User Testing to Refine an Electronic Behavioral Health Record for Wraparound: FidelityEHR

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FidelityEHR

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Today’s Presentation

• Overview & Acknowledgments
• Rationale and Functions of FidelityEHR
• Results of User Experience (UX) Testing
• Using of UX Feedback
• Discussion, Conclusions, and Next steps
Acknowledgments

• Research and commercialization funded by a National Institute of Mental Health STTR grant (Small Business Technology Transfer; R42 MH95516)

• Collaboration between FidelityEHR as the commercialization partner and the University of Washington as the research partner

• Informed by NWI, NWIC, and the Center for Innovation and Implementation at the University of Maryland School of Social Work
Who is FidelityEHR?

• Founder & CEO Dr. Kelly Hyde
• Formerly called Social TecKnowledge
• TMS- Wrap Logic newly rebranded as FidelityEHR in January 2016
• Mission of the company is to improve outcomes for children and families through user-friendly technology
Why was FidelityEHR developed?

- To provide Wraparound and System Of Care sites with a high-quality, field-tested electronic behavioral health system (EBHIS) that supports fidelity to research-based Wraparound and care coordination models.
STTR Phase II
Commercialization Product

FidelityEHR Mission Statement:

To support empowerment, engagement and healthy outcomes through innovations in technology for families and communities.
STTR Phase II
Commercialization Purpose

• Stimulate technological innovation
• Foster technology transfer through cooperative research and development between small businesses and research institutions
• Increase private sector innovations derived from research and development
STTR Phase II
Research Project

• Three phases:
  – **Phase 1: Development:** Program elements of FidelityEHR
  – **Phase 2: UX Testing:** Determine if FidelityEHR is feasible and user experience is positive
  – **Phase 3: Randomized Control Study:** Determine if FidelityEHR helps facilitate:
    • Better Wraparound implementation by providers and
    • Better outcomes for youth and families
Wraparound

• Wraparound is the only defined, research-based care coordination process youth with serious emotional and behavioral disorders (SEBD) and their families
• Wraparound is implemented for over 100,000 youths annually, in nearly 1,000 programs across the U.S.
• Now considered “Evidence-Based”
Quality matters!

- **However**, Wraparound quality matters
- Wraparound implementation often falls short of ideals
  - Teams of people important to the family working together effectively
  - Natural supports on teams
  - Youth and families truly in the driver’s seat
  - Clear needs statements
  - Strategies based on needs
  - Strategies based on strengths and culture of the family
  - Collecting and using objective data on progress
- **When implementation is poor, outcomes are poor**
Hypothesis: Electronic Health Records can facilitate efficiency, fidelity, positive outcomes
Individuals engaged in the process
- Youth and family members, team members, providers, natural and community supports, coordination of care

Key documentation
- Plans of care, strengths, needs, family stories, family history timeline, meeting and appointment times, meeting notes, contact histories, critical incidents, services and costs

Service processes
- Family satisfaction, fidelity, progress toward needs

Outcomes Monitoring and Feedback
- CANS data, youth and family support, residential status, educational environment and behavior, youth functioning

Provider network management and billing functions

FidelityEHR manages and reports on key information on the Wraparound process
FidelityEHR Functionality

- Improve **teamwork** through:
  - Ease of data entry and management
    - Basic info is all in one place
    - Upload assessments and documents
  - Better communication
    - Internal emails, meeting reminders, team meeting notes
  - Ease of retrieval and access
    - By facilitator, family, and supervisor
  - Transparency
    - Everyone has access to same information
FidelityEHR Functionality

• Improve **fidelity**:
  – Workflow and records organized by critical Wraparound action steps
  – Standardized assessments and evaluations keeps you “outcome based”
  – Supervisors have real-time access to strategies, services, history, progress, satisfaction
FidelityEHR Functionality

• Improve **efficiency:**
  – Managing:
    • Workflow
    • Meeting schedules
    • Team information
    • Referral and billing information
    • Task follow-through
  – Auto-populate functions
  – Ease of retrieval for supervision, team meetings
  – Provides information mandated by MCOs
FidelityEHR Functionality

• Improve **outcomes** by:
  – Integrating **monitoring of progress and feedback**
  – Aid in decision making based on progress
  – Standardized assessment data readily available
  – “Supervision based on needs” (not crisis of the week)
  – Clinical alerts
Theory of Positive Impact

FidelityEHR Components

- **Information management**: e.g., family, team, plan, providers, services, billing
- **Fidelity support**: e.g., Workflow pane, reminders, alerts, supervisor reports
- **Standardized assessment**: clinical alerts, treatment recommendations
- **Feedback of information** via dashboard reports on fidelity, services, progress, outcomes
- **Supervisor, manager, administrative reports**: e.g., services, costs, satisfaction, fidelity, outcomes, placements

Impact on Staff/Teams

- Availability of information
- Transparency and efficiency
- Better collaboration and teamwork
- Adherence to elements of high-fidelity Wraparound
- Options and treatments based on evidence for effectiveness
- More frequent progress review
- Decision-making based on objective data
- More focused, directive, data-informed supervision
- Staff more satisfied and self-efficacious
- Admin/manager-level accountability

Paths to Family Outcomes

- Goal clarity
- Team communication and consensus
- Better problem-solving
- Greater treatment alliance
- Family and team better engaged, hopeful, and satisfied
- Fidelity to core Wraparound principles
- Shorter self-correction cycles
- More effective treatment
- Reduced staff turnover

Outcomes

- Families retained in services
- Greater social support
- Greater progress and reduction in top problems
- Reduced youth emotional and behavioral problems
- Improved youth functioning
- Reduced out of home/community placement
- Reduced costs to public systems/MCOs/providers

UX Testing Targets this part of the Theory

Come back next year to hear more about testing this part of the Theory
Stages of FidelityEHR User Experience (UX) Testing

• Lab-based testing of prototype
• Initial field-based testing (“site 1”)
• Field-based testing of refined system with enhanced readiness promotion (“site 2”)

Overview of Measures

• Lab-based testing
  – System Usability Scale (SUS)
  – System Acceptability and Appropriateness Scale (SAAS)
  – Scenario-based “think aloud” procedure
  – Focus groups and debriefs

• Initial field-based testing
  – SUS, SAAS, focus groups

• Field-based testing of refined system with enhanced readiness
  – SUS, SAAS
  – User “click” patterns
  – Feedback in consultation calls
Results of Lab-Based Testing

- Users performed tasks grouped into three main “scenarios” in FidelityEHR.
- Users were asked “How easily do you expect to perform this task?” prior to performing each task, and “How easily were you able to perform this task?” upon completion.
- Overall, users reported that tasks were easier to complete than anticipated.

![Bar chart showing level of task ease for different scenarios.](image)

Results of Lab-Based Testing

User average of 88.33 on the SUS, well "above average" compared to national benchmarks.

Users reported the most difficulty entering a new youth record when using the Referral Form and enrolling the youth (means = 3.33 and 3.67, respectively, out of 5).
Results of Lab-Based Testing

• User Feedback:
  “Like that the information is all in one place.”
  “Like that we can send reminders for team meetings through the system.”
  “The graph visuals help us track progress over time.”
Results of Field-Based Testing

System Usability Scale (SUS) Scores

- **88.3** (Lab based test)
- **63.9** (Site 2, wave 1)
- **64.7** (Site 2, wave 2)

**Source:** Bangor, A., Kortum, P., & Miller, J. (2009).
### Results of Field-Based Testing

**Site 2**

11 of 18 respondents scored FidelityEHR with “Marginal” or “Acceptable” usability.

![Bar Chart]

<table>
<thead>
<tr>
<th>Score Range</th>
<th># of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>3</td>
</tr>
<tr>
<td>10-19</td>
<td>3</td>
</tr>
<tr>
<td>20-29</td>
<td>4</td>
</tr>
<tr>
<td>30-39</td>
<td>3</td>
</tr>
<tr>
<td>40-49</td>
<td>4</td>
</tr>
<tr>
<td>50-59</td>
<td>4</td>
</tr>
<tr>
<td>60-69</td>
<td>4</td>
</tr>
<tr>
<td>70-79</td>
<td>4</td>
</tr>
<tr>
<td>80-89</td>
<td></td>
</tr>
<tr>
<td>90-99</td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- **Unacceptable Usability**
- **Marginal Usability**
- **Acceptable Usability**
Results of Field-Based Testing

Users rated FidelityEHR as a compatible addition to their agency
- Relevance to client population (mean=3.5/5.0)
- Align with treatment modality (3.5/5.0)
- Fit with overall service delivery approach (3.4/5.0)

Training tools were unhelpful and did not contribute to expertise
- User Manual (1.8/5.0)
- Video training library (2.0/5.0)
- Technical assistance (2.2/5.0)
Results of Field-Based Testing

- **User Feedback Largely Positive:**
  - “I always use the Contact and Service Notes sections.”
  - “It’s been very easy to update the Plan of Care.”
  - “It’s really helpful to be able to log in remotely and type up notes after a meeting rather than going back to the office.”
  - 12 of 15 users reported the system “made their life better” in consultation calls
Data-informed System Improvement: Recommendations Based on Qualitative Feedback

• Improve the training tutorial(s) and materials
• Streamline how to enter demographic information in one place
• Ensure all features of FidelityEHR have the auto-save functionality
• Make the Crisis Plan easier to read
• Improve the functionality of Adding/Editing Diagnoses
• Add a notification feature for new messages
Data-Informed Consultation: Supporting Wraparound Fidelity

- UW WERT and FidelityEHR support high-fidelity Wraparound with consultation calls and checklists to guide users and maximize FidelityEHR potential.
Data-Informed Consultation: User Clicks in FidelityEHR

Percent of page clicks by task category, as a function of all clicks

<table>
<thead>
<tr>
<th>User Task Category</th>
<th>First month of use</th>
<th>Second month of use</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating with the Team</td>
<td>20.78%</td>
<td>40.53%</td>
<td>+95.0%</td>
</tr>
<tr>
<td>Core Assessments</td>
<td>0.30%</td>
<td>2.31%</td>
<td>+6.7%</td>
</tr>
<tr>
<td>Maintaining Service Notes</td>
<td>11.97%</td>
<td>14.95%</td>
<td>+24.9%</td>
</tr>
<tr>
<td>Managing Information</td>
<td>21.98%</td>
<td>1.20%</td>
<td>-94.5%</td>
</tr>
<tr>
<td>Updating &amp; Developing the POC</td>
<td>36.84%</td>
<td>20.78%</td>
<td>-43.6%</td>
</tr>
<tr>
<td>User Settings</td>
<td>18.13%</td>
<td>20.23%</td>
<td>+11.6%</td>
</tr>
</tbody>
</table>
Data-Informed Consultation: User Clicks in FidelityEHR

Example report of clicks by user for one month by task category, Compared to mean number of clicks for the site overall

<table>
<thead>
<tr>
<th>User Task Category</th>
<th>Facilitator 1</th>
<th>Facilitator 2</th>
<th>Site Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating with the Team</td>
<td>440</td>
<td>817</td>
<td>720</td>
</tr>
<tr>
<td>Core Assessments</td>
<td>35</td>
<td>26</td>
<td>29</td>
</tr>
<tr>
<td>Maintaining Service Notes</td>
<td>214</td>
<td>576</td>
<td>326</td>
</tr>
<tr>
<td>Managing Information</td>
<td>191</td>
<td>386</td>
<td>323</td>
</tr>
<tr>
<td>Updating &amp; Developing the POC</td>
<td>489</td>
<td>377</td>
<td>597</td>
</tr>
<tr>
<td>User Settings</td>
<td>257</td>
<td>540</td>
<td>469</td>
</tr>
</tbody>
</table>
Utilizing User Feedback

The Eight Essential Domains of Successful Fidelity EHR Implementation:

1. Continuous Quality Improvement (CQI)
2. Readyiness for Change
3. Implementation Plan
4. Implementation Team
5. Change Management
6. Training Plan Development
7. Training Resources & Ongoing Support
8. Go-Live Strategy
Utilizing User Feedback

<table>
<thead>
<tr>
<th>Observations about User Training</th>
<th>Training Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Usability likely related to Training more than system.</td>
<td>• Assess User learning preferences</td>
</tr>
<tr>
<td>• Improvement needed in training resources and structure of methods.</td>
<td>• Utilize PowerPoint presentations</td>
</tr>
<tr>
<td></td>
<td>• Demonstration in Software</td>
</tr>
<tr>
<td></td>
<td>• Role-based practice scenarios</td>
</tr>
<tr>
<td></td>
<td>• Team-based activities</td>
</tr>
<tr>
<td></td>
<td>• User Videos and Manuals</td>
</tr>
<tr>
<td></td>
<td>• Increase Structure of Training</td>
</tr>
</tbody>
</table>
## Utilizing User Feedback (cont’d)

<table>
<thead>
<tr>
<th>User Software Feedback</th>
<th>Software Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>• System changes suggested to increase ease of use.</td>
<td>User feedback led system improvements:</td>
</tr>
<tr>
<td>• Develop more Wraparound-centered features.</td>
<td>• Removed duplicate data entry</td>
</tr>
<tr>
<td>• User adoption of new POC process requires additional training.</td>
<td>• Implemented Auto-Save</td>
</tr>
<tr>
<td></td>
<td>• Increased usability of ICD and DSM search and diagnostic add/edit fields</td>
</tr>
<tr>
<td></td>
<td>• User friendly Search function for Youth Record and Service/Contact Notes</td>
</tr>
<tr>
<td></td>
<td>• Family friendly POC and Crisis Plan Reports</td>
</tr>
<tr>
<td></td>
<td>• Implemented Inbox and Client Portal messaging with notifications</td>
</tr>
</tbody>
</table>
User Confidence Levels During Fidelity EHR Implementation

- Discovery and Development Phase
- Go-Live
- Staff Uncertainty
- Successful Implementation
- Tangible Benefits
- Strained Moral & Workload

Time & EHR Adoption
Conclusion: Impact of User Testing on Software Development and Usefulness

1. Developed expertise in EHR implementation science and best practices in team-based training

2. Improved training structure and support materials for on-site and ongoing team-based learning

3. Strengthened Wraparound-centered software features
   The application of family-centered Wraparound practice principles applied to the crisis plan, client portal, and POC report

4. Implemented feedback to improve User Experience and Acceptability
Lessons Learned from Research and Experience

• Findings emphasize importance of:
  – Assessment & procedures for development customization
  – Collaborative implementation planning
  – Initial workflow analysis
  – Comprehensive user- and site-specific training
For more information:

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