The Role and Selection of Theoretical Frameworks in Implementation Research

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  - Brian Mittman
  - Cheryl Stetler
  - Teresa Damush

Outline

- Why use theory?
- Applying Theory in QUERI Step 3
- Approach for selecting and applying theory
  - With example case study
- Resources and help

Session Objectives

- Understand the role & value of theory in implementation research
- Equip you with an approach for applying theory in your work
  - Study design & conduct
  - Grant writing

A word on THEORY

- A generalized, loose definition of theory in science will sometimes be used today
  - "A set of statements or principles devised to explain a group of facts or phenomena"[1]
    - May be embodied in a framework, model, or specific hypothesis
- The literature is rife with inconsistent use of terms
  - Frameworks, models, theories

1. The American Heritage Science Dictionary. http://dictionary.reference.com/browse/theory

My favorite working definitions

- Framework
  - A conceptual framework that identifies a set of variables and relationships that should be examined to explain [implementation]
  - Need not ID direction of relationships nor critical hypotheses
- Theory
  - Denser and logically coherent set of relationships that can offer explanations and may or may not ID causal relationships
- Model
  - Precise assumptions about a limited set of parameters and variables
  - Usually multiple models are compatible with frameworks and theories

Kitson, A.L., et al., *Evaluating the successful implementation of evidence into practice using the PARIHS framework: theoretical and practical challenges. Implement Sci, 2008.* ***3(1): p. 1.***


WE'RE GOING TO USE CMMI. IT'S A MODEL FOR DEVELOPING A PROCESS TO CREATE A FRAMEWORK.
OR IT MIGHT BE A PROCESS FOR CREATING A FRAMEWORK TO MAKE A MODEL.
THERE'S NO BUDGET FOR TRAINING, SO WE'LL BE RELYING ON GUESSING MORE THAN USUAL.
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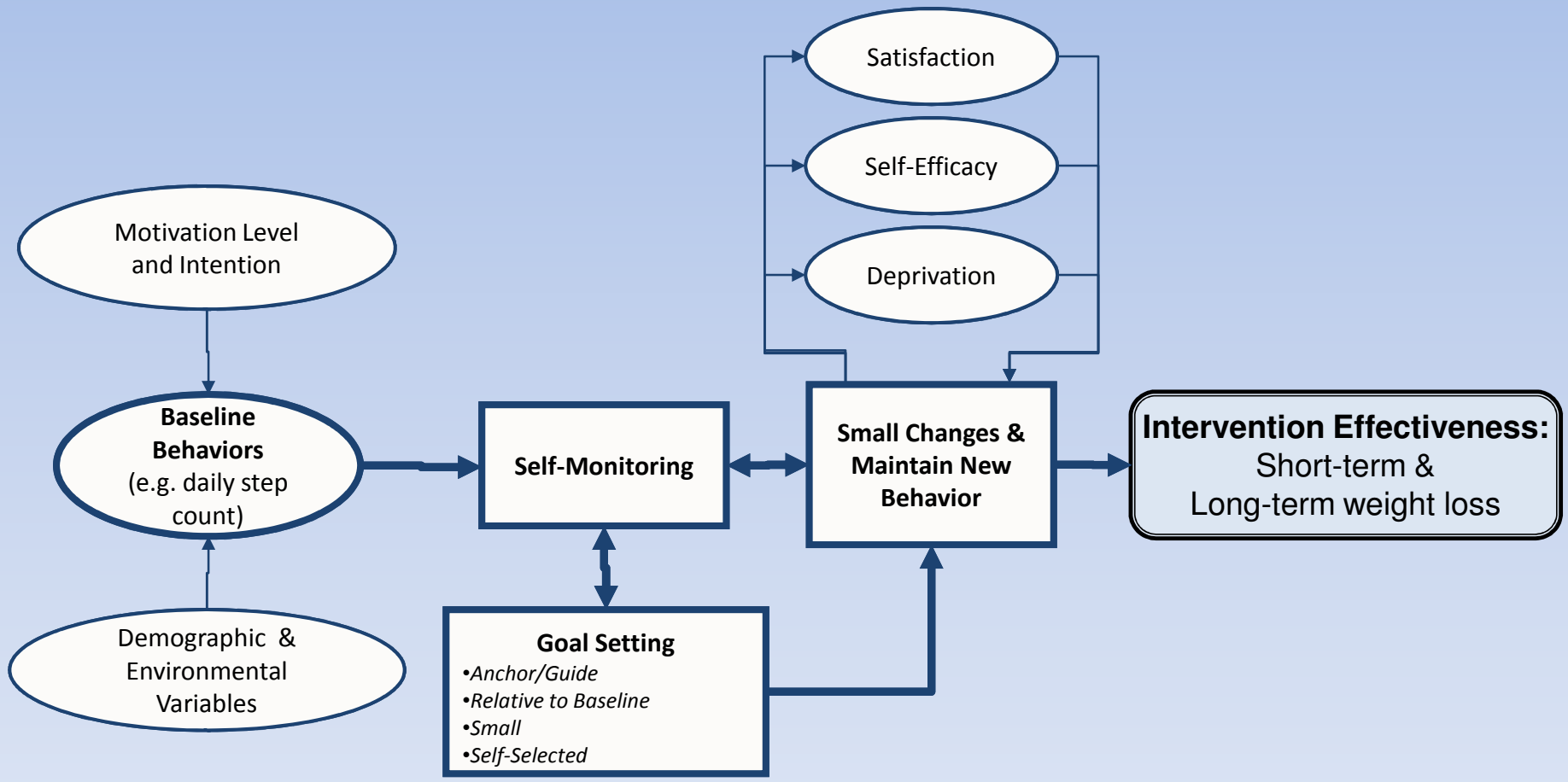
DILBERT.COM

Theory in a Clinical Intervention

- Example
  - Weight Loss Intervention: ASPIRE-VA
    - Social Cognitive Theory
    - Self-Regulation Theory
    - Problem-solving Theory
    - Small change Theory

Clinical Intervention Conceptual Model

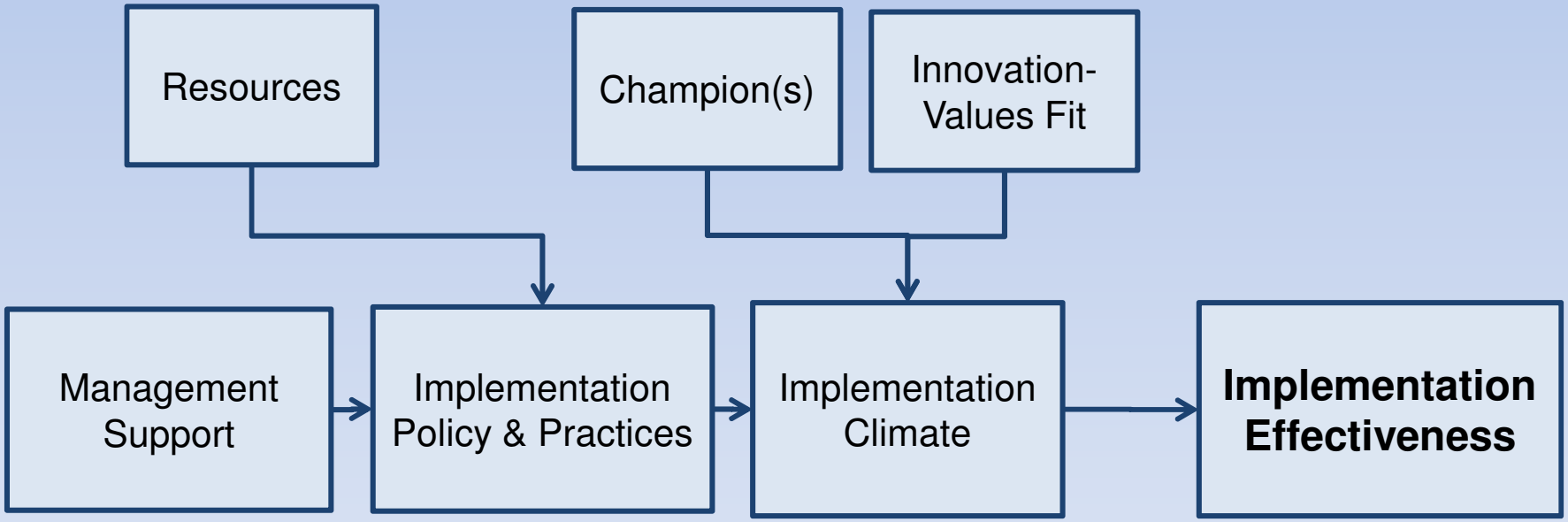


ASPIRE-VA Grant #IBB 09-034

Theory in Implementation

- Organizational Climate Theory
- Theory of conformity
- Other psychological & organizational theories

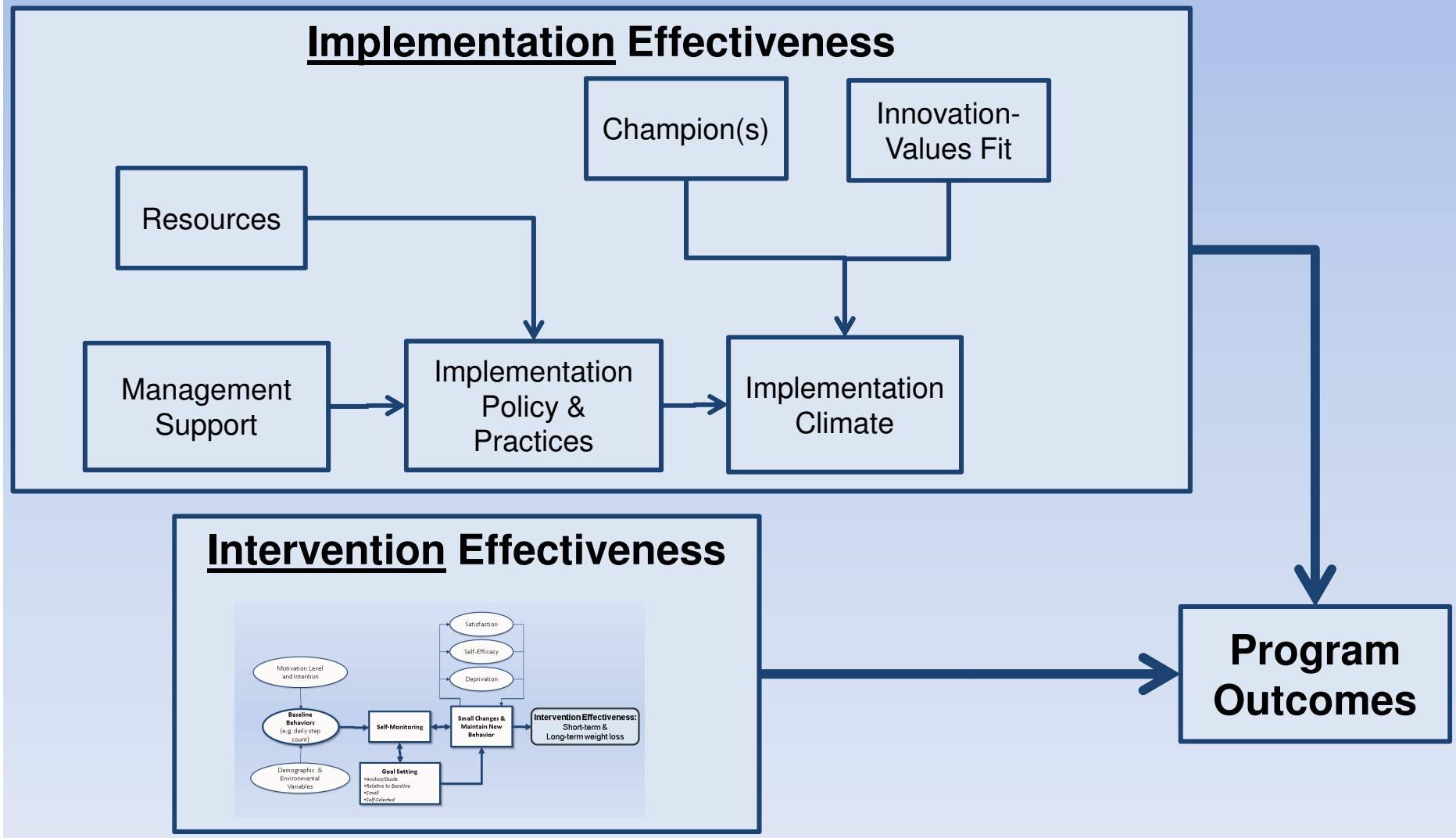
Conceptual Model for Implementation



Klein, K.J., A.B. Conn, and J.S. Sorra, *Implementing computerized technology: An organizational analysis. Journal of Applied Psychology, 2001.* ***86(5): p. 811-824.***

Helfrich, C. D., Weiner, B. J., McKinney, M. M., & Minasian, L. (2007). Determinants of implementation effectiveness: adapting a framework for complex innovations. Med Care Res Rev, 64(3), 279-303.

Pulling it Together



Type III Errors

- Incorrect conclusions about effectiveness of the intervention may result when
  - No treatment or too little treatment was actually provided
  - The wrong treatment was provided
  - Treatment is nonstandard, uncontrolled, or varies across settings/population
- …all resulting from inadequate implementation

Objectives of Implementation Research

- Replicate successful implementation
  - Core components
  - Rationale
- Generalize knowledge about how to implement and sustain interventions
- Navigate complex implementations
- Improve prospects for sustainability

Theory-driven implementation enables us to accomplish these objectives

State of the Literature - 1

- Systematic reviews of interventions consistently show
  - Some work some of the time
  - None work all of the time
  - More research needed to figure out what works where and why

State of the Literature – 2

- Largely atheoretical
  - Related to implementation[1]
  - …*and, by the way, too often, for interventions as well*
- Theory used only as heuristic[2]
  - Dropped after the introduction
  - Used to organize discussion of findings

State of the Literature - 3

- Inadequate descriptions of intervention(s), context, and implementation[1-3]
  - Large majority of trials have no qualitative component
  - Implementation studies suffer from small samples
    - Example from very recent paper:[4]
      - "Findings revealed limited information about attributes of successful and unsuccessful team initiatives, barriers and facilitators to team initiatives, unique or combined contribution of selected interventions, or how to effectively establish these teams."

Theory as a Way Forward

- "'Generalization through theory' potentially offers a more efficient and appropriate method of generalization than study replication in many possible settings" (p 2)
    - *International panel convened by AHRQ to improve the design, evaluation, and reporting of research for patient safety practices*
  - Build knowledge through strengthened confidence in the usefulness of a theory
  - Identify factors that predict likelihood of success
  - Guide adaptation of the intervention and tailoring of implementation
    - Through knowledge of determinants – or levers – of change

Case Example: *MOVE!®*

- Step 1: Prevention is high priority (now T-21) issue
  - Obesity prevalence is high among Veterans
- Step 2: Disseminate the MOVE! Weight Management Program in January 2006
- Step 3A: Many facilities not reporting MOVE! Workload
- **Step 3D: ID barriers and facilitators of MOVE! implementation[2]**
  - Embedded mixed methods cross-sectional study[1]
  - Purposive sample of 5 sites
    - Maximize variation with respect to program volume
      - » Indicator of implementation effectiveness
  - Semi-structured interviews with 24 stakeholders
    - 83% of those contacted and invited, participated in the study

1. Creswell, J.W. and V.L.P. Clark, *Designing and Conducting Mixed Methods Research. 1st ed. 2007, Thousand Oaks, CA: Sage Publications, Inc. 274.*
2. *Damschroder L, Goodrich D, Robinson C, Fletcher C, Lowery J. A systematic exploration of differences in contextual factors related to implementing the MOVE! weight management program in VA: A mixed methods study. BMC Health Services Research. 2011;11(1):248.*

Guiding Theories

- Types of theories
  - Explanatory Theories
  - Organizational-level theories
- Consolidated Framework for Implementation Research (CFIR)
  - Guided qualitative data collection & analyses
- Model of Implementation Effectiveness
  - Guided quantitative data collection & analyses
  - Qualitative confirmation

CFIR

- www.wiki.cfirwiki.net
- Comprehensive framework to promote consistent use of constructs, terminology, and definitions
  - Consolidates existing models and frameworks
  - Comprehensive in scope
  - Tailor its use to the study
- *Guided Qualitative Data Collection & Analyses*

Copy of the master interview guide available: http://wiki.cfirwiki.net/index.php?title=CFIR_in_action#Evaluation_of_MOVE.21

CFIR: 5 Major Domains

- **Intervention**
  - 8 Constructs (e.g., evidence strength & quality, complexity)
- **Outer Setting**
  - 4 Constructs (e.g., patient needs & resources)
- **Inner Setting**
  - 14 constructs (e.g., leadership engagement, available resources)
- **Individuals Involved**
  - 5 Constructs (e.g., knowledge, self-efficacy)
- **Process**
  - 8 Constructs (e.g., plan, engage, champions)

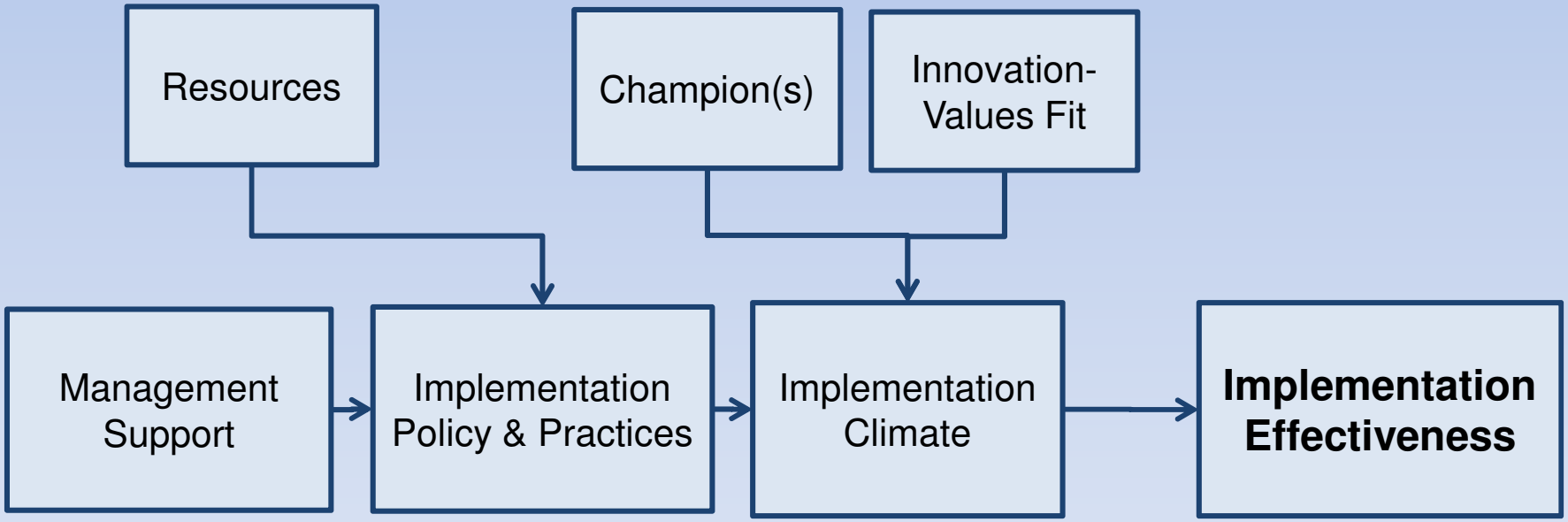
Additional File 3: Short Definitions

Ref: http://www.implementationscience.com/content/4/1/50

	Topic/Description	Short Description
I. INTERVENTION CHARACTERISTICS		
A	Intervention Source	Perception of key stakeholders about whether the intervention is externally or internally developed.
B	Evidence Strength & Quality	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes.
C	Relative advantage	Stakeholders' perception of the advantage of implementing the intervention versus an alternative solution.
D	Adaptability	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.
E	Trialability	The ability to test the intervention on a small scale in the organization [8], and to be able to reverse course (undo implementation) if warranted.
F	Complexity	Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement
G	Design Quality and Packaging	Perceived excellence in how the intervention is bundled, presented, and assembled
H	Cost	Costs of the intervention and costs associated with implementing that intervention including investment, supply, and opportunity costs.
II. OUTER SETTING		
A	Patient Needs & Resources	The extent to which patient needs, as well as barriers and facilitators to meet those needs are accurately known and prioritized by the organization.
B	Cosmopolitanism	The degree to which an organization is networked with other external organizations.
C	Peer Pressure	Mimetic or competitive pressure to implement an intervention; typically because most or other key peer or competing organizations have already implemented or in a bid for a competitive edge.

Model of Implementation Effectiveness

- Implementation Framework for Complex Innovations – *Quantitative Data Collection*



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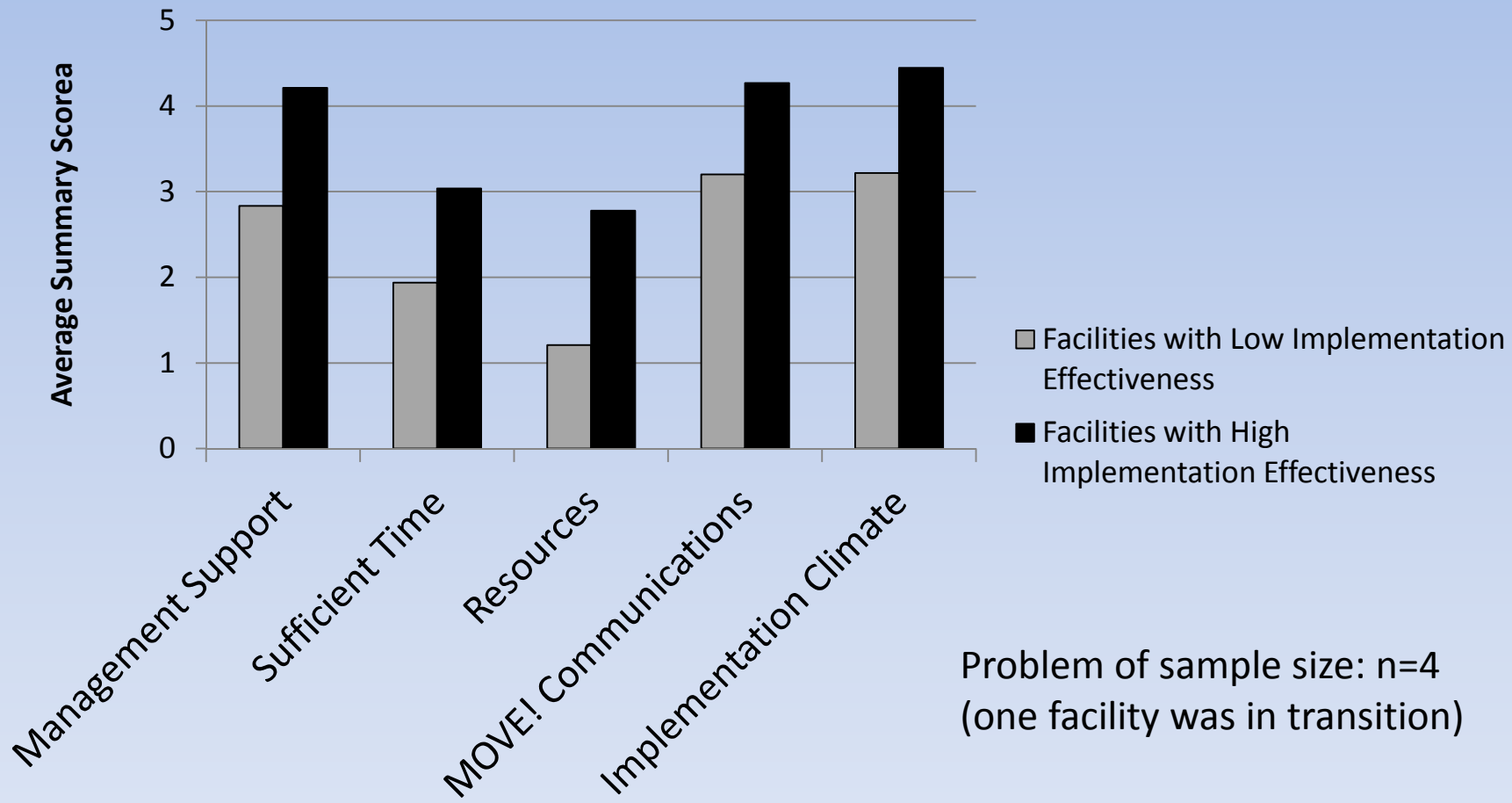
Quantitative Results



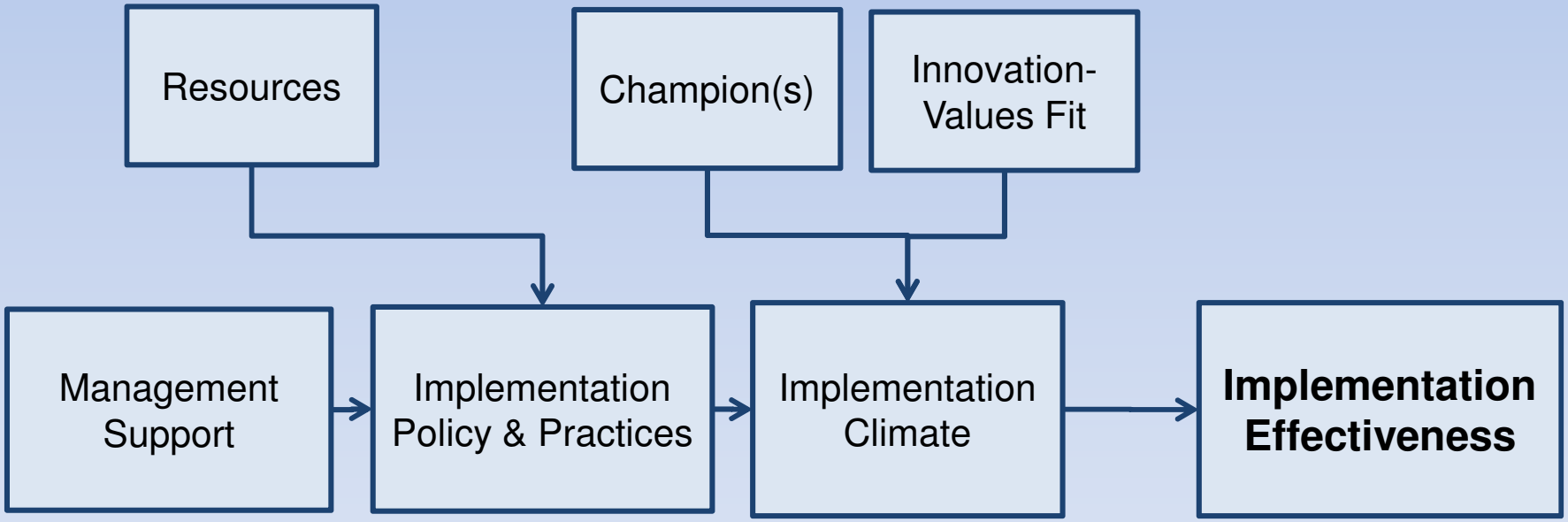
Problem of sample size: n=4
(one facility was in transition)

Qualitative Results

- Importance of Champions was mixed
  - Appointed but largely absent in one low and one high implementation site
- Innovations-values fit is important
  - I would say 99.99%…of the providers recognize that [obesity] is in some way hindering their success in managing diabetes or managing blood pressures or managing hyperlipidemia…So everyone is very receptive…to refer the patients to MOVE! [MOVE! Coordinator]
  - Lack of fit at 2 low implementation sites

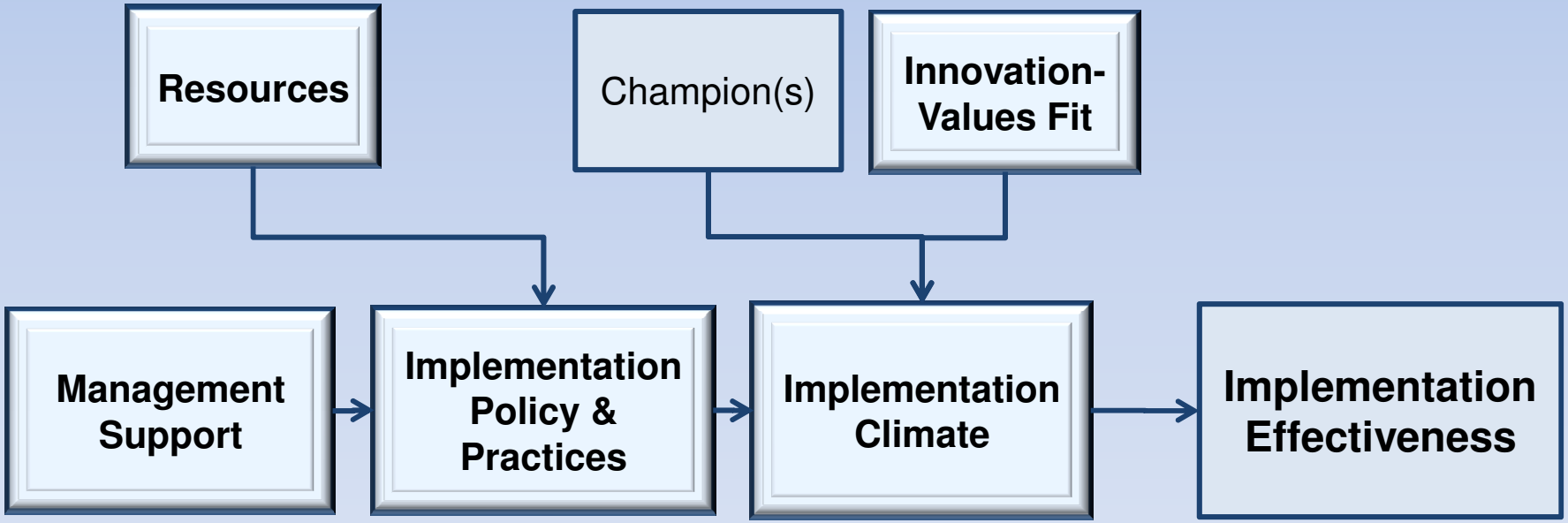
Theoretical Framework

- Implementation Framework for Complex Innovations



Were the theories useful?

- Implementation Framework for Complex Innovations



Damschroder L, Goodrich D, Robinson C, Fletcher C, Lowery J. A systematic exploration of differences in contextual factors related to implementing the MOVE! weight management program in VA: A mixed methods study. BMC Health Services Research. 2011;11(1):248.

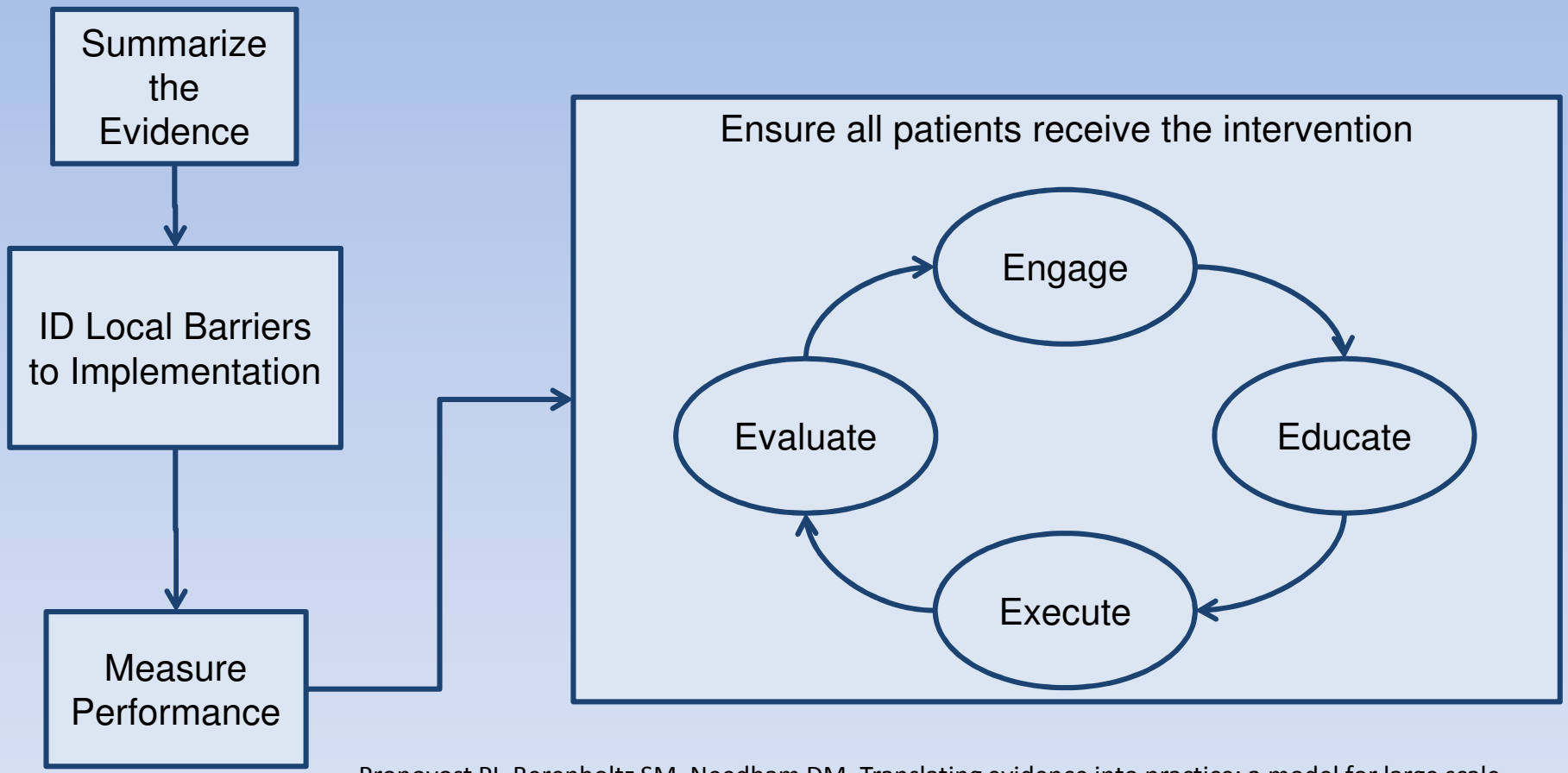
Were the Theories Useful?

- Champions' influence was mixed
- Additional insights & constructs were identified through CFIR. E.g.,
  - "Teamness" mattered: the degree to which MOVE! teams coalesced
  - Perception of intervention characteristics
    - Strength & Quality of evidence
    - Relative Advantage
  - Perception of patient needs & resources
- Not all CFIR constructs were salient

Types of Theories

- Multiple theories often needed
  - Explanatory theories (aka descriptive, impact)
    - Hypotheses and assumptions about how implementation activities will facilitate a desired change, as well as the facilitators and barriers for success
  - Process theories – (aka prescriptive, planned action)
    - How implementation should be planned, organized and scheduled
  - Mixed theories
    - Elements of both

Process: "4E's" Translation Model



Pronovost PJ, Berenholtz SM, Needham DM. Translating evidence into practice: a model for large scale knowledge translation. *BMJ. 2008;337:a1714.*

Used in the Michigan Keystone Project:

Pronovost P. Interventions to decrease catheter-related bloodstream infections in the ICU: the Keystone Intensive Care Unit Project. *Am. J. Infect. Control. Dec 2008;36(10):S171 e171-175.*

Pronovost PJ, Goeschel CA, Colantuoni E, et al. Sustaining reductions in catheter related bloodstream infections in Michigan intensive care units: observational study. *BMJ.340:c309.*

Mixed Model

Promoting Action on Research Implementation in Health Services (**PARIHS**)

- Successful Implementation =

  f(Evidence,Context,Facilitation)

- Kitson A, Harvey G, McCormack B. Enabling the implementation of evidence based practice: a conceptual framework. *Qual. Health Care* 1998;7(3):149-58.
- Helfrich CD, Damschroder LJ, Hagedorn HJ, et al. A critical synthesis of literature on the promoting action on research implementation in health services (PARIHS) framework. Implement Sci. 2010;5(1):82.
- Stetler CB, Damschroder L, Helfrich C, Hagedorn H. A Guide for Applying a Refined PARIHS Framework for Implementation. Implementation Science. 2011.

- Quantitative Measurement
  - Organizational Readiness for Change Assessment (ORCA) tool

Helfrich C, Li Y-F, Sharp N, Sales A: **Organizational readiness to change assessment (ORCA): Development of an instrument based on the Promoting Action on Research in Health Services (PARiHS) framework.** ***Implementation Science 2009, 4:38.***

  - Alberta Context Tool

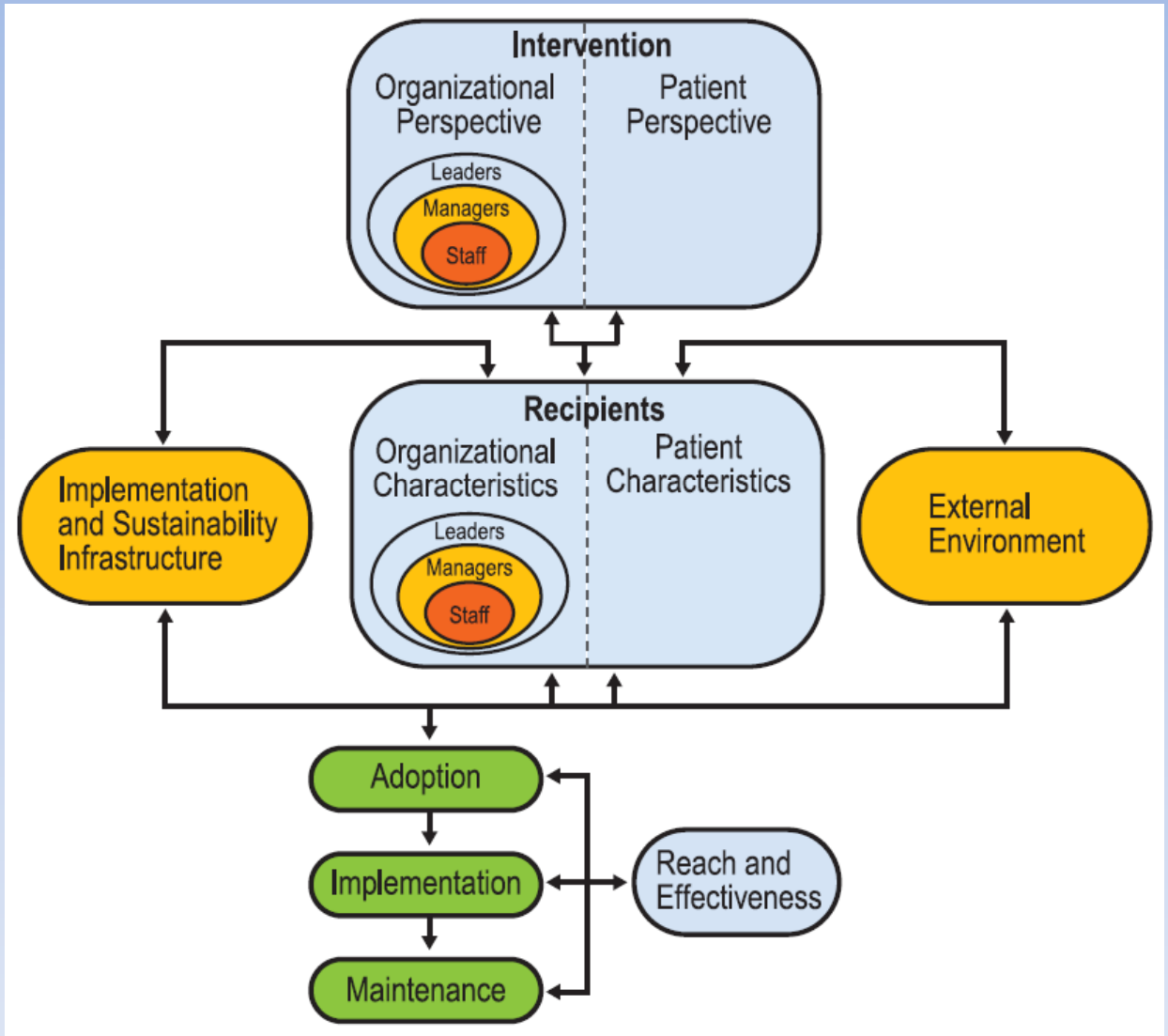
Estabrooks, C. A., J. E. Squires, et al. (2009). "Development and assessment of the Alberta Context Tool." BMC Health Serv Res **9(1): 234.**

Choosing Theory

1. Consider nature of the theory
   - Process v. explanatory
   - Context (e.g., policy, organization)
   - Discipline (e.g., social science, psychology)
2. Consider level at which it will be applied
   - Individuals
   - Teams
   - Organization
   - System
3. Previous findings, experience
4. Greatest potential for adding to the knowledge-base

Multi-level Model

The Practical, Robust Implementation and Sustainability Model (PRISM)



Feldstein, A. C., & Glasgow, R. E. (2008). A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice. *Jt Comm J Qual Patient Saf, 34(4), 228-243.*

Choosing Theory
Looking Forward from Step 3 Case Study

1. Consider nature of the theory
   - Used 2 Explanatory Theories
2. Future work: develop implementation strategy
   - Consider level at which theory will be applied
     - Organization
       - Develop organizational strategy to implement MOVE!
     - Teams
       - Importance of coalescing teams (“teamness”)
     - Individuals
       - Physician Champion
       - Formally appointed implementation leader
     - System
       - System-wide performance measurement

Conducting Theory-based Step 4 Implementation Studies

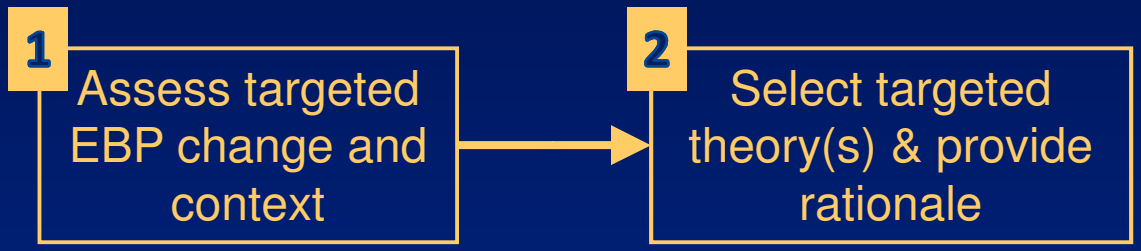
1

Assess targeted EBP change and **context**

Use theory to guide assessment

Sales A, Smith J, Curran G, Kochevar L. Models, strategies, and tools. Theory in implementing evidence-based findings into health care practice. *J. Gen. Intern. Med. Feb 2006;21 Suppl 2:S43-49.*

Conducting Theory-based Implementation Studies



QUERI Step 4 Implementation Research

- Example Study:
  - Krein S, Bernstein S, Fletcher C, et al. Improving eye care for veterans with diabetes: an example of using the QUERI steps to move from evidence to implementation: QUERI Series. Implementation Science. 2008;3(1):18.
- Step 1: Preventable blindness in diabetes patients
- Step 2: Early detection and timely laser therapy
- Step 3: Lack of close follow-up
- **Step 4: Implement strategies to improve follow-up**
  - System level: Change performance measures
  - Local organization: Progressive Reminder & Scheduling System (PRSS)

Organization-level Theory

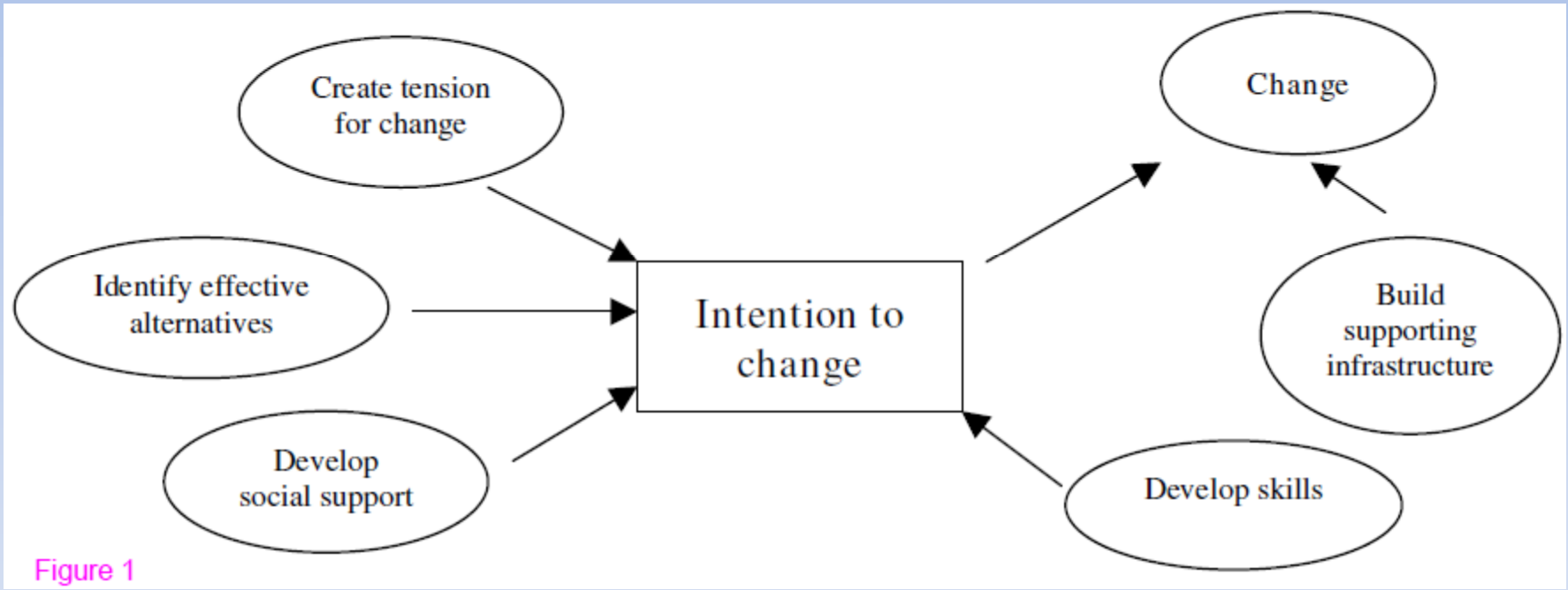
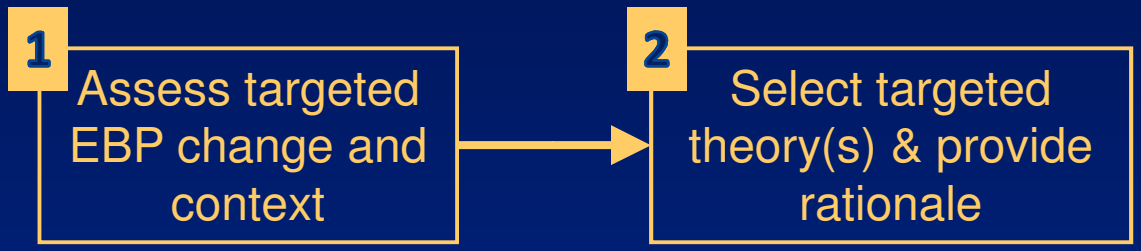


Figure 1

Conducting Theory-based Implementation Studies



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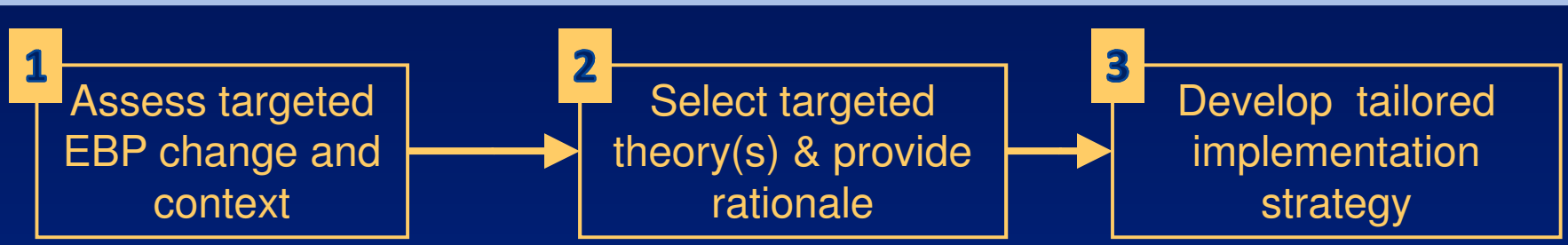

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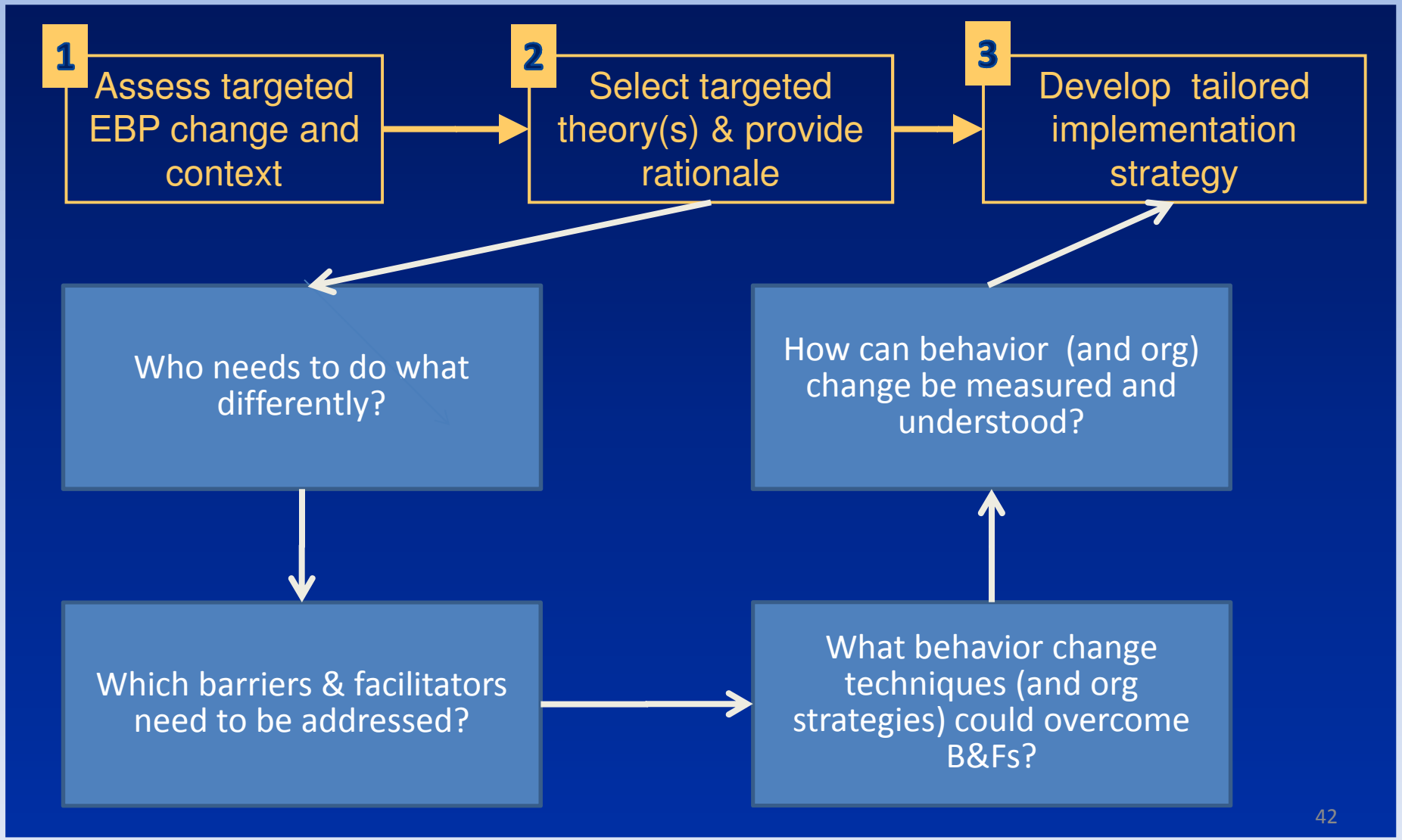
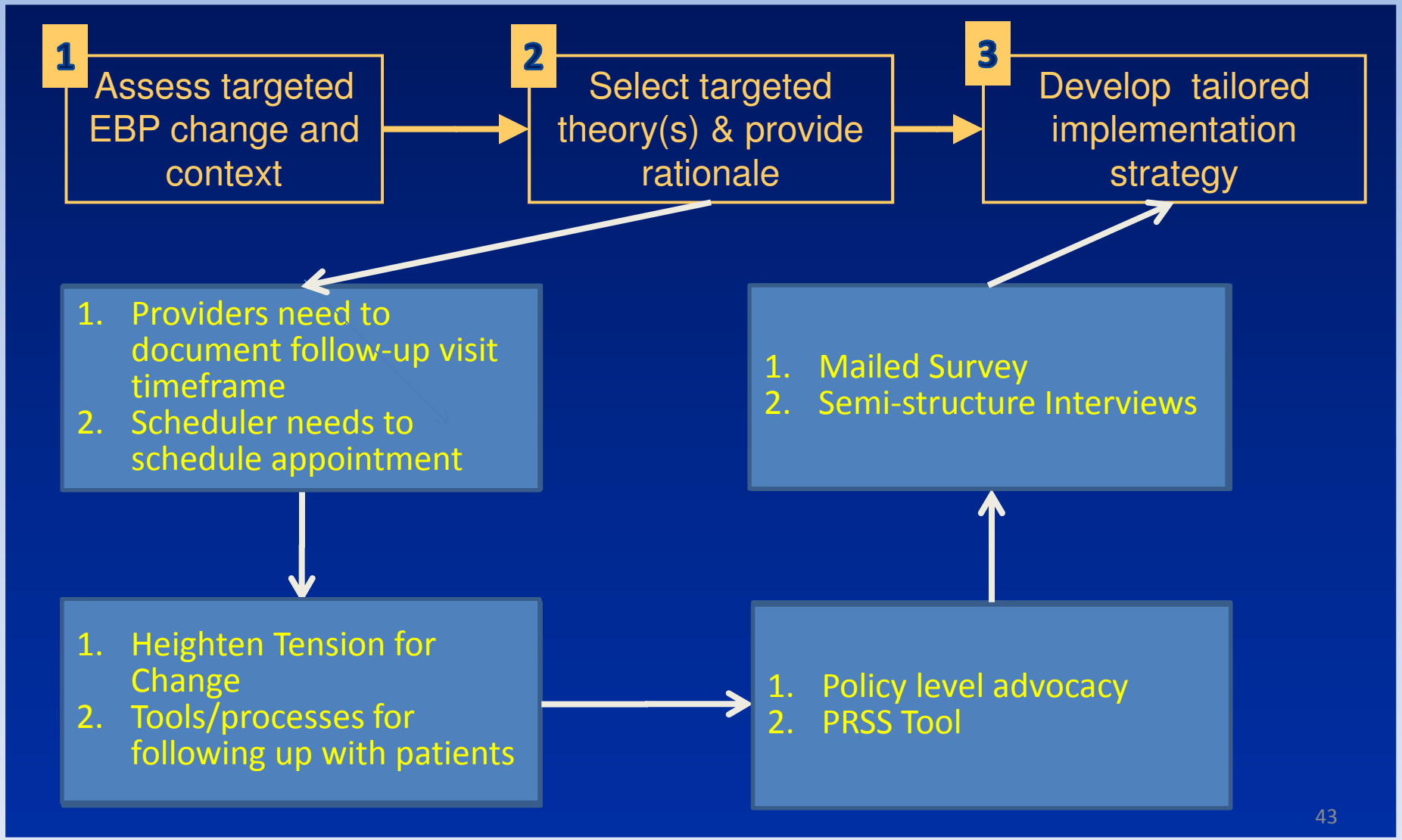


French SD, Green SE, O'Connor DA, et al. Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. *Implement Sci. Apr 24 2012;7(1):38.*

Conducting Theory-based Implementation Studies



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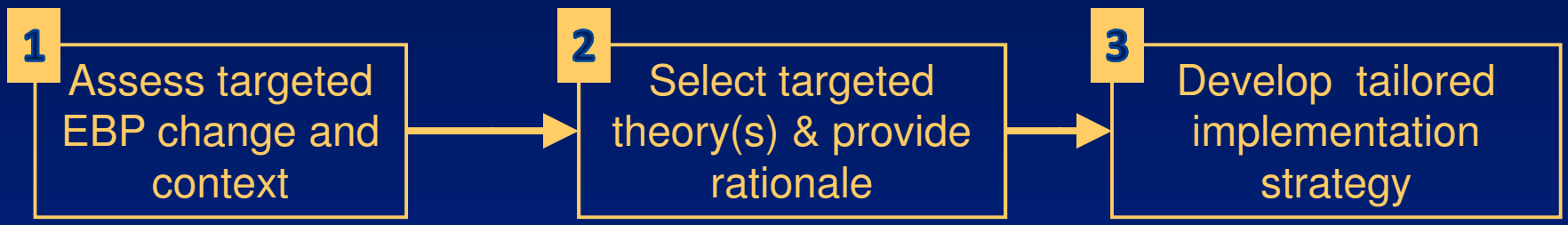
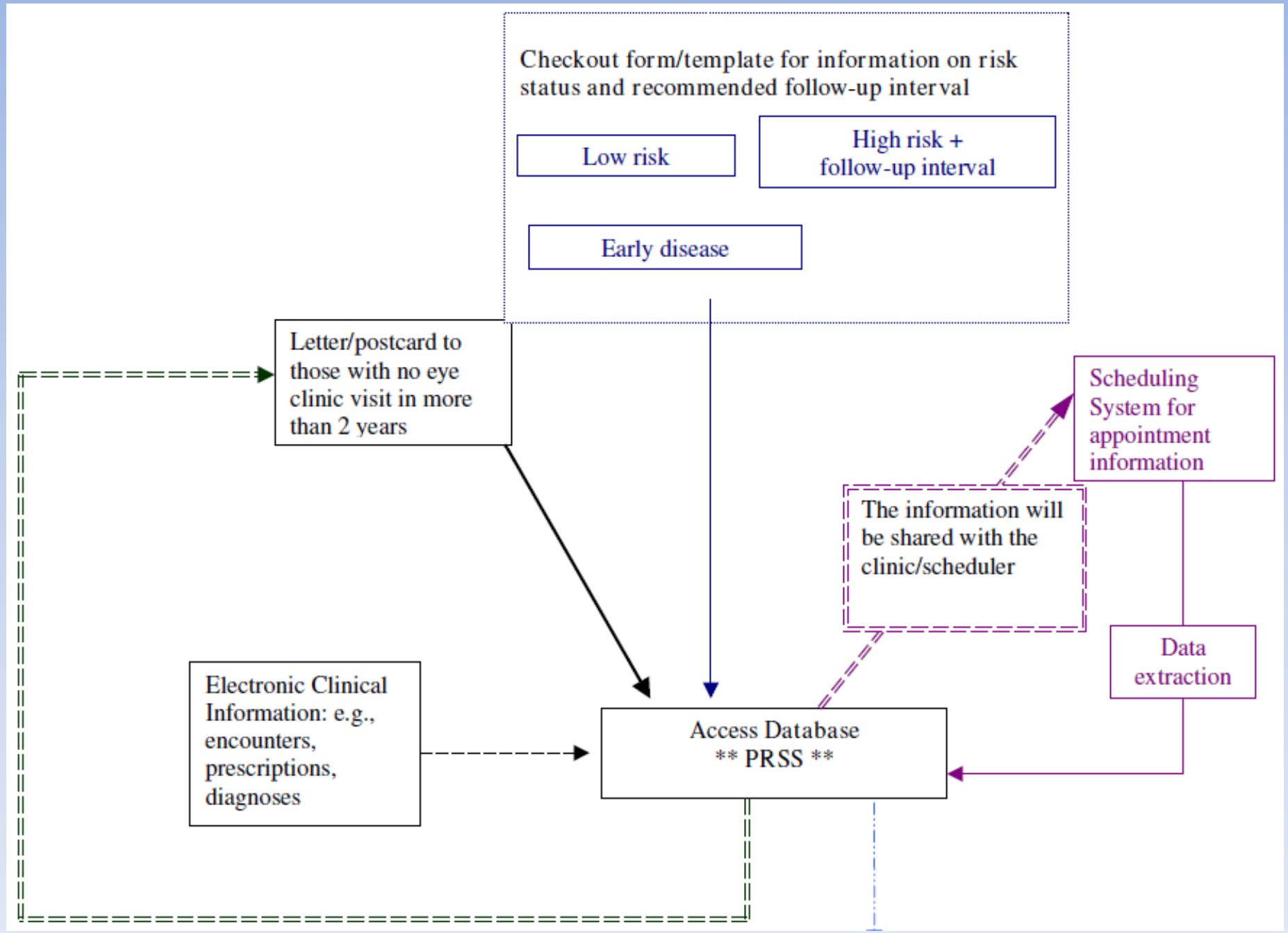



Checkout form/template for information on risk status and recommended follow-up interval
Low risk
High risk + follow-up interval
Early disease
Letter/postcard to those with no eye clinic visit in more than 2 years
Scheduling System for appointment information
The information will be shared with the clinic/scheduler
Data extraction
Electronic Clinical Information: e.g., encounters, prescriptions, diagnoses
Access Database
** PRSS **

Resources

- Selecting theories
  - Sharepoint site
    - Classification of Theories
    - Example Theory Diagrams
  - Process Theories
- Selecting techniques/strategies
  - Organizational-level
    - Powell BJ, McMillen JC, Proctor EK, et al. A compilation of strategies for implementing clinical innovations in health and mental health. Med. Care Res. Rev. Apr 2012;69(2):123-157
  - Individual-level
    - Michie S, Wren B, Williams S. Reducing absenteeism in hospital cleaning staff: pilot of a theory based intervention. Occup. Environ. Med. Apr 2004;61(4):345-349.

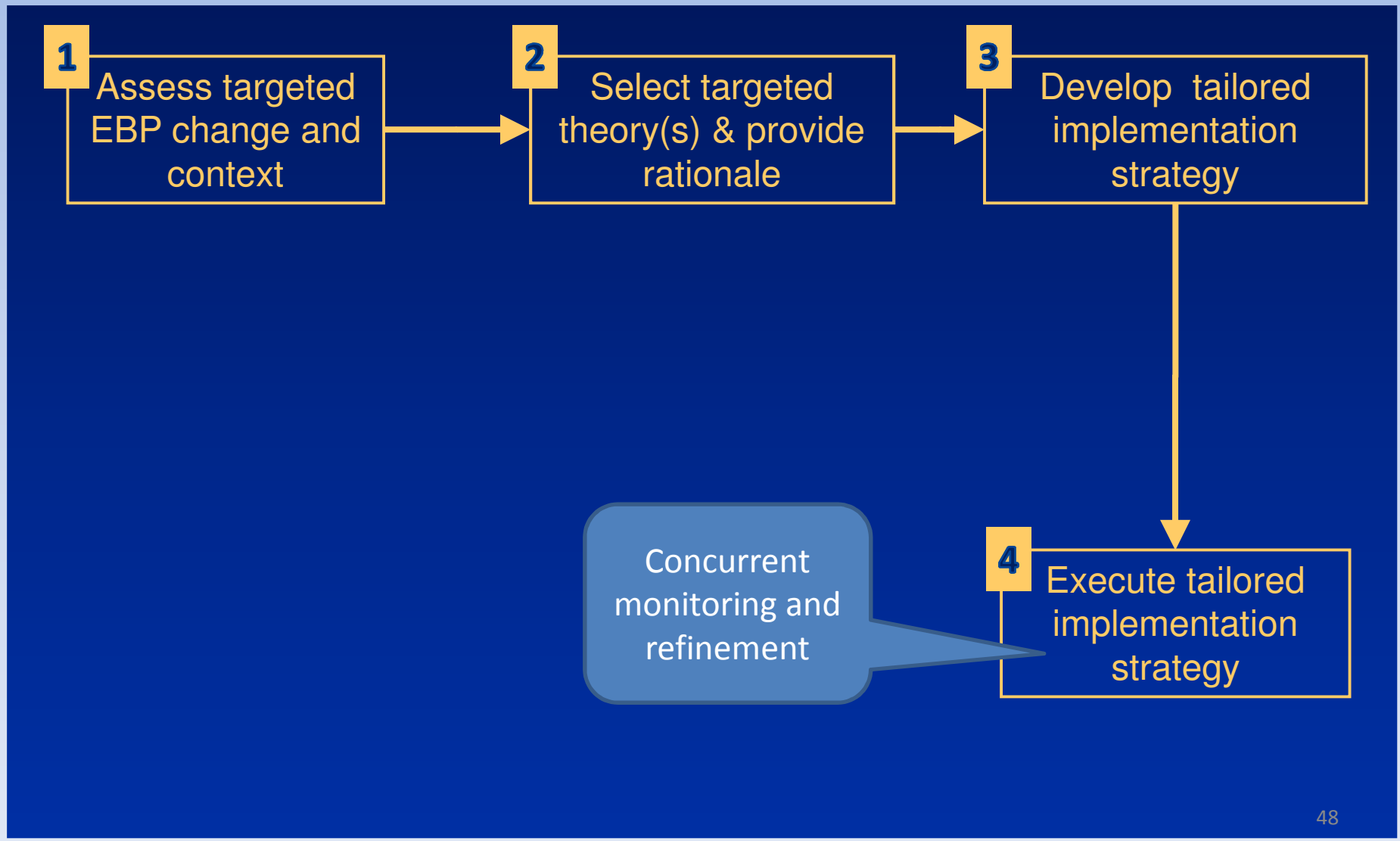
Using Theory: A Few Notes

- "All models are wrong…must be alert to what is importantly wrong"
  - There are no right or *completely* wrong theories

George E P Box, in "Science and statistics", Journal of the American Statistical Association 1976 (71)791-799

- There are **better fitting theories** that explain why a specific strategy or mechanism causes the intended change
- Implementation strategy(s) need to be operationalized from theoretical concepts

Conducting Theory-based Implementation Studies



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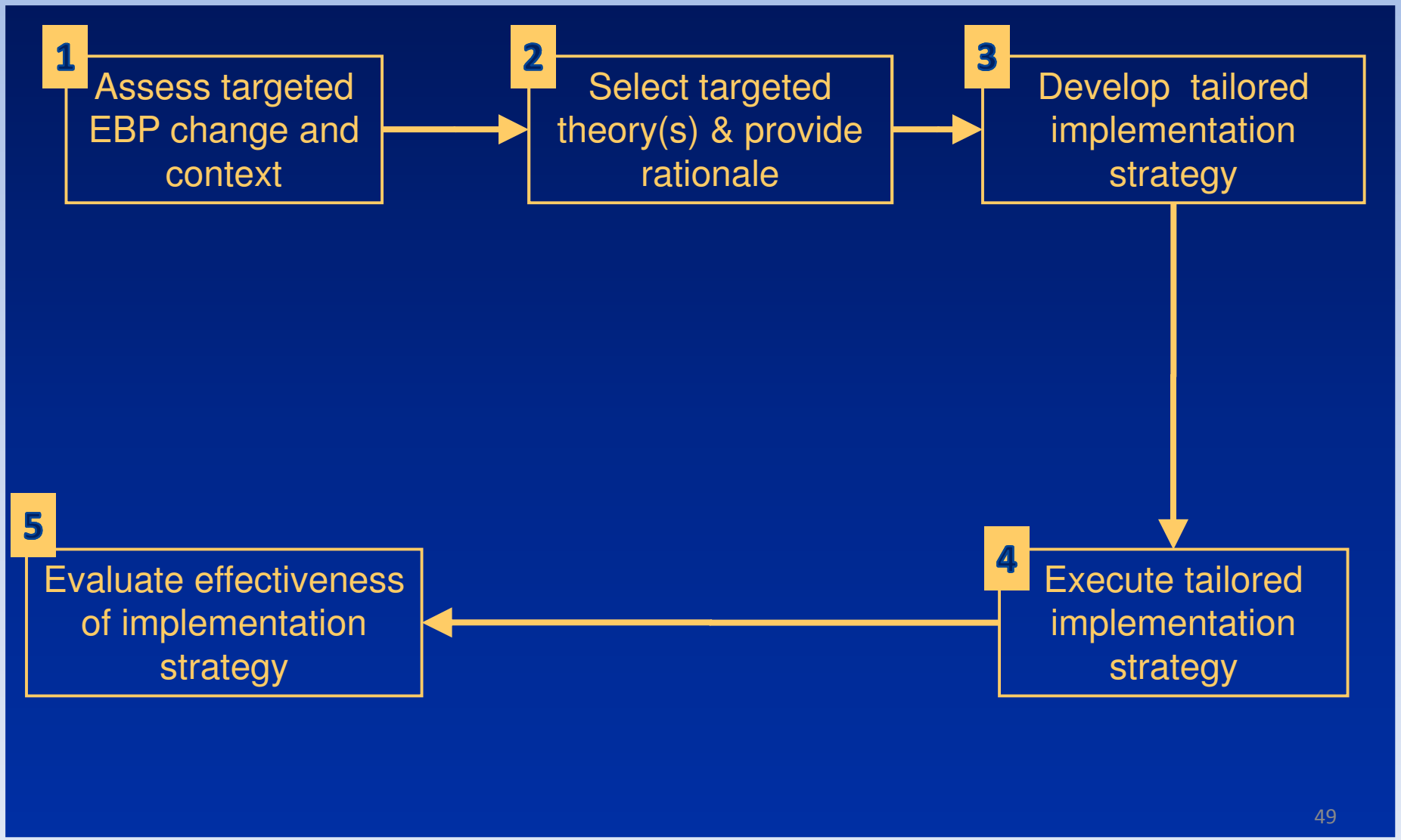
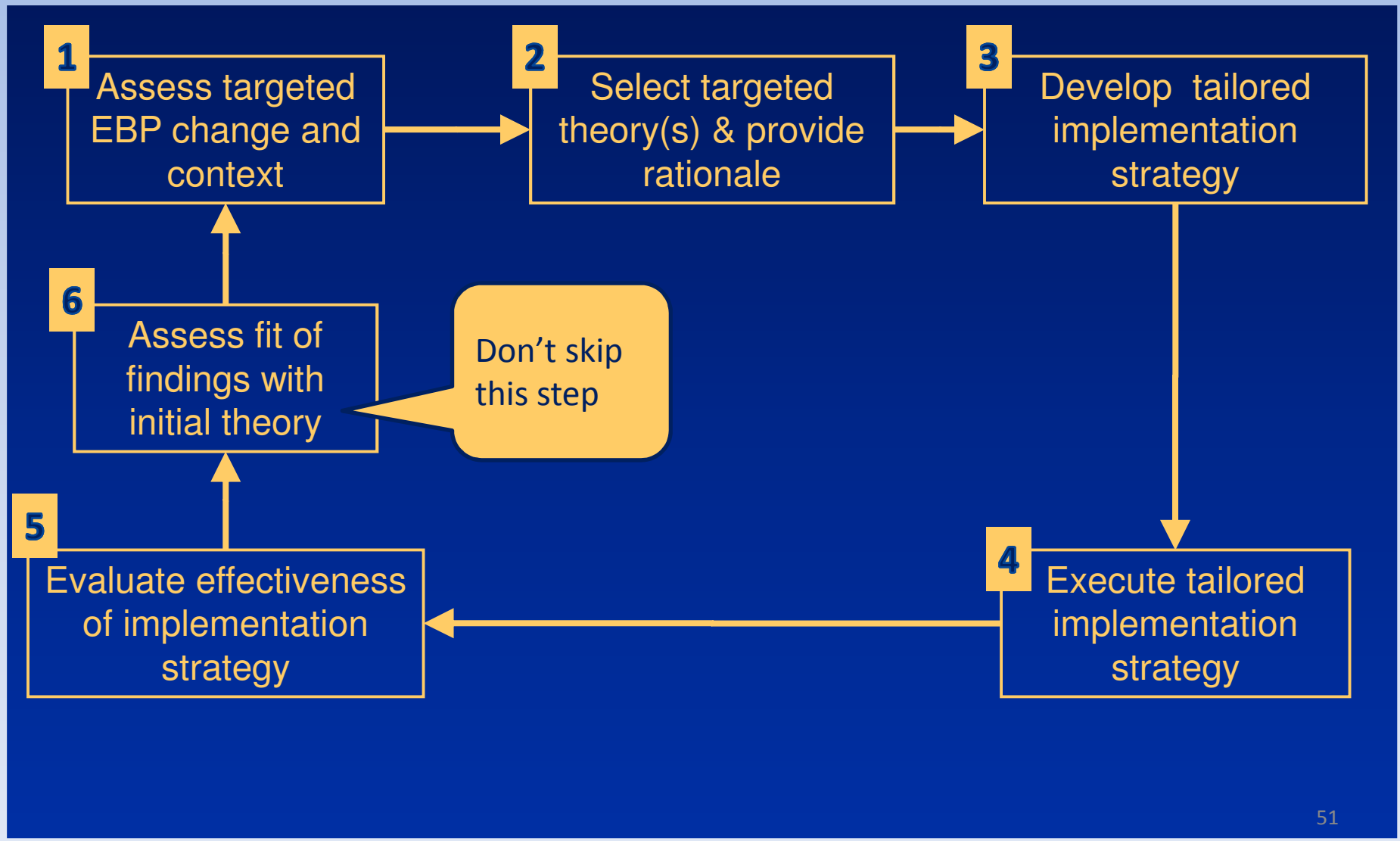


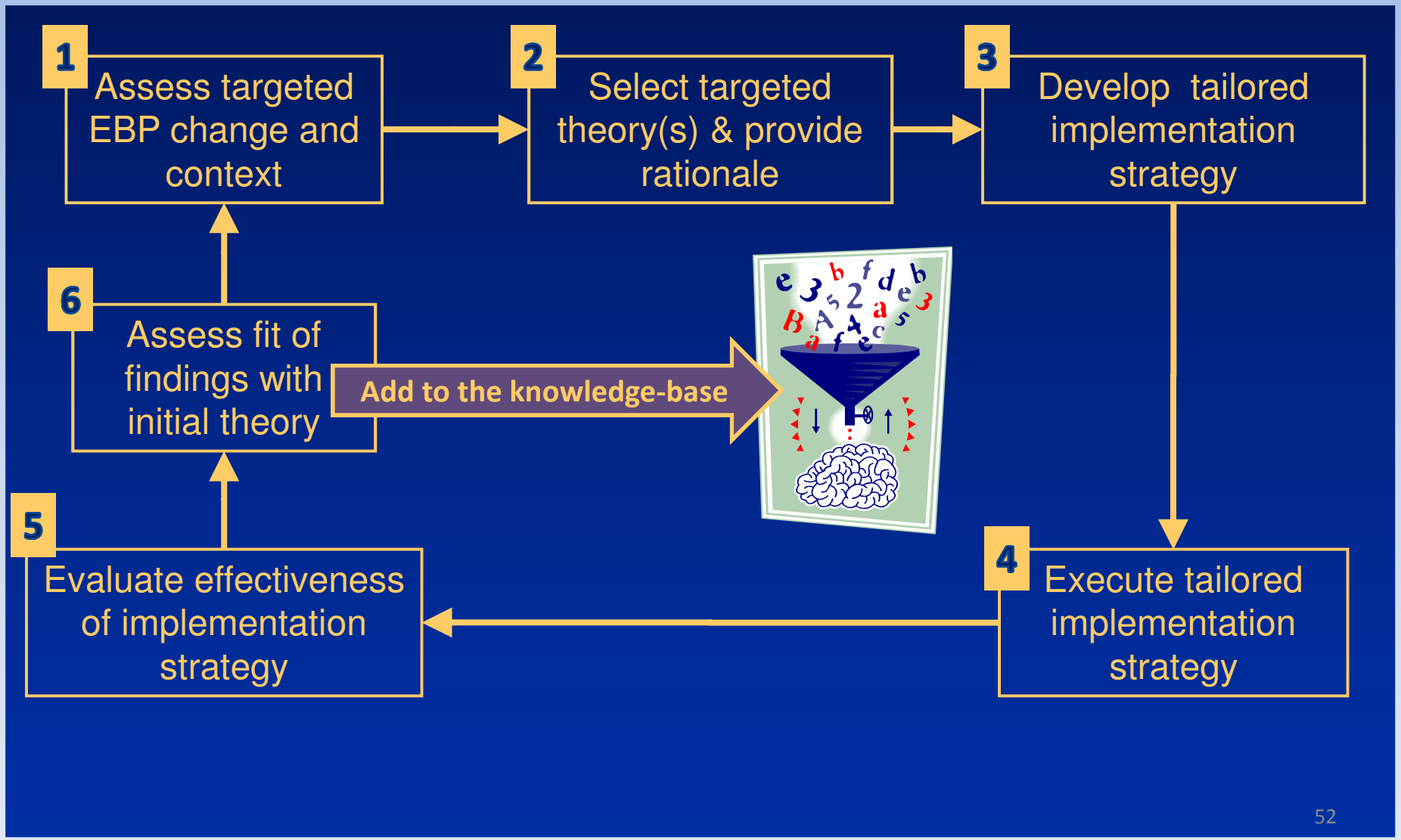
Case Study: Effectiveness of Implementation Strategy

- It took 5 years to get the performance measure changed
  - 2 years longer than planned
  - Near the end of the study
- Mixed commitment and loss over time
  - Pressure exerted by existing performance measure
  - Technical issues with PRSS integration/use
  - Local priorities and feuds
- Lessons learned!

Conducting Theory-based Implementation



Conducting Theory-based Implementation



Assess Theory

- Was it useful?
  - Does theory still apply?
- Modifications/refinements needed?
- Building validity of theory(s)
  - Quantitative theory testing
    - Test hypotheses
    - Path analyses
  - Qualitative theory testing
    - Is terminology/language coherent?
    - Does it promote comparison of results across settings and studies over time?
    - Does it stimulate new theoretical developments?

Key Points

- Use pre-implementation work to inform implementation approach
- Do use theory
- Provide clear rationale for theory selection
- Clearly define implementation strategy for replication beyond your specific efforts
  - Internal validity
  - External validity
- Evaluate usefulness of theory(s) used

Session Objectives

- Understand the role & value of theory in implementation research
- Equip you with an approach for applying theory in your work
  - Study design & conduct
  - Grant writing

The field is ripe

- Implementation Science is relatively new
  - What is the dependent variable?
  - How to measure?
  - What is success?
  - Sustainability
- Mutable v. immutable variables

Help

- References in this presentation
- CIPRS
- QUERI Centers
- Your EIS mentors

You are not alone

Additional References

ASPIRE-VA Theoretical Framework Slide: Damschroder, L. J., Lutes, L. D., Goodrich, D. E., Gillon, L., & Lowery, J. C. (2010). A small-change approach delivered via telephone promotes weight loss in veterans: Results from the ASPIRE-VA pilot study. Patient Education and Counseling, 79, 262-266. doi: pec.2009.09.025

& Lutes LD, Steinbaugh EK. Theoretical Models for Pedometer Use in Physical Activity Interventions. Physical Therapy Reviews. 2010;15(3):143-153.

Type III Errors Slide: Fixsen DL, Naoom SF, Blase KA, Friedman RM, Wallace F. Implementation Research: A Synthesis of the Literature. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute; December 27, 2007 2005.

State of the Literature – 2 Slides:

1. Foy R, Ovretveit J, Shekelle PG, et al. The role of theory in research to develop and evaluate the implementation of patient safety practices. Quality & safety in health care. Feb 11 2011.
2. Helfrich, C. D., Damschroder, L. J., Hagedorn, H. J., Daggett, G. S., Sahay, A., Ritchie, M., et al. (2010). A critical synthesis of literature on the promoting action on research implementation in health services (PARIHS) framework. Implement Sci, 5(1), 82. doi: 10.1186/1748-5908-5-82

State of the Literature – 3 Slides:

1. Glenton, C., Lewin, S., & Scheel, I. B. (2011). Still too little qualitative research to shed light on results from reviews of effectiveness trials: A case study of a Cochrane review on the use of lay health workers. Implement Sci, 6(1), 53. doi: 10.1186/1748-5908-6-53
2. Weiner, B. J., Amick, H. R., Lund, J. L., Lee, S. Y., & Hoff, T. J. (2011). Use of qualitative methods in published health services and management research: a 10-year review. Medical Care Research and Review, 68(1), 3-33. doi: 10.1177/1077558710372810
3. Michie S, Abraham C, Eccles M, Francis J, Hardeman W, Johnston M. Strengthening evaluation and implementation by specifying components of behaviour change interventions: a study protocol. Implementation Science. 2011;6(1):10.
4. White, D. E., Straus, S. E., Stelfox, H. T., Holroyd-Leduc, J. M., Bell, C. M., Jackson, K., et al. (2011). What is the value and impact of quality and safety teams? A scoping review. Implement Sci, 6(1), 97. doi: 10.1186/1748-5908-6-97

Theory as a Way Forward Slide:

1. Foy, R., Ovretveit, J., Shekelle, P. G., Pronovost, P. J., Taylor, S. L., Dy, S., et al. (2011). The role of theory in research to develop and evaluate the implementation of patient safety practices. Qual Saf Health Care. doi: 10.1136/bmjqs.2010.047993
2. Damschroder, L. J., & Hagedorn, H. J. (2011). A guiding framework and approach for implementation research in substance use disorders treatment. Psychol Addict Behav, 25(2). doi: 10.1037/a0022284

More on mixed methods: OBSSR Best Practices for conducting mixed methods research in Health Sciences: http://obssr.od.nih.gov/scientific_areas/methodology/mixed_methods_research/pdf/Best_Practices_for_Mixed_Methods_Research.pdf

Types of Theories Slide:

Adapted from: Grol RP, Bosch MC, Hulscher ME, Eccles MP, Wensing M. Planning and studying improvement in patient care: the use of theoretical perspectives. Milbank Q. 2007;85(1):93-138.

Selecting Evidence-based Implementation Strategies

Cochrane's Effective Practice and Organization of Care (EPOC): http://epoc.cochrane.org/

AHRQ's Evidence-based Practice Centers: http://www.ahrq.gov/clinic/epc/

A CLASSIFICATION OF THEORIES

TYPES OF THEORY[1,2]	SAMPLE IMPLEMENTATION-RELATED THEORIES	RELEVANT/SAMPLE CITATIONS
PRESCRIPTIVE/PROCESS/PLANNED ACTION: ➲ Outline for the user how implementation should be planned, organized and scheduled	1. Ottawa model	▪ Graham ID, Logan J. Innovations in knowledge transfer and continuity of care. Can J Nurs Res 2004 Jun;36(2):89-103 ▪ Logan J, et al. Evidence-based pressure-ulcer practice: the Ottawa model of research use. Can J Nurs Res. 1999 Jun;31(1):37-52.
	2. Precede-Proceed	▪ Green LW, Kreuter MW. Health promotion planning: An Educational and Ecological Approach. 3 ed. Mountain View, CA: Mayfield Publishing Company; 1999 ▪ Abbott CA, et al. Adoption of a ventilator-associated pneumonia clinical practice guideline. Worldviews Evid Based Nurs. 2006;3(4):139-52.
	3. Stetler model on research utilization/EBP	▪ Stetler CB. Updating the Stetler Model of research utilization to facilitate evidence-based practice. Nurs Outlook. 2001 Nov-Dec;49(6):272-9. ▪ Newell-Stokes V, et al. Developing an evidence-based procedure: maintenance of central venous catheters. Clin Nurse Spec. 2001 Sep;15(5):199-204
	4. Technology transfer model	▪ Kraft JM, et al. A technology transfer model for effective HIV/AIDS interventions: science and practice. AIDS Educ Prev 2000;12(5 Suppl):7-20.
	5. Ten-stage model	▪ Grol, R., Wensing M. 2004. What Drives Change? Barriers to and Incentives for Achieving Evidence-Based Practice. Med J Aust 180(6):S57–S60.

[1] Graham I, Tetroe J. Chapter 4.1. Theories of Knowledge to Action: Planned action theories. In Knowledge Translation in Health Care: Moving from Evidence to Practice, S Straus, J Tetroe, I Graham (Eds). 2009: Wiley Blackwell.

[2] Grol RP, et al. Planning and studying improvement in patient care: the use of theoretical perspectives. Milbank Q. 2007;85(1):93-138;

TYPES OF THEORY	SAMPLE IMPLEMENTATION-RELATED THEORIES	RELEVANT/SAMPLE CITATIONS
EXPLANATORY/IMPACT/DESCRIPTIVE: ➲ Describe and explain how change occurs, including related influences. Such theories can be used to develop hypotheses and assumptions about how implementation activities will facilitate a desired change, as well as related facilitators and barriers for success	1. Diffusion of innovation [through communication channels in a social system]	▪ Rogers E. Diffusion on Innovations, 5th Ed. Simon & Schuster, Inc., 2004. ▪ Krein SL, Olmsted RN, Hofer TP, Kowalski C, Forman J, Banaszak-Holl J, et al. Translating infection prevention evidence into practice using quantitative and qualitative research. Am. J. Infect. Control 2006;34(8):507-12.
	2. Unifying conceptual model for spread/ sustainability of innovations	▪ Greenhalgh T, et al. Diffusion of innovations in service organizations: systematic review and recommendations. Milbank Q 2004, 82:581-629 ▪ Gask L, et al. Dissemination and implementation of suicide prevention training in one Scottish region. BMC Health Serv Res. 2008 Dec 3;8:246.
	3. Implementation effectiveness	• Klein KJ, et al. Implementing computerized technology: An organizational analysis. J Appl Psychol. 2001;86(5):811-824
	4. CFIR	▪ Damschroder LJ, et al. Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. Implement Sci 2009, Aug7;4:50.

TYPES OF THEORY	SAMPLE IMPLEMENTATION-RELATED THEORIES	RELEVANT/SAMPLE CITATIONS
MIXED: ➲ Reflect both process/planned action and descriptive/explanatory types of theories	1. PARIHS	• Kitson AL, et al. Evaluating the successful implementation of evidence into practice using the PARiHS framework: theoretical and practical challenges. Implement Sci 2008, 3:1. [APPENDIX] • Rycroft-Malone, J., et al. An exploration of the factors that influence the implementation of evidence into practice. J Clin Nurs, 2004. 13(8): p. 913-924.
	2. PRISM	• Feldstein AC, Glasgow RE. A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice. Jt Comm J Qual Pat Saf 2008;34(4):228-43.
	3. Mendel	• Mendel P, et al. Interventions in organizational and community context: a framework for building evidence on dissemination and implementation in health services research. Adm Policy Ment Health. Mar 2008;35(1-2):21-37

LEVELS OF THEORY[3,4]	SAMPLE IMPLEMENTATION-RELATED THEORIES	RELEVANT/SAMPLE CITATIONS
INDIVIDUAL LEVEL CHANGE: 1. *"Motivational*: theories to explain behaviour change in people who have not yet established an intention to engage in a particular behaviour" (Michie et al., 2005)[5] 2. *"Action*: theories to explain the behaviour of those who are motivated to change" (Michie et al., 2005)	1. Theory of planned behaviour	• Ajzen I. The theory of planned behavior. Organ Behav Hum Decis Process. 1991;50:179-211. http://people.umass.edu/aizen/tpb.diag.htm • Eccles M, et al.. Changing the behavior of healthcare professionals: the use of theory in promoting the uptake of research findings. J Clin Epidemiol. 2005 Feb;58(2):107-12.
	2. Stages of change theories/ transtheoretical model	• Pathman, D.et al. The Awareness-to-Adherence Model of the Steps to Clinical Guideline Compliance: The Case of Pediatric Vaccine Recommendations. Med Care 1996;34:1328–31. • Prochaska, J.O., and W.F. Velicer. The Transtheoretical Model of Health Behavior Change. Amer J Health Prom 1997;12:38–48.
	3. Social cognitive theory /self-efficacy	• Godin G, et al. Healthcare professionals' intentions and behaviours: A systematic review of studies based on social cognitive theories. Implement Sci. 2008 Jul 16;3:36. • Soumerai SB, Avorn J. Principles of educational outreach ('academic detailing') to improve clinical decision making. JAMA. 1990 Jan 26;263(4):549-56.

[3] Michie S et al. Psychological Theory Group. Making psychological theory useful for implementing evidence based practice: a consensus approach. Qual Saf Health Care. 2005 Feb;14(1):26-33.

[4] Davies P, et al. A systematic review of the use of theory in the design of guideline dissemination and implementation strategies and interpretation of the results of rigorous evaluations. Implement Sci. 2010 Feb 9;5:14

LEVELS OF THEORY	SAMPLE IMPLEMENTATION-RELATED THEORIES	RELEVANT/SAMPLE CITATIONS
INDIVIDUAL LEVEL CHANGE (*cont'd)*	4. Decision theory	• Bucknall T. A gaze through the lens of decision theory toward knowledge translation science. *Nurs Res*. 2007 Jul-Aug;56(4 Suppl):S60-6
	5. Social marketing	• Luck J, et al. A social marketing approach to implementing evidence-based practice in VHA QUERI: the TIDES depression collaborative care model. *Implement Sci* 2009, 4:64
	6. Learning/education theory	• Merriam SB. Andragogy and self-directed learning: pillars of adult learning theory. *New Directions for Adult and Continuing Education*, no. 89, Spring 2001 © Jossey-Bass, A Publishing Unit of John Wiley & Sons, Inc.

LEVELS OF THEORY[6,7]	SAMPLE IMPLEMENTATION-RELATED THEORIES	RELEVANT/SAMPLE CITATIONS
HEALTH CARE SYSTEM/ORGANIZATION: ➲ "O*rganisational*: theories to explain change at a higher order social and systems" (Michie et al., 2005) ➲ As applied at multiple levels; e.g., team, unit, facility, or VISN	1. Diffusion theory	• Rogers E. Diffusion on Innovations, 5th Ed. Simon & Schuster, Inc., 2004. • Dearing J. Improving the state of health programming by using diffusion theory. Journal of Health Communication 2004; 9:21-36.
	2. Social networking	• Valente TW. Social network thresholds in the diffusion of innovations. *Soc Networs* 1996;18:69-89. • www.istheory.yorku.ca/socialnetworktheory.htm
	3. Complexity and systems theory	▪ Burnes, B. (2005). Complexity theories and organizational change. International Journal of Management Reviews, 7(2), 73-90. • Plsek P: Redesigning health care with insights from the science of complex adaptive systems. In Crossing the Quality Chasm: A New Health System for the 21st Century. Washington DC: National Academy of Sciences; 2000:309-322. • Litaker D et al. Using Complexity Theory to Build Interventions that Improve Health Care Delivery in Primary Care. *J Gen Intern Med*. 2006 Feb;21 Suppl 2:S30-4.

[6] Yano EM The role of organizational research in implementing evidence-based practice: QUERI Series Implement Sci 2008, 3:29 (29 May 2008)

[7] Klein, K.J. and J.S. Sorra, The Challenge of Innovation Implementation. Acad Mgmt Review, 1996. 21(4): p. 1055-1080.

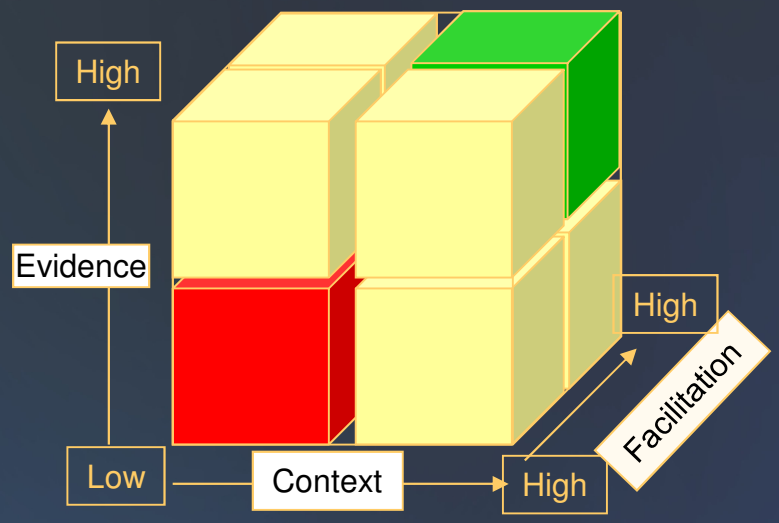
LEVELS OF THEORY	SAMPLE IMPLEMENTATION-RELATED THEORIES	RELEVANT/SAMPLE CITATIONS
HEALTH CARE SYSTEM/ORGANIZATION (*cont'd*)	4. Receptive context	• Pettigrew A, Ferlie E, McKee L: Shaping Strategic Change--The Case of the NHS in the 1980s. Pub Money & Mgmt 1992, 12(3):27-31. • Stetler C, et al. Institutionalizing evidence-based practice: an organizational case study using a model of strategic change. Implement Sci. 2009 30;4(1):78
	5. Theory of the organizational determinants	• Weiner BJ, et al. Using organization theory to understand the determinants of effective implementation of worksite health promotion programs. Health Educ Res. 2009 Apr;24(2):292-305
	6. Organization change management	• Gustafson DH, et al. Developing and testing a model to predict outcomes of organizational change. *Health Serv Res.* 2003 Apr;38(2):751-76. • Molfenter et al. Prospective evaluation of a Bayesian model to predict organizational change. *Health Care Mgmt Rev* 30(3), July/September 2005, pp 270-279 • Krein SL, et al. Improving eye care for veterans with diabetes: An example of using the QUERI steps to move from evidence to implementation: QUERI Series. Implement Sci. 2008 Mar 19;3:18.
	7. Organizational transformation	• Lukas CV, et al. Transformational change in health care systems: an organizational model. Health Care Manage Rev. 2007 Oct-Dec;32(4):309-20. • Lukas CV, Engle RL, Holmes SK, Parker VA, Nealon Seibert M, Petzel RA, Shwartz M, Sullivan JL. Strengthening organizations to implement evidence-based clinical practices. Healthcare Management Review, in press.

LEVELS OF THEORY	SAMPLE IMPLEMENTATION-RELATED THEORIES	RELEVANT/SAMPLE CITATIONS
HEALTH CARE SYSTEM/ORGANIZATION (*cont'd*)	8. PARIHS	• Rycroft-Malone, J., et al. An exploration of the factors that influence the implementation of evidence into practice. *J Clin Nurs*, 2004. 13(8): p. 913-924. • Helfrich C et al. Organizational readiness to change assessment (ORCA): Development of an instrument based on the Promoting Action on Research in Health Services (PARIHS) framework. *Implement Sci*. 2009 Jul 14;4:38.
	9. Group dynamics & Team learning	• Group Dynamics: Theory, Research, and Practice. APA PsychNET (*Journal*) • Edmondson, A. (1999). Psychological Safety and Learning Behavior in Work Teams. Administrative Science Quarterly, 44(2), 350-383. • Nembhard, I., & Edmonson, A. (2006). Making it safe: the effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. Journal of Organizational Behavior, 27, 941-966.
	10. TCU Program Change Model	• Simpson DD: A conceptual framework for transferring research to practice. J Subst Abuse Treat 2002, 22(4):171-182. • Roman PM, Johnson JA: Adoption & implementation of new technologies in substance abuse treatment. J Subst Abuse Treat 2002, 22(4):211-218 • Simpson DD, Flynn PM. Moving innovations into treatment: A stage-based approach to program change. J Subst Abuse Treat. 2007 Sep;33(2):111-20. Epub 2007 Apr 16.

Additional Theories

PARIHS Framework

- Promoting Action on Research Implementation in Health Services (PARIHS)*
- SI = f (E,C,F)
- Organizational Readiness for Change Assessment (ORCA) tool

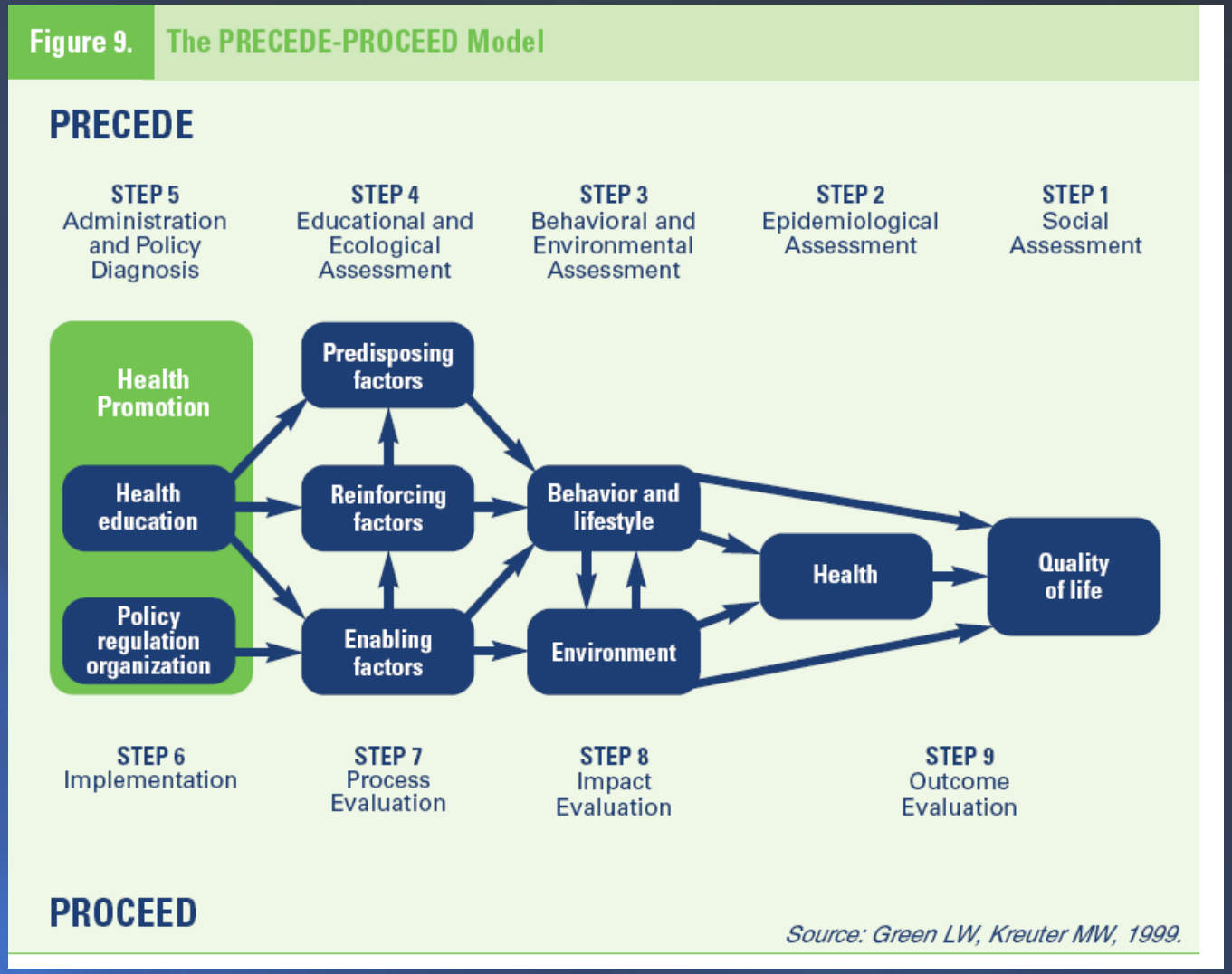


Helfrich C, Li Y-F, Sharp N, Sales A: **Organizational readiness to change assessment (ORCA): Development of an instrument based on the Promoting Action on Research in Health Services (PARiHS) framework.** ***Implementation Science 2009, 4:38.***

Estabrooks, C. A., J. E. Squires, et al. (2009). "Development and assessment of the Alberta Context Tool." BMC Health Serv Res **9(1): 234.**

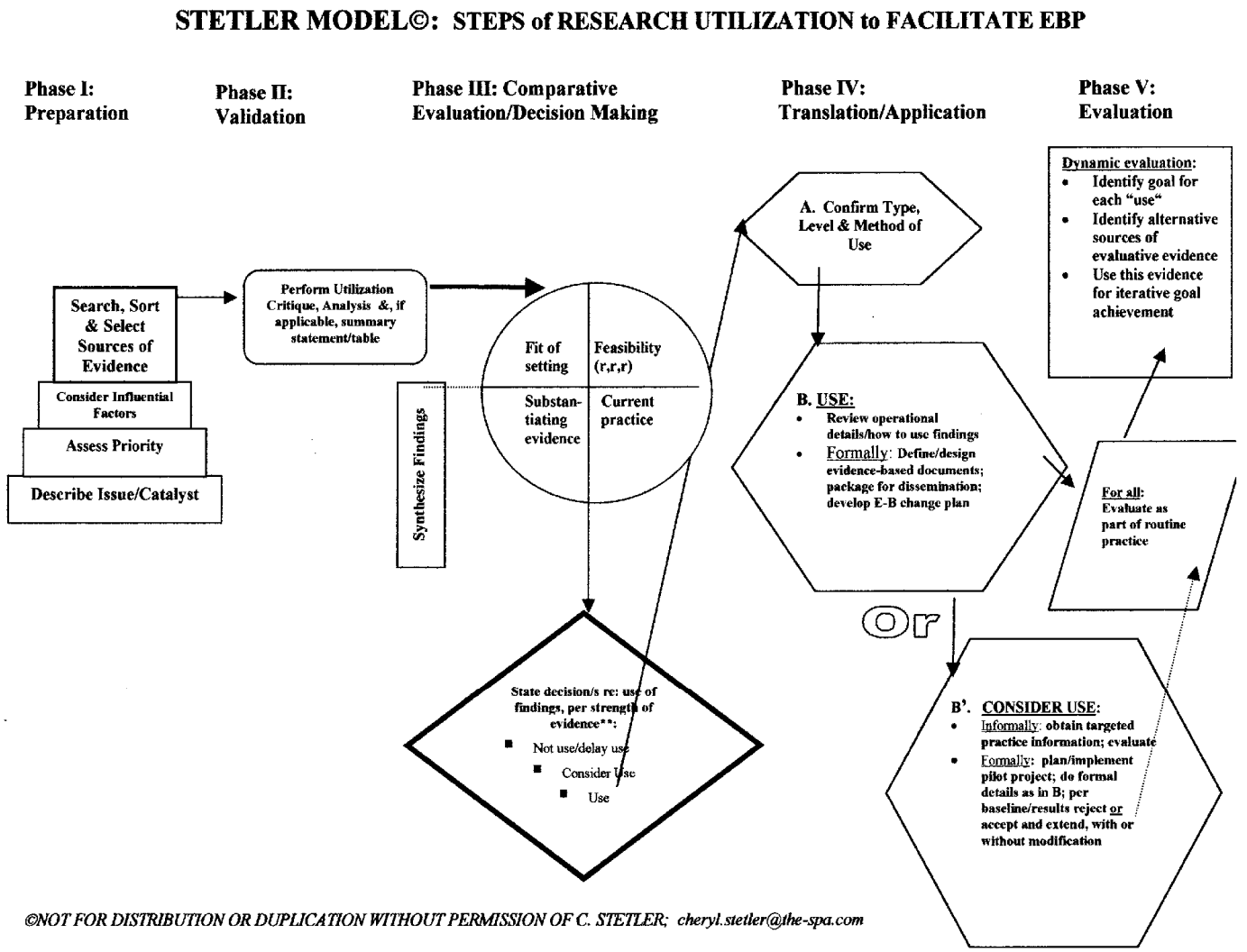
*Kitson A, Harvey G, McCormack B. Enabling the implementation of evidence based practice: a conceptual framework. *Qual. Health Care* 1998;7(3):149-58.

Process Model



US HHS-National Institutes of Health (2005). Theory at a Glance: A guide for health promotion practice 2nd. Retrieved June 20, 2007, from http://www.cancer.gov/PDF/481f5d53-63df-41bc-bfaf-5aa48ee1da4d/TAAG3.pdf

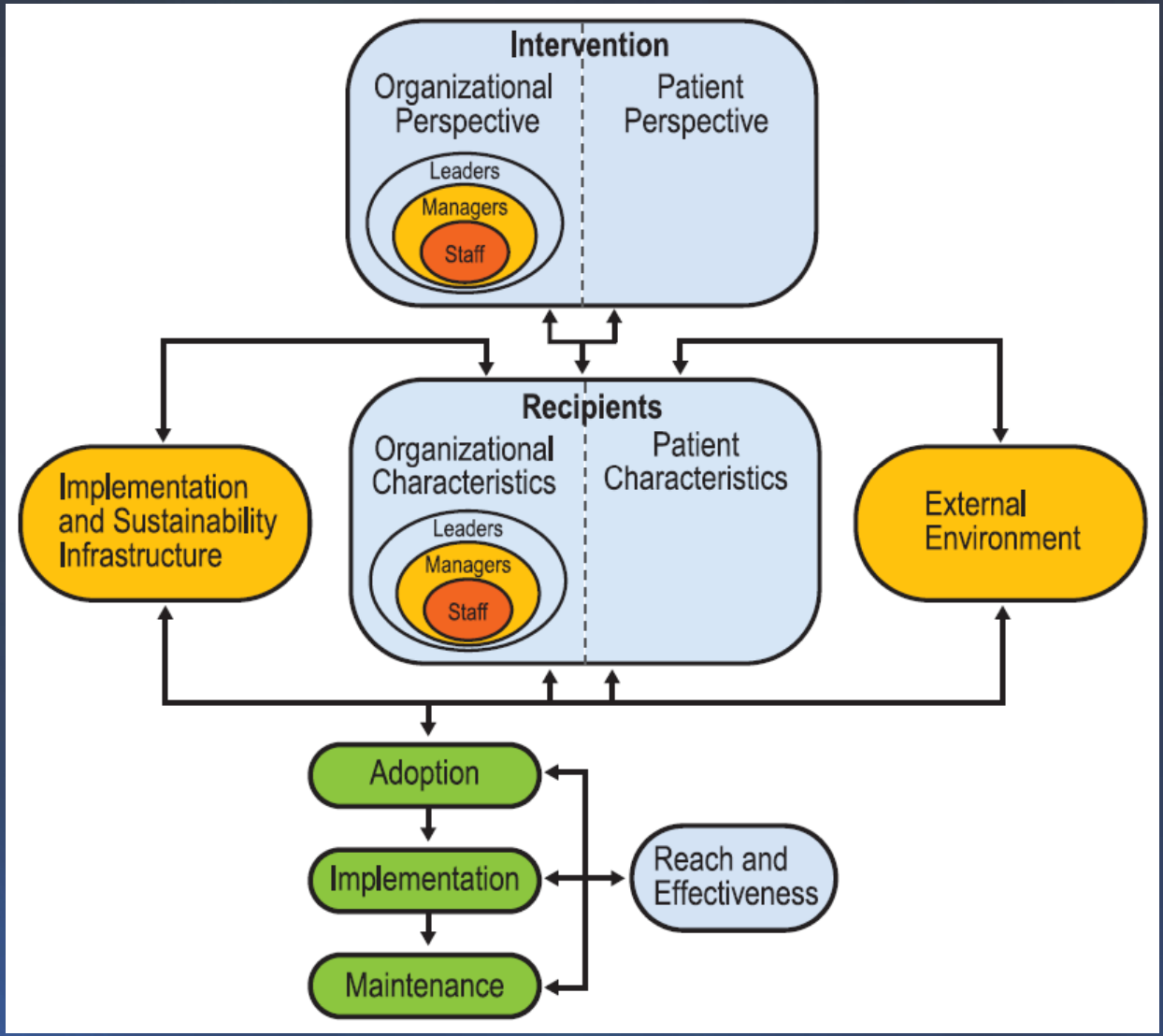
Process Theory



Stetler CB. Updating the Stetler Model of research utilization to facilitate evidence-based practice. Nurs Outlook. 2001 Nov-Dec;49(6):272-9.

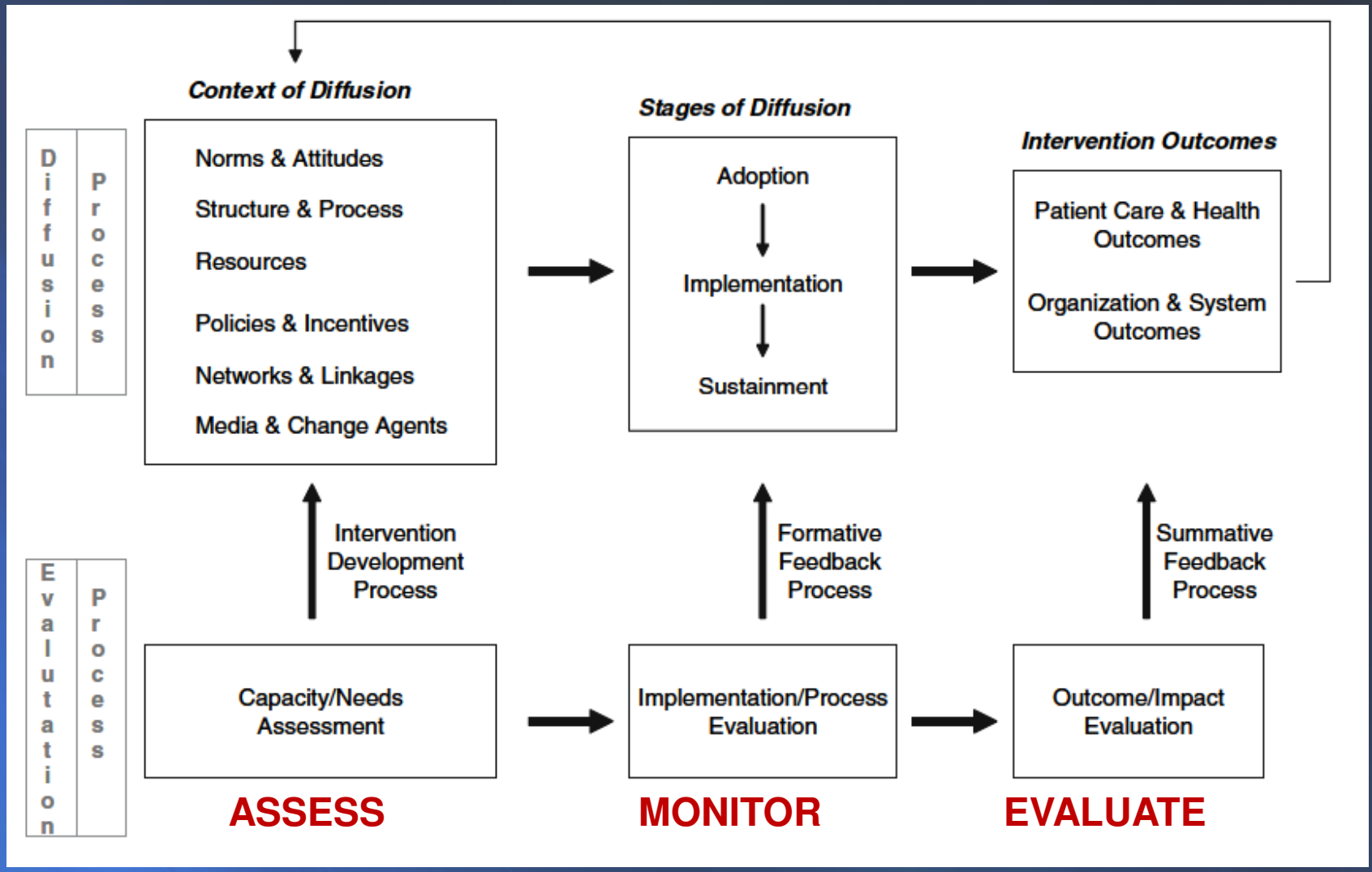
Mixed Theory

The Practical, Robust Implementation and Sustainability Model (PRISM)



Feldstein, A. C., & Glasgow, R. E. (2008). A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice. *Jt Comm J Qual Patient Saf, 34(4), 228-243.*

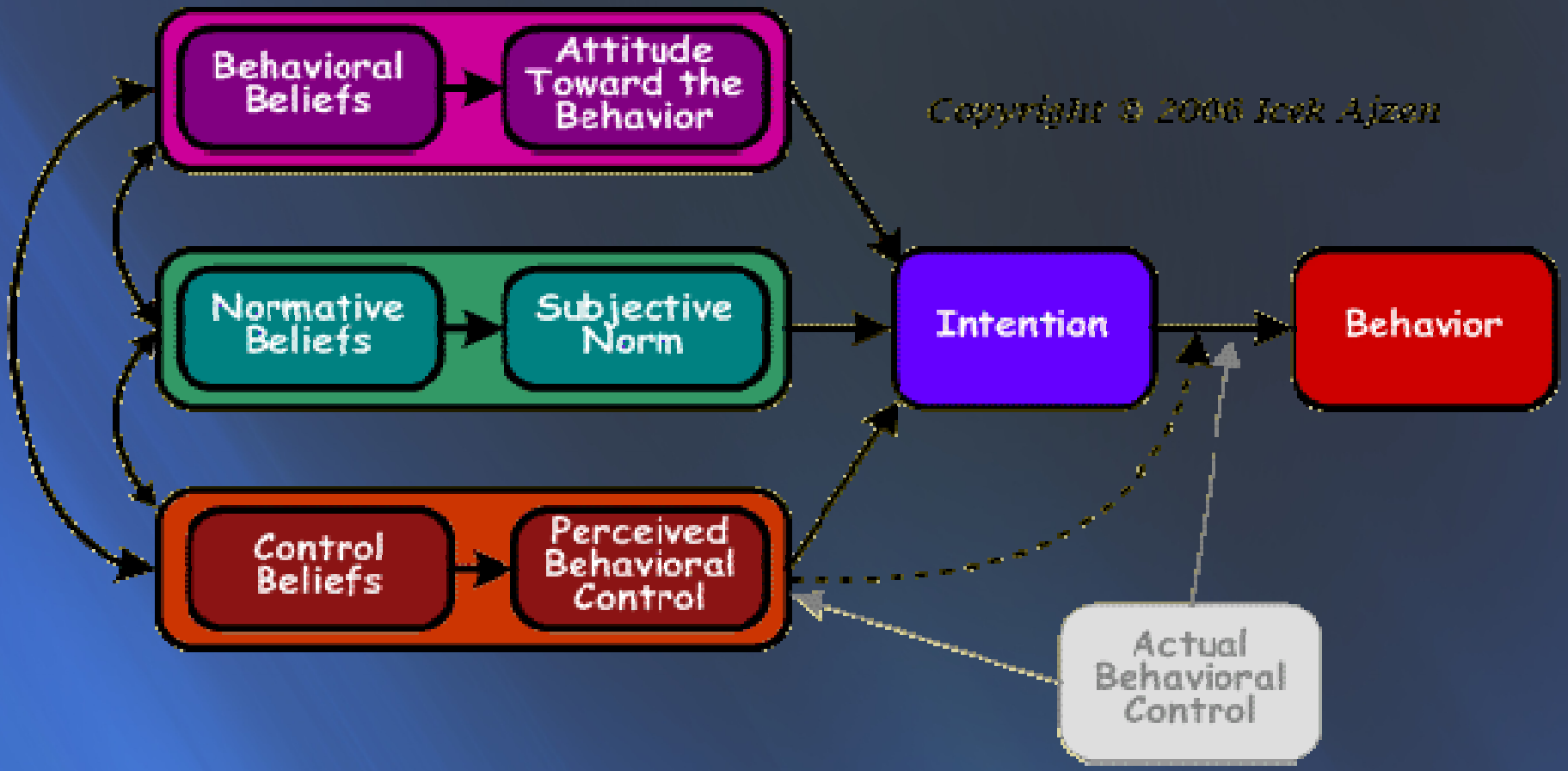
MixedTheory



Mendel P, Meredith LS, Schoenbaum M, Sherbourne CD, Wells KB. Interventions in organizational and community context: a framework for building evidence on dissemination and implementation in health services research. *Adm. Policy Ment. Health* 2008;35(1-2):21-37.

Individual Level Change

Theory of Planned Behavior



Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process.* 1991;50:179-211.
http://people.umass.edu/aizen/tpb.diag.htm |

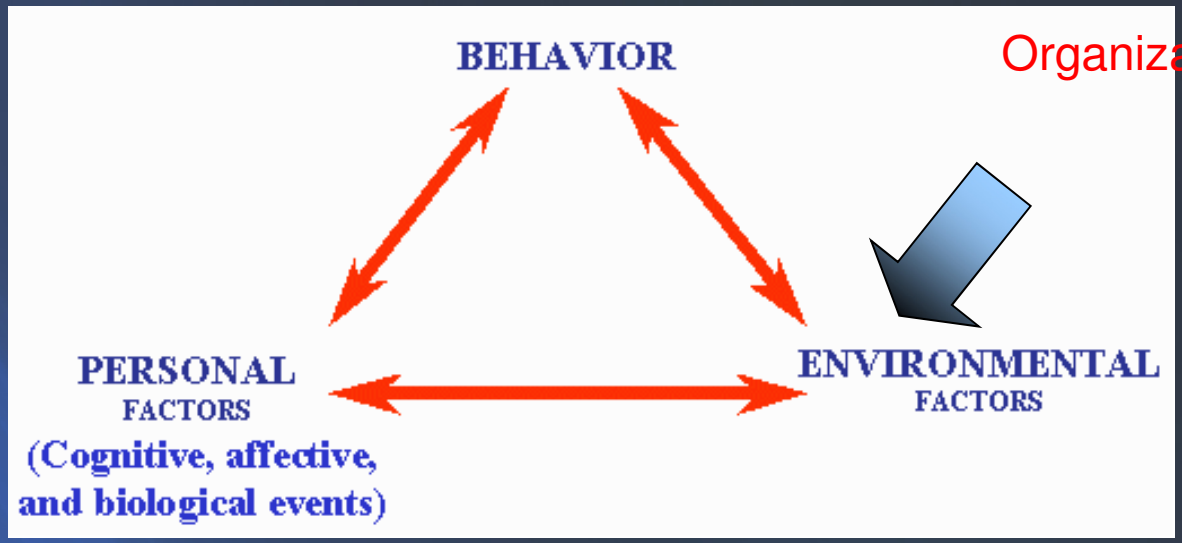
Individual Level Change

Table 3. Stages of Change Model

Stage	*Definition*	*Potential Change Strategies*
Precontemplation	Has no intention of taking action within the next six months	Increase awareness of need for change; personalize information about risks and benefits
Contemplation	Intends to take action in the next six months	Motivate; encourage making specific plans
Preparation	Intends to take action within the next thirty days and has taken some behavioral steps in this direction	Assist with developing and implementing concrete action plans; help set gradual goals
Action	Has changed behavior for less than six months	Assist with feedback, problem solving, social support, and reinforcement
Maintenance	Has changed behavior for more than six months	Assist with coping, reminders, finding alternatives, avoiding slips/relapses (as applicable)

US HHS-National Institutes of Health (2005). Theory at a Glance: A guide for health promotion practice 2nd. Retrieved June 20, 2007, from http://www.cancer.gov/PDF/481f5d53-63df-41bc-bfaf-5aa48ee1da4d/TAAG3.pdf

Individual Level Change

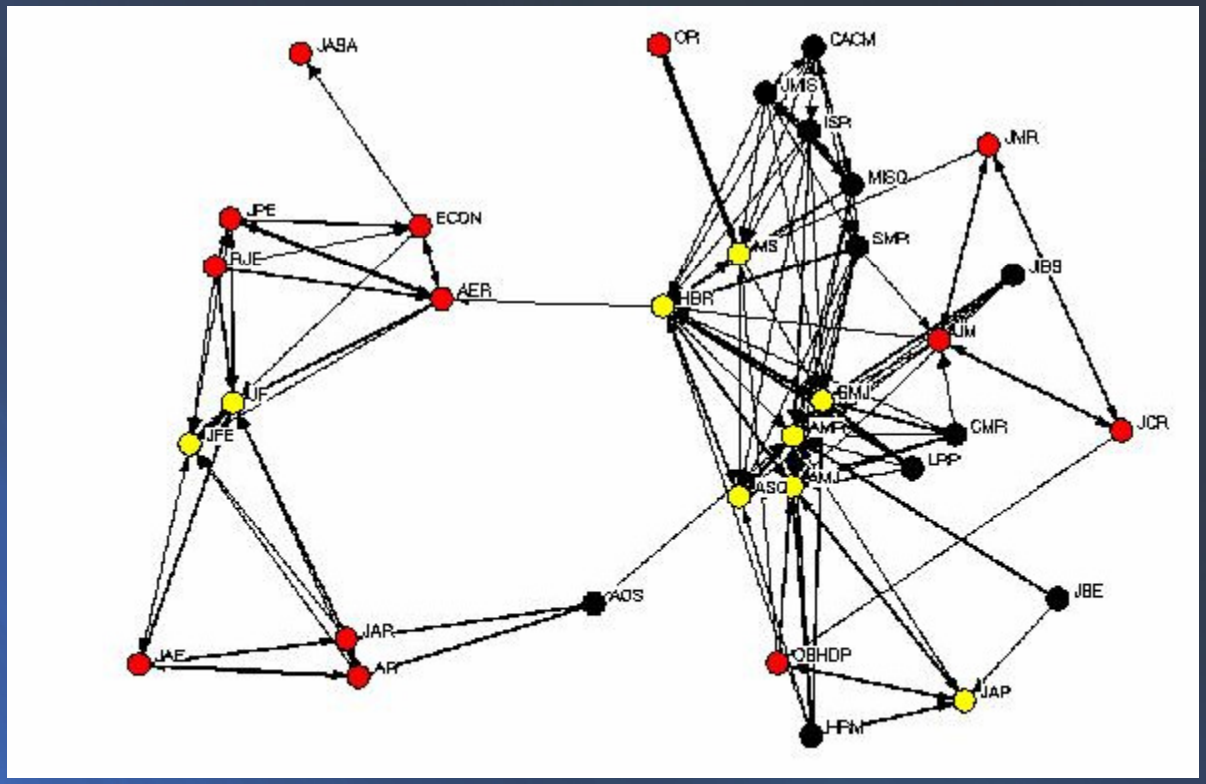


Organizational Setting

Godin, G., Belanger-Gravel, A., Eccles, M., & Grimshaw, J. (2008). Healthcare professionals' intentions and behaviours: A systematic review of studies based on social cognitive theories. *Implement Sci, 3(1), 36.*

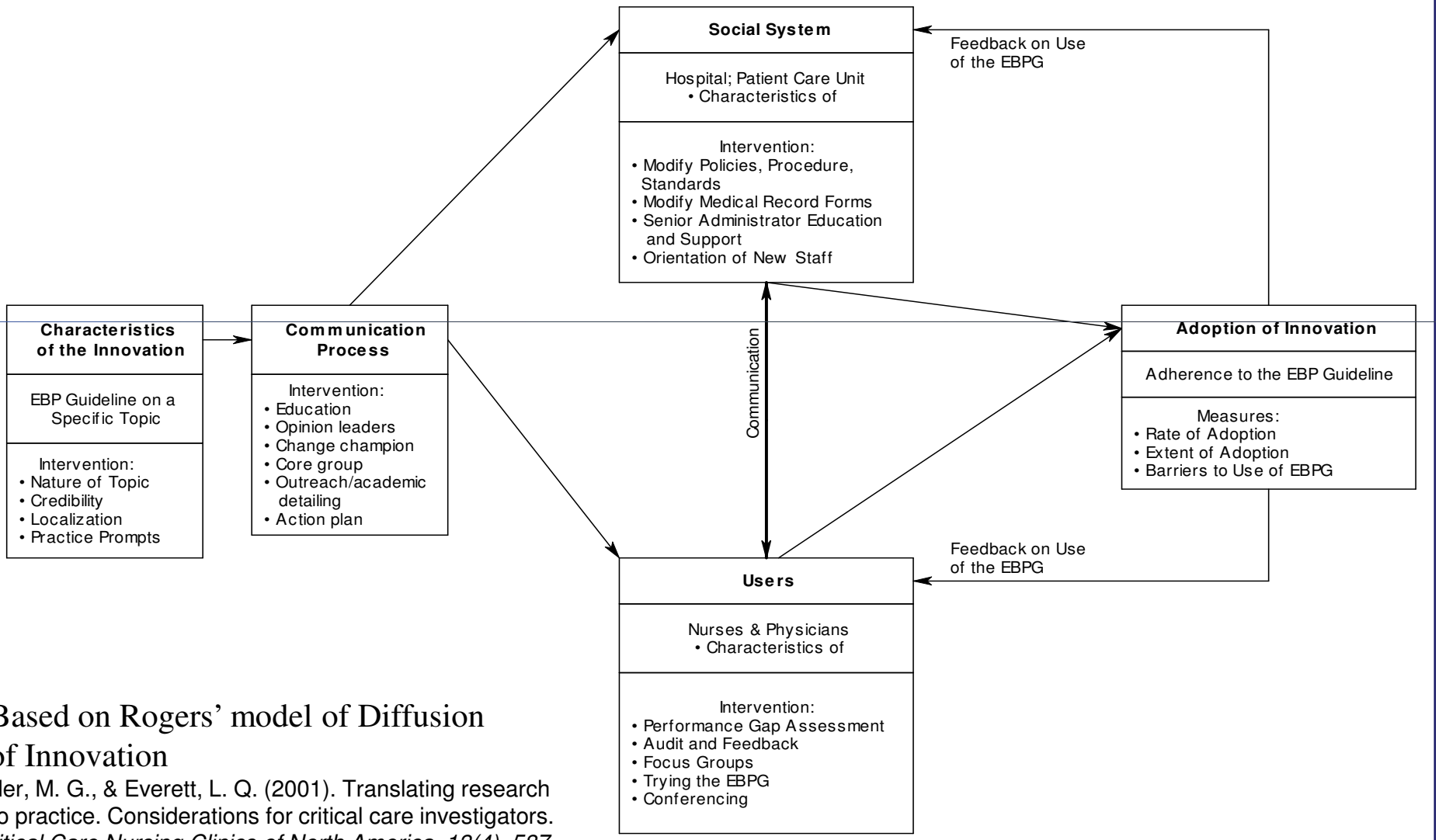
Healthcare System/Organization

Social Network Theory



http://www.istheory.yorku.ca/socialnetworktheory.htm

Translational Research Model



*Based on Rogers' model of Diffusion of Innovation

Titler, M. G., & Everett, L. Q. (2001). Translating research into practice. Considerations for critical care investigators. *Critical Care Nursing Clinics of North America, 13(4), 587-604.*

EIS- Intro Program Session 3: The Role and Selection of Theoretical Frameworks in Implementation Research

Thursday, June 7, 2012 2:00 PM - 3:00 PM EDT

Strong encouragement to read:

1. Damschroder, L., Aron, D., Keith, R., Kirsh, S., Alexander, J., & Lowery, J. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci, 4(1), 50.

2. Klein, K. J., Conn, A. B., & Sorra, J. S. (2001). Implementing computerized technology: An organizational analysis. Journal of Applied Psychology, 86(5), 811-824.

3. French, S. D., Green, S. E., O'Connor, D. A., McKenzie, J. E., Francis, J. J., Michie, S., et al. (2012). Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. Implement Sci, 7(1), 38. doi: 10.1186/1748-5908-7-38

Extra reading:

1. Powell, B. J., McMillen, J. C., Proctor, E. K., Carpenter, C. R., Griffey, R. T., Bunger, A. C., et al. (2012). A compilation of strategies for implementing clinical innovations in health and mental health. Medical Care Research and Review, 69(2), 123-157. doi: 10.1177/1077558711430690

2. Michie, S., Johnston, M., Francis, J., Hardeman, W., & Eccles, M. (2008). From Theory to Intervention: Mapping Theoretically Derived Behavioural Determinants to Behaviour Change Techniques. Applied Psychology: An international review, 57(4), 660-680.