HSR&D Center for Clinical Management Research
VA Ann Arbor Healthcare System

Use of the CFIR in VA Implementation Research

Julie C. Lowery, PhD, MHSA, Associate Director, CCMR; Co-Implementation Research Coordinator, Diabetes QUERI

Laura Damschroder, MS, MPH, Co-Implementation Research Coordinator, Diabetes QUERI

Outline

- Brief Description of VA's QUERI Program
- CFIR Orientation
- Coding and Analysis Using the CFIR
  - MOVE! Study
  - Tele-Retinal Screening Study
- Next Steps/CFIR Wiki

- (Focus on methods)

VA's QUERI: Quality Enhancement Research Initiative

- Launched in 1998
- "Using research evidence to improve practice"
- Funded from medical care dollars (not research)
- QUERI researchers employ concepts from implementation science (aka knowledge utilization, knowledge translation, knowledge transfer)
- Each QUERI is provided funds for an Implementation Research Coordinator (IRC)

10 QUERI Centers

- Chronic Heart Failure
- Diabetes
- eHealth
- HIV/Hepatitis
- Ischemic Heart Disease
- Mental Health
- Polytrauma and Blast-Related Injuries
- Spinal Cord Injury
- Stroke
- Substance Use Disorders

#1 QUERI Goal

- To improve healthcare quality through the systematic implementation of research findings known to generate better outcomes than prevailing practices

Challenges for Researchers

- Short turn-around time needed by operations
- Establishing partnerships between researchers and managers
- Who's responsible for implementation—researchers or managers?
- Different performance measures than in academics

Clinical Effectiveness Trial

- Primary aim: determine effectiveness of a clinical intervention
- Clinical intervention: a specific clinical/therapeutic practice or delivery system/organizational arrangement or health promotion activity
- Typical unit of randomization: patient or clinical unit
- Summative outcomes: health outcomes, costs, process/quality measures (intermediate outcomes)

Implementation Trial

- Primary aim: determine utility of an implementation intervention/strategy
- Implementation intervention: a method or technique to enhance adoption of a clinical intervention (e.g., electronic clinical reminder, audit/feedback, interactive education)
- Typical unit of randomization: provider, clinical unit, or system
- Summative outcomes: adoption/uptake of the clinical intervention; process measures/quality measures

Hybrid Designs

- Combine features of both clinical effectiveness and implementation trials

- Efficacy Studies
- → Effectiveness Studies
- → Implementation Research

- Hybrid designs fall between effectiveness studies and implementation research

Hybrid Trial Type 1

- Primary aim: determine effectiveness of a clinical intervention
- Secondary aim: better understand context for implementation

Hybrid Trial Type 2

- Coprimary aim: determine effectiveness of a clinical intervention
- Coprimary aim: determine feasibility and potential utility of an implementation intervention /strategy

Hybrid Trial Type 3

- Primary aim: determine utility of an implementation intervention/strategy
- Secondary aim: assess clinical outcomes associated with implementation trial

Conceptual Frameworks in Implementation Research

- While there are multiple conceptual models to use for guidance, there is a need for research that identifies the determinants of field-level successes and failures

Consolidated Framework for Implementation Research (CFIR)

- A comprehensive framework to promote consistent use of constructs, terminology, and definitions
  - Consolidate existing models and frameworks
  - Comprehensive in scope
  - Tailor use to the setting

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

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)

The CFIR:

- Embraces, consolidates, and standardizes key constructs from other models
- Agnostic to specific models and theories
- Provides a pragmatic structure for evaluating complex implementations
- Helps to organize findings across disparate implementations
- Paves the way for cross-study synthesis

Application of the CFIR

- Consists of 39 individual constructs
- Cannot use them all in every study
  - And not all will apply
  - A priori assessment of which constructs to include
    - Modifiable & non-modifiable constructs
- Determine levels at which each construct may apply
  - E.g., teams, departments, clinics, regions

MOVE! Study

- MOVE! weight management program disseminated in 2006
- Objective: Identify differences in organizational factors between facilities with high MOVE! implementation effectiveness versus those with low implementation effectiveness
  - Help explain the high variation in levels of patient participation observed across VHA facilities

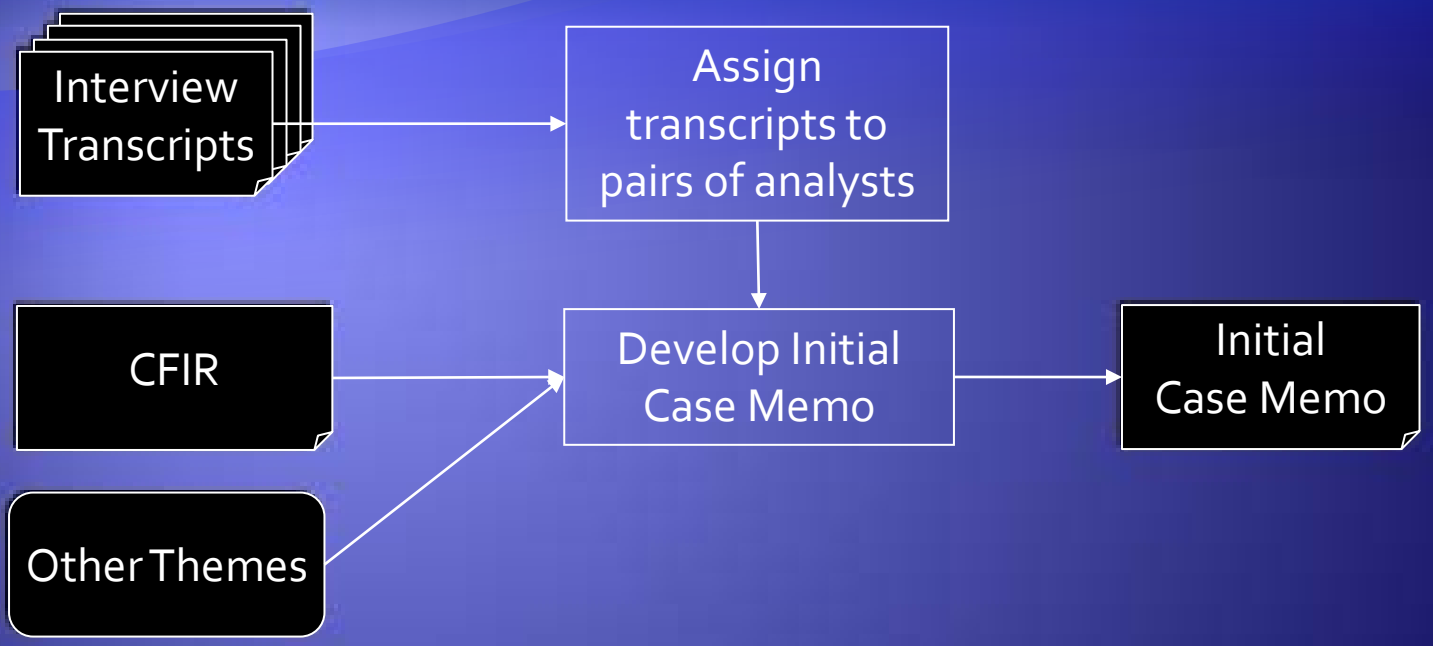
Methods

- Purposive sample of 5 low & high uptake sites
- Semi-structured interviews with 24 key stakeholders
  - 83% of those contacted and invited participated
- Qualitative analysis
  - Deductive, using CFIR
  - Inductive, open to new themes
  - Team-based analysis

Use of CFIR for Data Collection

- Interview key stakeholders to identify CFIR constructs that they think are most important for predicting implementation success
- Develop interview guide based on these constructs

Team-based Analysis



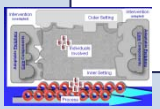
Develop initial case memo

- Analyze by case (site)
  - For each transcript:
    - Each analyst independently codes
    - Meet to compare and achieve consensus on coding
    - Work together to develop summary statements with supporting quotes
      - By construct

Large Group Consensus

- 2 pairs of analysts + PI + implementation researcher (+ qualitative expert)
- Pairs of analysts present their "initial case memos"
  - Accept, merge, modify statements
  - Write new statements
- Finalize group memo

Team-based Analysis



Interview Transcripts

Assign transcripts to pairs of analysts

CFIR

Develop Initial Case Memo

Initial Case Memo

Other Themes

Large Group Consensus

Modify Memos (+Quotes)

Group Consensus Memo

Repeat for each case

Rating Constructs

- Think of CFIR constructs as independent variables
  - *Construct$_1$ + construct$_2$ + … = f(implementation effectiveness)*
  - Ratings → ordinal values of independent variables
- Is the construct positive or negative force in the organization?
- Does it manifest strongly or weakly?
- Is the construct present but neutral?

Assign Construct Strength

- Weak
  - General statements
  - No direct, concrete examples
- Strong
  - Specific statements
  - Direct, concrete examples
- Neither
  - Neutral
    - Mixed effects balancing to neutral
    - Present but no effect
  - Missing: Unaware, not sufficiently knowledgeable

Rating Constructs

- Rate constructs within each case
- Compare constructs across cases
- Identify constructs that correlate with implementation success

Rating Matrix

- See handout

Recommendations

- Review qualitative data for operationalization of key constructs at sites with high implementation effectiveness, and review barriers at sites with low implementation effectiveness

Study Limitation

- Lack of blinding

Tele-retinal Screening Study

- Objective: to identify factors associated with the variability in uptake of VA tele-retinal imaging program across networks (VISNs)
- Characterized low and high uptake sites based on reach
- 9 VISNs
- 42 interviews

Tele-retinal Screening Study: Results

- 7 of 39 CFIR constructs rated negative or neutral in VISNs with low screening rates and rated more positively in VISNs with high screening rates:
  - External policies and incentives
  - Networks and communications
  - Organizational incentives and rewards
  - Learning climate
  - Access to knowledge and information
  - Personal attributes
  - Primary care engagement

Next Steps

- Increase efficiency of process
  - Use validated surveys to measure CFIR constructs
  - Determine correlation between constructs and implementation effectiveness
  - Focus qualitative data collection on highly correlated constructs

The CFIR Wiki

- The CFIR Wiki will promote:
  - Shared definitions
  - Operationalization of definitions
  - Repository of findings
  - Predictive modeling
  - Site-specific "System-change likelihood Indices"[1]
- Which will result in…
  - … more reliable implementation strategies
  - …more generalized knowledge about what works where and why

1. Davidoff F: **Heterogeneity is not always noise: lessons from improvement.** ***JAMA 2009, 302:2580-2586.***