Integrating technology into real world systems of care

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You can build it, but will they use it?

What influences readiness for, and successful implementation of, technology?

- **Diffusion of Innovations** (Rogers, 1962)
  - Adoption of innovations
  - Early adopters, late adopters

- **Consolidated Framework for Implementation Research**
  (CFIR: Damschroder et al, 2009)
  - Characteristics of innovation
  - Characteristics of inner and outer settings
  - Characteristics of potential end-users
  - Implementation process
Innovation Characteristics

- Relative advantage
  - Clear advantage over alternative solution or current practice
- Compatibility
  - Fit with end-user audience and needs
- Adaptability
  - Innovation can be adapted or tailored to meet local needs
- Simplicity
  - Ease of use
- Trialability
  - Ability to test on a small scale
- Observability

✧ Technology solutions can inherently meet these criteria!
✧ User-centered design is key
Inner Setting Characteristics

- Social networks and communication
- Implementation climate: Capacity for change, shared vision among stakeholders
  - Tension or motivation for change
  - History of innovation
  - Compatibility or fit with norms and workflows
  - Shared perception of importance of implementation of innovation
  - Incentives for implementation – tangible (awards, promotions) and intangible (stature, respect)
  - Extent to which goals are clearly communicated, acted upon and fed back to stakeholders
  - Learning promotion – inclusive across the organizational hierarchy
- Readiness for implementation
  - Leadership engagement
  - Available resources
  - Ease of access to information and knowledge about the innovation
Outer Setting Characteristics

- Networks with other organizations
- Peer pressure to implement
- External policies and incentives
  - Affordable Care Act
  - HiTech Act
  - Parity Act
  - Other federal and state regulations
Individual Characteristics

- Knowledge and beliefs about the innovation
- Self efficacy regarding implementation
- Openness to change, flexibility
- Connection with organization
Process

- Planning – preparation for implementation
  - Workforce
  - Workflow
  - Resources
  - Monitoring success and providing feedback
- Engaging
  - Opinion leaders
  - Implementation leaders
  - Champions
  - External change agents – technical assistance, consultation
- Executing
- Reflecting and evaluating
  - Ongoing feedback about progress ➔ quality improvement
  - Planning for sustainability
Dartmouth-National Council Readiness for Technology Survey

- Partnership between Dartmouth and the National Council for Behavioral Health
- Online survey distributed to clinical decision making leadership
  - Organizational flexibility
  - Pressures for change
  - Attitudes about technology
  - Readiness for service demands of ACA
  - Current technology use
  - Technology readiness
    - Support, Perceived Value, Commitment
# Perceived Technology Readiness

<table>
<thead>
<tr>
<th>Category</th>
<th>Technology Readiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible Organization</td>
<td>.41***</td>
</tr>
<tr>
<td>Internal Pressures for Change</td>
<td>.27***</td>
</tr>
<tr>
<td>External Pressures for Change</td>
<td>.13*</td>
</tr>
<tr>
<td>Privacy Concerns</td>
<td>-.22***</td>
</tr>
<tr>
<td>Health Care Reform Readiness</td>
<td>.34***</td>
</tr>
<tr>
<td>Current Technology Use</td>
<td>.29***</td>
</tr>
</tbody>
</table>

*Lord et al, under review*
## Most Likely Uses of Technology Approaches

<table>
<thead>
<tr>
<th>Areas of Treatment to Use Technology</th>
<th>% Endorsed</th>
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<th>% Endorsed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training for clinicians/providers</td>
<td>75.2</td>
<td>Relapse prevention/ recovery support</td>
<td>49.0</td>
</tr>
<tr>
<td>Appointment reminders</td>
<td>71.3</td>
<td>Secure messaging w/ clients</td>
<td>48.5</td>
</tr>
<tr>
<td>Illness education for clients</td>
<td>64.5</td>
<td>Comprehensive assessment</td>
<td>40.9</td>
</tr>
<tr>
<td>Wellness interventions</td>
<td>63.5</td>
<td>Chronic disease management</td>
<td>39.0</td>
</tr>
<tr>
<td>Medication and treatment reminders</td>
<td>60.5</td>
<td>Client vocational support</td>
<td>32.1</td>
</tr>
<tr>
<td>Ongoing symptom tracking</td>
<td>60.3</td>
<td>Brief interventions</td>
<td>31.9</td>
</tr>
<tr>
<td>Communication w/ providers about shared clients</td>
<td>58.3</td>
<td>Treatment</td>
<td>31.1</td>
</tr>
<tr>
<td>Screening</td>
<td>51.0</td>
<td>Crisis interventions</td>
<td>20.6</td>
</tr>
</tbody>
</table>

Lord et al, under review
Paving the Way to Successful Implementation: Identifying Perceived Barriers

Funding/Cost
“We continue to purchase workstations...to meet the demands of staff growth...there is not enough money to address other technology needs”

Privacy/Security
“Biggest barrier is protection of confidential information...The rules need to catch up to technology growth”

Need for Knowledge/Skill Building
“...I think there is no real knowledge or understanding about how technology could be used in the therapy room”

Equipment/Infrastructure
“...outdated computer systems that prevent newer technology...some employees have computers with very little power for new technologies”

Ramsey, Lord et al, under review
Paving the Way to Successful Implementation: Identifying Perceived Barriers

Attitudes/Prior Experience

“Technology-based tools place a chasm of mistrust between client and therapist…There is a need for healthy boundaries and I would not want my clients to be able to contact me via smartphone any time of day or week…we are still accountable”

Accessibility

“Customer base is primarily indigent and 90% report not having access to a computer, a smartphone or the internet in their living environment”…”getting service reception in remote rural areas is an issue”

Billing/Reimbursement

“Treatment using new technologies is often not covered under fee for service”

Ramsey, Lord et al, under review
<table>
<thead>
<tr>
<th>Barrier</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Costs</strong></td>
<td>• Demonstrate short- and long-term value-added</td>
</tr>
<tr>
<td></td>
<td>• Cost effectiveness and comparative effectiveness research</td>
</tr>
<tr>
<td><strong>Privacy</strong></td>
<td>• Technologists and behavioral health experts work collaboratively to enhance:</td>
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<tr>
<td></td>
<td>▪ Authentication: Are we reaching intended person?</td>
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<td></td>
<td>▪ Training regarding use and protection of information</td>
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<tr>
<td><strong>Need for Knowledge</strong></td>
<td>• Disseminate technology in meaningful ways to consumers, care providers, payers, and policy makers</td>
</tr>
<tr>
<td><strong>Technology Literacy and Skills</strong></td>
<td>• Train all end-user groups and provide easily accessible, ongoing technical assistance</td>
</tr>
<tr>
<td>Barrier</td>
<td>Solutions</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Beliefs/Attitudes</td>
<td>• Identify supporters to promote buy-in at leadership, provider and consumer levels</td>
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<td></td>
<td>• Arm constituents with clear, job-relevant information about research and value-added</td>
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<td>• Implement early pilot demonstrations with clear guidelines and training</td>
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<td></td>
<td>• Opportunities for feedback based on clear process and outcome metrics</td>
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<tr>
<td>Accessibility and Connectivity</td>
<td>• Use technology approaches appropriate to the context and population</td>
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<tr>
<td></td>
<td>• Utilize community resources</td>
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<tr>
<td></td>
<td>• Develop technology on multiple platforms</td>
</tr>
<tr>
<td>Billing and Reimbursement</td>
<td>• Implement demonstrations of programs with various payers to determine models with maximum outcome in relation to fiscal impact</td>
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www.c4tbh.org