Implementation for Improving Client and Provider Outcomes

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- PEPFAR

The NIH-PEPFAR PMTCT Implementation Science Alliance

Nigeria Implementation Science Alliance
Roadmap

- What is Implementation science?
- Define “implementation outcomes”
- Present the Exploration, Preparation, Implementation, Sustainment (EPIS) framework
- Define “implementation strategies”
- Results of clinic and provider focused implementation studies
It takes **17 years** to turn just **14%** of original research to the benefit of patient care.
The Difference between Dissemination and Implementation?

**Dissemination**
- “targeted distribution of information and intervention materials to a specific public health or clinical practice audience. The intent is to spread knowledge and the associated evidence-based interventions.”

**Implementation**
- “the use of strategies to introduce or change evidence-based health interventions within specific settings”

Source: NIH PAR-10-038; Adapted from Lomas, 1993
Qualitative

Who would've thought that a structure of steel could be so beautiful... strong and delicate at the same time.

Quantitative

It shortens my commute to work by 12.7 mile.

Different philosophical bases
Implementation Frameworks and Strategies

- **Implementation Framework:**
  - A proposed model of factors likely to impact implementation and sustainment of EBP
    - (Aarons, Hurlburt, & Horwitz, 2011; Damschroder et al., 2009; Tabak et al., 2012)

- **Implementation Strategy:**
  - Systematic *processes* to adopt and integrate evidence-based innovations into usual care.
    - (Powell et al., 2011)
Why Frameworks?

As proposed by the project sponsor.

As specified in the project request.

As designed by the senior analyst.

As produced by the programmers.

As installed at the user's site.

What the user wanted.
Frameworks Can Have Specific Purpose

- Suggest potential barriers and facilitators
- Support evaluation of implementation efforts
- Build theory in implementation science
- Test theory in implementation science

Frameworks can have different origins
- Some consolidate the literature
- Some focused on special purpose or context
Reviewed 61 models
– Models (aka “theories” or “frameworks”)

– Frameworks evaluated on:
  – Construct flexibility
    – Broad $\rightarrow$ highly operationalized
  
  – Focus on dissemination vs. implementation
    – D-only $\rightarrow$ D=I $\rightarrow$ I-only
  
  – Socioecologic framework level
    – Individual $\rightarrow$ Community $\rightarrow$ System

Implementation Outcomes

**Intervention Strategies**
- Evidence Based Practices
  - Systems
  - Environment
  - Organizational
  - Group/Learning
  - Supervision
  - Providers
  - Consumers

**Implementation Strategies**
- Systems
- Environment
- Organizational
- Group/Learning
- Supervision
- Providers
- Consumers

**Outcomes**
- Service Outcomes
  - Efficiency
  - Safety
  - Effectiveness
  - Equity
  - Patient-Centered
  - Timeliness

- Workforce Outcomes
  - Fidelity
  - Reach
  - Acceptability
  - Sustainability
  - Uptake
  - Costs

**Client Outcomes**
- Symptoms
- Functioning
- Satisfaction
- Quality of Life

*IOM Standards of Care

**Implementation Research Methods**

Common Elements of Frameworks

- **Multiple Levels**
  - Implementation occurs in complex systems
  - Need to identify concerns at different levels

- **Multiple phases**
  - Implementation occurs over time
  - There may be relatively discrete phases or stages
Why Consider Multiple Phases?

- Characterizes process of implementation
- Develops a way to think about what supports are needed during the implementation process
- Helps in providing a “long-term view”
- Helps in planning

Exploration, Preparation, Implementation, Sustainment (EPIS) Conceptual Model of Implementation and Sustainment

Outer Context
- Service Environment
  - Legislation
  - Leadership
  - Policies
  - Resources
  - Service Contracts
- Inter-organizational Environment
  - Relationship of service system with CBOs
  - Relationships between provider organizations
    - Collaboration
    - Competition
    - Co-operation
- Patients/Consumers
  - Need
  - Advocacy

Inner Context
- Intra-Organizational Characteristics
  - Leadership
  - Policies
  - Structure
  - Culture
  - Climate
  - MIS
  - Data monitoring/feedback
- Individual Adopter Characteristics
  - Attitudes to EBP
  - Fidelity
  - Commitment to EBP
  - Org. Commitment
  - Job Satisfaction
  - Turnover Intentions
  - Turnover

Sustainment Model of EBP Implementation in Public Sectors (EPIS Framework)

Outer Context
- Service Environment
  - Legislation
  - Leadership
  - Policies
  - Resources
  - Service Contracts
- Inter-organizational Environment
  - Relationship of service system with CBOs
  - Relationships between provider organizations
  - Collaboration
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EBP Characteristics
- EBP System Fit
- EBP Organization Fit
- EBP Provider Fit
- EBP Patient/Client Fit

EBP Developers
- Purveyors / Implementation Support

Interconnections
- Interactions-Linkages-Relationships
- Procurement-Contracting

Sustainment Outcomes
- QUALITATIVE
  - Level of Institutionalization
  - Continued use of EBP
  - Adaptations
- QUANTITATIVE
  - Provider Reach/Penetration
  - Client Reach/Penetration
  - Org. Sustainment Climate
  - Fidelity

Exploration, Preparation, Implementation, Sustainment (EPIS) Model

- **Exploration**
  - System/org assessment to understand barriers and facilitators

- **Preparation**
  - Taking what is learned in exploration and planning for implementation

- **Implementation**
  - Training, putting structures and processes in place

- **Sustainment**
  - Begin with sustainment in mind
  - Practice(s) institutionalized at multiple levels

### EXPLORATION

**OUTER CONTEXT**
- Sociopolitical Context
  - Legislation
  - Policies
  - Monitoring and review
- Funding
  - Service grants
  - Research grants
  - Foundation grants
  - Continuity of funding
- Client Advocacy
  - Consumer organizations
  - Interorganizational networks
    - Direct networking
    - Indirect networking
    - Professional organizations
    - Clearinghouses
    - Technical assistance centers

**INNER CONTEXT**
- Organizational characteristics
  - Absorptive capacity
  - Knowledge/skills
  - Readiness for change
  - Receptive context
- Culture
- Climate
- Leadership
- Individual adopter characteristics
  - Values
  - Goals
  - Social Networks
  - Perceived need for change

### ADOPTION DECISION / PREPARATION

**OUTER CONTEXT**
- Sociopolitical
  - Federal legislation
  - Local enactment
  - Definitions of “evidence”
- Funding
  - Support tied to federal and state policies
- Client advocacy
  - National advocacy
  - Class action lawsuits
- Interorganizational networks
  - Organizational linkages
  - Leadership ties
  - Information transmission
    - Formal
    - Informal

**INNER CONTEXT**
- Organizational characteristics
  - Size
  - Role specialization
  - Knowledge/skills/expertise
  - Values
  - Leadership
    - Culture embedding
    - Championing adoption

### ACTIVE IMPLEMENTATION

**OUTER CONTEXT**
- Sociopolitical
  - Legislative priorities
  - Administrative costs
- Funding
  - Training
  - Sustained fiscal support
  - Contracting arrangements
- Community based organizations
- Interorganizational networks
  - Professional associations
  - Cross-sector
  - Contractor associations
  - Information sharing
  - Cross discipline translation
- Intervention developers
  - Engagement in implementation
- Leadership
  - Cross level congruence
  - Effective leadership practices

**INNER CONTEXT**
- Organizational Characteristics
  - Structure
  - Priorities/goals
  - Readiness for change
  - Receptive context
  - Culture/climate
- Innovation-values fit
  - EBP structural fit
  - EBP ideological fit
- Individual adopter characteristics
  - Demographics
  - Adaptability
  - Attitudes toward EBP

### SUSTAINMENT

**OUTER CONTEXT**
- Sociopolitical
  - Leadership
  - Policies
  - Federal initiatives
  - State initiatives
  - Local service system
  - Consent decrees
- Funding
  - Fit with existing service funds
  - Cost absorptive capacity
  - Workforce stability impacts
- Public-academic collaboration
  - Ongoing positive relationships
  - Valuing multiple perspectives

**INNER CONTEXT**
- Organizational characteristics
  - Leadership
  - Embedded EBP culture
  - Critical mass of EBP provision
  - Social network support
- Fidelity monitoring/support
  - EBP Role clarity
  - Fidelity support system
  - Supportive coaching
- Staffing
  - Staff selection criteria
  - Validated selection procedures

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Phases and Transition Points in the EPIS Model

**Exploration Phase**
- Evaluate EBP Fit
- Assess outer context issues
- Assess inner context issues

**Preparation Phase**
- Marketing EBP to stakeholders
- Address outer context issues
- Address inner context issues

**Implementation Phase**
- Leadership and support for EBP
- Alignment of outer context support
- Problem solving inner context issues

**Sustainment Phase**
- EBP quality assurance
- Alignment and contingency management
- Supervision incentivization turnover mgmt

*Begin with Sustainment in Mind*
*Problem Solving Orientation*
Implementation Strategy:

- Systematic process(es) to adopt and integrate evidence-based innovations into usual care.

(Powell et al., 2011)

- Strategy should derive from theory

Implementation Strategies

- Address specific factors identified in implementation frameworks

- **Discrete** implementation strategies
  - Clinical reminders, training only

- **Multifaceted** implementation strategies
  - Training + reminders
  - Training + fidelity monitoring + coaching

- **Blended** implementation strategies (comprehensive)
  - Dynamic Adaptation Process strategy (DAP)
  - Leadership and Organizational Change for Implementation (LOCI)

<table>
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<tr>
<th>Type of Strategy</th>
<th>Description</th>
<th>Context Level</th>
<th>N</th>
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<tbody>
<tr>
<td>Planning</td>
<td>Info gathering, leadership, relationships</td>
<td>Outer/Inner</td>
<td>n=17</td>
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<tr>
<td>Education</td>
<td>Training, materials, influence stakeholders</td>
<td>Inner/Outer</td>
<td>n=16</td>
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<tr>
<td>Financing</td>
<td>Incentives, financial support</td>
<td>Inner/Outer</td>
<td>n=9</td>
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<tr>
<td>Restructuring</td>
<td>Change roles, create teams, alter record systems, create relationships</td>
<td>Inner/Outer</td>
<td>n=7</td>
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<tr>
<td>Quality Management</td>
<td>MIS + feedback, clinical reminders, decision support, PDSA cycles</td>
<td>Inner/Outer</td>
<td>n=16</td>
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<tr>
<td>Policy Change</td>
<td>Licensure, accreditation, certification, mandates</td>
<td>Outer/Inner</td>
<td>n=3</td>
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Organizational Factors in Youth Mental Health Services
NIMH PI: Aarons

- Participant Organizations
  - 49 programs in San Diego County
    - 94.4% participation rate
  - Services provided
    - Outpatient (49.0%), Day treatment (19.6%), Assessment/evaluation (9.8%), Case management (7.8%), Residential treatment (5.9%), other (7.9%)

- Participant providers
  - 322 public sector clinical and case management service workers from programs providing mental health services to children and adolescents and their families
    - 96% participation rate
  - 80% Full-time employees
    - 32% MFT, 31% Social work, 23% Psychology, 2% Psychiatry, 12% Other

- Develop a measure of provider attitudes to adopting EBP
- Examine correlates of attitudes
## Participants (Clinics=49; Providers=322)

### Gender

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<tr>
<td>Male</td>
<td>23.3%</td>
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<tr>
<td>Female</td>
<td>76.7%</td>
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### Race

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<tr>
<td>Caucasian</td>
<td>64.8%</td>
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<tr>
<td>Hispanic</td>
<td>15.0%</td>
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<tr>
<td>African-American</td>
<td>7.2%</td>
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<tr>
<td>Asian/PI</td>
<td>5.9%</td>
</tr>
<tr>
<td>Other</td>
<td>7.1%</td>
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### Education

<table>
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<td>Some college</td>
<td>3.2%</td>
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<tr>
<td>B.A., B.S.</td>
<td>19.9%</td>
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<tr>
<td>Some grad</td>
<td>10.1%</td>
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<tr>
<td>MSW, MA, MFT</td>
<td>56.2%</td>
</tr>
<tr>
<td>Ph.D. M.D.</td>
<td>10.1%</td>
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Leadership, Organizational Climate and Working Alliance

Transformational Leadership

ns 0.13

ORGANIZATIONAL CLIMATE

.71*

WORKING ALLIANCE

.28*

N = 332 Mental health clinicians and case managers in 49 youth mental health programs

Organizational climate and work attitudes mediated the effective of organizational culture on staff turnover.

Organizational Climate Mediates effect of Transformational Leadership on EBP Perceived Burden

Notes: $N = 363$; Path coefficients are standardized; *$p < .01$, **$p < .001$
Although path from empowering climate to perceived burden not significant, PRODCLIN 2 analysis showed indirect effect of TL on burden was significant ($\beta = -.185$, $SE = .062$, 95% CI = -.317, -.075)

Leadership Impact on Climate and Turnover During Statewide Behavioral Health Reform

ARC Org. Intervention Effect on Turnover

Note: Baseline turnover rate = 50%.

Mixed-Methods Study of a Statewide EBP Implementation (NIMH R01MH072961 PI: Aarons)

- Implementation of SafeCare® in Oklahoma’s Statewide Children’s Services System
- Organizational and Clinical Theory/Hypothesis Driven
- Combines exploratory and confirmatory approaches
- Mixed Methods
  - Equal quantitative and qualitative components
- Longitudinal at organization/team level
- Requires collaboration and ongoing relationship building and maintenance
Mixed-Methods Study of a Statewide EBP Implementation, PI: Aarons; NIMH R01MH072961

Organizational adoption decision/EBP Implementation

- **JOB AUTONOMY** → **WORK ATTITUDES** → **TURNOVER INTENTIONS** → **STAFF TURNOVER**

  - Workforce Issues

  - Therapeutic Process

  - Organizational Process

- **ORGANIZATIONAL FACTORS**
  - Leadership
  - Climate
  - Culture
  - Structure

- **PERSONAL CHARACTERISTICS**

- **PERSONAL DISPOSITIONAL INNOVATIVENESS**

- **NETWORK EXTERNALITIES**

- **ATTITUDES TOWARD EBP** → **FIDELITY** → **CONSUMER OUTCOMES**

- **WORKING ALLIANCE**
### SafeCare® Effectiveness Study
**(NIMH PI: Mark Chaffin)**

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<th>Monitored</th>
<th>Non-Monitored</th>
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<tbody>
<tr>
<td>SafeCare®</td>
<td>SafeCare Protocol + Coaching</td>
<td>SafeCare Protocol</td>
</tr>
<tr>
<td>SAU</td>
<td>Usual Care + Coaching</td>
<td>Usual Care</td>
</tr>
</tbody>
</table>
Methods

Participants = service providers, supervisors, agency directors and executive directors (n approx. 140 but varies by wave, 21 teams of providers)
  – Race/ethnicity closely matches the service population

Longitudinal Web-based organizational surveys
  – Completed by service providers and supervisors

Annual Qualitative data collection (interviews, focus groups)
  – Service providers, supervisors, agency directors

Inherent quantitative data problems at system/organizational level
  – The “small n” problem
  – Level 2 missing data problem

Response rates
  – Qualitative: >95%
  – Quantitative: >95% over 12 waves
Mixed-Methods EBP Implementation Study
NIMH 5R01MH072961 (PI: Aarons) Implementation
NIMH 5R01MH065667 (PI: Chaffin) Effectiveness
OK Statewide Comparative Effectiveness Trial: Client Recidivism

Complex sample two-level recurrent event random survival models

Implementation Outcomes
Effect of EBP Implementation on Staff Retention

Figure 1. Kaplan-Meier Survival Function Estimates (Retention Probability) by Study Condition. Note: SC/M = participating in SafeCare and fidelity coaching; SC/Non = participating in SafeCare, but not fidelity monitoring; SAU/M = services as usual and receiving fidelity monitoring; and SAU/Non = services as usual and not receiving fidelity monitoring. N=153.

Effects of Type of Leadership on Team Climate for Innovation and Staff Attitudes Toward Adopting EBP

The Implementation Leadership Scale

- Identifies specific behaviors that leaders may enact to support and engage followers in the larger goal of successful EBP implementation

- Focused on leader behaviors related to climate embedding mechanisms to promote strategic climates

1. Proactive Leadership
   - “Has a plan to address implementation of EBP”

2. Knowledgeable Leadership
   - “Is able to answer staff questions about EBP”

3. Supportive Leadership
   - “Recognizes and appreciates employee efforts toward successful implementation of EBP”

4. Perseverant Leadership
   - “Carries on through the challenges of implementing EBP”

Implementation Leadership Total Scale

Total $\alpha = .97$, 12 total items

Implementation Climate Scale

Implementation Climate

- ...employees’ shared perceptions of the importance of EBP or innovation implementation within the organization
  (adapted from Klein, Conn, & Sorra, 2001, p. 813)

- 1. Focus on EBP
  “Using EBP is a top priority at this agency”

- 2. Recognition for EBP
  “Seen as clinical experts”

- 3. Support for EBP
  “This team provides EBP trainings”

- 4. Rewards for EBP
  “More likely to get a bonus/raise”

- 5. Selection for EBP
  “Previously used EBP”

- 6. Selection for Openness
  “Open to new interventions”

Implementation Climate Total Scale

- Alphas range .81-.91; Total alpha=.91
- 18 total items

Implementation Citizenship Behavior Scale

Implementation Citizenship Behavior

- Those behaviors that employees perform that go above and beyond what is required in order to support EBP implementation.

- 1. Helping Others
  - “Assisting others to make sure they implement evidence-based practices properly”

- 2. Keeping Informed
  - “Keeping up with the latest news regarding evidence-based practices”

- Implementation Citizenship Behavior Total Scale
  - Alphas range .91-.93; Total alpha=.93
  - 6 total items

How Do Providers Perceive SafeCare?

- Provider Cultural Competency, Client Satisfaction, and Engagement in Home-Based Programs to Treat Child Abuse and Neglect (Damashek et al., 2012)
  - American Indian providers rate SafeCare as more culturally appropriate than usual home visitation services

- Cultural adaptation of an evidence-based home visitation program: Hispanic clients’ participation in and perceptions of program delivery (Finno et al., 2014)
  - Hispanic clients report high satisfaction with SafeCare

- A statewide trial of the SafeCare home-based services model with parents in Child Protective Services (Chaffin et al., 2012)
  - SafeCare more effective than usual care in reducing neglect

- New grant focusing on sustaining SafeCare
Interagency Collaborative Teams to Scale-Up Evidence-Based Practice
(NIMH R01MH092950 PIs: Aarons & Hurlburt)

Child Welfare System (EBP Policy + Service $)

Intervention Developers/
Academic Partners

United Way (Training $)

Seed Team
Community Based Orgs
Training Fidelity Coaching

SC Team x... SC Team 3 SC Team 2 SC Team 1

IMPLEMENTATION IN MULTIPLE TEAMS OVER TIME WITH
ONGOING FIDELITY MONITORING (tablet based – real-time) + COACHING
Job Satisfaction

The degree to which staff positively appraise their specific job tasks and duties.

Sample Items:

- “How satisfied are you with the chance to do things for clients?”
- “How satisfied are you with the feeling of accomplishment you get from your job?”
Job Satisfaction

*Possible range is 0-4

Very great extent
Great extent
Moderate extent
Slight extent
Not at all

Team E
Team C
All other teams

2008 2009 2010 2011 2012 2013 2014
Organizational Commitment

The extent to which a staff member is a dedicated member of their team.

Sample Items:

- “I am willing to put in a great deal of effort in order to help this CSF team be successful.”

- “This team really inspires the very best in me in the way of job performance.”
Organizational Commitment

**Very great extent**

**Great extent**

**Moderate extent**

**Slight extent**

**Not at all**

*Possible range is 0-4*
Emotional Exhaustion

The extent to which staff feel emotionally exhausted by their work.

Sample Items:

- “I feel fatigued when I get up in the morning and have to face another day on the job.”
- “I feel used up at the end of the workday.”
Role Conflict

The extent to which staff feel their positions are in conflict with agency bureaucracy.

Sample Items:

- “Interests of the clients are often replaced by bureaucratic concerns.”
- “Rules and regulations often get in the way of getting things done.”
Role Conflict

*Possible range is 0-4
Role Overload

The extent to which staff feel overwhelmed by the demands of their positions.

Sample Item:

- “How often does your role interfere with your family life?”
- “No matter how much I do, there is always more to be done.”
Role Overload

*Possible range is 0-4*
Change in “Culture” and Attitudes

“Wow this is so different than what I’ve been doing, this is so structured. I have to read this, I can’t be myself, this is weird.”

– Early trepidation
  - Newbies most likely to express discontent

– Changes over time to valuing SC

“I’ve seen with people who use it in the beginning, they don’t like it, and then they like it more as they become more familiar with it.”
Job satisfaction

“in terms of worker satisfaction... when I compare the folks using SafeCare to those not, we are doing better with SafeCare. And that’s really important, because the child abuse prevention stuff is high burnout work. You go into homes that are, you know, pretty icky.... And looking for ways to support staff doing... that kind of home visiting is... just something that you always have to be doing. And SafeCare’s been valuable in those terms.”

Can bring the family back to the point, and it works. It makes a difference.”
“I kind of like doing on-the-spot thinking, so like previous experience and all that stuff I bring it in with the previous curriculum, but with this one it’s like I don’t have to. It’s kind of all just laid out for me... Maybe it made me less creative”
“Staff like it. And it makes them more comfortable. It makes them feel more effective. It reduces burnout.”
What About “Practice-Based Evidence”?

- Interventions or service models that are in development
- Interventions developed in the community
- Most of these are in need of rigorous evaluation
- Determine if it meets APA/IOM criteria

Source: American Psychological Association, 2005; Institute of Medicine, 2001
Implementation is needed to improve the use of effective interventions to serve the needs of children and families.

It is helpful to think of outer context, inner context, and the process or phases of implementation.

System and organization issues can affect provider functioning, job perceptions, and turnover.

Important to consider how EBPs fit with system, organization, providers, and clients.
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