Overview of Implementation Science and Trans-NIH Initiatives

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Definitions

- **Implementation practice:** *Using* interventions in health care and public health settings (i.e., the act of implementing something)

- **Implementation science:** *Studying the use* of interventions in health care and public health settings

  - "scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice" (Eccles & Mittman 2006)

  - "study of the use of strategies to adopt and integrate evidence-based interventions into clinical and community settings" (Glasgow 2012)

Health

Pfizer's coronavirus vaccine is more than 90 percent effective in first analysis, company reports

November 9, 2020 at 8:15 p.m. EST

Health

FDA authorizes the first coronavirus vaccine, a rare moment of hope in the deadly pandemic

Dec. 12, 2020 at 9:00 a.m. EST

Health

FDA authorizes a second coronavirus vaccine, a turning point in the pandemic

Moderna's shots will ship almost immediately and be used for health-care workers and nursing home residents

Dec. 18, 2020 at 11:00 p.m. EST

Health

The vaccine rollout has been slow and complicated

Jan. 28, 2021 at 10:41 p.m. EST

Health

Anxiety grows as long-term care awaits COVID-19 vaccines

Jan. 31, 2021 at 9:22 a.m. EST

Health

Shots are slow to reach arms as Trump administration leaves final steps of mass vaccination to beleaguered states

Federal and state officials say the pace will soon accelerate, but the logistical challenges are also expected to intensify in the new year

Vaccination is going slowly because nobody is in charge

We've known for months that vaccines were coming. Why weren't we prepared to use them?

Dec. 31, 2020 at 12:10 p.m. EST

Vaccination is going slowly because nobody is in charge

We've known for months that vaccines were coming. Why weren't we prepared to use them?

By **Ashish K. Jha**

Ashish K. Jha is a physician, health policy researcher and the dean of the Brown University School of Public Health.
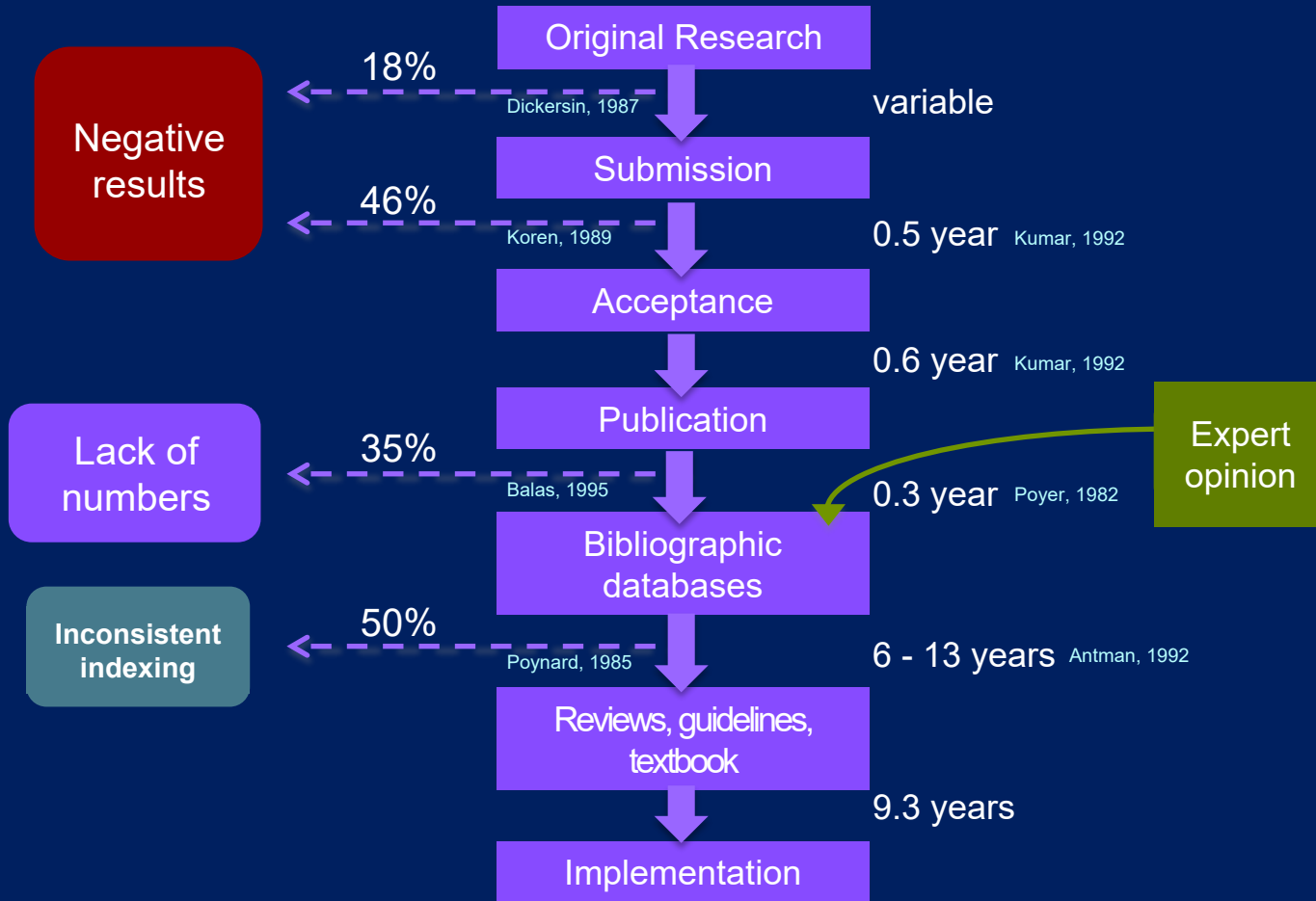
Dec. 31, 2020 at 12:10 p.m. EST

How did we get from 100 million promised doses to just a few million people vaccinated? It is a lesson in misunderstanding American federalism and a failure of national leadership. The federal government and Operation Warp Speed saw their role as getting vaccines to the states, without considering what supports states would need to get vaccines to the people. The Trump administration is now blaming the slow rollout on states. This is political theater and obviously untrue. States undoubtedly have a critical role to play in vaccine distribution. But states alone can't mount one of the largest vaccination efforts in recent history. Moreover, not all 50 states are failing.

Beyond effectiveness

- Effective interventions (including practices, programs, tools, policies, etc.) can only be as good as whether and how they are used by the public, health providers, regulators, and policymakers…

- How do we do that most effectively?

  a) Not thinking about implementation; no plan

  b) Write lots of publications about the need for a plan

  c) Thinking about implementation; plan informed by intuition

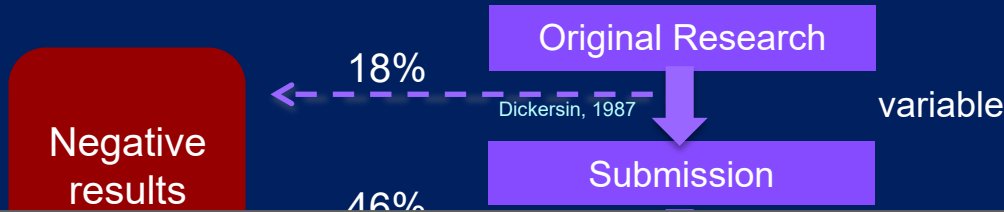 d) Thinking about implementation; plan informed by empirical evidence (e.g., the science of implementation)

"PUBLICATION PATHWAY"

Balas & Boren, 2000

Balas & Boren, 2000

Original Research

18% ← Dickersin, 1987

variable

Negative results

46%

Submission

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

databases

Inconsistent indexing

50% ← Poynard, 1985

6 - 13 years   Antman, 1992

Reviews, guidelines, textbook

9.3 years

Implementation
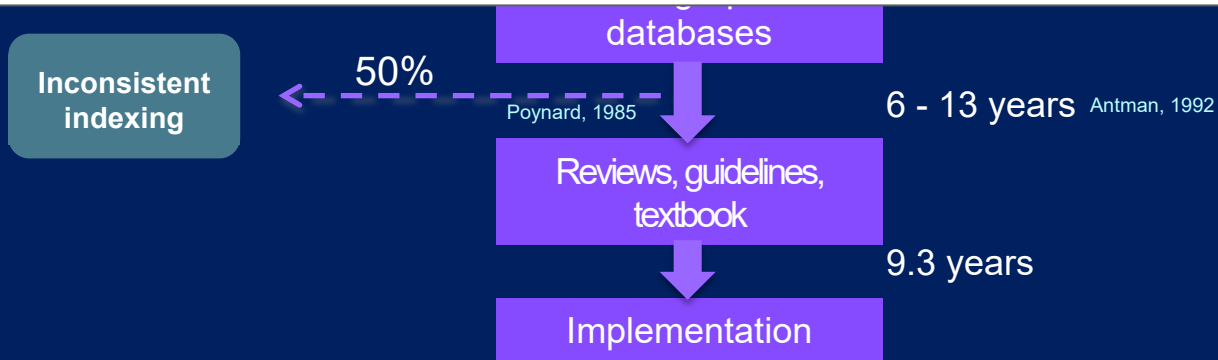
Beyond the evidence for efficacy/effectiveness…

Evidence is only as good as how and whether…

- It is adopted?
- Practitioners and communities are trained to use it?
- Trained practitioners and communities choose to use it?
- Eligible populations/patients benefit from it?

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Beyond the evidence for efficacy/effectiveness (Cont.)…

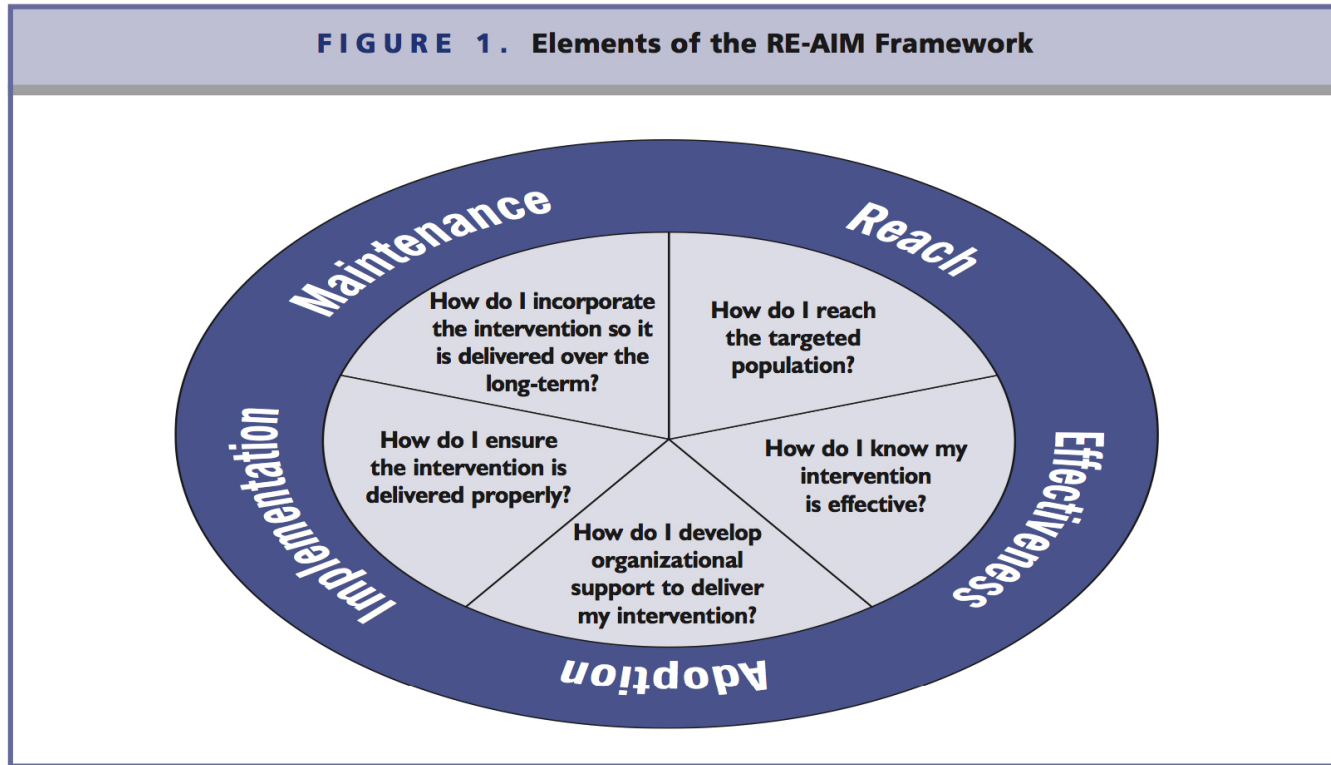Evidence is only as good as how and whether…

- It is adopted?
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- Trained practitioners and communities choose to use it?
- Eligible populations/patients benefit from it?

If we assume 50% threshold for each step…

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

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

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Source: David Chambers, NCI

Beyond effectiveness

FIGURE 1. Elements of the RE-AIM Framework

Maintenance — How do I incorporate the intervention so it is delivered over the long-term?

Reach — How do I reach the targeted population?

Implementation — How do I ensure the intervention is delivered properly?

Effectiveness — How do I know my intervention is effective?

Adoption — How do I develop organizational support to deliver my intervention?

Glasgow, RE-AIM

Definitions (from NCI)

Implementation Science intends to bridge the gap between research, practice, and policy by building a knowledge base about how health information, effective interventions, and new clinical practices, guidelines and policies are communicated and integrated for public health and health care service use.
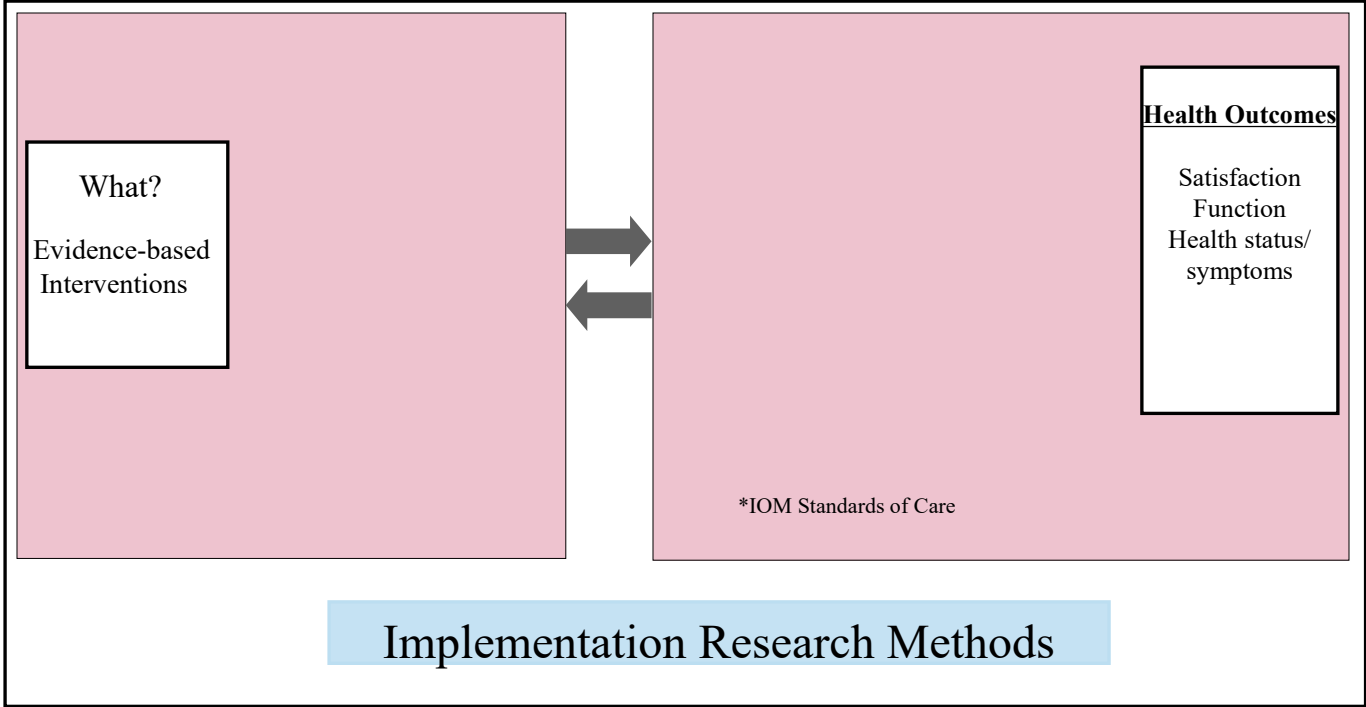
- *Dissemination research* is the scientific study of targeted distribution of information and intervention materials to a specific public health or clinical practice audience. The intent is to understand how best to communicate and integrate knowledge and the associated evidence-based interventions.

- *Implementation research* is the scientific study of the use of strategies to adopt and integrate evidence-based health interventions into clinical and community settings to improve individual outcomes and population health.

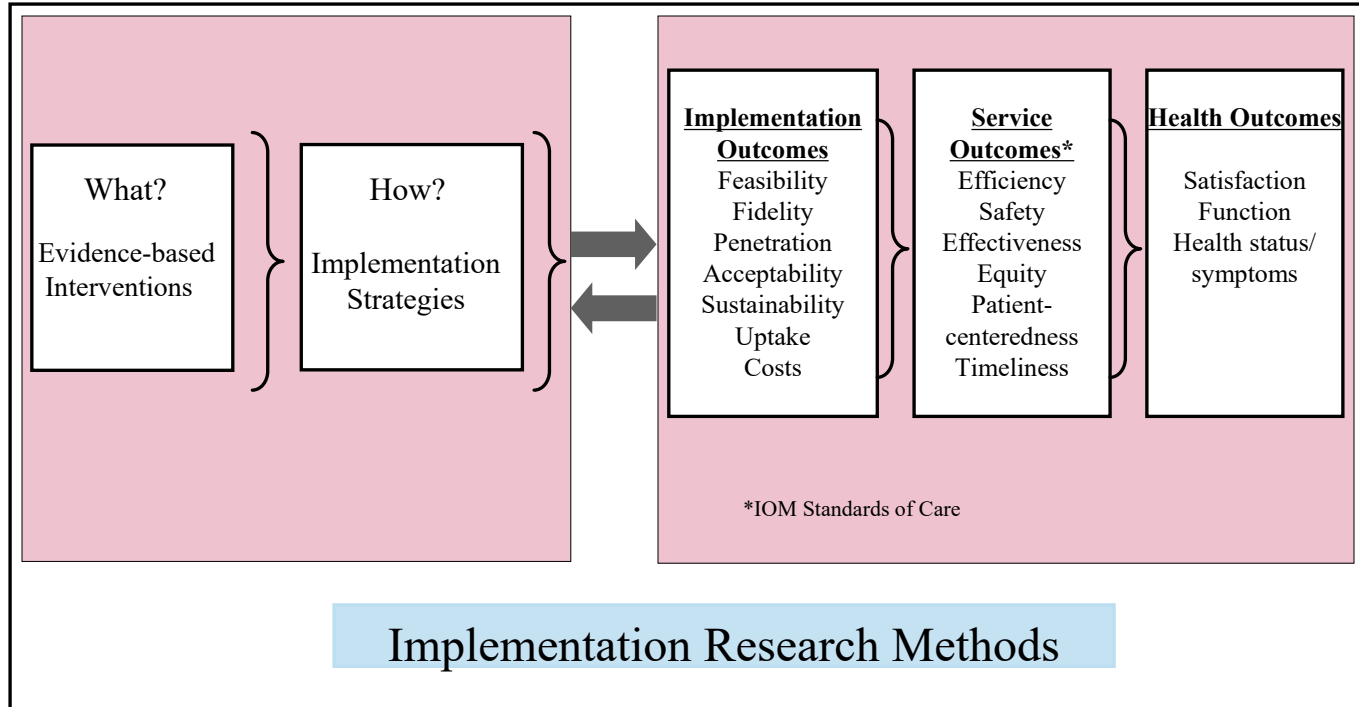**Source: PAR-19-274**

Dissemination research

- How, when, by whom, and under what circumstances evidence spreads
    - Creation
    - Packaging
    - Transmission
    - Reception

➜ Turning information into action

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Implementation research

Proctor et al 2009 *Admin. & Pol. in Mental Health & Mental Health Services Research*

Implementation research (Cont.)

| What?
Evidence-based Interventions | How?
Implementation Strategies | Implementation Outcomes
Feasibility
Fidelity
Penetration
Acceptability
Sustainability
Uptake
Costs | Service Outcomes*
Efficiency
Safety
Effectiveness
Equity
Patient-centeredness
Timeliness | Health Outcomes
Satisfaction
Function
Health status/ symptoms |

*IOM Standards of Care

Implementation Research Methods

Proctor et al 2009 *Admin. & Pol. in Mental Health & Mental Health Services Research*

Implementation strategies

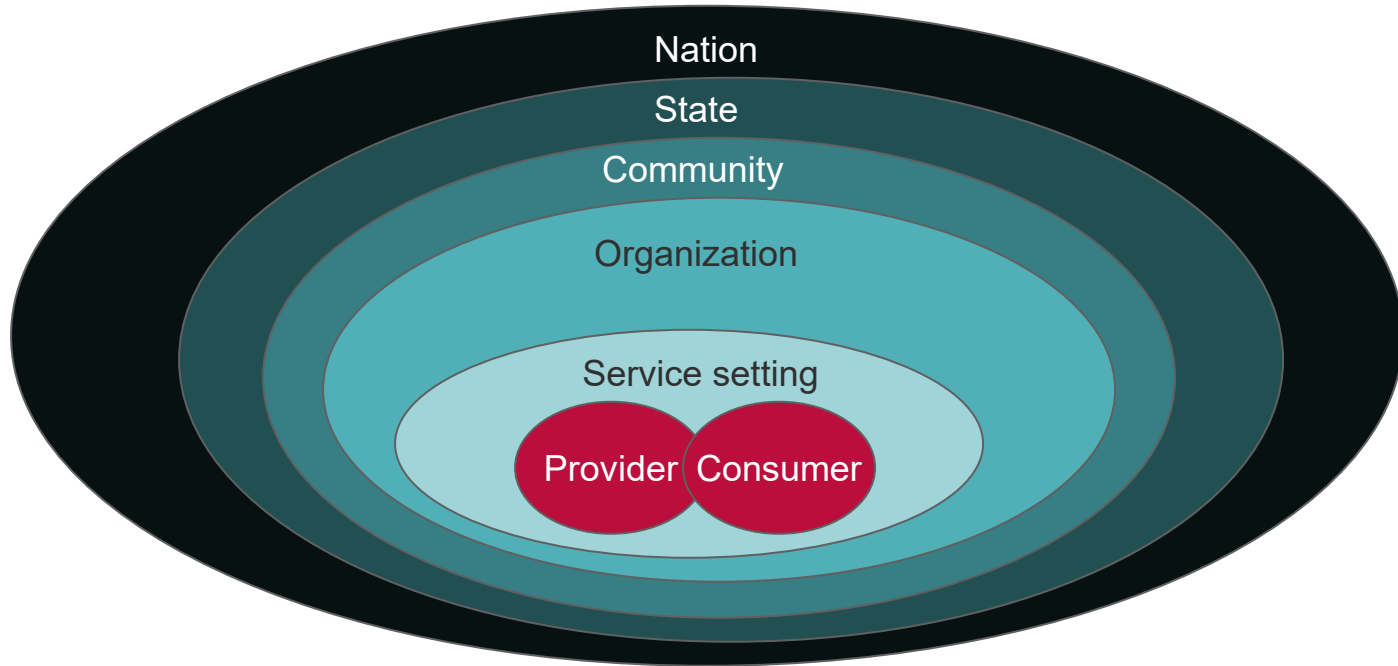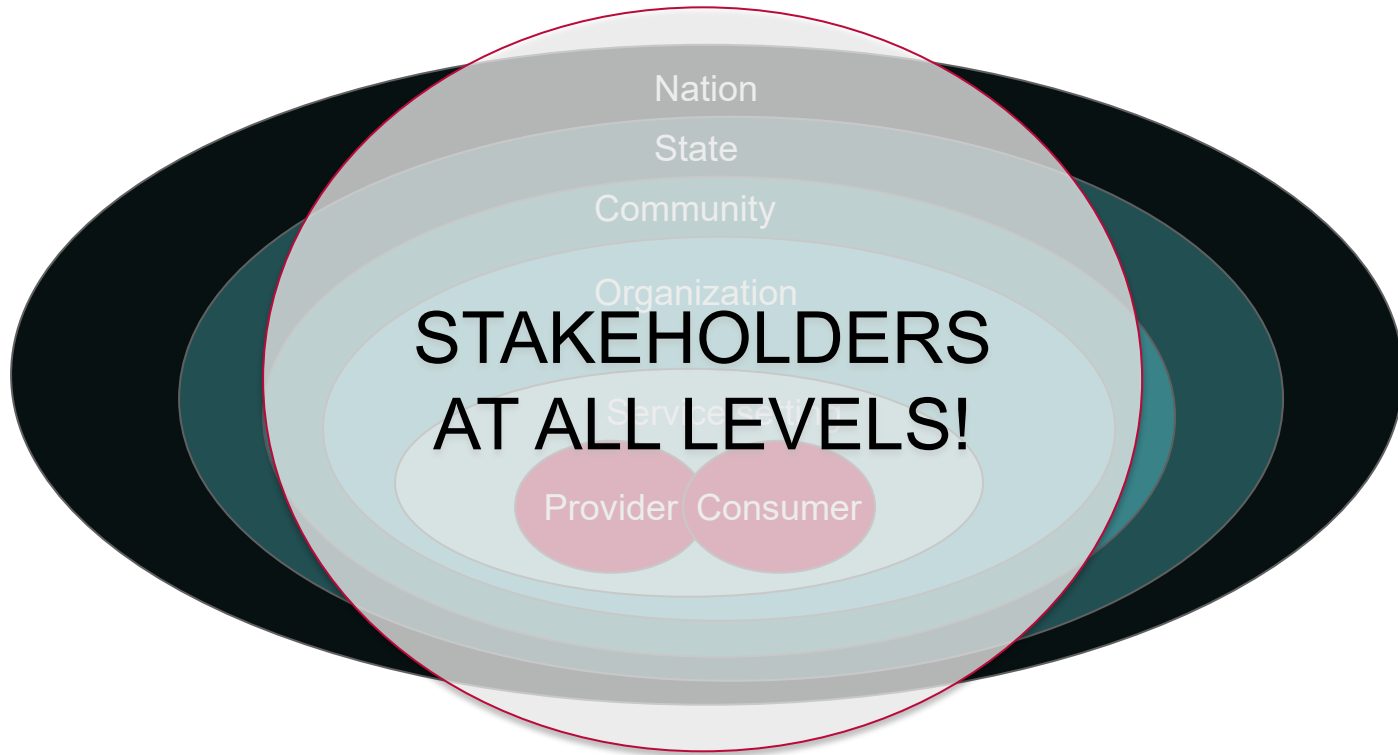|		
Evaluative & iterative strategies	Interactive assistance	Adapt & tailor to context
Develop stakeholder relationships	Train/educate stakeholders	Support clinicians
Engage consumers	Financial strategies	Change infrastructure

- What barriers are you trying to overcome?

- What resources are you able to leverage?

- Who are your stakeholders?

Powell, et al., 2015.

Context dependent & multi-level factors

Nation
State
Community
Organization
Service setting
Provider Consumer

Source: David Chambers

Context dependent & multi-level factors (Cont.)

Nation
State
Community
Organization
STAKEHOLDERS AT ALL LEVELS!
Service System
Provider Consumer

…As you scale up decision-making from practice to program to policy, does evidence exist to guide implementation?

Source: David Chambers

Trans-NIH Funding Opportunities

R01, Dissemination and Implementation Research in Health (PAR-19-274, Clinical Trial Optional)

This funding opportunity provides research project grants to support discrete, specified research projects led by an investigator in a topic area representing his or her specific interests and competencies. Because the nature and scope of the proposed research will vary from application to application, it is anticipated that the size and duration of each award will also vary. Applications may not exceed 5 years.

R21, Dissemination and Implementation Research in Health (PAR-19-275, Clinical Trial Optional)

This funding opportunity provides grants that are intended to encourage exploratory or developmental research projects by supporting the development of pilot projects or feasibility studies to support creative, novel, and high-risk/high-payoff research. Applicants may request a project period of up to 2 years and the combined budget for direct costs may not exceed $275,000.

R03, Dissemination and Implementation Research in Health (PAR-19-276, Clinical Trial Not Allowed)

This funding opportunity provides small research grants to support the initiation of studies that are generally for preliminary short-term projects. Applicants for an R03 award may request a project period of up to 2 years and a budget for direct costs of up to $50,000 per year. While the grant is nonrenewable, there is less competition for these start-up research project funds.

Successful Grant Applications

Reference excerpts from successfully funded research grant applications to help prepare applications for NCI funding.

SAMPLE GRANT APPLICATIONS

NICHD Scientific Contact

Marion Koso-Thomas, M.D.
Medical Officer
Email: kosomari@mail.nih.gov
Phone: 301 435 6873

Selected research questions

- What **factors influence the creation, packaging, transmission and reception** of valid health research knowledge?

- How can an evidence-based practice be **adapted** to fit within specific contexts or settings?

- Which **strategies** best support uptake and sustainability, and how do these strategies work?

- How do you **scale up and sustain** effective interventions across systems, states and communities

- How do you **de-implement** practices that are not evidence-based, or are harmful or wasteful?

Source: PAR-19-274

Thank you!
Gila.Neta@nih.gov

www.cancer.gov   **www.cancer.gov/espanol**