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# Diffusion, Dissemination and Implementation: What is the Difference?

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# Objectives

- Definitions?”
- Where does it fit within the field of “Translational Science?”
- Common Theories and Frameworks
- Who conducts IS research?
- Two examples

# What is Implementation Science?

- The scientific study of methods to promote the systematic uptake of research findings and other evidence-based practice into routine practice to improve the quality and effectiveness of health care and health care services.



# Other terms for “implementation”

- Knowledge translation
- Knowledge exchange
- Knowledge transfer
- Knowledge integration
- Research utilization

# A Continuum: Diffusion-Dissemination-Implementation

## **Diffusion**

The passive, untargeted and unplanned spread of new practices

## **Dissemination**

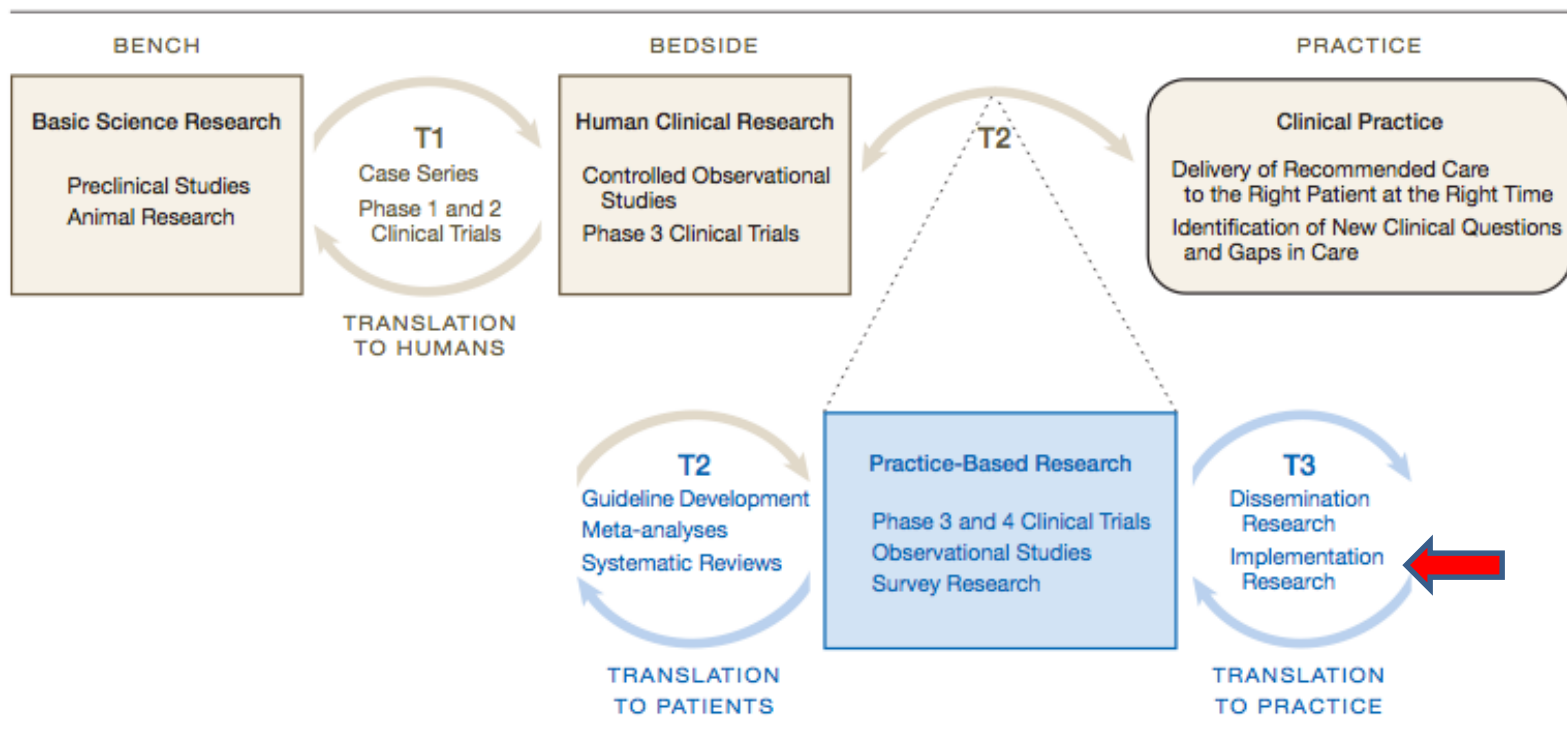
Active spread of new practices to the target audience using planned strategies

## **Implementation**

The process of adoption, integration and use of new practices within a setting



# The Translational Research Spectrum



# Why Do We Need It?

- It takes 17 years to turn 14 percent of original research findings to the benefit of patient care
  - Lenfant C. N Engl J Med. 2003
- Patients receive 54.9% of recommended evidence-based care for prevention and chronic illness care.
  - McGlynn EA. NEJM 2003
- Two-thirds of organizations' efforts to implement change fail
  - Damschroder LJ. Implement Science 2009

# Theories, Models and Frameworks (Oh My!)

- Theory

- principles or statements designed to structure our observation, understanding and explanation of the world

- Model

- a deliberate simplification of a phenomenon
- model is descriptive, whereas a theory is explanatory as well as descriptive

- Framework

- a structure, overview, outline, system or plan consisting of various descriptive categories, e.g. concepts, constructs or variables, and the relations between them that are presumed to account for a phenomenon



# Approaches to building frameworks

## Classical model

- Passive & explanatory
- Descriptive but not meant to guide or cause change

## Planned change model

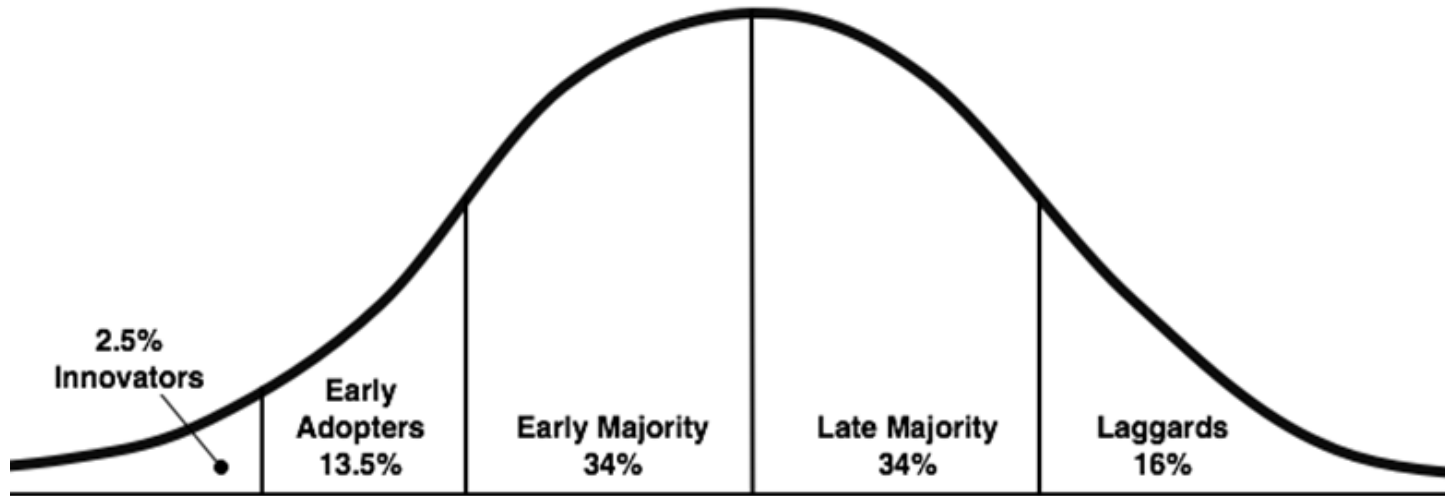
- “...a set of logically interrelated concepts that
- Explain, in a systematic way, the means by which planned change occurs
  - Predict how various forces in an environment will react in specified change situations
  - Help planner or change agents control variables that increase or decrease the likelihood of change.”

# Examples of Theories and Frameworks

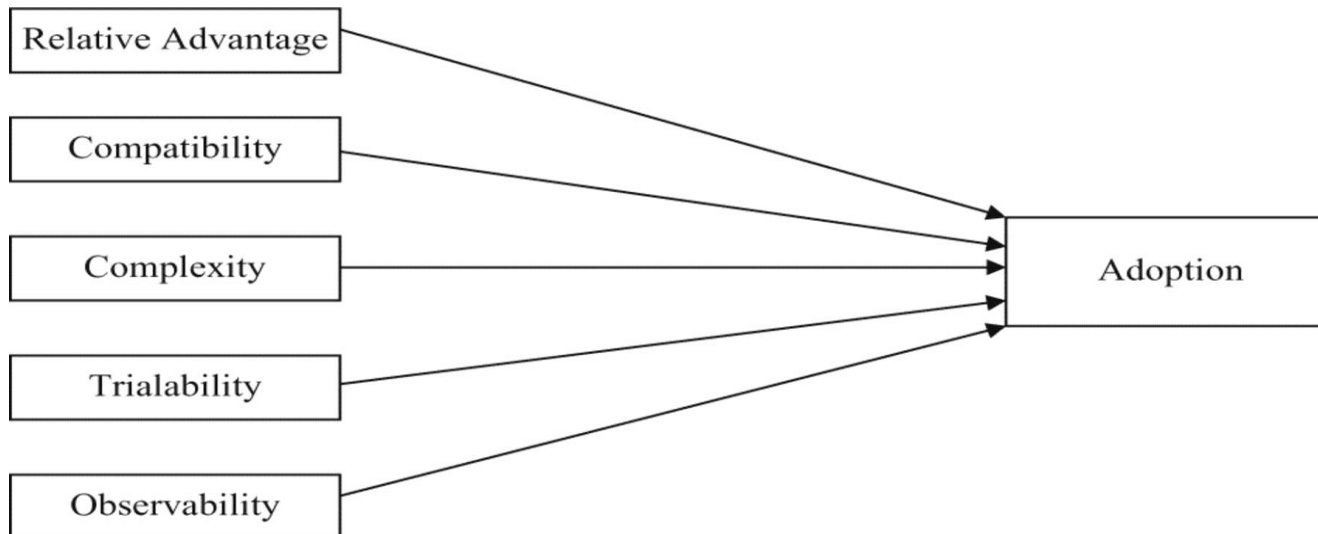
- Diffusion of Innovation Theory –
  - Rogers 1962
- Dissemination and Implementation of Innovations in Health Services Delivery
  - Greenhalgh 2004
- Consolidated Framework for Implementation Research (CFIR)
  - Damschroeder 2009
- Small Practice Change Model
  - Solberg 2007

# Diffusion of Innovation Theory

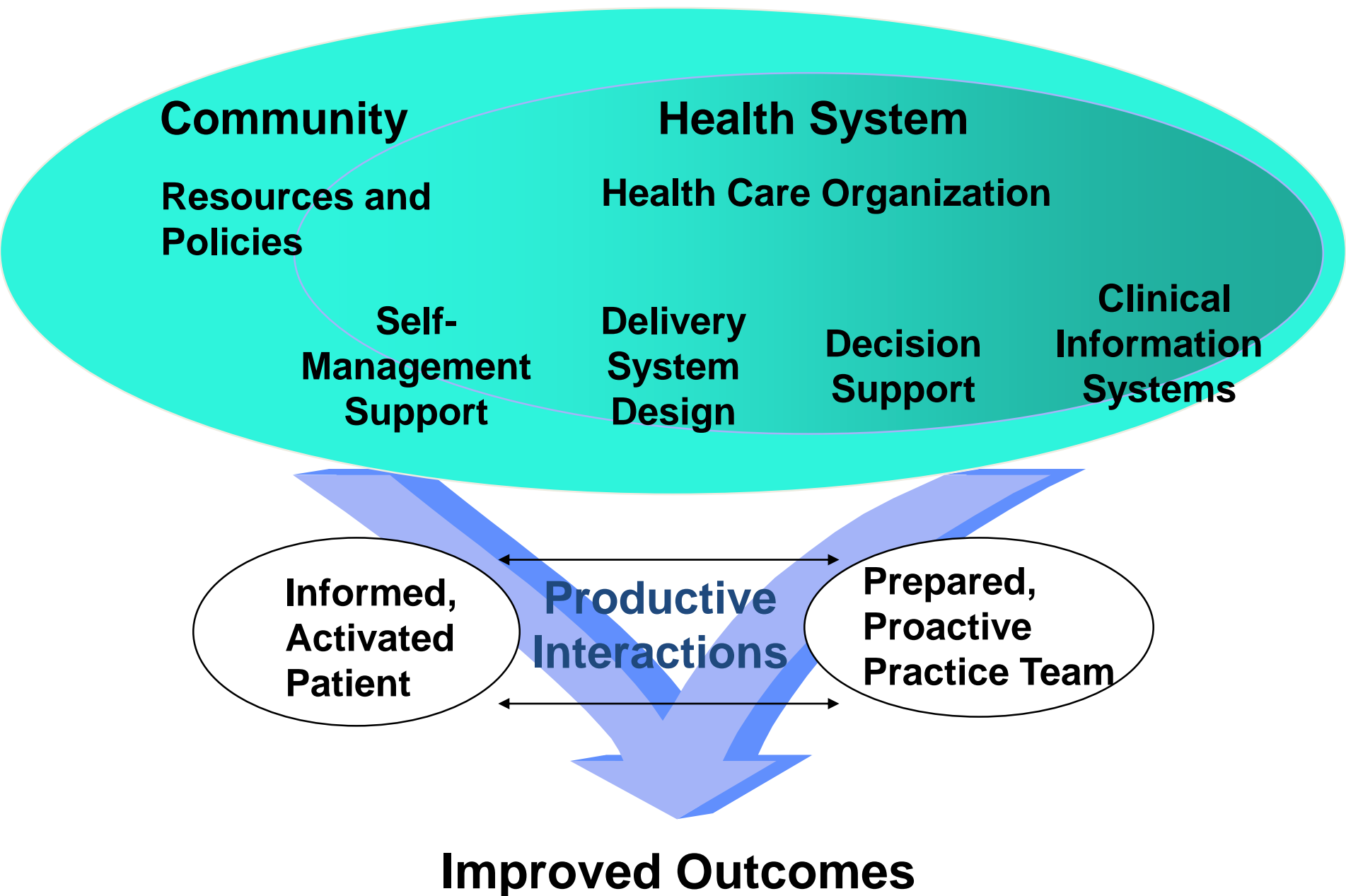
## Everett Rodgers-(1962)



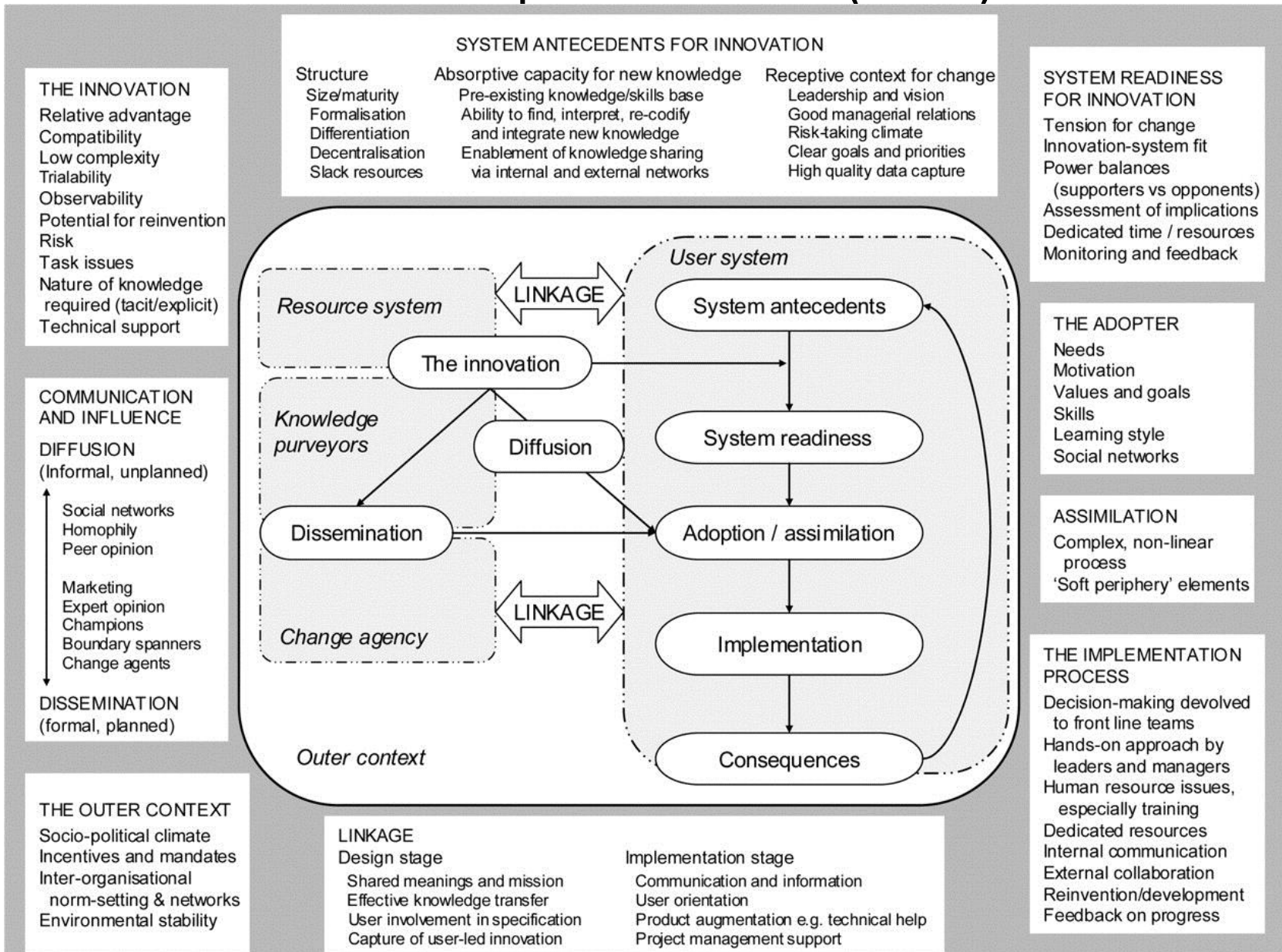
Source: Everett Rogers, Diffusion of Innovations model



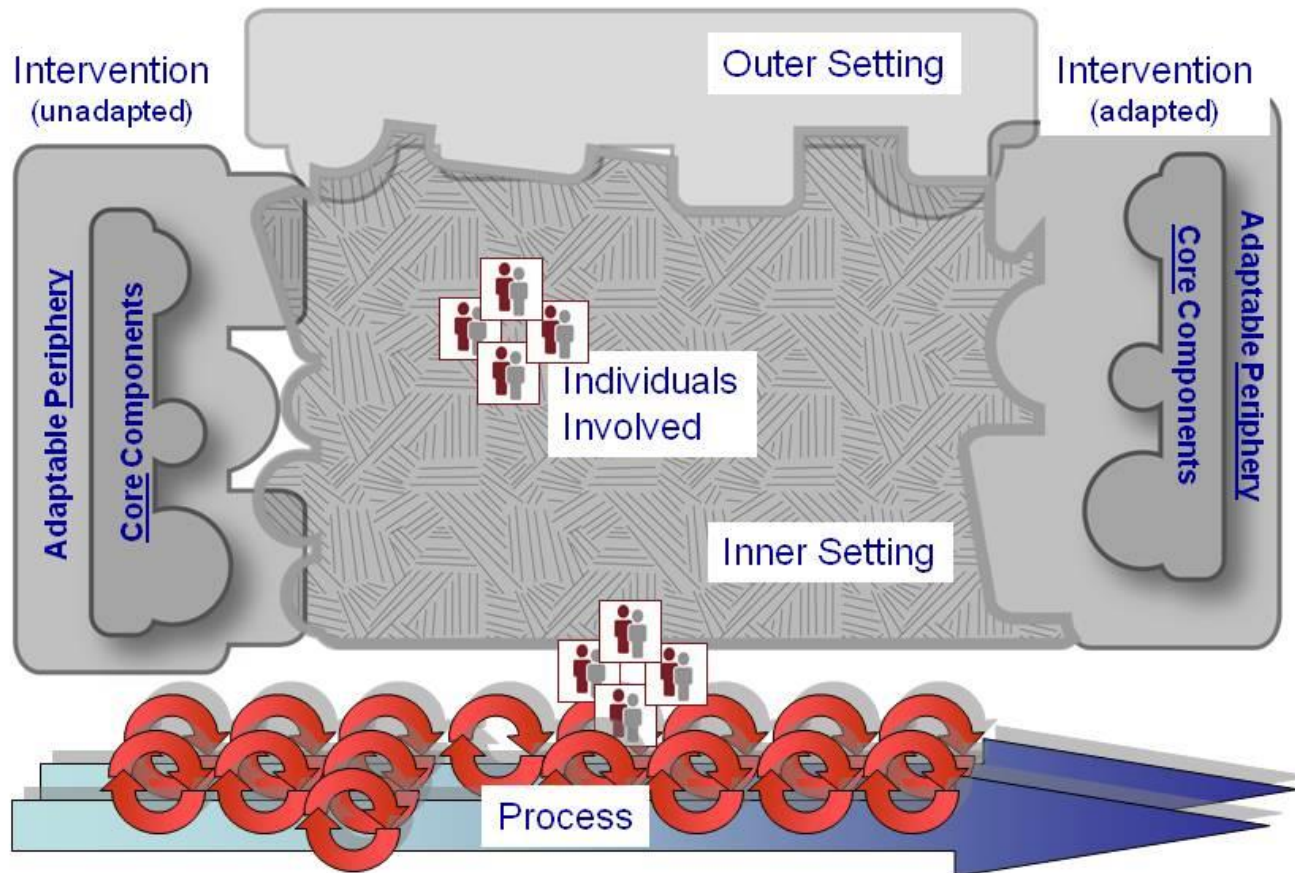
# Chronic Care Model



# Greenhalgh: Determinants of Diffusion, Dissemination and Implementation (2004)

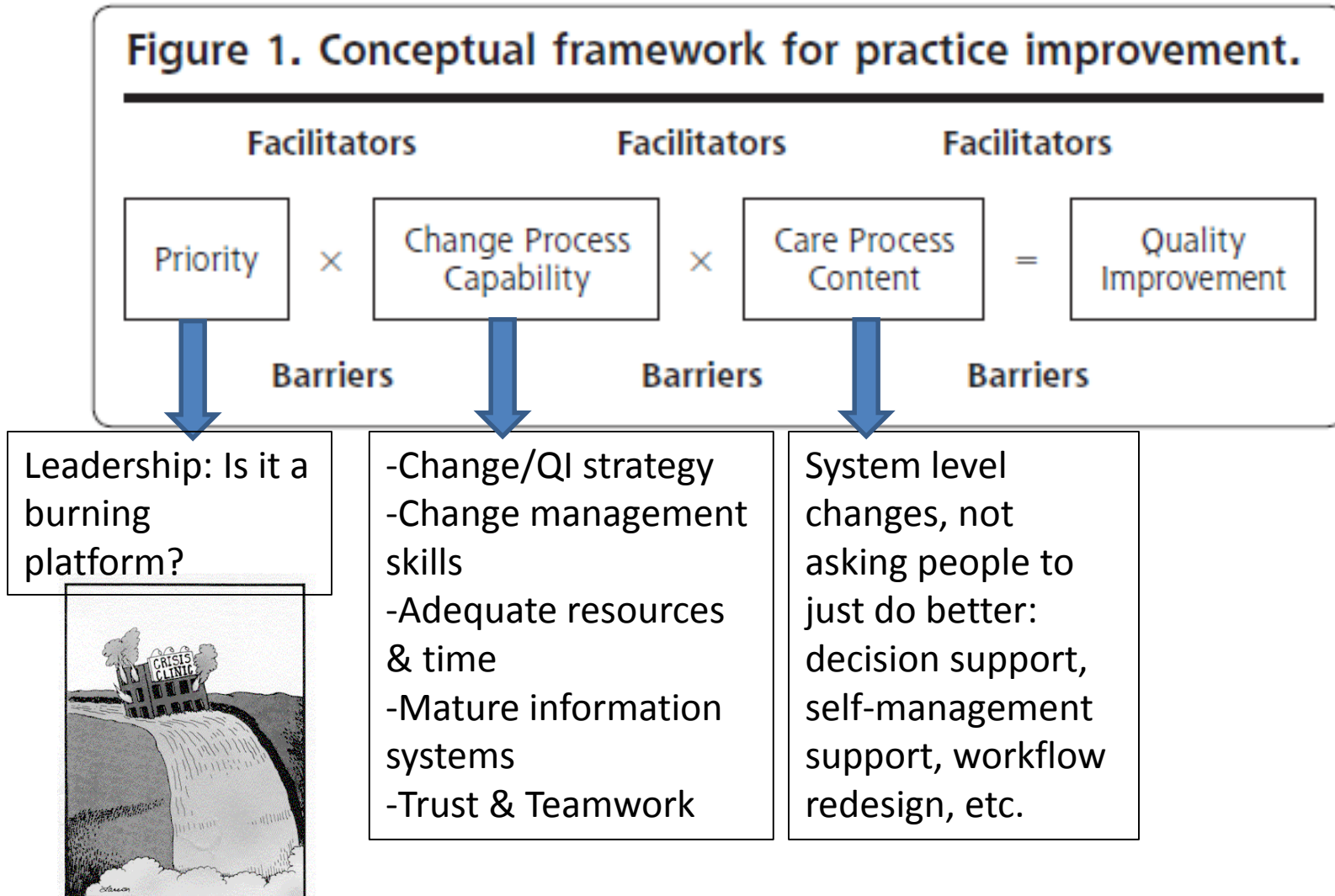


# Consolidated Framework for Implementation Research (CFIR)



# Framework for Practice Improvement

Figure 1. Conceptual framework for practice improvement.



# Who Does IS Research?

- Clinicians
- Nurses
- Psychologists
- Economists
- Public Health
- Organizational Scientists
- Epidemiologists
- Health Informaticians
- Health Administrators
- Biostatisticians
- Social Scientists
- Health Care Management
- And many more



# Examples of Implementation Research Studies

- Diamond Initiative: Depression in Minnesota
- Practice Facilitation Improves Chronic Illness Care: The ABC Intervention Study

# Diamond Study: Conceptual Framework

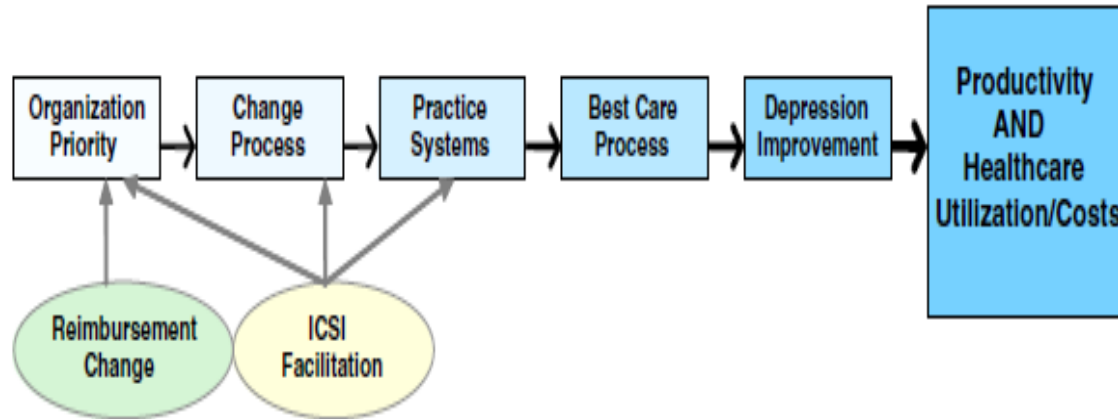


Figure 1 The implementation chain.

# Change/Implementation Process

- Training: one physician, care manager
  - Four face-to-face sessions
  - Two conference calls/webinar
- Registry
- Tools/Resources: checklists, clinic workflow, scripts for patient visits
- Monthly care manager support calls

# Diamonds Study: Practice Systems

1. Consistent use of a standardized tool (the PHQ9) for assessing and monitoring depression severity [21,22];
2. Systematic patient follow-up tracking and monitoring with a registry;
3. Treatment intensification for patients who did not improve;
4. Relapse prevention planning for those who go into remission;
5. A care manager in the practice to educate, monitor and coordinate care for patients in collaboration with the primary care physician;
6. Scheduled weekly psychiatric caseload review with the care manager in order to provide change recommendations to the primary care clinician for those not improving;
7. Monthly report of overall performance measures from each clinic for focused improvement attention, both by individual clinics and medical groups and the Initiative.

# Diamond Study: Methods & Results

## METHODS

- 75 primary care clinics
- Stepped Wedge Design
  - 5 sequences of 10-40 clinics every 6 months

“This study shows the difficulty of widespread implementation of evidence-based practices that require major changes in roles and extensive financial and leadership support.”

- PHQ-9 Scores not significantly different
  - Diamond: 13.2 to 8.0
  - Control: 12.3 to 7.8
  - ( $p=.92$ )
- Depression remission rates were not significantly different
  - 36.4% Diamond Care vs 33.9% Control Clinics; ( $p = .94$ )



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# A randomized trial of practice facilitation to improve the delivery of chronic illness care in primary care: initial and sustained effects

Michael L Parchman<sup>1\*</sup>, Polly H Noel<sup>2,3</sup>, Steven D Culler<sup>4</sup>, Holly J Lanham<sup>2,5</sup>, Luci K Leykum<sup>2,3</sup>, Raquel L Romero<sup>6</sup> and Raymond F Palmer<sup>6</sup>

# Methods

- 38 small practices
- Stepped Wedge Design
  - Initial Intervention (n=19)
  - Delayed Intervention (n=19)
- 12 months of practice facilitation/coaching to implement components of the CCM
- Tools/resources for improving diabetes outcomes: A1c, BP, lipids (ABC)

# Outcomes

- Clinician Staff Surveys:
  - Assessment of Chronic Illness Care
- Chart Abstractions (n=60 random per clinic)
  - A1c
  - BP
  - Lipids



# Care Consistent with the CCM?

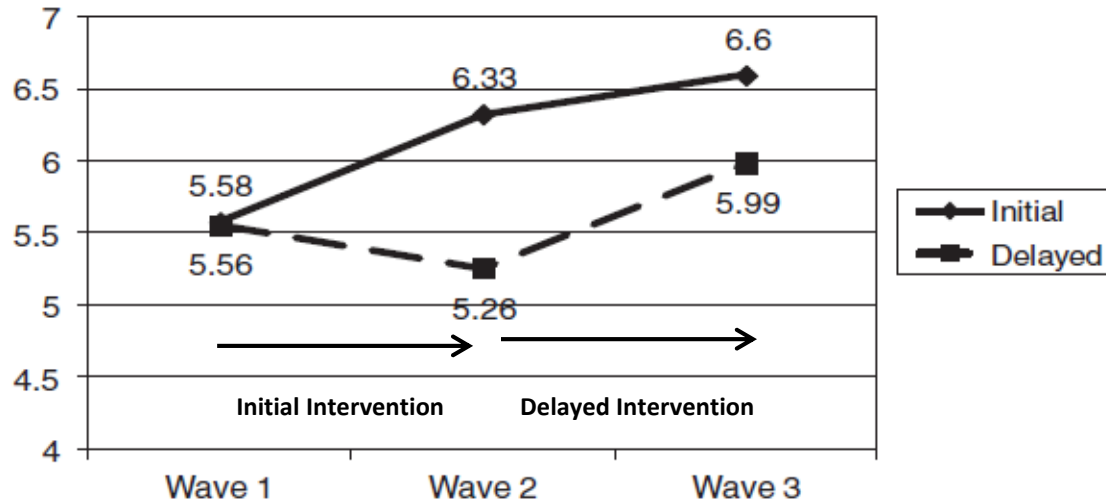
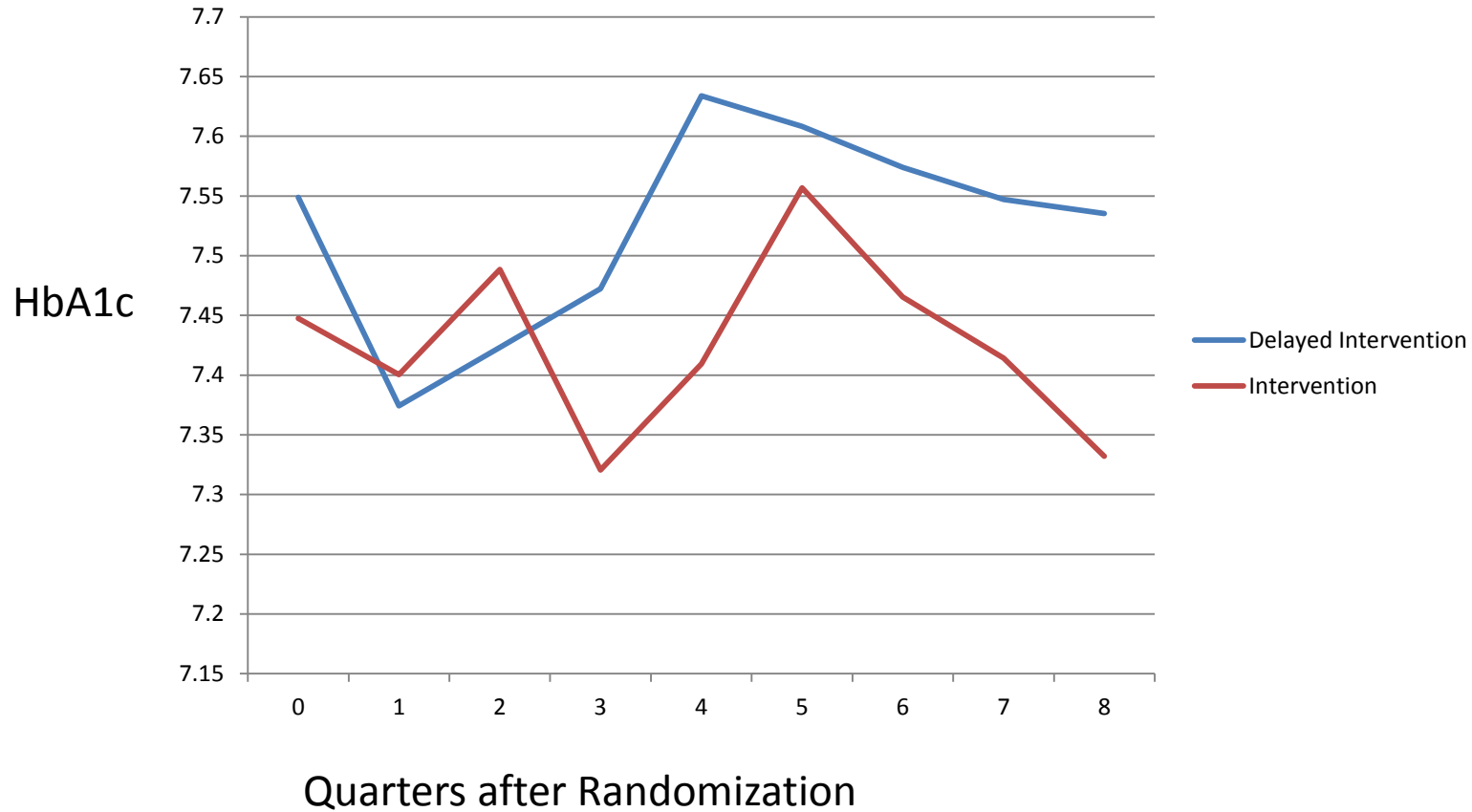


Figure 1 ACIC scores: initial and delayed intervention practices.

\*Wave 1 to Wave 2 paired t-test =  $-2.38$  ( $p = .02$ ), mean difference  $0.75$  (S.D.  $1.36$ ), 95% CI of the difference  $0.09, 1.40$ .

# Trends in A1c Control



# Conclusions

“One of the most consistent findings from clinical and health services research is the failure to translate research into practice and policy. As a result of these evidence-practice and policy gaps, patients fail to benefit optimally from advances in healthcare and are exposed to unnecessary risks of iatrogenic harms, and healthcare systems are exposed to unnecessary expenditure resulting in significant opportunity costs...[and] our evidence on the likely effectiveness of different strategies to overcome specific barriers remains incomplete.”

-Jeremy Grimshaw 2012

# References

- The journal “Implementation Science” is open-source and worth exploring back issues for interesting articles:
  - [www.implementationscience.com](http://www.implementationscience.com)
- Website: Consolidated Framework for Implementation Science:
  - [www.cfirguide.org](http://www.cfirguide.org)
- Greenhalgh T, et al. Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Quarterly*, 2004;82:581-629.



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# Questions?

