Participatory Development of Technology-Based Support Tools for a Newly Implemented, Department Of Public Health Funded, Medical Care Coordination Model For Improved Retention on the Treatment Cascade

Dallas Swendeman, Ph.D., M.P.H.

Co-Director, Center for HIV Identification, Prevention & Treatment Services (CHIPTS)
Assistant Professor, Department of Psychiatry and Biobehavioral Sciences
David Geffen School of Medicine at UCLA
Affiliated Faculty, Department of Epidemiology, UCLA Fielding School of Public Health
Medical Care Coordination (MCC)

• LAC Dept PH, Division of HIV & STD Programs funded LAGLC in Fall 2012 to implement

• LAGLC’s Jeffrey Goodman Clinic quadrupled staff during roll-out of program in 2013

• Integrates medical & non-medical case mgmt.

• Coordinates behavioral interventions and support services with medical care

• Team members co-located at patient’s medical home

• Focus on moving patients to a “self-managed” state
### MCC – Acuity-Driven Service Intensity

**Table 2: Minimum Service Delivery by Acuity Level**

<table>
<thead>
<tr>
<th>ACUITY LEVEL</th>
<th>MCC SERVICE ACTIVITY (MINIMUM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Registration/Screening</td>
</tr>
<tr>
<td>Severe</td>
<td>Every 6 months</td>
</tr>
<tr>
<td>High</td>
<td>Every 6 months</td>
</tr>
<tr>
<td>Moderate</td>
<td>Every 6 months</td>
</tr>
<tr>
<td>Self-managed</td>
<td>Every 6 months</td>
</tr>
</tbody>
</table>

Prtocol & materials: http://publichealth.lacounty.gov/dhsp/MCC.htm
MCC - Multidisciplinary team

- Medical Care Manager (MCM) – RN
  - Suggested lead coordinator
  - Delivers brief interventions on: patient education, treatment adherence, managing side effects, medical nutrition therapy, co-infections, preventative care and risk reduction.
- Patient Care Manager (PCM) – MA level counselor
  - Assess psychosocial needs
  - Delivers brief interventions on: substance misuse, mental health, risk reduction and disclosure/partner notification.
- Case Workers (CW) – BA level counselor, nurse, SW
  - Assists MCM and PCM with patient monitoring, reassessment, service linkages, plan updating, patient follow-up, and tracking outcomes.
  - liaison between Counseling & Testing sites and the medical clinic
- Administrative Coordinator & Support team (3 people)
MCC Brief Interventions: Motivational Interviewing w/ SoC

Figure 1. Medical Care Coordination Model Components: Stages of Change (SOC) and Related Behavior Change Strategies

Adapted from (Abramowitz, Flattery, Franses, & Berry, 2010).
SOC=stages of change; MI=motivational interviewing; OARS=open-ended questions, affirmations, reflections and summaries
Research Goal - Tech Supports for MCC

mHealth

Use mobile devices to enhance health and wellness by extending health interventions and research beyond the reach of traditional clinical care.

- **our actions**
  - Photo: Marshall Astor, WWW

- **our self report**
  - Experience sampling streams
  - Context and activity traces

- **personal data repository**
  - Aggregate measures, trends, patterns
  - Event detection

- **visualization**

- **processing**
Data driven feedback loops for patient-centered care

Participant self-care
*How is this new medication working for me?*

Clinical care
*How is the patient responding to new care plan?*

Research evidence
*What works best in different contexts? & for different people*
Self-monitoring for self-management & Ecological Momentary Intervention

• **Self-monitoring**
  – *Awareness* of feelings, symptoms, thoughts, actions, and patterns
  – *Behavior Change* by reminder, mindfulness, or logging to track and motivate progress

• **Ecological Momentary Interventions (EMI)**
  – In the moment interventions,
  – Text messages, IVR calls, smartphone app prompts
  – Tailored to individual’s needs and patterns
create interactions, send custom messages back based on specific conditions that you set

Chorus is used to create a series of 'interactions' to engage with clients. The above example is a blood sugar monitor app. On the left in blue is the prompt to be sent to clients: "Hello! What is your blood sugar today?"

On the right, you can set any number of conditions to dynamically respond to. In this example, the app responds based on blood sugar values with custom messages based on if it is: low, normal, or high.

You can determine how complex you want to make the set of interactions - from a simple reminder message to a series of interactions that teach people a new way to build resilience.
reach out to users with recurring schedules

**Schedule**

**SETUP**  **HISTORY**

**what**
send out the following message:

- insulin reminder

**how**
use the following method to reach out:

- Text Message

**who**
contact the following people:

- Select a person to add

**when**

**send the first message on:**

- Monday, November 4, 2013 at 7:45am

**do you want to setup a recurring schedule?**

- yes

**repeat every**

- 3 days

**for**

- 2 weeks

**make another attempt if there’s no response?**

- 2nd on the n Mon at 1:45p
- 3rd on the n Wed at 8:15f

**here’s the plan**

**READY?**

- just click ‘on’ to launch!

Chorus will reach out on:

- Monday, Nov 04, 2013 7:45am
- Thursday, Nov 07, 2013 7:45am
- Sunday, Nov 10, 2013 7:45am
- Wednesday, Nov 13, 2013 7:45am
- Saturday, Nov 16, 2013 7:45am
- Tuesday, Nov 19, 2013 7:45am

**+ SCHEDULE**
Smart Apps: Smart Reminders or Triggers for Surveys and EMI:

Location-based

Time range
Trigger only during the following interval
Start Time
5:35 pm
End Time
5:35 pm
Trigger always
Trigger at End Time even if it is not reached
Minimum re-entry time
120 minutes

Time-based

Trigger Time
11:27 am
Repeat
Everyday
Time range
Enforce a range for the trigger time
Start Time
11:27 am
End Time
11:27 am
Randomize
Use random trigger times within the range

Tangmunarunkit, et al
Affect, Symptoms, QoL, Triggers, Cravings

From APC 1 with Dr. Cathy Reback at Friends Research Institute: “EMA to Support MSM in Outpatient Methamphetamine Treatment”
Behaviors, Coping Strategies, etc.

From APC 1 with Dr. Cathy Reback at Friends Research Institute: “EMA to Support MSM in Outpatient Methamphetamine Treatment”
Feedback to Patients/Clients, even Providers

CHARTS
*Last 30 responses shown
Food Quality
Food Quantity
Did Exercise
Stress Amount
Time For Self

RESPONSES

More Charts

Bedtime
Survey Complete!

Great Job!

- You exercised!

Continue

Previous
Submit
Ohmage suite of tools

Web-based Data Management and Administration
- ohmage Web FrontEnd
- Project Authoring
- Survey Gathering
- Customized Tools

Web-based Data Visualization and Analysis
- ohmage Explore Data
- Interactive Dashboards
- LifeStreams
- Passive Data Visualization

Ohmage Backend
(Web APIs for access-controlled data storage, management, and visualization)

Self-report Data Collection Apps
- ohmage
- ohmage MWF
- Trialist

Passive Data Collection Apps
- Mobility
- AudioSens
- SystemSens

Mobile Data Collection Apps

Fig. 1: Ohmage system architecture and its end-to-end PS software suite.
Data driven feedback loops for patient-centered care

- Participant self-care
  How is this new medication working for me?

- Clinical care
  How is the patient responding to new care plan?

- Research evidence
  What works best in different contexts? & for different people
Dashboards for Providers & Patients

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“EMA to Support MSM in Outpatient Methamphetamine Treatment”
Life Streams – Pattern Change Detection

Lifestreams Dashboard: an interactive visualization platform for mHealth data exploration
Cheng-Kang Hsieh, Hongsuda Tangmunarunkit, Faisal Alquaddoomi, John Jenkins, Jinha Kang, Cameron Ketcham, Brent Longstaff, Joshua Selsky, Dallas Swendeman, Deborah Estrin, Nithya Ramanathan
University of California, Los Angeles, USA
Fidelity Monitoring & Support for Intervention Deliverers (& Dose/Exp.)

Antenatal
- Alcohol ✔
- Feeding Method ✔
- Healthy Eating ✔
- HIV ✔
- Smoking ✔
- TB ✔

4.9 / 8 Hours Remaining

Postnatal
- Alcohol ✔
- Caring for LBW Baby ✔
- Childcare ✔
- Feeding Method ✔
- HIV – child ✔
- HIV – mother ✔
- Immunisations ✔
- Introducing solids ✔
- Mother’s Health ✔
- TB ✔
- Weight Gain of Child ✔

1.9 / 10 Hours Remaining
Thank you

Dallas Swendeman, Ph.D., M.P.H.

dswendeman@mednet.ucla.edu

http://chipts.ucla.edu/