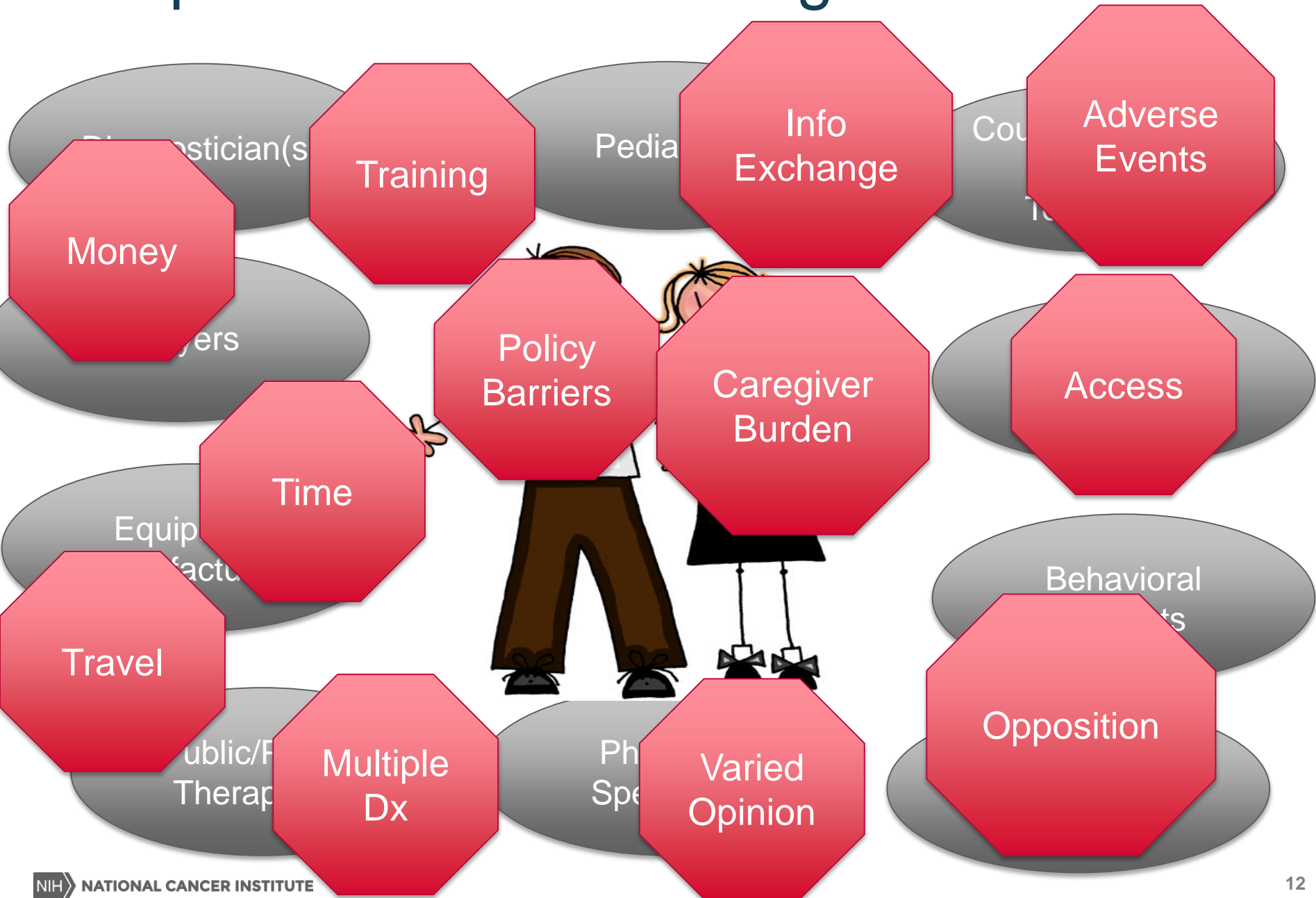
Public/Private  
Therapist(s)

Physician  
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# Implementation Challenges Abound...

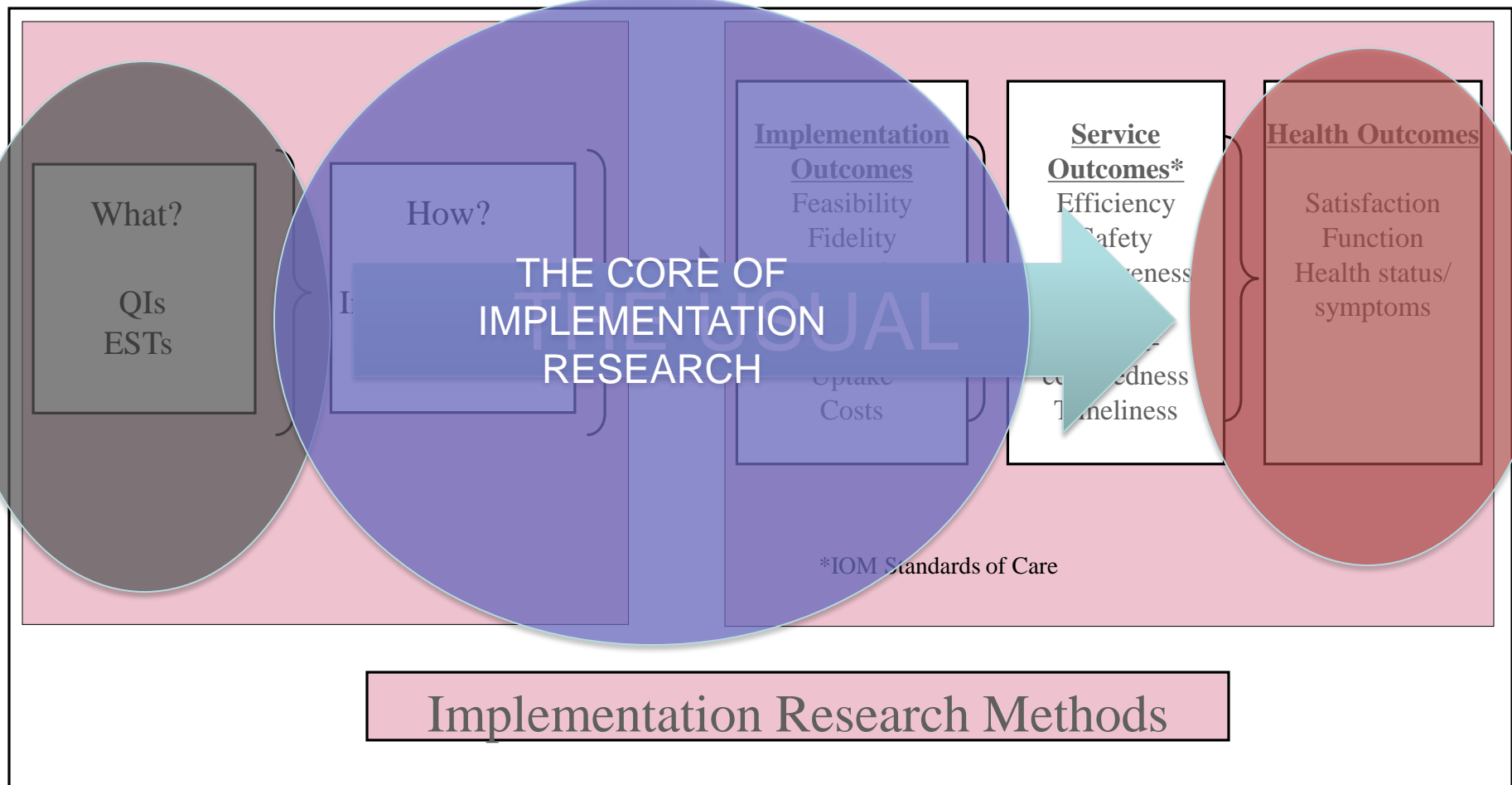


# The Importance of What...

What is the intervention that needs to be implemented?

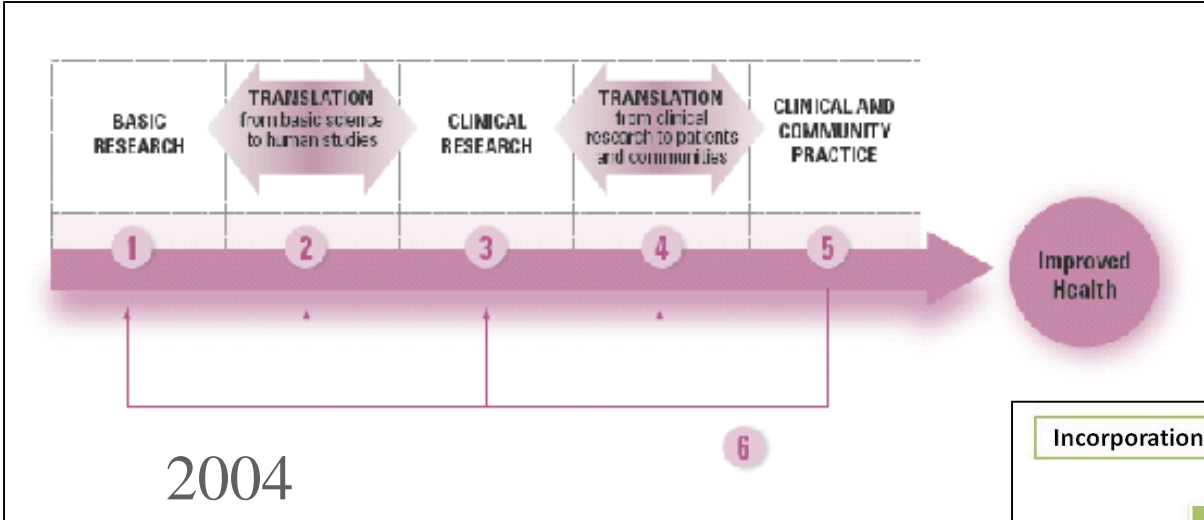
- A. Genetic/genomic tests
- B. Information Dissemination/educational intervention
- C. Monitoring and Follow-up
- D. Preventive Care
- E. Treatment
- F. All of the above?

# Studying Implementation

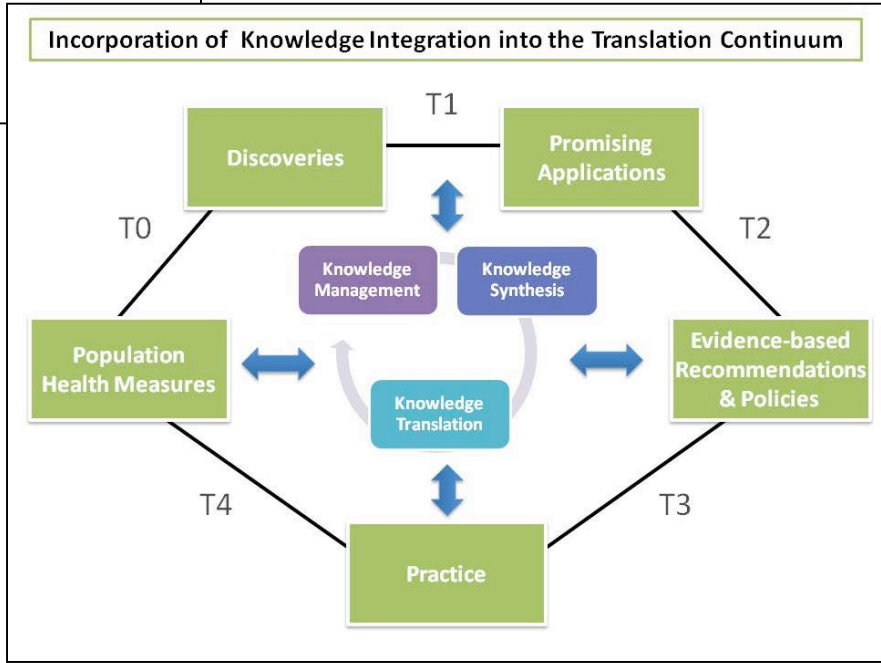
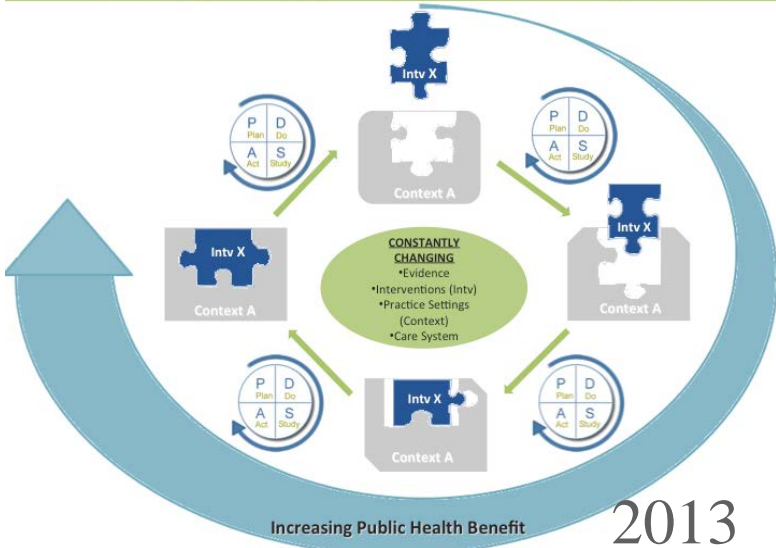




# The Current Paradigms for D&I Science



The DSF: Managing the Fit Between an Intervention and Context to Optimize Benefit

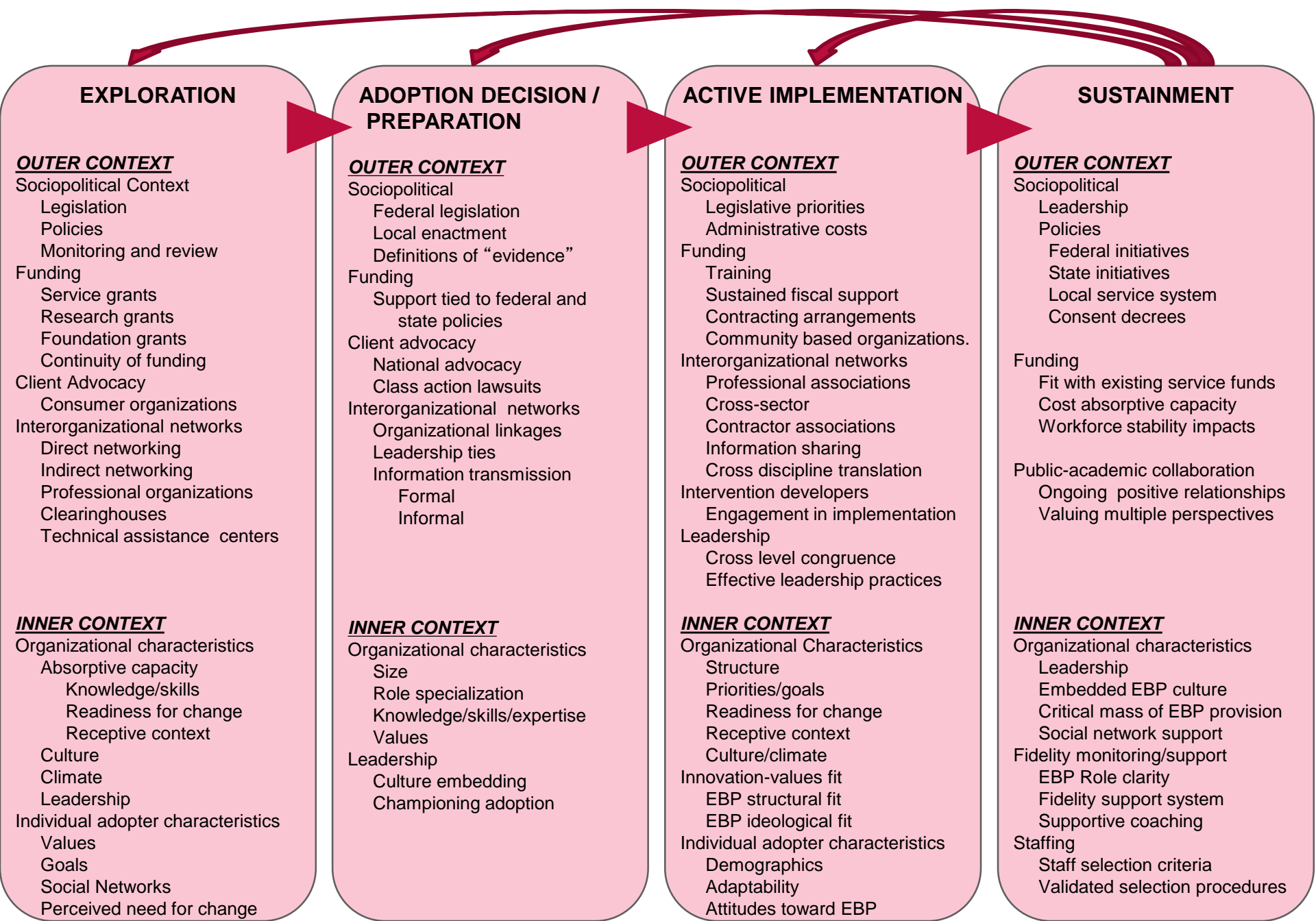


# Tabak et al. review of Implementation Science Models

- 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





# 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...



September 16, 2016 – December 13, 2016



Washington, D.C.



National Heart, Lung,  
and Blood Institute

**Research Career Development  
Programs in T4 Implementation  
Research (K12)**



APPLICATIONS NOW BEING  
ACCEPTED!



TRAINING INSTITUTE FOR DISSEMINATION  
AND IMPLEMENTATION RESEARCH IN CANCER

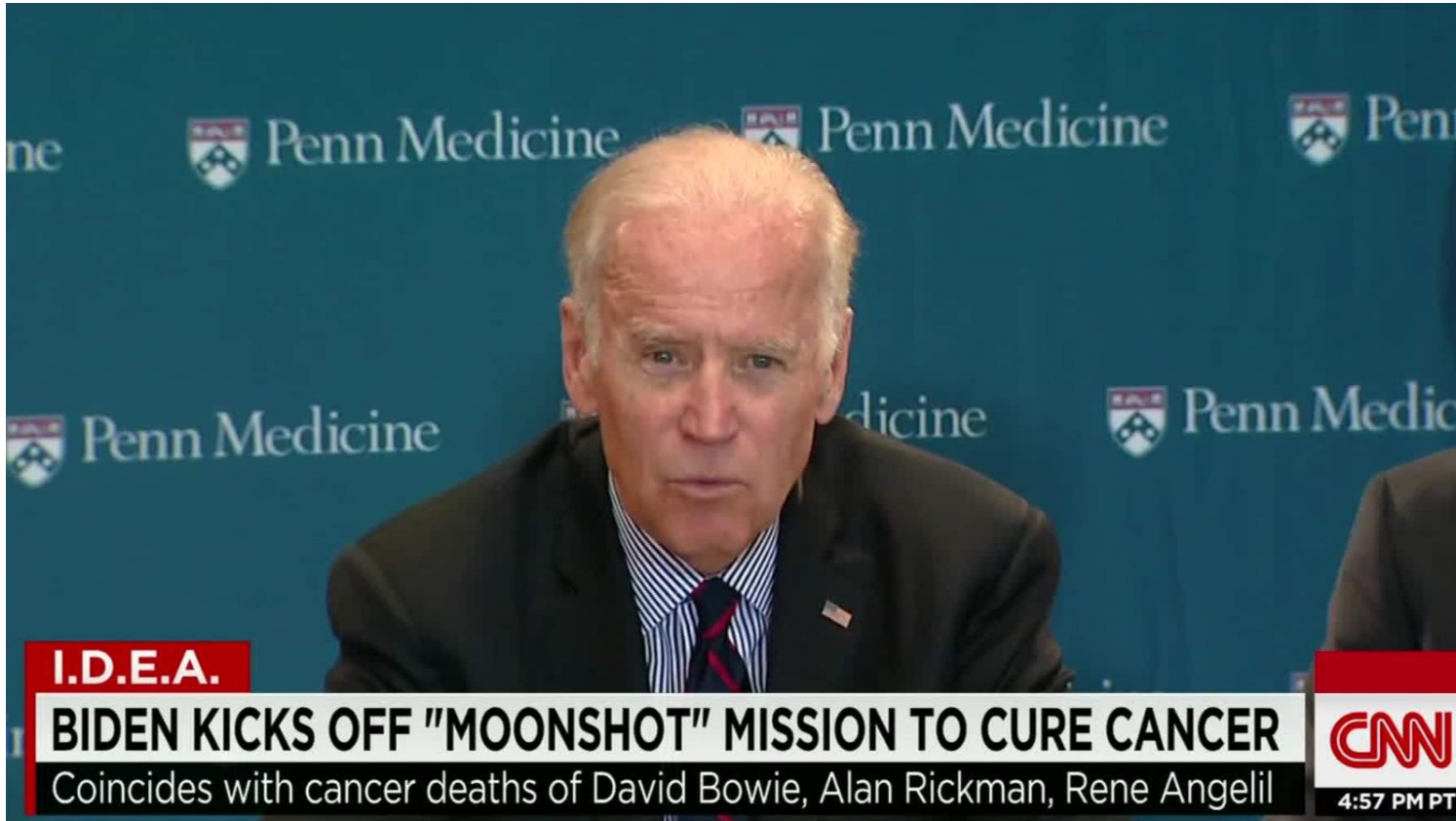
ALL MATERIALS DUE FEB. 9, 2018

The screenshot shows the AcademyHealth website with the following elements:

- Header: AcademyHealth logo, navigation links (Career Center, My Account, Contact, Member Login), and a search bar.
- Secondary Navigation: Evidence, Membership, Professional Resources, Events (highlighted), Advocacy, Blog, About.
- Main Content Area: A large image of a conference audience with the title "11th Annual Conference on the Science of Dissemination and Implementation in Health" and subtitle "Scaling up Effective Health and Healthcare: Advancing the Research Agenda and Necessary Infrastructure".
- Call to Action: A green "Learn More" button.
- Event Details: "DATE & TIME December 3-5, 2018" and "LOCATION Renaissance Washington D.C.".
- Share Section: "SHARE" with social media icons for Facebook, Twitter, LinkedIn, and Email.
- Additional Links: "Call for Abstracts" and "What to Expect" links.

<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

Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes 

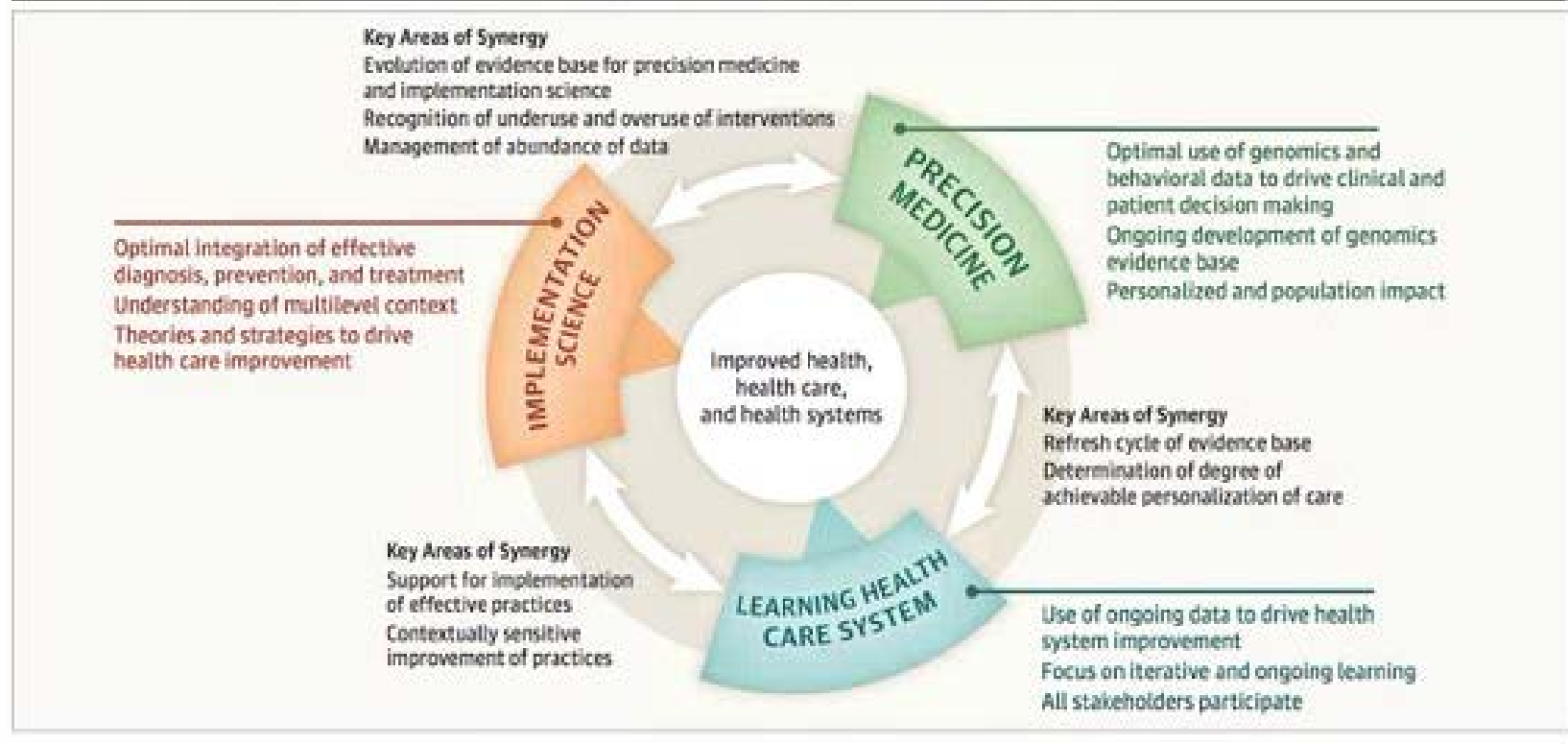
## Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes



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

# Hope for the future...

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



Chambers DA, Fears WG, Khoury MJ. Convergence of Implementation Science, Precision Medicine, and the Learning Health Care System. *Journal of the American Medical Association*. 2016;316(12):1281-1282.



# The Implementation Journey Continues...



**THANK  
YOU**

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