CDC Division of Nutrition, Physical Activity, and Obesity Monthly Webinar

Leveraging Implementation Science for Public Health Impact: Tools and Resources

Margaret M. Farrell MPH RD
Public Health Advisor
Implementation Science team
Division of Cancer Control and Population Science
July 2019

NIH NATIONAL CANCER INSTITUTE

“Public health is hard.
*Learning about implementation science can help.”**

*Inspiring Change: Creating impact with evidence-based implementation. The Center for Implementation

Overview of Presentation

1. *What is Implementation Science and why is "everyone" talking about it?*
2. *Identify key several implementation science frameworks, models, and measures*
3. *Explain how implementation science can help inform public health practice*

Rapidly Maturing Field of Implementation Science

https://cancercontrol.cancer.gov/IS/

Rapidly Maturing Field of Implementation Science

"Letting it happen"

Diffusion

Passive, unplanned, and untargeted spread of information

"Helping it happen"

Dissemination

Targeted distribution of information and intervention materials to a specific audience

"Making it happen"

Implementation

Use of strategies to adopt and integrate interventions and change practice patterns in specific settings

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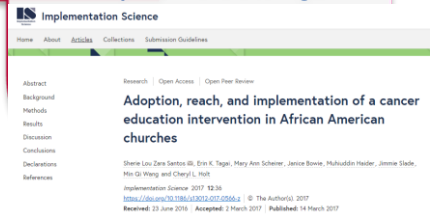

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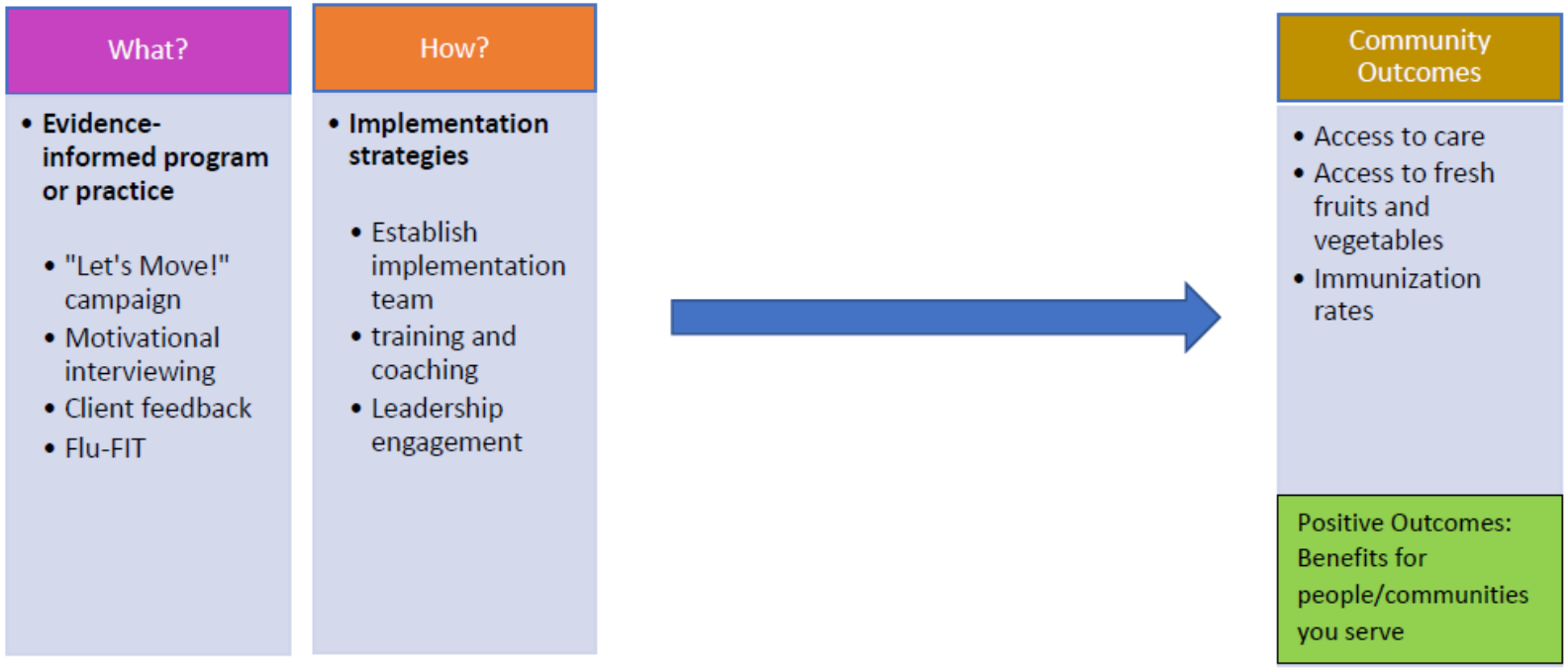
Key Terms

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.
- ***Knowledge Translation*** is the process of converting scientific and technically complex research into everyday language and applicable actionale concepts in the practice setting.

Evidence-based Public Health Practice (Typical)



Evidence-based Public Health Practice (Typical)

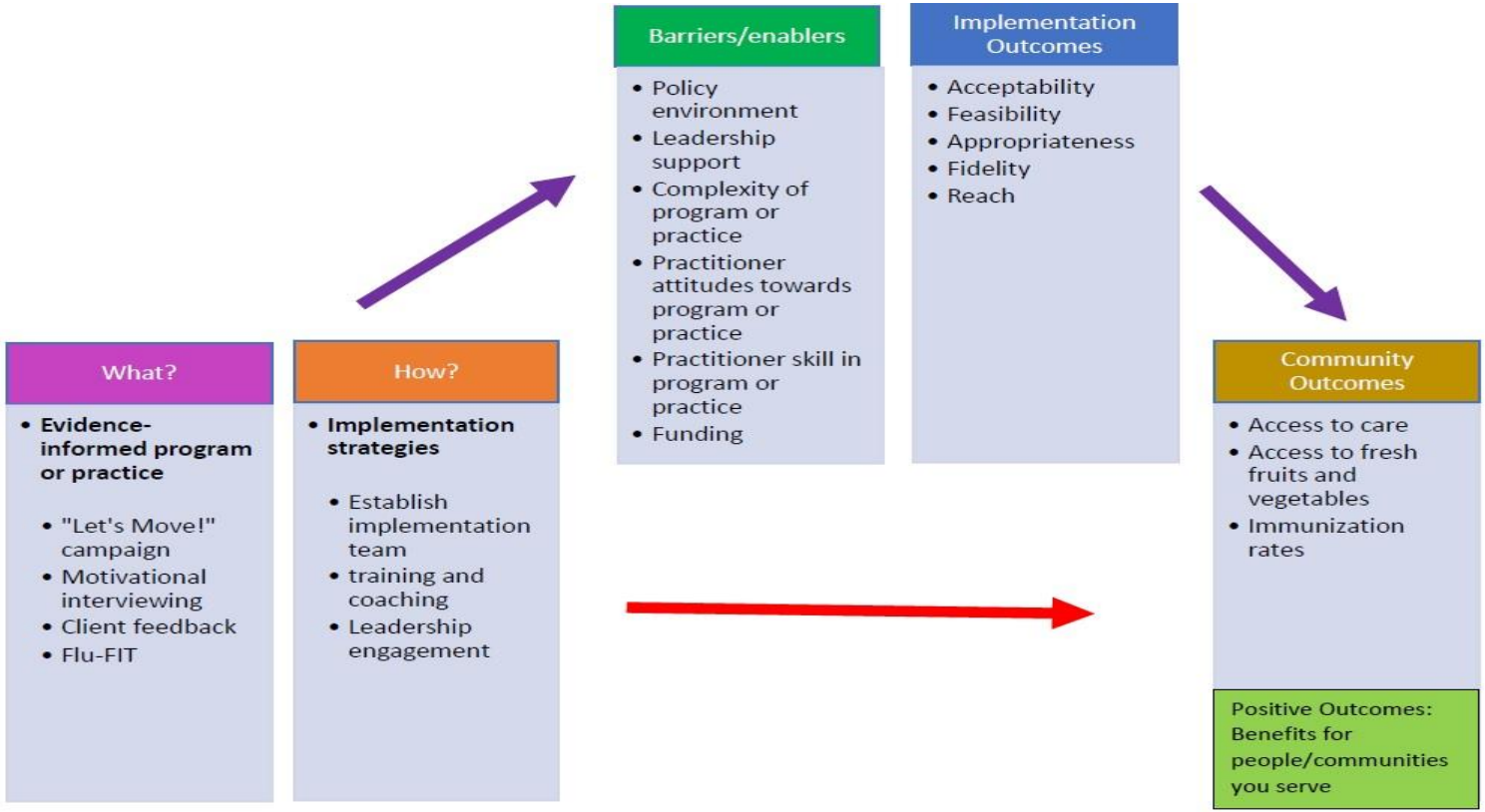
What?	How?
• **Evidence-informed program or practice** • "Let's Move!" campaign • Motivational interviewing • Client feedback • Flu-FIT	• **Implementation strategies** • Establish implementation team • training and coaching • Leadership engagement

Community Outcomes

- Access to care
- Access to fresh fruits and vegetables
- Immunization rates

Positive Outcomes: Benefits for people/communities you serve

Looking at “What?” and “How” of Implementation to Inform Practice

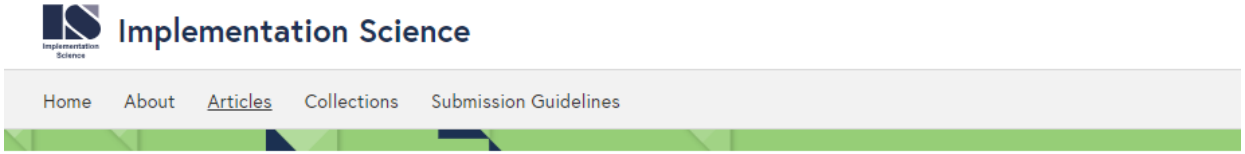


Adapted from Implementation Science at a Glance (2019), Lewis (2017), Lyon and Bruns (2019), Proctor et al (2011)

Understanding public health practice drives stronger implementation science

- Missing the intermediate outcomes between implementing an evidence-based intervention and achieving health outcomes
- Need to understand how specific strategies were effective at moving evidence-based practice into routine setting
- Contribute to knowledge base to then generalize to other contexts

Implementation Science & Public Health: Rich and Growing



Abstract
Background
Methods
Results
Discussion
Conclusion
Declarations
References

BMC Public Health. 2018; 18: 498.
Published online 2018 Apr 13. doi: 10.1186/s12889-018-5403-z
PMCID: PMC5899408
PMID: 29653529

Scale-out of a community-based behavioral intervention for childhood obesity: pilot implementation evaluation

William J. Heerman,[1] David Schludnt,[2] Dawn Harris,[1] Leah Teeters,[3] Rachel Apple,[4] and Shari L. Barkin[1]

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Implementation Science & Public Health: Rich and Growing

Implementation Science & Public Health: Rich and Growing

Implementation Science

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PCD SEARCH

CDC A-Z INDEX

Preventing Chronic Disease

CDC

Dissemination and Implementation Science for Public Health Professionals: An Overview and Call to Action

ESSAY – Volume 15 – December 20, 2018

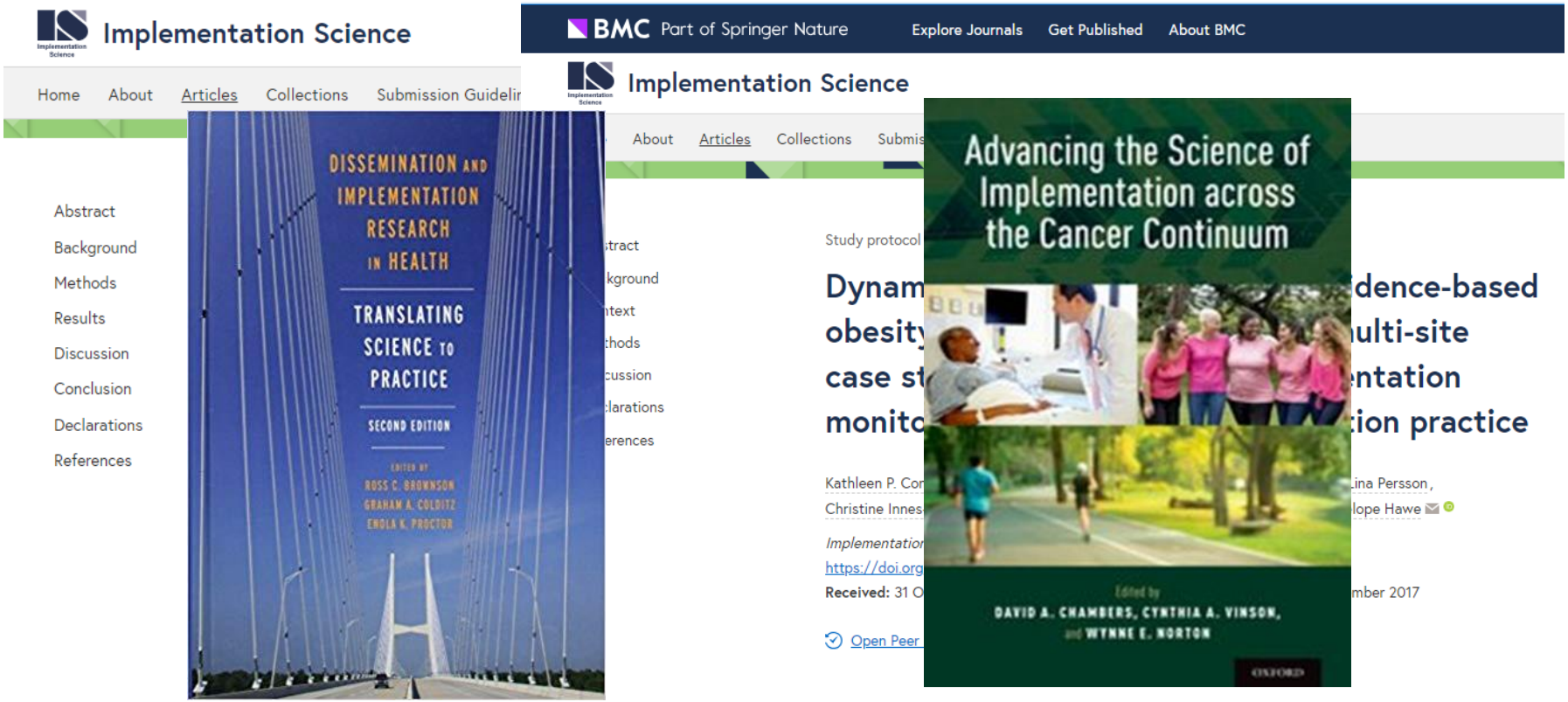
Format: Select One

Paul A. Estabrooks, PhD[1]; Ross C. Brownson, PhD[2,3]; Nicolaas P. Pronk, PhD[4,5] (View author affiliations)

Suggested citation for this article: Estabrooks PA, Brownson RC, Pronk NP. Dissemination and Implementation Science for Public Health Professionals: An Overview and Call to Action. Prev Chronic Dis 2018;15:180525.
DOI: http://dx.doi.org/10.5888/pcd15.180525

Open Peer Review reports

Implementation Science & Public Health: Rich and Growing



Implementation Science & Public Health: Rich and Growing

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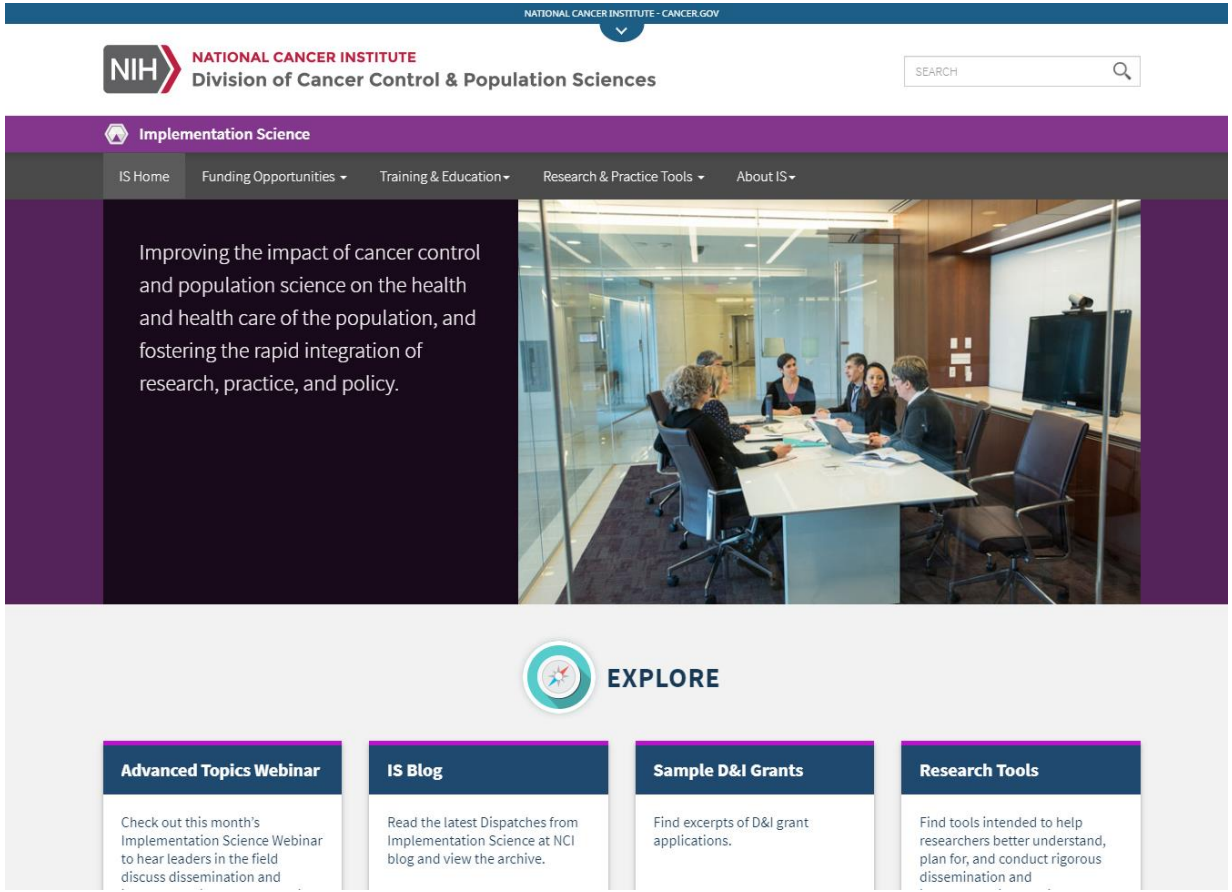


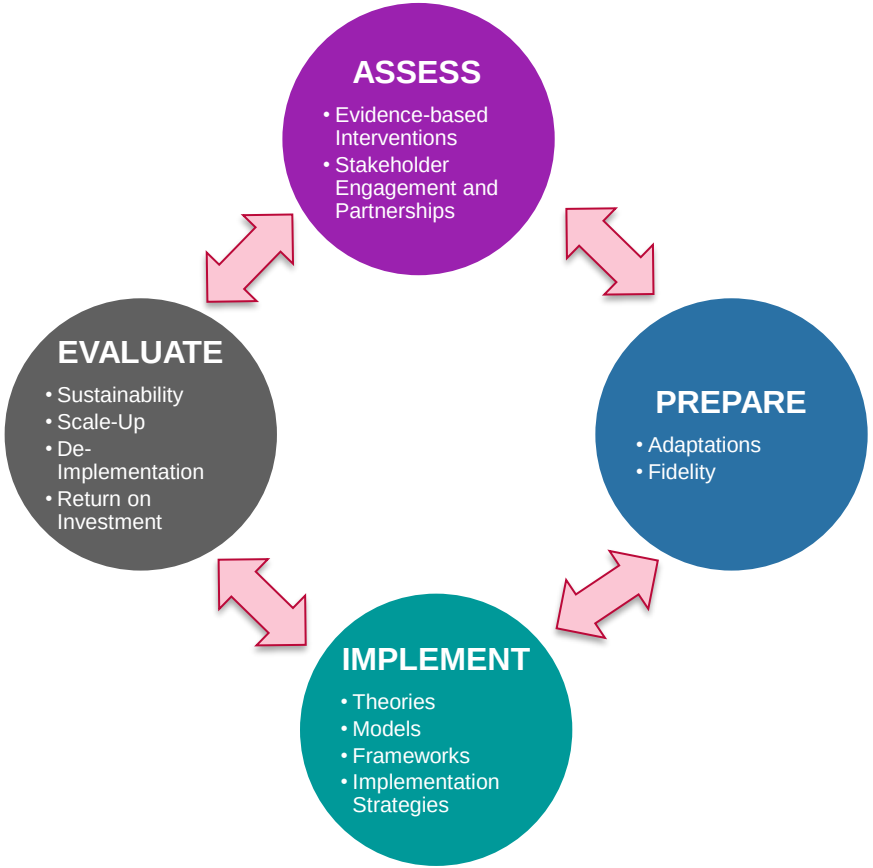
https://cancercontrol.cancer.gov/IS/

Implementation Science at Glance

- Align with other NCI Implementation Science team efforts
- Builds on lessons learned from Research to Reality community
- Initial draft reviewed by 86 practitioners and researchers
- Over 50 completed reviews
- Comments so extensive: when consolidated had over 18 pages of text
- Released April 2019

http://go.usa.gov/xmqyV

When are we incorporating implementation science?



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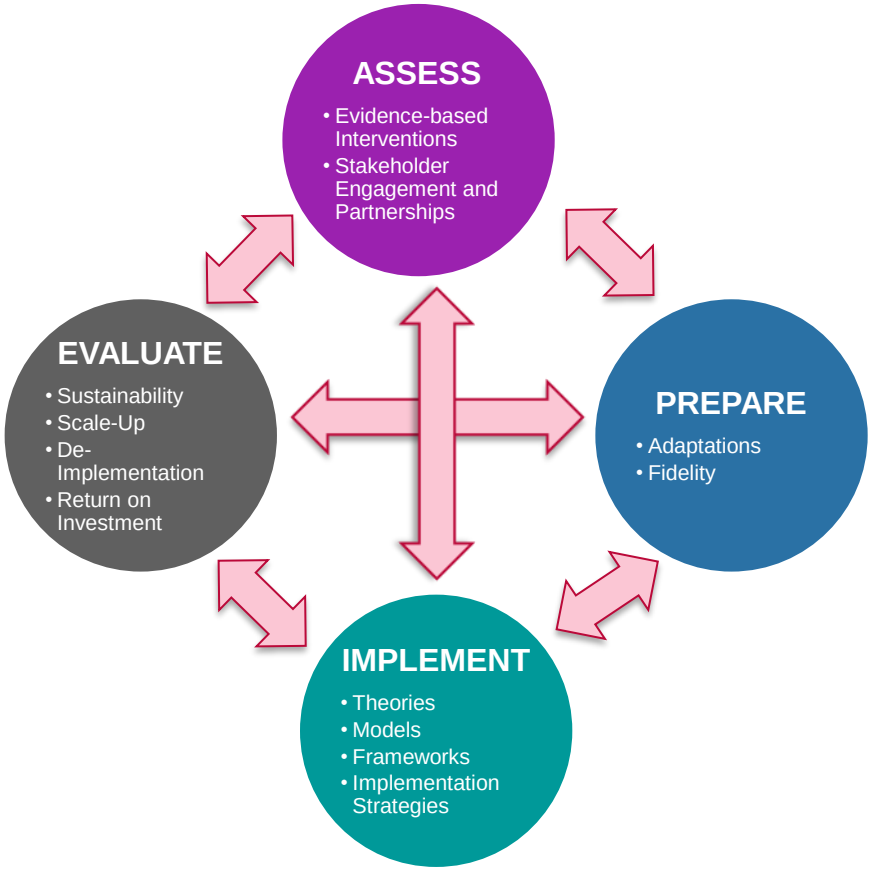

Assess

Start with Your Stakeholders…..

Create meaningful partnerships

- What outcomes are important to them?
- Engage them throughout the entire implementation.

Figure 2. Components to consider when selecting an intervention[7]

Case Study: Tailored Communication for Cervical Cancer Risk

"It will be exhausting and time consuming, but that is what is going to set you up for success."

Following up with women who have had abnormal Pap tests – to come in for follow-up testing

- Partnering with clinic staff
  - ASKING about workflow
  - CHECKING on other priorities
- Follow-up calls moved off-site to dedicated call center

Take Home Message:

- Integrating into practice ensured uptake and sustainability.

Prepare

Maintaining Fidelity and Making Adaptations

- Evidence-based interventions are not one size fits all.
- Making too many changes to an intervention can reduce its original effectiveness, or worse, introduce unintended and harmful outcomes.

The **core components** of an intervention relate to its:[11]

» Content - the substance, service, information, or other material that the intervention provides (e.g., screening tests)

» Delivery - how the intervention is implemented (e.g., setting, format, channels, providers)

» Method - how the intervention will affect participants' behavior or environment

Before adapting an intervention, consider the following:

» Are adaptations necessary?

» How important is it to your partners to adapt this intervention?

» What adaptation would you make?

» Do you have the resources to implement the adapted intervention?

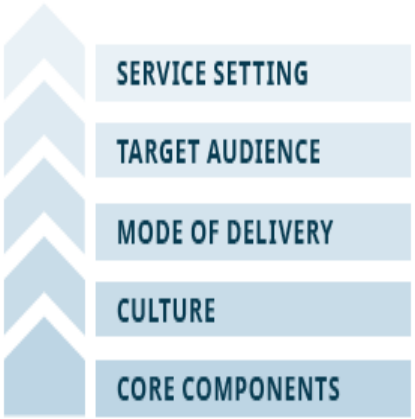

Figure 3. Sources of intervention adaptation[14]

What You Can Do: **Balance Fidelity and Adaptations**

Making too many changes to an intervention can reduce its original effectiveness, or worse, introduce unintended and harmful outcomes.

Before making adaptations to the intervention, you should think about how the change to the original intervention can improve the fit to your community, setting, or target population, and at the same time, maintain fidelity to the core components of the original intervention. Think of possible adaptations as you would a green, yellow, or red traffic light: green light changes are usually OK to make; yellow light changes should be approached with caution; and red light changes should be avoided when possible.[12]

- Usually minor
- Made to increase the reach, receptivity, and participation of the community
- May include:
  - Program names
  - Updated and relevant statistics or health information
  - Tailored language, pictures, cultural indicators, scenarios, and other content

- Typically add or modify intervention components and contents, rather than deleting them
- May include:
  - Substituting activities
  - Adding activities
  - Changing session sequence
  - Shifting or expanding the primary audience
  - Changing the delivery format
  - Changing who delivers the program

- Changes to core components of the intervention
- May include:
  - Changing a health behavior model or theory
  - Changing a health topic or behavior
  - Deleting core components
  - Cutting the program timeline
  - Cutting the program dosage

Case Study: Kukui Ahi (Light the Way): Patient Navigation

- Lay-patient navigators from the local community
- Provide education, coordinating screenings, providing transportation, assisting with paperwork, and finding ways to pay for care.
- Aim: to increase screening rates for colorectal, cervical, breast, and prostate cancers

Barrier	Implementation strategy	Definition	Implementation Stage	Examples
Low self-efficacy of patient navigators				

Adapted from: Implementation in action: A guide to implementing evidence-informed programs and practices https://aifs.gov.au/publications/implementation-action

Barrier	Implementation strategy	Definition	Implementation Stage	Examples
Low self-efficacy of patient navigators	• Conduct ongoing training • Make training dynamic • Provide follow-on coaching			

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Barrier	Implementation strategy	Definition	Implementation Stage	Examples
Low self-efficacy of patient navigators	• Conduct ongoing training	• Plan for and conduct ongoing training in the program or practice.		
	• Make training dynamic	• Vary training methods to cater to different learning styles and work contexts.		
		• Ensure training is interactive, with a focus on skill-building.		
	• Provide follow-on coaching	• Use skilled coaches to provide ongoing modelling, feedback and support for staff.		

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Barrier	Implementation strategy	Definition	Implementation Stage	Examples
Low self-efficacy of patient navigators	• Conduct ongoing training	Plan for and conduct ongoing training in the program or practice.	Stage 2: Prepare Stage 3: Implement	
	• Make training dynamic	Vary training methods to cater to different learning styles and work contexts. Ensure training is interactive, with a focus on skill-building.	Stage 2: Prepare	
	• Provide follow-on coaching	Use skilled coaches to provide ongoing modelling, feedback and support for staff.	Stage 3: Implement	

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Barrier	Implementation strategy	Definition	Implementation Stage	Examples
Low self-efficacy of patient navigators	• Conduct ongoing training	• Plan for and conduct ongoing training in the program or practice.	Stage 2: Prepare Stage 3: Implement	• Ensure all practitioners, team leaders, etc can access training in an ongoing way.
	• Make training dynamic	• Vary training methods to cater to different learning styles and work contexts. • Ensure training is interactive, with a focus on skill-building.	Stage 2: Prepare	• Use adult learning principles • Consider using web-based technology to make the delivery more flexible. • Supplement training with follow-on coaching
	• Provide follow-on coaching	• Use skilled coaches to provide ongoing modelling, feedback and support for staff.	Stage 3: Implement	

Adapted from: Implementation in action: A guide to implementing evidence-informed programs and practices https://aifs.gov.au/publications/implementation-action

What?	How?	Barriers/enablers	Implementation Outcomes	Community Outcomes

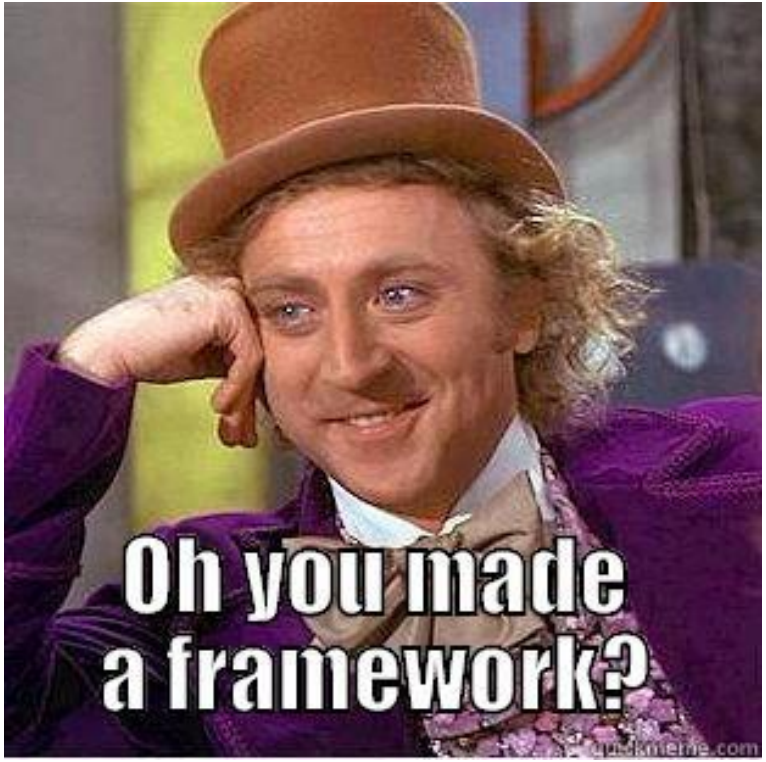
• **Evidence-informed program or practice**
• Examples:
  • "Let's Move!" campaign
  • Motivational interviewing
  • Client feedback
  • Flu-FIT
	• **Implementation strategies**
	• Examples:
	  • Establish implementation team
	  • training and coaching
	  • Leadership engagement
		• Policy environment
		• Leadership support
		• Complexity of program or practice
		• Practitioner attitudes towards program or practice
		• Practitioner skill in program or practice
		• Funding
			• Acceptability
			• Feasibility
			• Appropriateness
			• Fidelity
			• Reach
				• Access to care
				• Access to fresh fruits and vegetables
				• Immunization rates

Positive Outcomes:
Benefits for people/communities you serve

Adapted from Implementation Science at a Glance (2019), Lewis (2017, Lyon and Bruns (2019), Proctor et al (2011)

Implement

Implementation Frameworks



ELSEVIER

Journal of Clinical Epidemiology 100 (2018) 92–102

Journal of Clinical Epidemiology

REVIEW

Scoping review identifies significant number of knowledge translation theories, models, and frameworks with limited use

Lisa Strifler[a,b], Roberta Cardoso[a], Jessie McGowan[c], Elise Cogo[a], Vera Nincic[a], Paul A. Khan[a], Alistair Scott[a], Marco Ghassemi[a], Heather MacDonald[a], Yonda Lai[a], Victoria Treister[a], Andrea C. Tricco[a,d], Sharon E. Straus[a,e,*]

[a]*Li Ka Shing Knowledge Institute, St. Michael's Hospital, 209 Victoria Street, East Building, Toronto, Ontario, M5B 1W8, Canada*
[b]*Institute of Health Policy Management & Evaluation, University of Toronto, 4th Floor, 155 College Street, Toronto, Ontario, M5T 3M6, Canada*
[c]*School of Epidemiology, Public Health and Preventive Medicine, University of Ottawa, 600 Peter Morand Crescent, Ottawa, Ontario, K1G 5Z3, Canada*
[d]*Epidemiology Division, Dalla Lana School of Public Health, University of Toronto, 6th Floor, 155 College Street, Toronto, Ontario, M5T 3M7, Canada*
[e]*Department of Geriatric Medicine, University of Toronto, 27 King's College Circle, Toronto, Ontario, M5S 1A1, Canada*

Accepted 6 April 2018; Published online 13 April 2018

Abstract

Objectives: To conduct a scoping review of knowledge translation (KT) theories, models, and frameworks that have been used to guide dissemination or implementation of evidence-based interventions targeted to prevention and/or management of cancer or other chronic diseases.

Study Design and Setting: We used a comprehensive multistage search process from 2000 to 2016, which included traditional bibliographic database searching, searching using names of theories, models and frameworks, and cited reference searching. Two reviewers independently screened the literature and abstracted the data.

Results: We found 596 studies reporting on the use of 159 KT theories, models, or frameworks. A majority (87%) of the identified theories, models, or frameworks were used in five or fewer studies, with 60% used once. The theories, models, and frameworks were most commonly used to inform planning/design, implementation and evaluation activities, and least commonly used to inform dissemination and sustainability/scalability activities. Twenty-six were used across the full implementation spectrum (from planning/design to sustainability/scalability) either within or across studies. All were used for at least individual-level behavior change, whereas 48% were used for organization-level, 33% for community-level, and 17% for system-level change.

Conclusion: We found a significant number of KT theories, models, and frameworks with a limited evidence base describing their use. © 2018 Elsevier Inc. All rights reserved.

Keywords: Knowledge synthesis; Knowledge translation; Implementation; Theory; Model; Framework

Attached is a recently-published article from Sharon Straus and her team on theories, models, and frameworks in IS. Looks like we are up to 159 from the review of 61 several years ago by Rachel Tabak and David et al.

Implementation Frameworks

Frameworks articulate and organize key variables that need to be considered when implementing new programs and practices.

Common themes:

- Implementation unfolds over time or through stages/phases.
- Implementation occurs in complex, multilevel systems.
- There is a bidirectional relationship between settings and EBIs. Both are likely to require some degree of adaption for implementation to be successful.

Consolidated Framework for Implementation Research

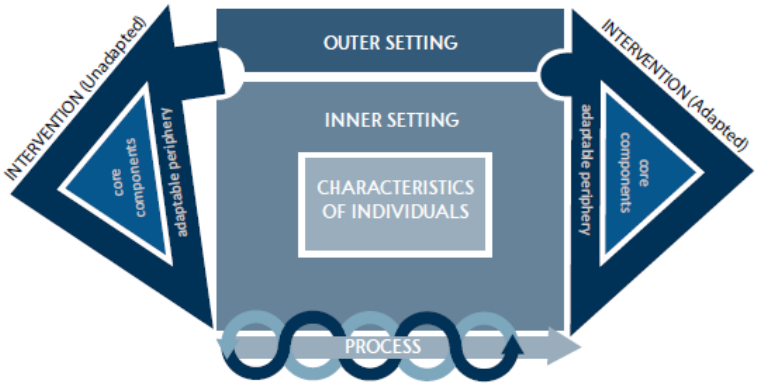


Figure-5. Consolidated Framework for Implementation Research (CFIR).[26]
Source: Damschroder et al. 2009.

- "Meta theory" of factors that influence positively or negatively implementation success
- It has 5 domains of constructs:
  - intervention;
  - individual characteristics (implementers);
  - inner setting (e.g., leadership engagement)
  - outer setting (e.g., patient needs and resources)
  - process (e.g., plan, evaluate and reflect)
- Resource with example of quantitative measures and qualitative questions (https://cfirguide.org/)

From Theory to Practice

Implementation Strategies:

- "How to"
- Choose the strategies

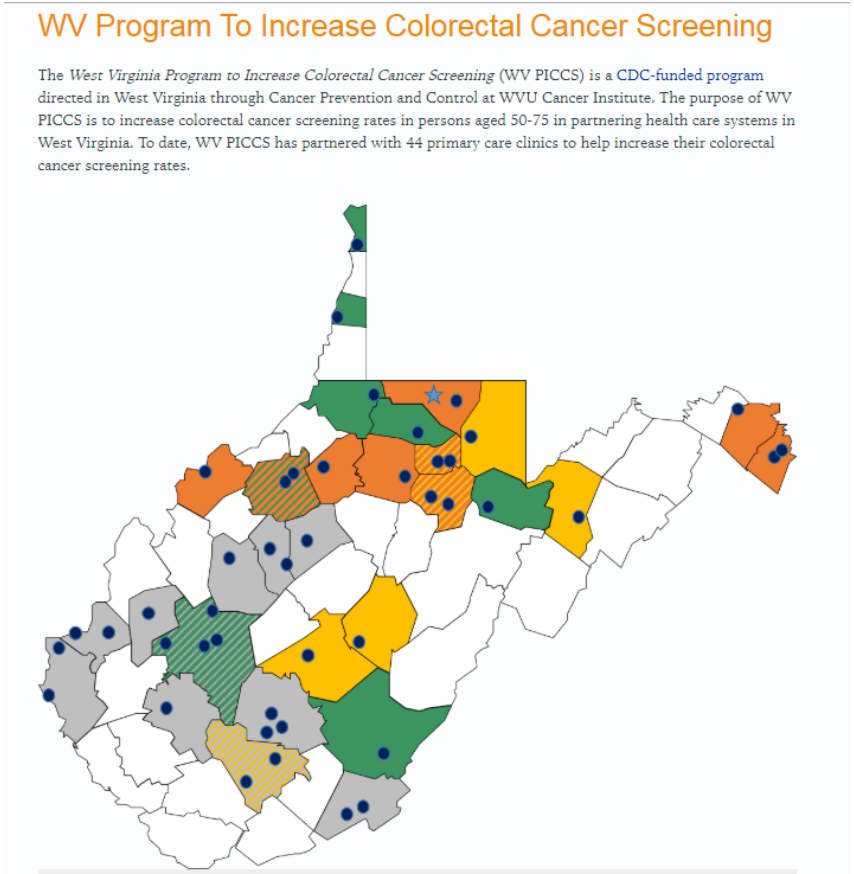
Figure 7. Implementation strategy categories and examples[23]

Adapted from: Powell et al (2015) and Waltz et ak (2015)

Case Study: WV Program To Increase Colorectal Cancer Screening

- Worked with the clinics over a two-year, two-phase implementation period
- Multiple implementation strategies, such as patient navigation and media outreach, to enhance the intervention implementation and uptake.
- Technical assistance to clinics extensively during the project's first year.
  - Tailored technical support and monthly facilitation meetings and helped monitor changes to each clinic's care delivery system.

As partners, you need to listen.



Evaluate

Implementation Science Can Drive Evaluation

What to Evaluate

Is what we're doing working? › *Why or why not?* › *How do we show the value of the work we do?*

Four categories of outcomes:

Implementation Outcomes	Program Outcomes	Community Outcomes	Individual Outcomes
» Acceptability » Adaptation » Adoption » Appropriateness » Feasibility » Fidelity » Maintenance » Penetration » Sustainability	» Cost-effectiveness » Effectiveness » Equity » Reach	» Access to care » Access to fresh produce » Built environment » Disease incidence » Disease prevalence » Health disparities » Immunization and vaccination » Walkability	» Longevity » Physical activity and fitness » Social connectedness » Quality of life

Case Study: Livestrong at the Y

Evaluation: Examining Spread and Uptake

Launched in 2007 as a partnership between the LIVESTRONG Foundation and YMCA of the USA and is available at more than 400 locations, having served more than 29,000 survivors to date.

LIVESTRONG at the YMCA, program directors and practitioners credited the time spent in preparation and in giving organizations the time to build the program:

- identify local staff and partners,
- develop a partnership pathway, and
- sustain meaningful relationships

was central to their success.

Other Exciting Reasons to Download ISaaG

Sustainability

Your intervention can only deliver population benefits if you are able to sustain your activities over time. Sustainability describes the extent to which an evidence-based intervention can continue to be delivered, especially if external support or funding ends.[35]

You will only be able to sustain effective implementation efforts if you keep evaluating and adapting it to your setting and population. Therefore, after you evaluate your efforts, you should reassess and continue sustaining the implementation.

What You Can Do: **Sustain Your Intervention Program**

Consider the following **eight core domains** to increase the intervention's capacity for sustainability.[36,37] These domains were developed by practitioners, scientists, and funders from several public health areas.

You can use the Program Sustainability Assessment Tool to understand factors that influence your intervention's capacity for sustainability and develop an action plan to increase the likelihood of sustainability. The tool helps identify your organization's sustainability strengths and weaknesses and can guide your sustainability planning.

De-Implementing

De-implementation is the process of reducing or stopping the use of a practice, intervention, or program. There are many reasons why a public health agency, organization, or department may purposely choose to reduce (in terms of frequency or intensity) the delivery of a practice to a target population, or choose to stop offering the practice to a target population entirely.

Practices that may be appropriate for de-implementation include those that are:

» Ineffective (e.g., evidence shows the

What You Can Do:
Follow These Steps for De-Implementation

1. Identify and prioritize practices that may be appropriate for de-implementation.
   a. Is your organization offering practices that are no longer needed by the community?
   b. Is there a more pressing or important health issue that should be addressed instead?
2. Gather information on potential barriers to the de-implementation process.
   a. Will personnel or organizational changes be needed if the practice is no longer offered?
   b. Will de-implementing the practice reduce collaborative opportunities with community partners?
3. Identify strategies that are

Scaling Up

If the intervention has been successful in your setting, you or your organization might be considering "scale-up." Scaling up is the deliberate effort to increase the impact of successful interventions so that they can benefit more people and foster sustainability.[38] You can scale-up your implementation effort in three ways, as shown in Figure 9.

Scaling up requires a new examination of your partnerships and resources to decide if there is evidence to support the adapted intervention.

Final Thoughts

- Applying IS to practice can seem like a lot of work
  - Requires careful planning, thoughtfulness, resourcefulness and dedication.
  - Investment of resources pays dividends later - in the form of more sustainable and effective service delivery.

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- Try applying an implementation framework to your next initiative.
  - What fits in your context?
  - What activities or approaches may need to be adapted or tailored?

You'll build your confidence and capacity to lead implementation efforts

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You'll build your confidence and capacity to lead implementation efforts

Questions?

Consider how to better engage public health practitioners to drive implementation science

"What challenges do you face moving research-tested interventions into practice?"

- Engaging stakeholders?
- Sustaining programs?
- Identifying programs/interventions?
- Adapting interventions?
- Aligning interventions with your community (fit?)

Even more to consider…..

Amplifying Practitioner Perspectives to Strengthen Implementation Science

Margaret Farrell

March 2019

The NCI Implementation Science Team takes seriously our mission to advance the science of implementation and integrate implementation science within the broader cancer control and population sciences context.

Continue Reading »

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY

Dissemination and Implementation Science for Public Health Professionals: An Overview and Call to Action

ESSAY — Volume 15 — December 20, 2018

Paul A. Estabrooks, PhD[1]; Ross C. Brownson, PhD[2,3]; Nicolaas P. Pronk, PhD[4,5] (View author affiliations)

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A Selective Review of the Origins of Dissemination and Implementation Science

Preventing Chronic Disease has a mission to enhance communication between researchers, public health professionals, and policy makers to integrate research and practice experience with a goal of improved population health. As a result, those involved in dissemination and implementation (DI) science — a growing field of study that examines the process by which scientific evidence is adopted, implemented, and sustained in typical community or clinical settings — have submitted and published their rigorous and relevant work in the journal with a high degree of success. Over the previous 2 years, the journal also added a new article type — Implementation Evaluation — to facilitate submission of articles that examine the implementation of evidence-based public health interventions in community and clinical settings. In an effort to continue the focus on DI, we wrote this commentary with the following objectives: 1) to provide a brief DI description, 2) to demonstrate the shared systems–based focus of DI science and public health practice, and 3) to highlight pathways to move public health–focused DI science forward. We reflect on our own learnings and by doing so hope to motivate more public health researchers and practitioners to engage in DI research.

DI research emerged — by name — over the past 25 years (1), but its roots can be traced to a much earlier time (2–4). A review of current DI research areas likely would not have seemed out of place in the 1930s through the 1960s. Some examples include the need for clinically relevant and community-relevant research (5), engaging systems and communities as partners in the co-creation of evidence (6), and examining the characteristics of interventions to determine which are more likely to be taken to scale and sustained (7). These topics can be traced back to the origins of action research in the 1940s, the push and pull between pure and applied research in the 1960s, and the diffusion of innovations that spanned both those periods. Indeed, the works of Kurt Lewin (8), Archie Cochrane (9), and Everett Rogers (3,10) provide a strong foundation for DI science.

Kurt Lewin founded the field of action research (4,8). He and other scientists of his day struggled against a paradigm that did not consider practice professionals in the development, implementation, and interpretation of scientific studies. In a critique that sounds like it could have come from the last American Public Health Association annual meeting, Lewin criticized the lack of integration of science and practice as a lost opportunity to understand group dynamics and organizational change processes while also contributing to achieving a community benefit through research. He argued for a pragmatic epistemological approach that combined social theory, experimental or quasi-experimental methods, and practice perspectives that could be used for local decision making and contribute to generalizable knowledge. He developed numerous participatory methods that engaged organizational representatives from the settings where social solutions would be applied, members of the population intended to benefit, and social scientists to collectively conduct diagnostic, participatory, empirical, and experimental action research (8). Action research, whether described as a systems-based approach, participatory dissemination, community-based participatory research, or integrated research–practice partnerships, provides a methodological basis for much of the current DI research. It also underscores the ideal outcomes of public health–focused DI research — a balance of demonstrating local impact while concurrently contributing to generalizable knowledge on how best to move evidence into practice.

Archie Cochrane — the inspiration for the thriving Cochrane collaborative (11) and the myriad of systematic reviews developed with a goal to provide a summary of evidence that can be used for health care practice and decision making — railed against the focus on pure research over applied research during the course of his career (9,12). Indeed, this quote captures his view of the existing research paradigm in the late 1940s: "I remember being advised by the most distinguished people that the best research should be utterly useless" (9 p432). Cochrane's approach was grounded in his experience as a prisoner of war in Germany, where he provided care for thousands of soldiers and was concerned with the likelihood that he may have inadvertently provided therapies that did more harm than good because of the lack of scientific evidence for the medical approaches of the day. As a result, he became an advocate for the use of randomized controlled trials (RCTs) for practical, applied research that could contribute to health care practice in a timely manner. By the early 1970s Cochrane was advocating for systematic reviews of literature to compile the findings of research studies and allow for guideline and policy implementation across medical disciplines (2). Cochrane reviews and other systematic review approaches (13) are used broadly in DI and to support evidence-based public health (EBPH) practice as an indicator that a given intervention is either appropriate or inappropriate for broad-scale adoption, implementation, and sustainability.

Finally, Everett Rogers could be considered the Father of DI with his seminal work published in *Diffusion of Innovations* from the first edition in 1962 through the fifth and final edition in 2003 (3). With his roots in rural sociology, Rogers introduced a theoretical approach that considered the communication of an innovation, over time and through distinct channels, across a social system. He also proposed that an innovation could be described as an idea, practice, or product that is perceived as new to a social system. Rogers's introduction of the S-shaped curve demonstrated the relative rate of adoption across early innovators and adopters with a slower rate of spread of an innovation followed by a steep increase as the early and late majority take up the innovation, followed by a slowing of the rate of adoption when system laggards (a term Rogers referred to in personal communications as one for which he wished he had come up with a less "inherently negative" label) take up the innovation.

Implementation Science at a Glance

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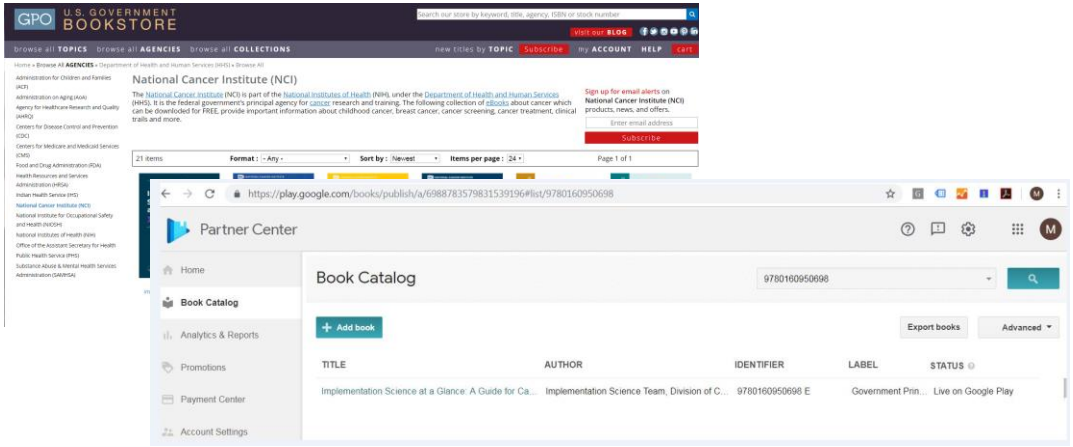


Other Resources

Cancer Prevention & Control Research Network (http://cpcrn.org/pub/evidence-in-action/)
Putting Public Health Evidence in Action Training Workshop

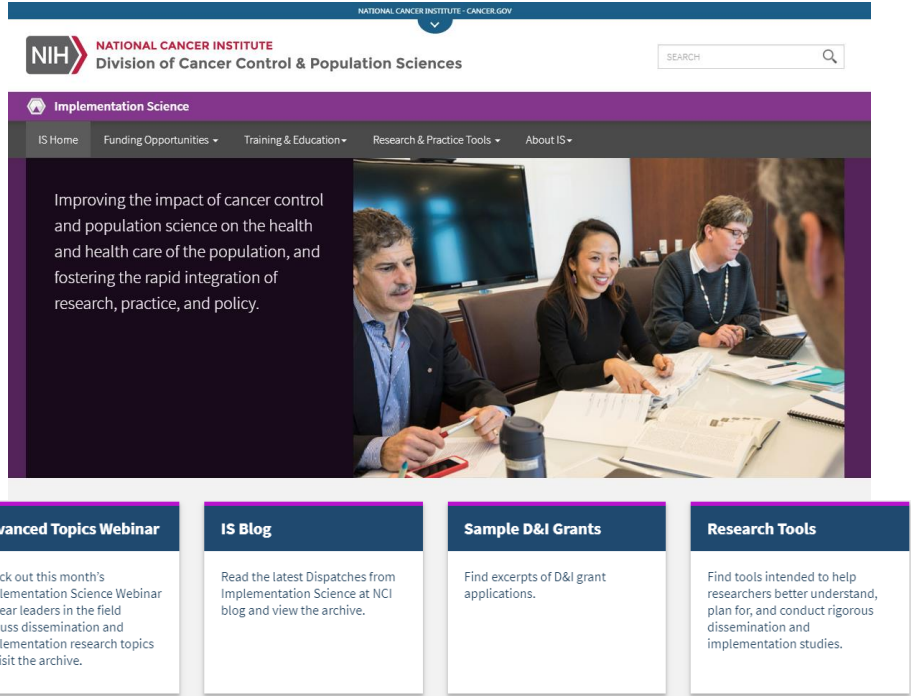
The Community Guide
(https://www.thecommunityguide.org/tools)

The Center for Implementation
(https://thecenterforimplementation.com)

Inspiring Change: Creating impact with evidence-based implementation (mini-course)

Australian Institute of Family Studies
(https://aifs.gov.au/publications/implementation-action)
Implementation in action: A guide to implementing evidence-informed programs and practices

NCI Implementation Science team
https://cancercontrol.cancer.gov/IS



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Implementation Science at a Glance team

- Dalena Nguyen MPH
- Margaret Farrell MPH RD
- Wynne Norton PhD
- Prajakta Adsul, MBBS, MPH, PhD
- David Chambers, DPhil

Case Study Contributors:

- Amy Allen
- Stephenie Kennedy-Rhea
- Mary Ellen Conn
- Ann-Hilary Heston
- Kathryn Braun
- Suzanne Miller Halegoua
- Erin Tagai

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