

**Diffusion of Innovations and
Community Mobilization and Empowerment
Models
Epi 246**

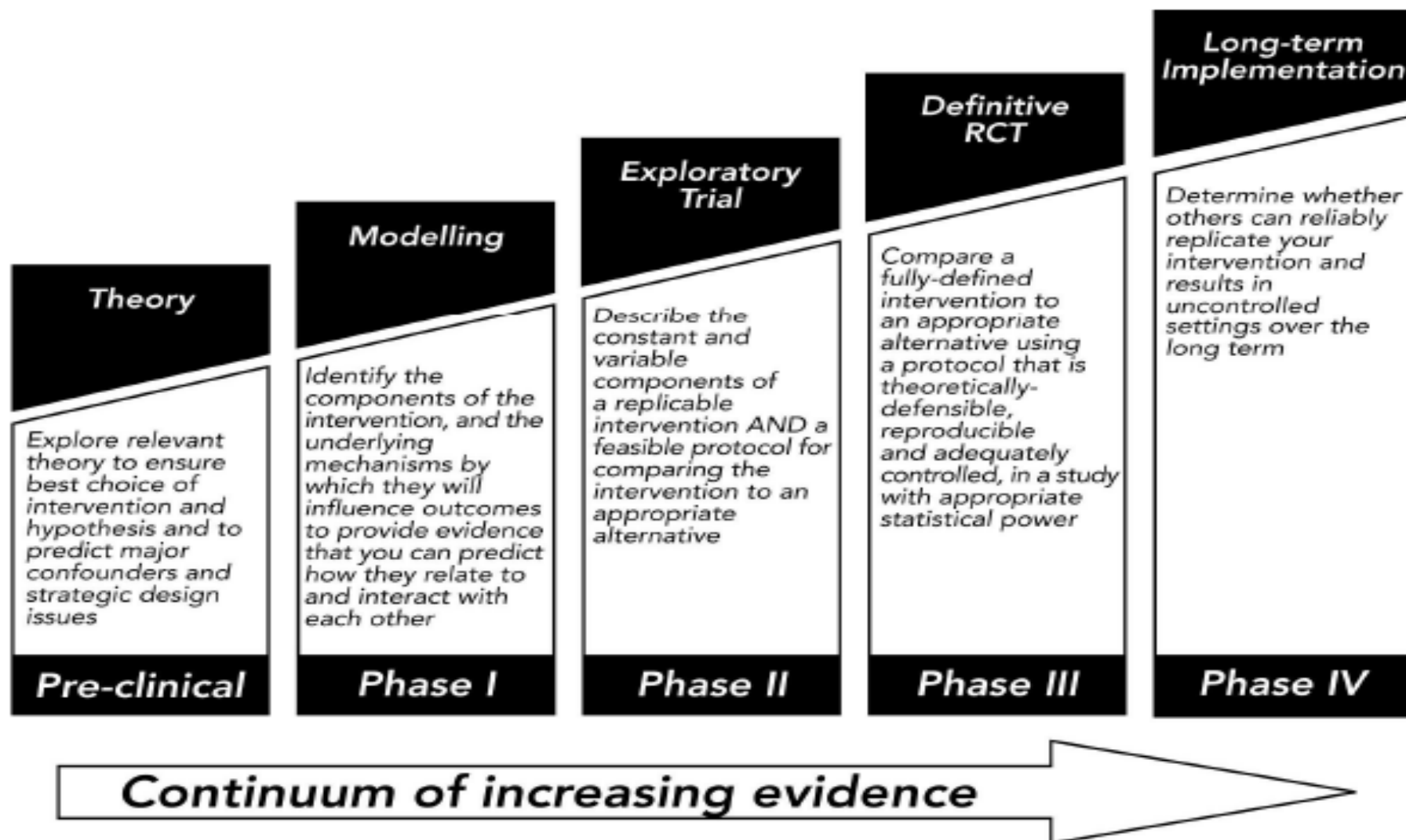
Margaret Handley, PhD MPH

October 3, 2014

Outline of Today's Lecture

- I. Discuss the Diffusion of Innovations (DOI) Model and Its Evolution**
- II. Describe examples that integrate DOI with other theories that we have discussed**
- III. Discuss Socio-Ecological Models that focus on Community Mobilizing and Empowerment**

Evidence Continuum – Begin with Theory



Behavioral Theory Use on a Continuum

1. **Informed by theory** – Framework or constructs identified, but not specifically applied
2. **Applied theory** - Framework or constructs identified--at least one construct specifically applied
3. **Testing theory** - Framework or constructs identified and tested against one another
4. **Building/creating theory** – Developing new or revised theory using constructs specified, measured, and analyzed

Overview Diffusion of Innovations

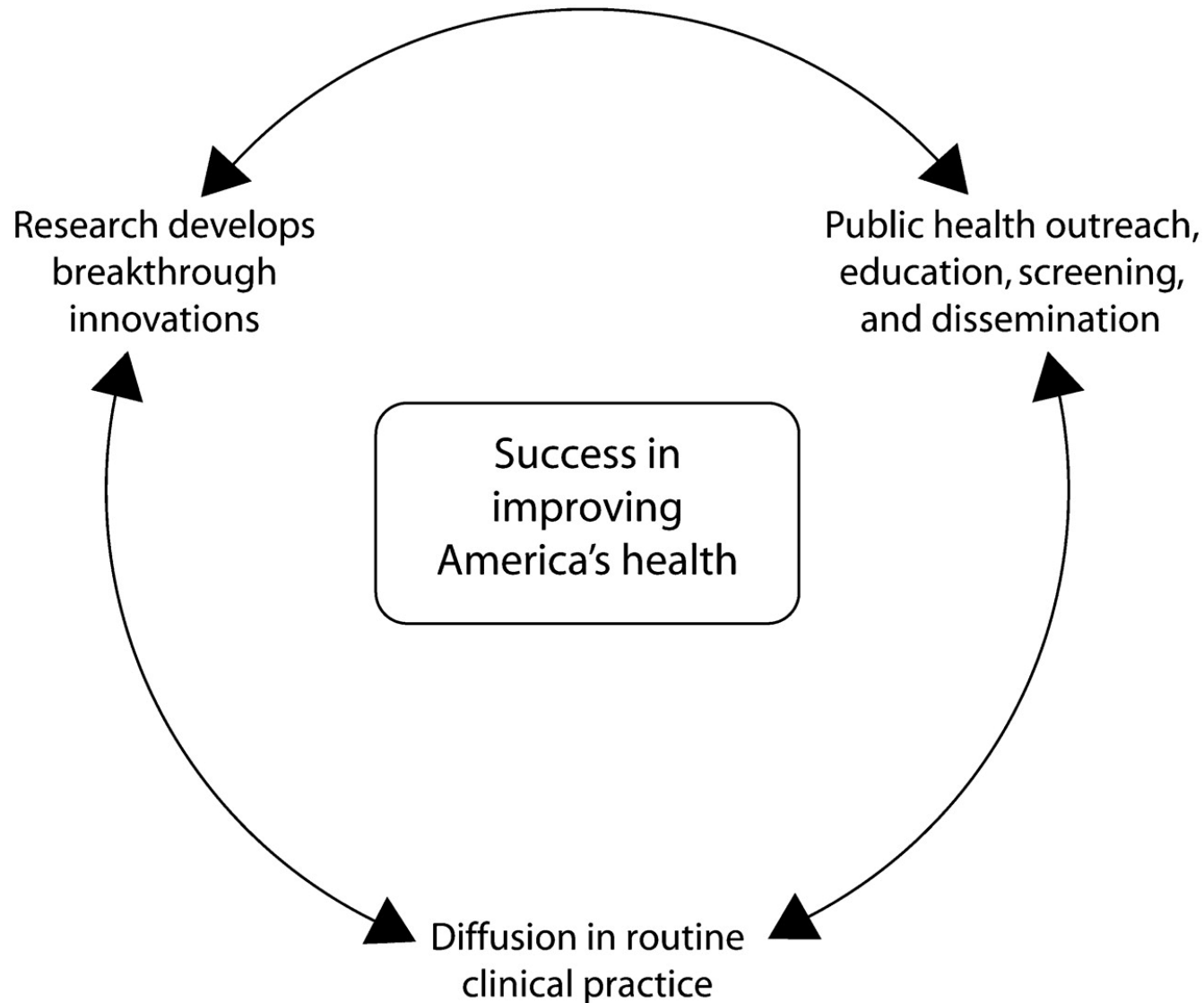
**“In healthcare, invention is hard,
but dissemination is even harder” – D. Berwick**

**7 of the 9 causes of death with large declines
between 1950 and 2000 clearly required,
and had diffusion of innovations through
triangulated public health & medical care channels**

**Purpose of DOI – To use what we know about how
and why innovations diffuse to design and
conduct successful interventions that get widely
adopted**

**Berwick D. JAMA 2003
Rust G et al AJPH, 2010**

Diffusion of Innovations & Declines in Mortality



Diffusion

Diffusion is the **process** through which an **innovation** is communicated through certain channels over time among the members of a social system (the science of spread of ideas)

“Ideas and products and messages spread just like viruses do”

- Malcolm Gladwell- the Tipping Point

Social influence is at the heart of diffusion, with active change processes engaged with potential adopters of the innovation

Dearing 2008; Dearing and Kreuter 2010

Dissemination

Dissemination is **planned** systematic efforts to make an existing program or innovation more widely available to specific group
(the spreading of information to stakeholders)

- Dissemination can be passive or active
- The product of dissemination is **information**

Key Concepts Related to Diffusion of Innovations

Diffusion: the overall spread of an innovation, the process for which an innovation is communicated over time in a social system

Dissemination: the planned systematic effort designed to make a program or innovation more widely accessible

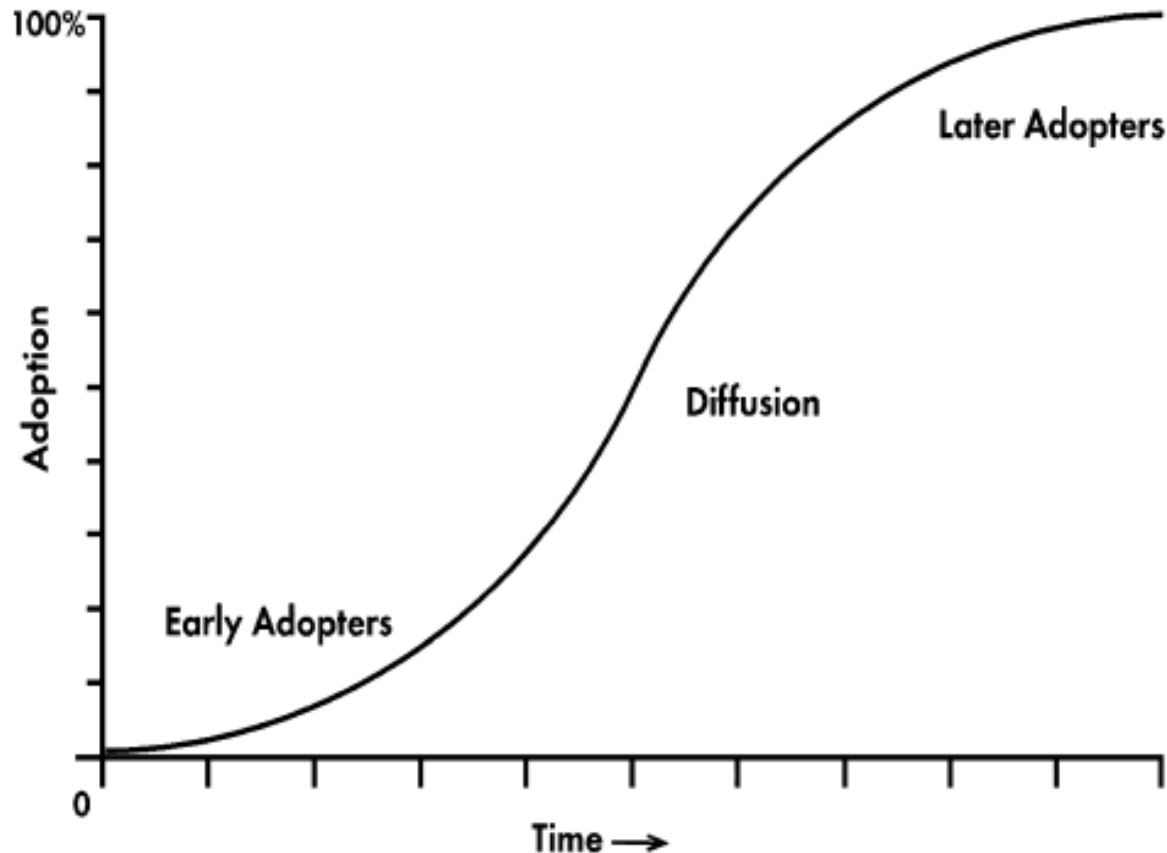
Innovation: an idea, practice, or object that is perceived to be as new

Communication Channels: means by which messages are spread, mass media/personal

Social System: inter-related (inds. or groups) that are engaged in joint problem-solving

Diffusion of Innovations- Success over Time

FIGURE 1 ● Innovations spread through a social system or social sector after positive adoption decisions and/or social modeling of the innovation by local, informal opinion leaders who comprise a subset of all early adopters.



What is Diffusion of Innovations?

- A model with 50 years of studies examining what works for spreading innovations -- key ideas:
 - (1) perceptions about **innovativeness** of the innovation by target audience matter
 - (2) the attention of **influential adopters** is critical to moving forward, especially 'early adopters'
 - (3) **context** could 'make or break' adoption
- Many key features of DOI can be built into intervention dissemination efforts
- Some refer to DOI as Theory of Social Change or Diffusion Theory

5 Main DOI Components

(1) the *innovation*

(2) the *adopter*, and their innovativeness

(3) the *social system*

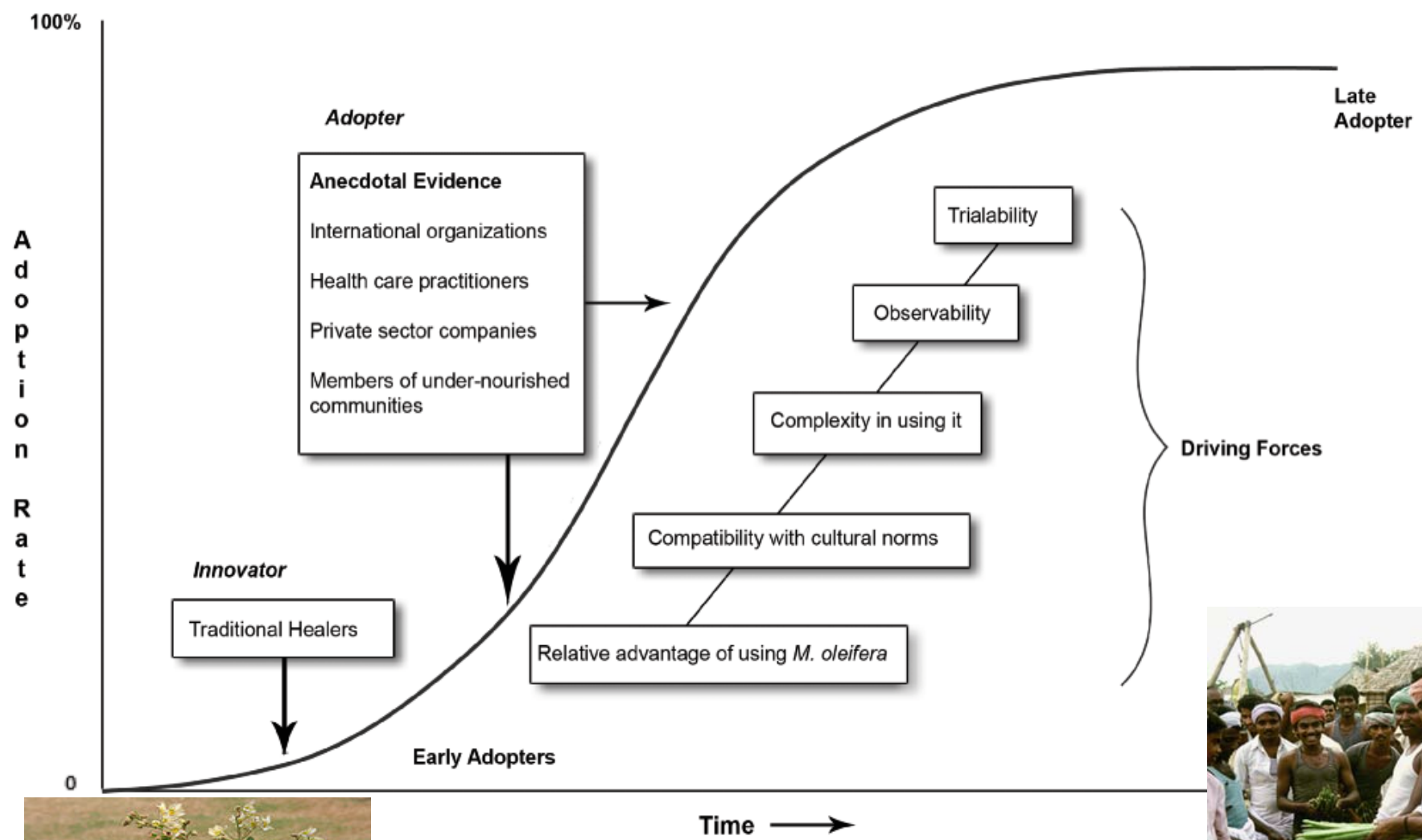
(4) the *individual adoption process* –

a stage ordered model of awareness, persuasion, decision, implementation and continuation

(5) the *diffusion system*—

especially regarding outside agents that can work within the system the innovation is being brought to

DOI to Understand Adoption of Food to Treat Under-Nutrition



The 'miracle' tree

Thurber M et al, Ecol Food Nutr. 2009 May-Jun;48(3):212-25. Adoption of *Moringa oleifera* to combat under-nutrition viewed through the lens of DOI



Key Concepts of the **Innovation** in DOI

1.Relative advantage:

Is it better than what was there before?

2.Compatibility:

Does the innovation fit with the intended audience?

3.Complexity: Is it easy to use?

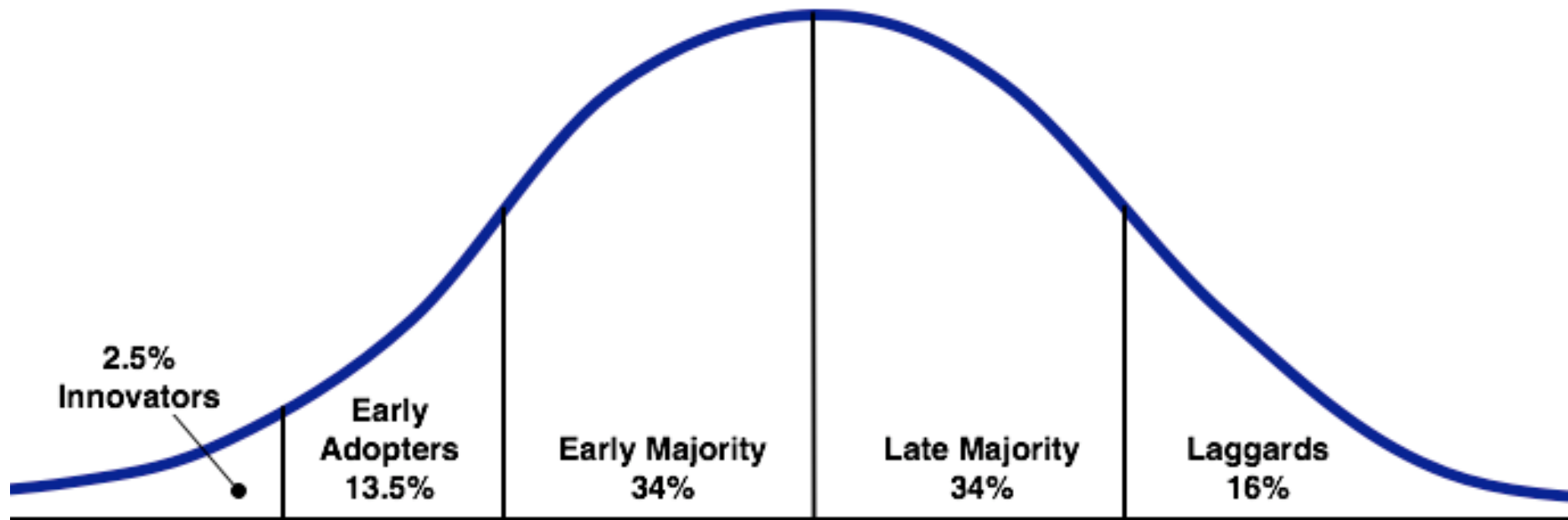
4.Trialability:

Can the innovation be tried before deciding?

5.Observability:

Are the results observable and easy to measure?

Diffusion of Innovations- A Population Perspective of Success



Source: Everett Rogers, Diffusion of innovations model

What matter most about the process?

1.Communication channels: How does information get spread? Who are the “connectors”?

2.Opinion leaders:

Who is talking about the innovation and who is listening? (not the same as early adopters)

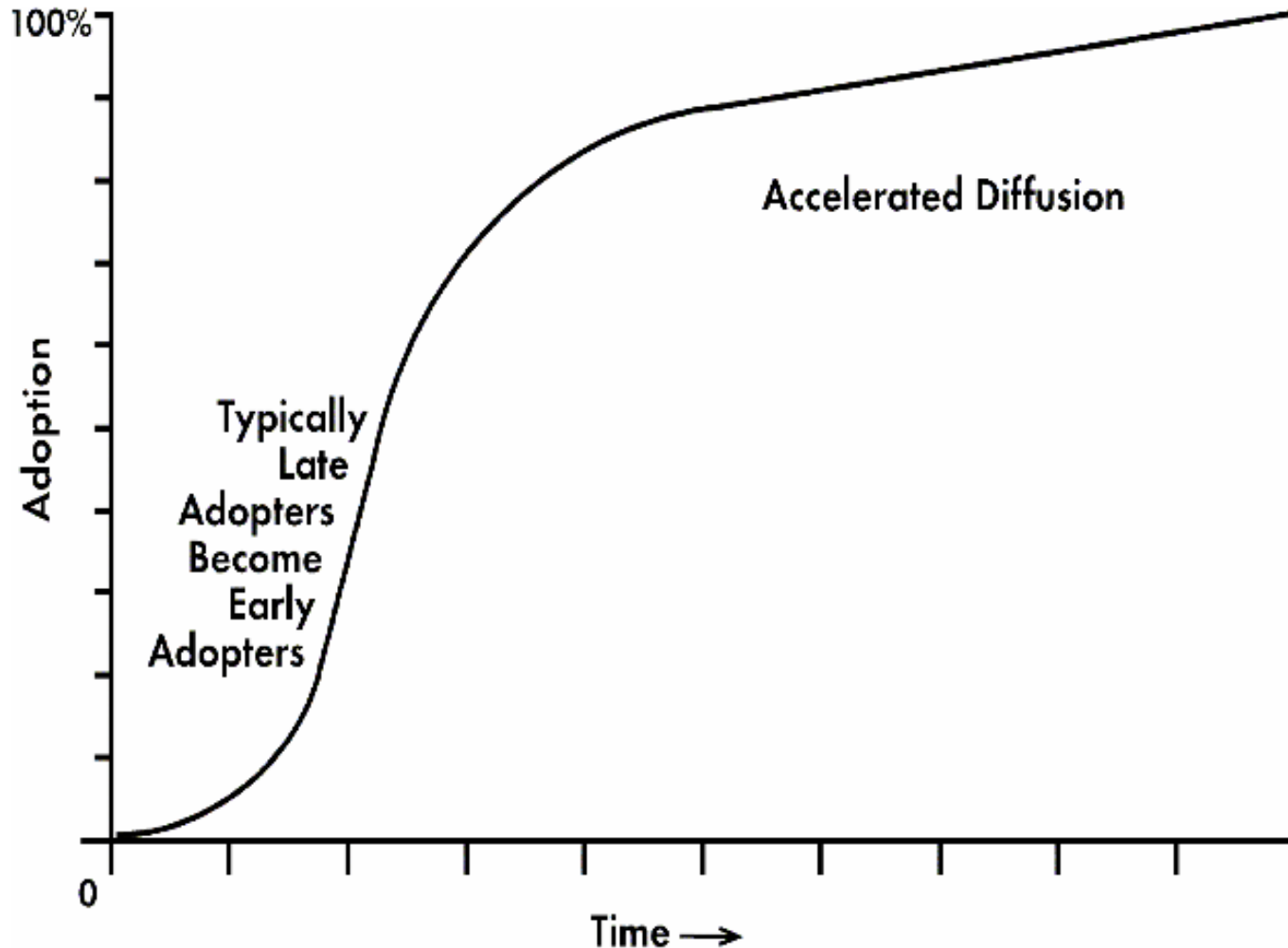
3.Like groups:

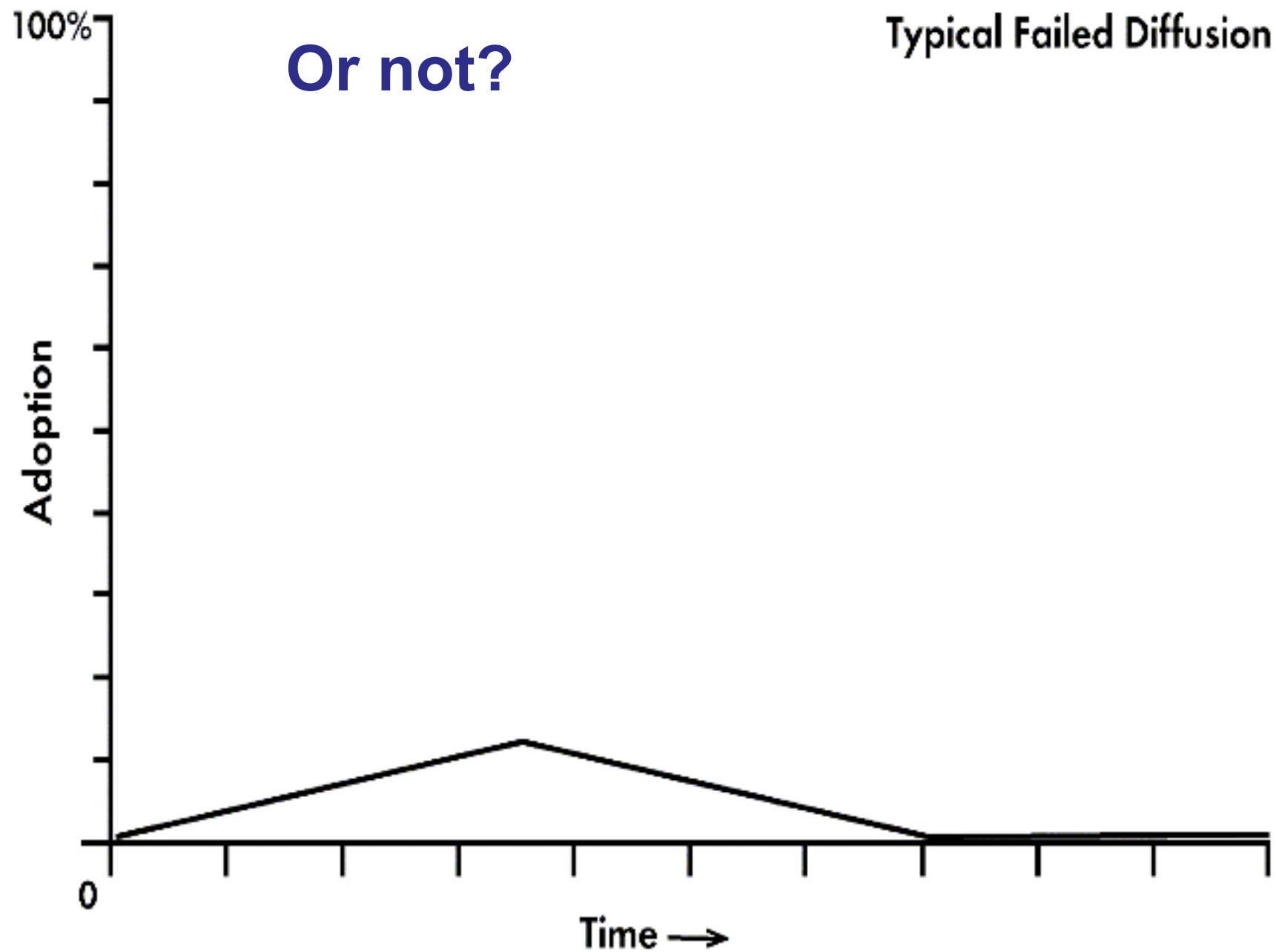
Are there groups that have similar attributes?

4.Norms and roles in social networks: Do these help or hinder the spread?

5.Infrastruture: Are there technologies or other things that cluster with the innovation?

Can DOI-Based Implementation Accelerate Diffusion in Health Care?





Diffusion of Innovations – Population Level

Table 1. Hierarchy of Technology Adopters

Category	Characteristics	Percent of Adopters
Innovators	■ Venturesome ■ Cosmopolite ■ Geographically dispersed contacts ■ High tolerance of uncertainty and failure	2.5
Early adopters	■ Well-respected opinion leadership ■ Well integrated in social system ■ Judicious and successful use of innovation	13.5
Early majority	■ Deliberate ■ Highly interconnected within a peer system ■ Just ahead of the average	34.0
Late majority	■ Skeptical ■ Responsive to economic necessity ■ Responsive to social norms ■ Limited economic resources ■ Low tolerance for uncertainty	34.0
Laggards	■ Traditional ■ Localite ■ Relatively isolated ■ Precarious economic situation ■ Suspicious	16.0

Source: Everett Rogers. *Diffusion of Innovations*. New York: The Free Press. 1995.

Top 10 Dissemination Mistakes

- 1. We assume that evidence matters in the decision making of potential adopters.**
- 2. We substitute our perceptions for those of potential adopters.**
- 3. We use intervention creators as intervention communicators.**
- 4. We introduce interventions before they are ready.**
- 5 We assume that information will influence decision making.**

Top 10 Dissemination Mistakes

6 We confuse authority with influence.

7 We allow the first to adopt (innovators) to self-select into our dissemination efforts.

8 We fail to distinguish among change agents, authority figures, opinion leaders, and innovation champions.

9 We select demonstration sites on criteria of motivation and capacity.

10 We advocate single interventions as the solution to a problem.

Case Study: Designing with DOI for a Behavior Change Intervention to Improve Obstetric Care

Background

- Implementation of evidence-based obstetrical practices is an important challenge -- effective dissemination strategies are needed**
- Evidence-based interventions are underused in maternity hospitals, and ineffective or harmful practices continue to be used**
- In many settings, active management of third stage of labor is low (e.g oxytocin use) and harmful practices (e.g. episiotomy) are common**

Case Study: Designing with DOI for a Behavior Change Intervention to Improve Obstetric Care

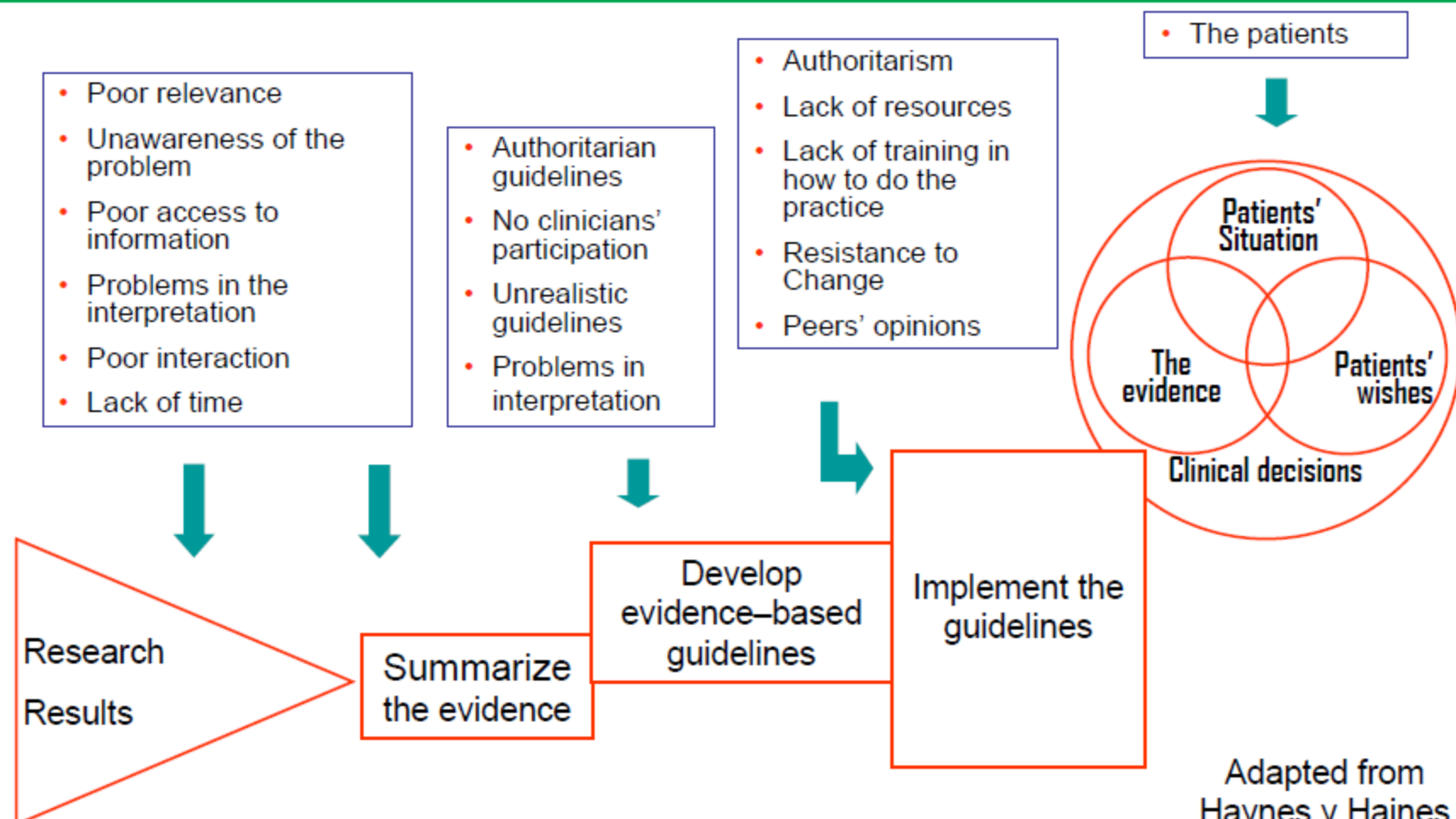
- **Large randomized trial of hospitals to test a multi-faceted behavioral intervention to increase adoption of guidelines for use of episiotomy and management of third stage of labor in Argentina and Uruguay**
- **Selection of opinion leaders, interactive training, detailing, reminders, feedback to develop and implement guidelines**
- **Extensive formative work on barriers preceded the intervention development**

A Behavioral Intervention to Improve Obstetric Care

Evidence-Based Intervention Components w/DOI:

- Teams formed of opinion leaders/peers identified by peers located in hospital setting across disciplines (physicians, residents, nurses, midwives)
- Opinion leader* training in academic detailing, skills, guidelines.
- Reminders and feedback on utilization rates
- Support from administration

Barriers *Formative Research 2002*



From knowledge to implementation

Adapted from
Haynes y Haines
1998

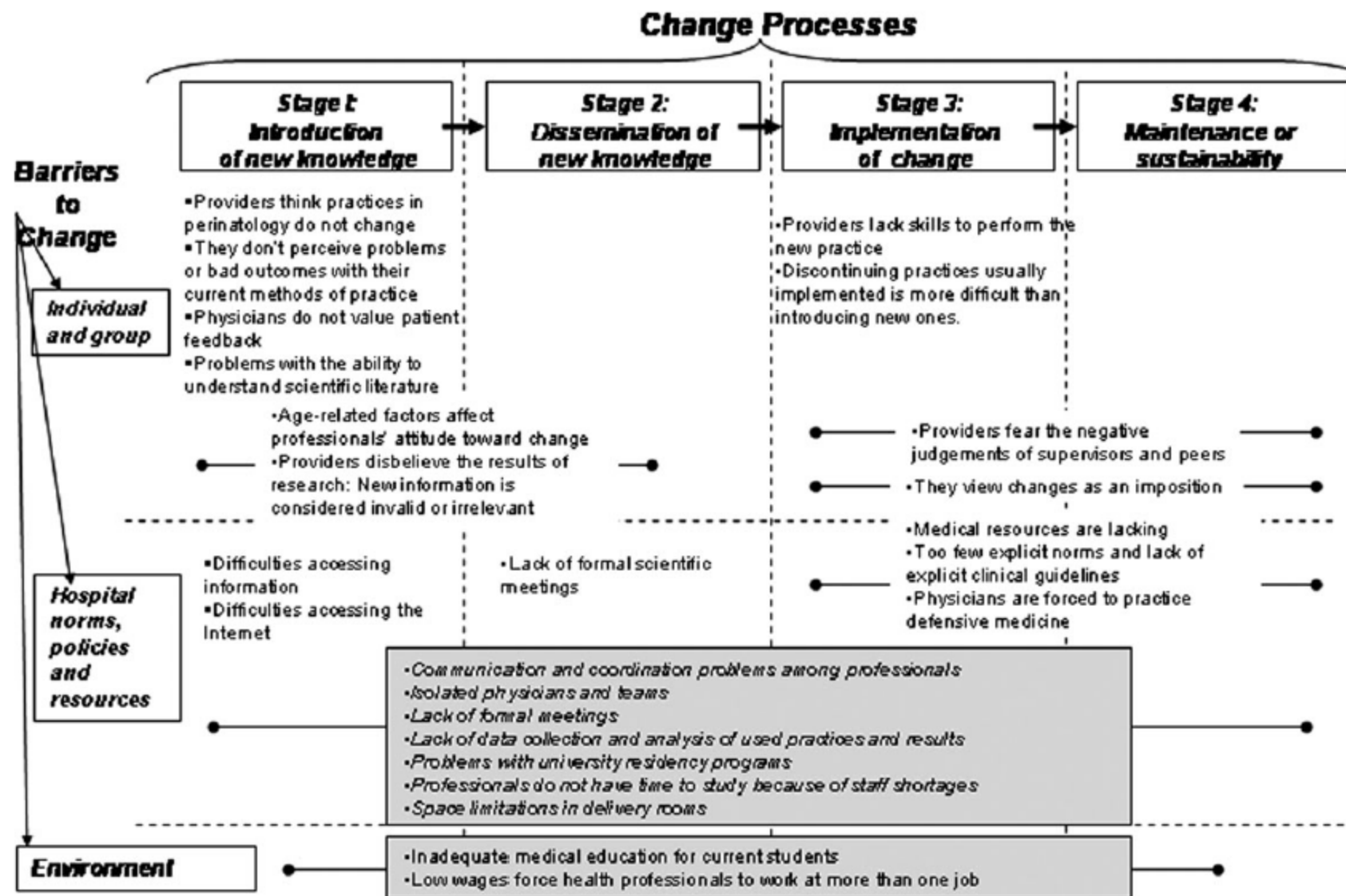


Fig. 1. Multi-level influences affecting barriers to changing clinical practice.

A Behavioral Intervention to Improve Obstetric Care

Tailoring Based on Formative Work:

- ‘Facilitadores’ opinion leaders- young doctors**
- Academic detailing based on Motivational Interviewing and SCT components**
- Peer ‘matching’ in hospital location for academic detailing – emphasis on individual (boca a boca) communication style**
- Seeing/doing training style emphasized**

Evaluation Components –DOI

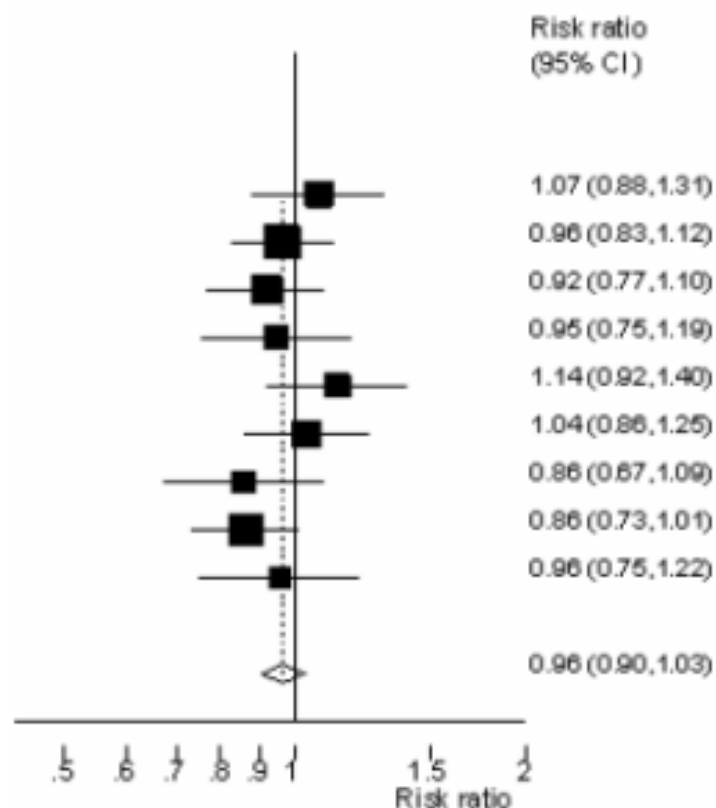
Process Evaluation Information

- High level of implementation of components
- >90% response rates to surveys
- Variability across hospitals/situations
- Reminders noticed at first:
 - All put signs in delivery room, few in charts
 - Monthly reports ignored after awhile
- Few people used Cochrane/guideline info
- Most perceived impact: hands-on training and personal visits/academic detailing

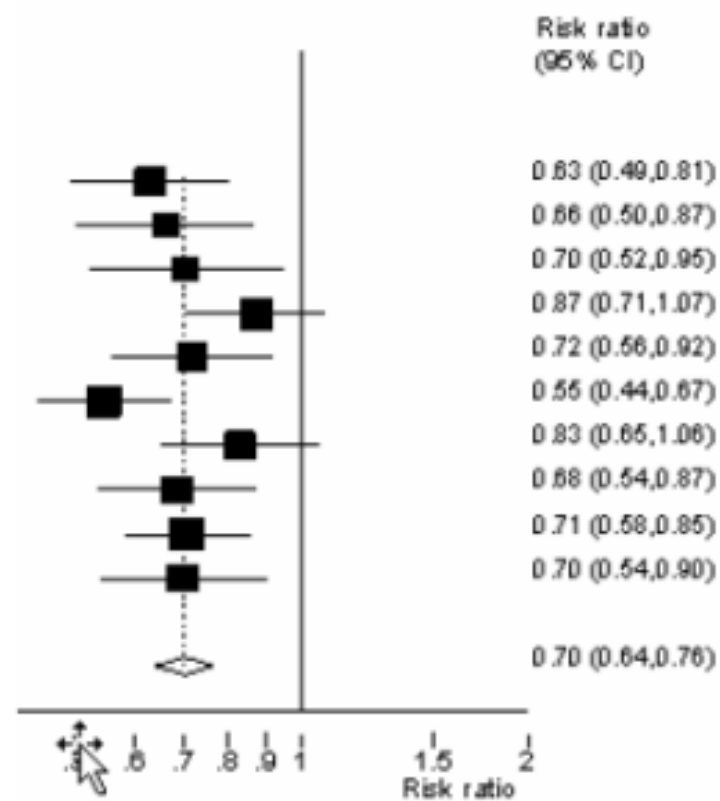
Outcomes

Episiotomy

Control Hospitals

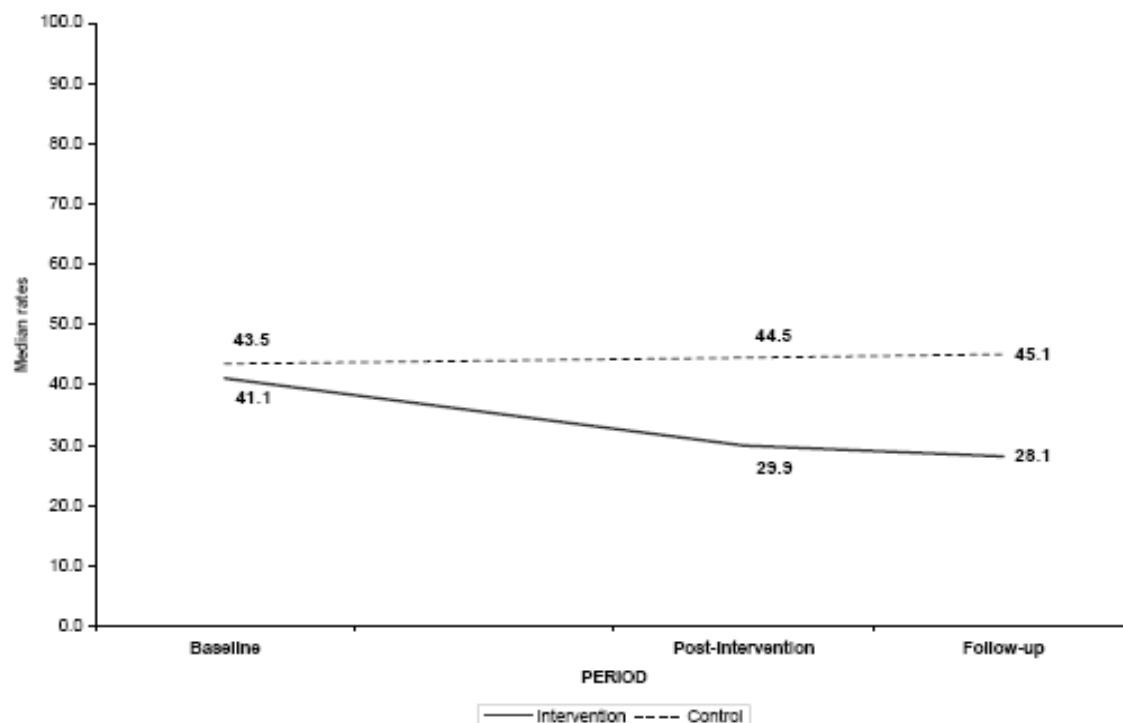


Intervention Hospitals



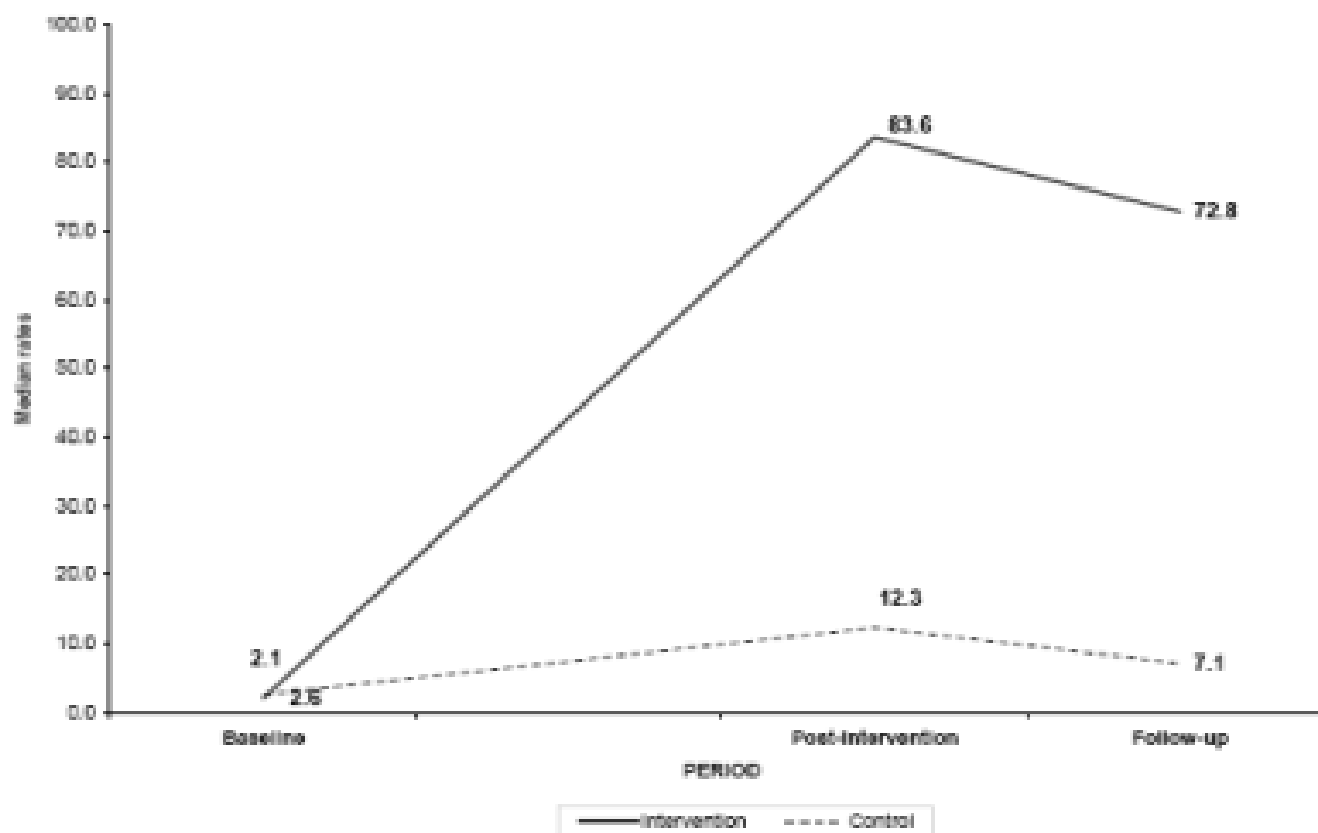
Outcomes

Follow-up One Year *Episiotomy*



Follow-up One Year

Active Management of 3rd Stage



Outcomes- Lessons for Dissemination

Adaptation based on local context and culture

- intervention components**
- naming and terms used**

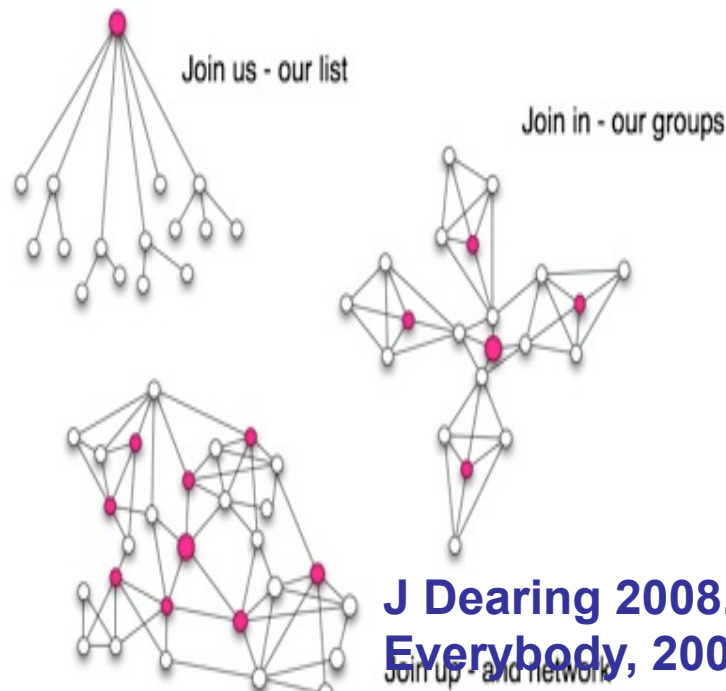
Qualitative methods and observation

Detailed process/implementation evaluation

New Dynamics - Diffusion of Innovations to Dissemination Sciences

1. Importance of Social Networks not Defined by Geography Alone –

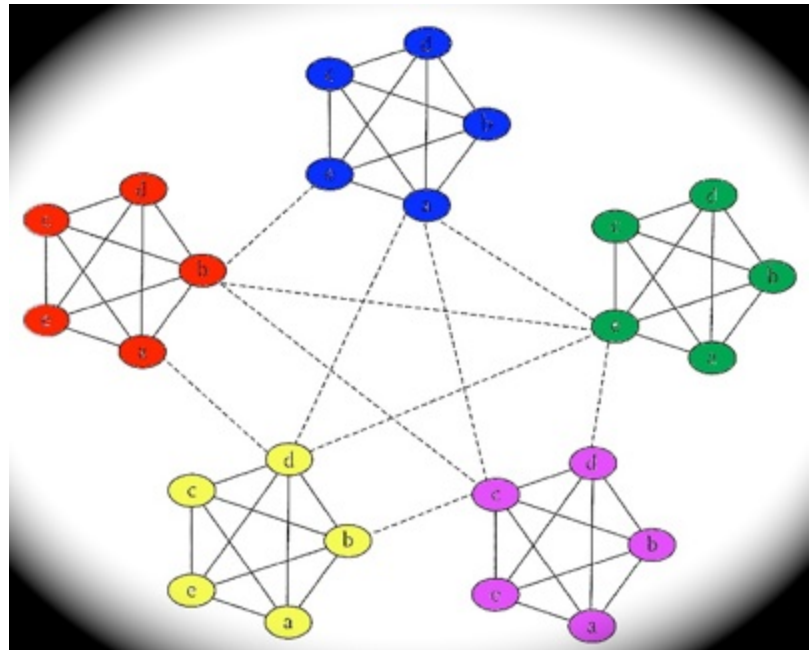
How integrated are the social networks related to the proposed innovation?



J Dearing 2008. Shirkey C, Here Comes Everybody, 2009

New Dynamics - Diffusion of Innovations to Dissemination Sciences

2. Non-Centralized Dissemination – Diffusion systems are less centralized- Individuals do not have to react to a strong control over political interest – naturalistic diffusion occurs



Resources – DOI TOOLS

DOI in Health Care – CHCF 2002

<http://www.chcf.org/documents/healthit/DiffusionofInnovation.pdf>

AHRQ- Tools for Adopting Innovations

<http://www.innovations.ahrq.gov/resources/indexoftools.aspx>

Opinion leaders – Cochrane Review

Local opinion leaders: effects on professional practice and health care outcomes (Review) Doumit G, Gattellari M, Grimshaw J, O' Brien MA

Quick Tips for Technology Diffusion

Relative advantage

- Understand the end user of the technology
- Recognize the impact of significant behavior change
- Consider the business case for the adoption of a new technology

Trialability

- Look for opportunities to carve out some part of a system that is more trialable
- When designing a complex new technology or system, consider which components could be tried out without committing to the full innovation

Observability

- Make the invisible visible with viral marketing

Communications channels

- To *inform* people about an innovation, select mass media and “cosmopolite” sources. To *persuade* people to adopt the innovation, closer links and interpersonal channels are more effective
- To communicate more complex messages, select interpersonal communications channels
- In order to select the right communication channels, select the right target audience
- Identify people who are “Connectors”

Homophilous groups

- To use homophily as a technology promoter, understand the degree of homophily in the target group
- Look for other homophilous groups

Pace of innovation/reinvention

- Put in place active listening posts
- Monitor medical technologies very carefully for instances of potentially dangerous misuses
- Look for the “work-arounds” that users employ to make a technology work
- Do not be offended by reinvention

Norms, roles, and social networks

- Pay explicit attention to the physical and virtual networks of the groups you wish to reach
- Be aware of opportunities to leverage existing or to create new social networks

Opinion leaders

- Do not mistake early adopters for opinion leaders
- Work hard to identify the relevant opinion leaders
- Be on the lookout for “Mavens”

Compatibility

- Understand current behaviors and values
- Innovations that reduce hassles are more likely to be successful
- Mimic things from other parts of life

Infrastructure

- Look for opportunities to plug and play
- Understand current and future regulatory constraints and competing patent protections
- Look for leapfrogging technology

Mobilization and Empowerment-Focused Intervention Models

From Building 'Capacity' to Community Mobilizing and Empowerment

- Conceptual shift away from 'capacity building' and collaboration towards empowerment
 - communities can develop insight into and solutions for their own problems (Freire)
 - attempts to remove paternalism w/in health promotion practice/ interventions
- WHO health promotion strategies now describe community action and empowerment as prerequisites for health

Mobilization, Empowerment & Health

Mobilization – a capacity-building process through which groups plan, carry out, and evaluate activities on a participatory or sustained basis to improve health and other conditions >>>>> **Motivation and Engagement**

Empowerment influences people's **Ability to Act** through collective participation by strengthening organizational capacities and creating motivation

...in many reciprocal levels in different domains:
psychological empowerment/efficacy, household relations, enhanced social capital and cohesion, transformed institutions, greater access to resources, open governance and equitable community conditions.

Empowerment & Relation to Health

- **Roots in community psychology, health ed. health promotion, liberatory adult ed., comm. organizing, rural and comm. devt, and social work**
- **Interplay between gaining internal skills and overcoming external structural barriers**
- **Closely related to community engagement, participatory action, Community Based Participatory Research (CBPR)**

Empowerment & Relation to Health

- Takes a socio-ecological stance, with psychological empowerment being people's self-efficacy and control in their lives, organizational empowerment the ability of an agency to influence change and community empowerment the ability to change real conditions
- Focuses on power relations and action-intervention strategies (unlike social capital). Power is central with two core aspects based in relationships with others: control over resources (material, human, financial); and control over ideology (values, attitudes, beliefs)

Case Study: Empowerment/Community Mobilization with Integrated Frameworks

Background:

Intervention Focus: participatory action research informed intervention package and diffusion strategy>>behavior change

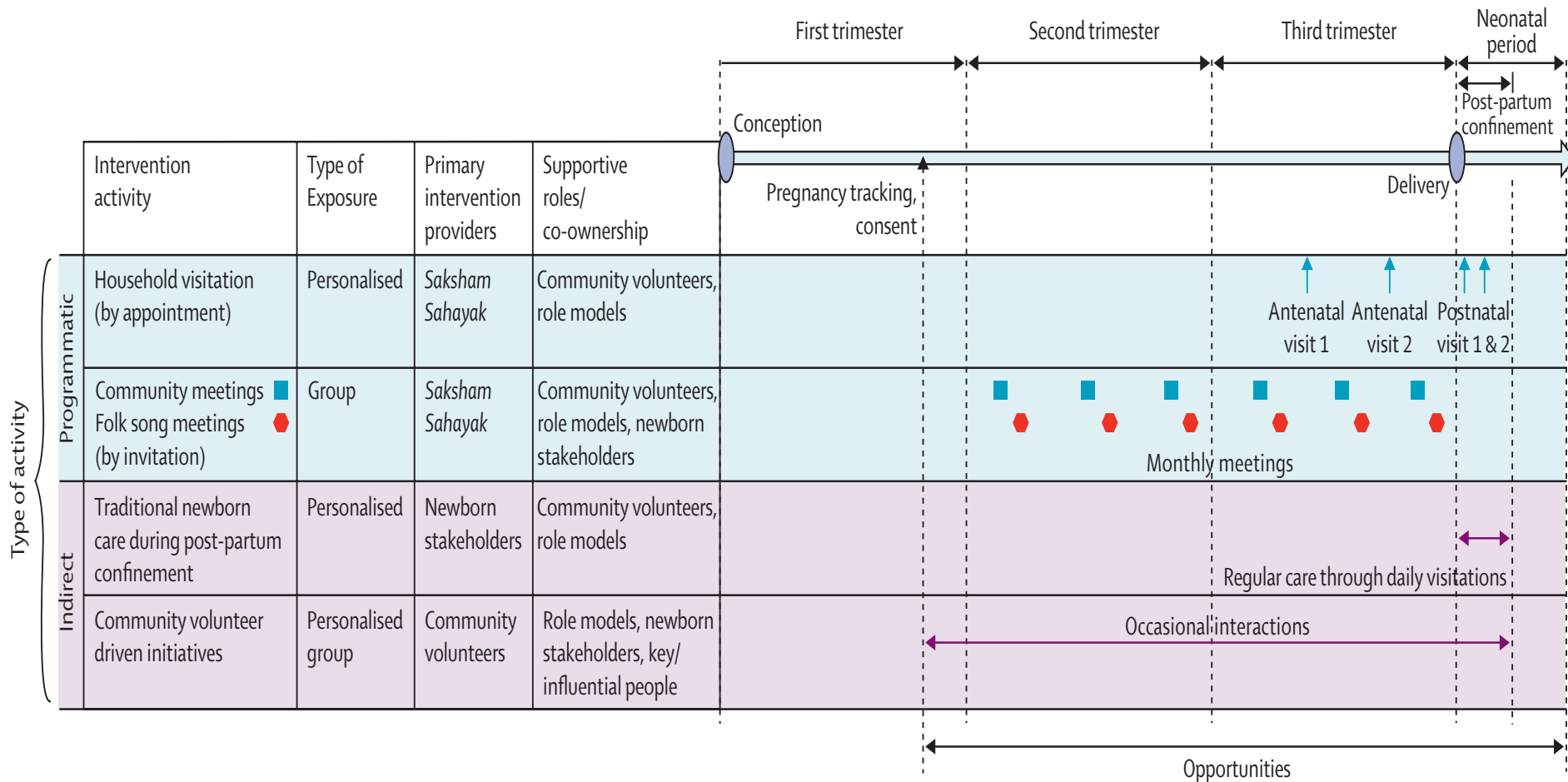
Behavior Change Theory/Model Concepts:
Participatory action cycle, HBM, TPB, SCT, DOI

Outcome: Neonatal Mortality

Effect of Community-Based Behavior Change Management on Neonatal Mortality, Shivgarh, India

- **Large scale cluster randomized trial based on reducing neonatal mortality using behavior change management using participatory methods to deliver the intervention package (co-community developed)**
- **Cluster randomized trial (39 village clusters)
>105, 000 people**
- **Trust-Based Intervention- home visits, meetings, initiatives to ‘shift in reasoning’ away from some practices and towards other practices (webtales)**
- **Neonatal mortality, home care practices, health seeking behavior**

Case Study: Empowerment/Community Mobilization with Integrated Frameworks



Effect of Community-Based Behavior Change Management on Neonatal Mortality, Shivgarh, India

RESULTS

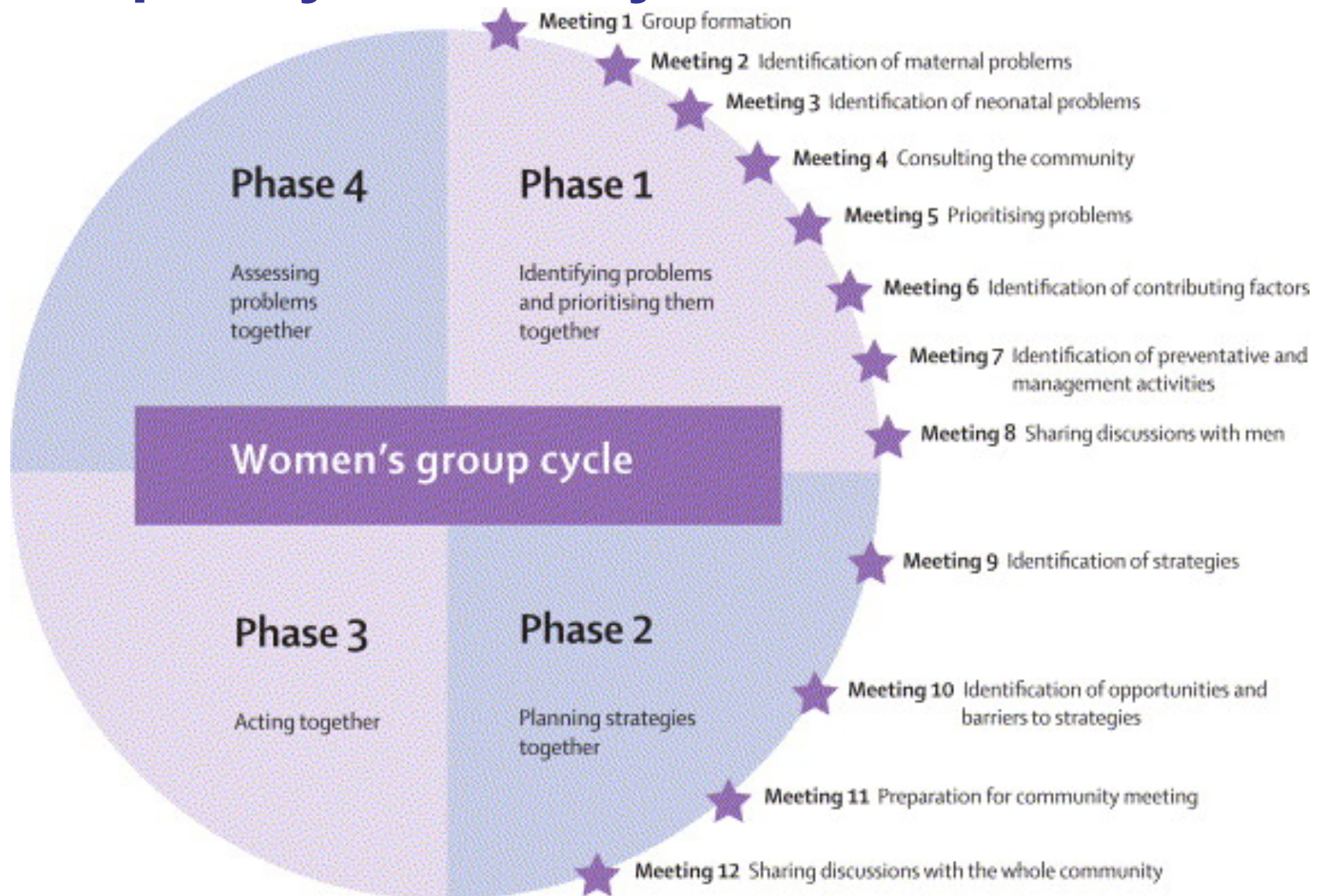
Improvements in birth preparedness, hygienic delivery, thermal care, umbilical cord care, skin care, and breastfeeding were seen in intervention arms.

Reduced Mortality Rates:

- **54% in the essential newborn-care intervention** (rate ratio 0·46 [95% CI 0·35–0·60], $p < 0·0001$) and
- **52% in the essential newborn care plus ThermoSpot arm** (0·48 [95% CI 0·35–0·66], $p < 0·0001$).

- **There was little change in care-seeking.**
- **Propose behavior change management framework**

Example – Mobilization through a Participatory Action Cycle – Malawi



Rosata M, Lancet. The action cycle of the women's group

Homework?

