Behavioral Health is Essential To Health

Prevention Works

Treatment is Effective

People Recover
Evidence Based Approaches to Systematic Fidelity Assessment for First Episode Programs

Monday, April 20, 2015 at 2pm Eastern
First Episode Psychosis Services
Fidelity Scale

Donald Addington
Professor, Department of Psychiatry
University of Calgary
Conflict of Interest

- Dr. Addington is one of the FEPS-FS developers
- No Pharmaceutical Company conflicts
Co-Investigators

- Emily McKenzie, U of Calgary
- Jianli Wang, University of Calgary
- Ross Norman, U of Western Ontario
- Tamara Sale, Portland State U
- Ryan Melton, Portland State U
- Gary Bond, Dartmouth Medical School
Program Fidelity

• The degree of implementation of an evidence-based practice (EBP)

Bond GR et al  *Mental Health Services Research*  2000;2:75-87
Fidelity Scale

• A scale that measures fidelity.

• Provides a list of objective criteria by which a program or intervention is judged to adhere to a reference standard for the intervention.

Bond GR et al  *Mental Health Services Research*  2000;2:75-87
Fidelity Scale: Applications

Research

- Define services in both arms of an RCT or other research project
- Validate the scale and components through prospective longitudinal studies
- Outcome measure for implementation studies

Clinical Practice

- Service implementation
- Quality control
- Define fundable services
- Accreditation
FEPS-FS development: Objectives

- Develop a fidelity scale for first episode psychosis services which
  - Includes essential evidence based components
  - Is appropriate for all first episode psychosis services
  - Is not model specific
  - Is reliable
  - Is valid
FEPS-FS Development: Methods

- Systematic review of FEP peer review and grey literature
- Identification of service components
- Rate level of evidence for components
- International expert consensus process
- Systematic review of team based components
- Developed measures of components
- Pilot study of feasibility and reliability
- Comparison with 3 other fidelity measures
## Search Strategy and Results

<table>
<thead>
<tr>
<th>Steps</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Original search conducted Mar/Apr’10 Medline (M), PsycINFO (P), EMBASE (E) <em>(Jan 1980 – April Week 1, 2010)</em> Search terms: early psychosis or early schizo* or early psychotic episode or first psychotic episode</td>
</tr>
</tbody>
</table>
| 2     | - 6,792 results (Medline)  
- 1,113 PsycINFO  
- + 5,334 EMBASE  
  = 13,239 citations  
Combine above search terms with: fidelity or program development or evaluation or impact or intervention or early intervention or program effect* |
| 3     | - 312 results (Medline)  
- 247 PsycINFO  
- + 461 EMBASE  
  = 1,020 citations  
Review 1,020 abstracts for relevance  
Exclude n= 780  
Inclusion of 280 peer-reviewed publications |
| 4     | Search grey literature for worldwide FEP programs; reports on standards or guidelines  
Inclusion of 38 reports/sites identified in grey literature |
From Review to Components

- 280 Peer reviewed papers
  - Rated for quality
  - Components identifies by two independent raters
  - Components compared and consensus achieved
- 75 Components
  - Components rated for level of evidence
Delphi Process

A systematic consensus building process that obtains and quantifies the opinions of a group of experts

Experts

- Purposive sampling
- Authored peer reviewed paper between 2005 - 2010
- Individual search terms: health services research, early psychosis, first episode psychosis, clinical research
- All identified authors invited
- 31 agreed
- 28 completed round 1
- 24 completed round 2
32 Essential Components of First Episode Psychosis Services

- Public education
- Gatekeeper education
- Easy access
- Pharmacotherapy
- Case management
- Family education & support
- Integrated addictions
- Patient education
- Supported employment

Addington D Psychiatric Services 2013 Aug 1;64(8):796-9
From Components to Fidelity Items

- Additional systematic review of literature on team based services for mental health services
  - *Identified team based components that were poorly described in FEPS research literature*
- Iterative process with team to
  - *Operationalize components*
  - *Quantify the rating of each component*
# FEPS-FS domains and items

<table>
<thead>
<tr>
<th>Domain</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>3</td>
</tr>
<tr>
<td>Assessment/Monitoring</td>
<td>5</td>
</tr>
<tr>
<td>Pharmacotherapy</td>
<td>5</td>
</tr>
<tr>
<td>Psychosocial therapies</td>
<td>8</td>
</tr>
<tr>
<td>Team composition and function</td>
<td>10</td>
</tr>
</tbody>
</table>
### Psychosocial Item

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>12. Family Education and Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provision of individual or group family education and support covering a structured curriculum. At least 8 sessions delivered by an appropriately trained clinician</td>
<td>0-19% families receive at least 8 sessions of family education &amp; support over 1 year</td>
<td>20-39% families receive at least 8 sessions of family education &amp; support over 1 year</td>
<td>40-59% families receive at least 8 sessions of family education &amp; support over 1 year</td>
<td>60-79% families receive at least 8 sessions of family education &amp; support over 1 year</td>
<td>80+% families receive at least 8 sessions of family education &amp; support over 1 year</td>
</tr>
</tbody>
</table>
8. Antipsychotic Selection based on low EPS and low weight gain potential. * Includes: Aripiprazole, Ziprasidone, Lurasidone

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-19% patients receive antipsychotic with low EPS and low weight gain potential</td>
<td>20-39% patients receive antipsychotic with low EPS and low weight gain potential</td>
<td>40-59% patients receive antipsychotic with low EPS and low weight gain potential</td>
<td>60-79% patients receive antipsychotic with low EPS and low weight gain potential</td>
<td>80+% patients receive antipsychotic with low EPS and low weight gain potential</td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td><strong>28. Weekly Multi-Disciplinary Team Meetings:</strong> All team members attend weekly meetings with focus on: 1. Case review (admissions &amp; discharges); 2. Assessment and treatment planning; 3. Discussion of complex cases; &amp; 4. Termination of services</td>
<td>No team meetings held</td>
<td>Monthly team meetings</td>
<td>Team meetings held more often than once a month, but less often than every two weeks</td>
<td>Bi-weekly team meetings</td>
<td>Weekly team meetings</td>
</tr>
</tbody>
</table>
Review Manual

- A *definition and rationale* for each component in the fidelity scale
- A *list of data sources* appropriate for each component
- *Decision rules* that will help score each component correctly. As you collect information from various sources, the rules will help you determine the specific rating to give for each component
- *Probe questions* that will help you gather information needed to rate the component
Fidelity Scale Tools

• First Episode Psychosis Services Fidelity Scale: (FEPS-FS 1.0) ©

• First Episode Psychosis Services Fidelity Scale: Individual Patient Version (FEPS-FS-I 1.0) ©

• First Episode Psychosis Services Fidelity Scale Fidelity Review Manual
Pilot study

• Objectives
  • Train raters
  • Broaden application of criteria and ratings
  • Refine rating manual
  • Test feasibility of broad application
  • Test face validity
  • Test for inter rater reliability
  • Set quality criteria
Pilot Study: Methods

- Review of criteria with videos and rating of one program
- Site visits to 6 program including
  - Four united states program EASA
  - Two Canadian programs EPION
- Modification of elements, descriptors and ratings
- Test of inter rater reliability
- Discrimination between high and low fidelity programs
Pilot Study: Methods

• Site Visits
  • Review policies, procedures
  • Review administrative data
  • Review public and client education materials
  • Interview managers and clinicians
  • Observe team meeting
  • Meet with consumers and family group
  • Review 10 charts
Pilot Study: Results

- **Fidelity items modified:**
  - 2 dropped 2 added
  - *Descriptors made more generic and non country specific*

- **Manual revised:**
  - *More comprehensible in both US and Canada*
  - *Broadened concept of sessions;*
    - Delivered across providers in team
    - Purpose focused rather than brand focused
Pilot Study: Results

- **Inter Rater Reliability**
  - 3 raters 4 centres
  - Intraclass correlation coefficient
    - 0.932 (95% CI: 0.908, 0.950)
    - Inter rater reliability rated as very good
Pilot Study: Results

- **Quality Standard:** 3 raters 4 centres
  - *Programs considered to meet standards*
    - Mean score **86%** of total score
  - *Programs considered to not meet standards*
    - Mean score **70%** of total score
- **80%** of total score or 4/5 average item score recommended as good quality.
Pilot Study: Conclusions

- **FEPS-FS**
  - Works across a variety of programs
  - Reliable
  - Has face validity
  - Has suggested quality standard
  - Has discriminative validity
Published First Episode Psychosis Fidelity Scales

- **United States**
  - *Early Assessment and Support Alliance (EASA)*
  - *Recovery After Initial Schizophrenia Episode Connection (RAISE-C)*

- **United Kingdom**
  - *Evaluating the Development and Impact of Early Intervention Services in the West Midlands (EDEN)*

- **International**
  - *First Episode Psychosis Services Fidelity Scale (FEPS-FS)*
Four Scales Compared on

- Content
- Developmental Process
- Rating scale structure
- Process for assessing Fidelity
- Quality Standard
## Comparison of Four Fidelity Scales

<table>
<thead>
<tr>
<th></th>
<th>FEP-FS</th>
<th>EASA</th>
<th>RAISE-C</th>
<th>EDEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Items</td>
<td>32</td>
<td>97</td>
<td>41</td>
<td>64</td>
</tr>
<tr>
<td>Shared by all</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Percent common items</td>
<td>53</td>
<td>17</td>
<td>41</td>
<td>27</td>
</tr>
<tr>
<td>Shared with FEPS-FS %</td>
<td>100</td>
<td>25</td>
<td>54</td>
<td>39</td>
</tr>
<tr>
<td>Shared with EASA %</td>
<td><strong>75</strong></td>
<td>100</td>
<td>50</td>
<td>43</td>
</tr>
<tr>
<td>Shared with RAISE %</td>
<td><strong>72</strong></td>
<td>22</td>
<td>100</td>
<td>22</td>
</tr>
<tr>
<td>Shared with EDEN</td>
<td><strong>78</strong></td>
<td>43</td>
<td>22</td>
<td>100</td>
</tr>
</tbody>
</table>

FEPS-FS has highest proportion of items common to all measures
FEPS-FS has highest proportion of items shared with other measures
Four Scale Comparisons: Summary

• Content shows significant overlap across scales
• Development processes vary
  • Systematic review and international expert consensus FEPS-FS
  • Expert clinical opinion, EDEN
  • Operationalize program content RAISE-C
  • Expert committees and opinion EASA
• Rating
  • Dimensional rating EDEN, EASA FEPS-FC
  • Categorical rating RAISE-C
Comparison Study: Conclusions

• Core set of 17 items common to all measures

• FEPS-FS shares highest proportion of items
  • 54% of FEPS-FS comprise the 17 common items
  • 75% FEP-FS items common to other scales

• FEPS-FS only one based on systematic reviews

• FEPS-FS 80% of total score suggested quality threshold
Four Scale Comparisons: Summary

• Assessment process
  • Site review and multiple sources  EASA, FEPS-FS
  • Administrative data bases RAISE-C
  • Manager self report EDEN

• Quality criteria
  • 80 % total score EASA, FEPS-FS
  • Not specified EDEN. Raise-C
Conclusions: FEPS-FS

- Evidence-based components
- International consensus
- Works across program models
- Highest proportion of shared items
- Reliable
- Face validity
- Discriminative validity
- Rating manual
- Training available
Future Development: FEPS-FS

- Publication and dissemination
- International testing and application
- Predictive validity
- Active comparisons
Conclusions: Fidelity Assessment

- Supports implementation
- Supports quality and outcome agenda
- Links well with core performance measures
- Opportunity for linking implementation and further research
For additional questions

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Comments on
FEPS Fidelity Scale

Gary R. Bond
Dartmouth Psychiatric Research Center
Applications of Fidelity Scales

- **Research:** Fidelity measurement is essential to building a cumulative science.

- **Clinical:** Fidelity reviews (fidelity assessments with feedback) are powerful tools for quality improvement.
Key Role of Fidelity Scales in Building a Cumulative Science

• Impossible to evaluate outcomes in studies lacking fidelity measures
• Impossible to compare across studies lacking shared fidelity measures
• These gaps evident in the area of first episode research
Key Role of Fidelity Scales in Implementing EBPs

• Give federal agencies and state leaders templates to disseminate evidence-based practice (EBPs)
• Provide a roadmap for new programs starting out
• Are the most powerful tools we have for quality improvement
Fidelity Scales: Some Major Scientific Challenges

- Many fidelity scales never used after initial study
- Most scales haven’t established predictive validity
- Weighting of items: Should some items be given more weight?
- Calibration issue: Few have empirical benchmarks for high fidelity
Fidelity Scales: Some Major Practical Challenges

• Fidelity assessment is labor intensive: How do we monitor fidelity in the real world?
• What are optimal strategies for assessing fidelity (e.g., # items, frequency of assessment)
• How do we efficiently measure clinical interventions?
A Success Story: IPS Fidelity Scale

- Individual Placement and Support (IPS) supported employment is recognized as an EBP
- IPS has a standardized fidelity scale accepted by both the research and practice communities
  (Bond et al., 1997, Becker et al., 2011)
Adoption of IPS Fidelity Scale

- Has been used in over 20 randomized controlled trials
- Routinely used to monitor quality in over 150 programs in 18-state learning collaborative and worldwide
- No competing fidelity scales for measuring supported employment
Validation of IPS Fidelity Scale

- Distinguishes between treatment conditions in randomized controlled trials
- Sensitive to change over time (McHugo et al., 2007)
- Predictive validity of IPS fidelity scale documented in 11 studies (Bond et al., 2011; 2012)
## IPS Fidelity Predicts Outcome

<table>
<thead>
<tr>
<th>IPS Fidelity Category</th>
<th>N (%)</th>
<th>Mean Competitive Employment Rate (Quarterly index)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplary Fidelity</td>
<td>7 (9%)</td>
<td>44%</td>
</tr>
<tr>
<td>Good Fidelity</td>
<td>45 (57%)</td>
<td>39%</td>
</tr>
<tr>
<td>Fair Fidelity</td>
<td>23 (29%)</td>
<td>32%</td>
</tr>
<tr>
<td>Not Supported Employment</td>
<td>4 (5%)</td>
<td>29%</td>
</tr>
</tbody>
</table>

(Bond et al., 2012)
Specific Challenges for the FEPS-FS

- Will it be adopted widely? Many competitors
- Too many items? Will scope of scale make it hard for program leaders to focus on what needs changing?
- As a synthesis of EBPs, it measures complex areas with single items
- Example: Single item for IPS
8 Follow-up Studies of Early Intervention Programs Providing IPS Supported Employment

<table>
<thead>
<tr>
<th>Condition</th>
<th>N</th>
<th>% Competitively Employed</th>
<th>% Education Enrollments</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPS</td>
<td>709</td>
<td>49%</td>
<td>27%</td>
</tr>
<tr>
<td>Control</td>
<td>165</td>
<td>29%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Effect Size

- 0.41

Significance

- $X^2 (1) = 21.6, \ p < .0001$
- $X^2 (1) = 2.3, \ n.s.$
Conclusions:

What is Significance of FEPS-FS?

- Extraordinary accomplishment: Scale constructed using scientific process of identifying key evidence-based components
- Very few fidelity scales have this foundation
- FEPS-FS fills critical gap impeding scientific study of FEP
Conclusions:

What is the Future for the FEPS-FS?

• Further advances will depend on acceptance and adoption – at least partly a political issue
• Adoption will also depend on practical issues
  • Some barriers are common to fidelity scales in general
  • Some specific to FEPS-FS
Questions?