Moving Forward through Building Partnerships

Harnessing Mobile Technology to Predict, Diagnose, Monitor, and Develop Treatments for Nervous System Disorders—A Workshop

John Torous, MD MBI

Funding: NIMH 1K23MH116130-01, NARSAD Young Investigator Award
Clinical Informatics Fellowship Programs

The following programs are accredited by the Accreditation Council for Graduate Medical Education (ACGME).

University of Arizona College of Medicine - Phoenix Clinical Informatics Fellowship Program

ACGME Program #1390314001

Clinical Informatics Fellowship
Program Director: Hamed Abbaszadegan, MD, MBA, FACP
Email: habbaszadegan@email.arizona.edu
Program Coordinator: Dulcinea Juarez
Email: COMPHX-DBMI@email.arizona.edu
Phone: (602) 827-2567
Application: http://phoenixmed.arizona.edu/bmi/education/fellowship

Beth Israel Deaconess Medical Center

ACGME Program #1392414001
Mobile Health (mHealth) Versus Clinic-Based Group Intervention for People With Serious Mental Illness: A Randomized Controlled Trial.

Ben-Zeev D\(^1\), Brian RM\(^1\), Jonathan G\(^1\), Razzano L\(^1\), Pashka N\(^1\), Carpenter-Song E\(^1\), Drake RE\(^1\), Scherer EA\(^1\).

Abstract

OBJECTIVE: mHealth approaches that use mobile phones to deliver interventions can help improve access to care for people with serious mental illness. The goal was to evaluate how mHealth performs against more traditional treatment.

METHODS: A three-month randomized controlled trial was conducted of a smartphone-delivered intervention (FOCUS) versus a clinic-based group intervention (Wellness Recovery Action Plan [WRAP]). Participants were 163 clients, mostly from racial minority groups and with long-term, serious mental illness (schizophrenia or schizoaffective disorder, 49%; bipolar disorder, 28%; and major depressive disorder, 23%). Outcomes were engagement throughout the intervention; satisfaction posttreatment (three months); and improvement in clinical symptoms, recovery, and quality of life (assessed at baseline, posttreatment, and six months).

RESULTS: Participants assigned to FOCUS were more likely than those assigned to WRAP to commence treatment (90% versus 58%) and remain fully engaged in eight weeks of care (56% versus 40%). Satisfaction ratings were comparably high for both interventions. Participants in both groups improved significantly and did not differ in clinical outcomes, including general psychopathology and depression. Significant improvements in the FOCUS group posttreatment, and significant improvements in recovery and quality of life in the WRAP group at six months.

CONCLUSIONS: Both interventions produced significant gains among clients with serious mental illnesses who were mostly from racial minority groups. The mHealth intervention showed promise and produced patient satisfaction and clinical and recovery outcomes that were comparable to those of a clinic-based group intervention for illness management.
What is the Gold Standard for Clinical?

“German psychiatrist Emil Kraepelin used careful observations utilizing notecards to longitudinally assess symptoms and outcomes in insane hospitalized patients”...in the 1890s


Evolving Nosology? Ripe for Stratification?

Clinicians as Partners

Clinicians as Partners: Relapse Prediction
Clinicians as Partners: Relapse Prediction

Survey ID: 56fe99da1206f74995a83f71
Survey ID: 56e6facc1206f735d849088b
Survey ID: 56e6fa3e1206f735d8490880

- # missed calls
- Call duration
- Total length of texts received
- # texts received
- Total length of texts sent
- # texts sent
- Circadian routine
- # significant locations visited
- Max distance from home
- Distance travelled
- Home time
- GPS amount recorded

Week 1
Week 2
Week 3
Week 4
### Clinicians as Partners: Relapse Prediction

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- # missed calls
- Call duration
- Total length of texts received
- # texts received
- Total length of texts sent
- # texts sent
- Circadian routine
- # Significant locations visited
- Max distance from home
- Distance travelled
- Home time
- GPS amount recorded

The chart shows a timeline of survey data across seven weeks. The data is color-coded to indicate the frequency and type of entries for each week.
Clinicians as Partners: Relapse Prediction

Clinicians as Partners: Relapse Prediction
New Clinical Models?

Evidence Based Digital Mental Health Care to Augment and Extend Services

Digital Clinic Staff Support Patients and Psychiatrists in Setting Up, Customizing, and Monitoring Digital Data Streams

Traditional Visit Based Care to Maintain Strong Therapeutic Alliance

Patients as Partners

- 28-year-old male diagnosed with schizophrenia
- Noticed symptoms of auditory hallucinations were becoming more frequent.
- Psychiatrist recommended a dosage change in an antipsychotic medication.
- But he wanted to know if the medication would actually be helpful for him
Patients as Partners
Patients as Partners

Patients as Partners

NOW AVAILABLE
Free tool to help you or your loved one with schizophrenia and related disorders.
Patients as Partners

Patients and Clinicians as Partners ... Seeking Help Today

• Increasing number of health apps

• Many make bold claims

• Some are dangerous

• Some are useful

• Patients are using them right now


ALL IN: Informed Decision Making Today for Success Tomorrow

The American Psychiatric Association App Evaluation Model

- Interoperability: Meaningful data use and sharing
- Usability and adherence
- Potential for benefit
- Assessing for harm
- Evidence
- Ease of use


1. Risk: Privacy / Transparency

2. Evidence (in Depression Apps)


3. Engagement

ALREADY COVERED!!
But Engagement with Asthma Apps

- Eligible = 8,524
- Enrolled = 7,953
- Participants = 6,370
- Robust Users = 2,317 = >=5 total surveys
- Milestone Users = 175 = completed a survey at 6 months

Informed Decision Making -> New Efforts

Who are we?

- Safety-net health system
- 12 Primary Care sites, 3 hospitals
- 140,000 patients
- 43% speak a primary language other than English
- Behavioral health providers embedded within Primary Care

Current 1 Year Pilot Study

- Reduce barriers to mental health care
- Clinical “Extender”
- Enhanced patient self-management

CURATE APPS

APP TOOLKIT + SCRIPTS

TRAIN CLINICAL TEAM

TEAMS OFFER TO PATIENTS
Collaborative Health App Rating Teams (CHART)

- Is it Engaging Enough for You to Use?
- What is the Evidence it Will Work for You?
- Can You Share Your Data with Your Care Team?
- Is Your Personal Data Protected?
Thank You!

jtorous@bidmc.harvard.edu

Funding: NIMH 1K23MH116130-01, NARSAD Young Investigator Award