Using Multimedia and Stakeholder Collaborations to Enhance HIV Adherence Research and Clinical Practice in Resource-Constrained Settings: The Case of Masivukeni

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Overview

• CCNMTL: Role in Education and Public Health
• South African Context and Etiology of Masivukeni
• The Collaborative Process
• Masivukeni Description
• Feasibility Outcomes
• Next Steps & Broader Implications
CCNMTL

COLUMBIA dedicated to the purposeful use of technology in education

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HIV-positive South Africans receive support in adherence to prescribed treatment regimens.

MASIVUKENI >>

Columbia Center for New Media Teaching and Learning

CCNMTL partners with Columbia University faculty to enhance teaching and learning through the purposeful use of technology and new media. The Center supports a range of efforts from basic course websites to advanced projects.

MORE

Useful Links

CourseWorks @ Columbia
Wikipages @ Columbia
EdRecs @ Columbia

Spotlight

NEWS & UPDATES | May 13, 2011
Faculty Workshops for Summer Session!

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CCNMTL News & Postings

ENHANCED | May 20, 2011
QGIS: A Free, Open-Source GIS Tool

There are many geographic information system software packages on the market. Quantum GIS (QGIS) is a free, open source option which can run on multiple... → more.

ENHANCED | May 19, 2011

HIV CENTER for Clinical and Behavioral Studies
at the New York State Psychiatric Institute and Columbia University
CCNMTL: Design Research
CCNMTL: Triangle Initiative

Research

Community

Education
South African Context

• Highest burden of HIV/AIDS in the world
  • 5.3 - 5.6 million infected
  • 37 – 56% eligible are on ART
  • 1 physician per 1,300 patients (US: 1 per 390)

• ART adherence & retention problems are a growing concern

• Health clinics task-shifting to meet demands and allocate resources
Adherence Context

- Widespread poverty and stigma
- Alcohol and mental health problems
- Poor knowledge and understanding of non-adherence consequences (i.e., viral resistance)
- Lack of sufficient patient-provider communication
- Local attitudes about traditional medicine and myths re: “Western medicine”
Adherence Counseling

- Reliance on “lay” counselors trained by the Western Cape AIDS Training, Information and Counselling Centre (ATICC)
  - Wide variability in supervision and support in clinics

- Lack of standardized curriculum (content, number of sessions, treatment buddies, etc.)

- **Bottom line:** There is wide variability in adequacy of adherence counseling provided to patients
Collaborating Institutions

- HIV Center for Clinical and Behavioral Studies
  NY State Psychiatric Institute and Columbia University; New York, NY

- University of Cape Town
  Departments of Psychiatry and Public Health; Cape Town, South Africa

- Columbia Center for New Media Teaching and Learning
  Columbia University; New York, NY

- Social Intervention Group
  Columbia University School of Social Work; New York, NY

- Provincial Department of Health of the Western Cape
  Cape Town, South Africa

- Hout Bay Main Road Clinic
  Department of Health, City of Cape Town, South Africa
Hout Bay Main Road Clinic
Adjacent Township
Adjacent Township
Clinic Waiting Room
Pharmacy
Development of R34

• Address need for standardized adherence counseling

• SMART Couples viewed as a good model for SA “buddy” system

• Computer technology useful to convey critical information to low-literacy populations
  • Engaging
  • Standardized
  • Deliverable by lay counselors
THE SMART COUPLES PROJECT
SMART Couples

• “Serodiscordant Couples, Medical Adherence, and HIV;” NIMH: R01MH61173
  • PI: Robert H. Remien
  • Co-Is: Alex Carballo-Dieeguez; Nabila El- Bassel; Curtis Dolezal; Michael J. Stirratt; Glenn J. Wagner; Joanna Dognin; Cheng-Shiun Leu

• First efficacious “dyadic” adherence intervention

• Currently: CDC Compendium of Evidence-Based HIV Behavioral Interventions
  • Among the first of eight adherence interventions
  • One of the five selected for dissemination
R34* Pilot Study Aims

• Develop intervention and assess capacity of counselors to use laptop-based intervention

• Assess acceptability of intervention among users and providers

• Assess feasibility of delivering the intervention in busy clinic setting

• Find preliminary evidence of intervention effect on outcomes

*MH82654 “A Multimedia Social Support Intervention: Adherence to HIV Care In South Africa;” Funded by the National Institute of Mental Health in 2007
Theoretical Framework for Enhancement of Adherence

• Social Action Theory (Ewart):
  • Information/Knowledge
  • Self-Regulatory Processes
    • Mood, motivation
  • Social Context
    • Stigma & disclosure
  • Interpersonal Processes
    • Social support, provider communication & behaviors
  • Behavior
    • Self-efficacy, skills, problem solving & maintenance of good adherence
Intervention Content

• Mental health screening
• Overview and choosing a treatment buddy
• HIV 101: Importance of adherence
• Pill regimen
• Problem solving barriers to adherence
• Social support and disclosure
• HIV prevention
• Reasons for staying healthy
Development Process

• Community Based Participatory Research
  • All stakeholders involved in development and decision making:
    • Clinic providers, adherence counselors, patient advocates
    • Patients and support partners
    • Academic researchers
    • Technology experts
    • Health Department advisors

• Iterative feedback and development of all content
  • Face-to-face meetings
  • Wiki site
  • Email and telephone
  • Skype
Mental Health Screening

During the past month, that is, from last month to yesterday, about how often did you feel:

<table>
<thead>
<tr>
<th></th>
<th>None of the time</th>
<th>A little of the time</th>
<th>Some of the time</th>
<th>Most of the time</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tired out for no good reason?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Nervous?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. So nervous that nothing could calm you down?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Hopeless?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Restless or fidgety?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. So restless you could not sit still?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Sad or depressed?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. So depressed that nothing could cheer you up?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. That everything was an effort?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Worthless?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Interpretation of Total Score**

- **10-19:** No significant distress
- **20-24:** Mild distress consistent with mild depression and/or anxiety
- **25-29:** Moderate distress consistent with moderate depression and/or anxiety
- **30-50:** Severe distress consistent with severe depression and/or anxiety

"It seems like you're really under a lot of stress and having some difficulties. At the end of our Masivukeni session today, I'm going to give you information for you to talk with someone trained to help you with your problems. You don't have to talk to anyone, but I really encourage you because it could help you feel better."
Alcohol Use

During the past month, that is, from last month to yesterday, about how often did you feel:

1. How often do you have a drink containing alcohol?
   (0) Never [Skip to Qs 9-10]
   (1) Monthly or less
   (2) 2 to 4 times a month
   (3) 2 to 3 times a week
   (4) 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   (0) 1 or 2
   (1) 3 or 4
   (2) 5 or 6
   (3) 7, 8, or 9
   (4) 10 or more

3. How often do you have six or more drinks on one occasion?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

Interpretation of Total Score

0-8: No issues

8-15: Simple advice on drinking

"Have you ever thought about talking with someone about the risks and consequences of drinking? If you haven’t already done so, would you be interested in talking with someone who knows a lot about the risks and consequences of drinking?"

If Yes,
"Yes, good. I will give you information to do so at the end of our Masivukeni session today."

If No,
"Are you completely certain? Talking can really help sometimes."

If No,
"Okay then. Let’s continue with our Masivukeni session."

16-19: Brief counseling

>20: Serious problems, further diagnosis needed
Social Support Tree: Choosing a “Buddy”
Brainstorming
Social Support Evolution
Social Support Evolution (2)
Pill Regimen

Day ARVs
- Aspen Didanosine: 100 mg.
- Kaletra: 133/33 mg.
- Zidovudine: 300 mg.

Evening ARVs
- 20:00
Poster Depicting AIDS

HIV HAS MANY FACES
How many have you seen today?

How many did you test today?

HIV is treatable. Diagnosis is the first step. No diagnosis, no treatment.
Island Activity

BEFORE GOING ON ARVs

BEFORE GOING ON ARVs

HIV CENTER for Clinical and Behavioral Studies
at the New York State Psychiatric Institute and Columbia University
Relationship to Adherence

ON ARVS

ON ARVS
Island Activity Evolution
Island Activity Evolution
Island Activity Evolution
Snakes & Soldiers Video
Adherence Barriers

**Common Barriers:** Participants and support partners choose relevant barriers, and then have a chance to apply problem solving skills

"Being at the clinic takes too much time, and is too unpleasant"

“When I drink too much, I forget to take my medications”

"The medication makes me feel sick"
Problem Solving Video

Two friends, Nomhle and Chantal, demonstrate the steps of effective problem solving
Problem Solving

• Applied to Patient’s Personal Barriers
• Counselors help patient + support partner apply problem solving to specific barriers identified by the patient
  • Ask – What is the problem?
  • Aim – What is the goal?
  • Alternatives – What are the options?
  • Action – What can we try (before next meeting)
Problem Solving Example

Ask
When I drink with my friends I don't take my tablets

Aim
To drink less on the weekends

Alternatives
I can not drink at all
I can try to take my tablets with me when I go out
I can spend less time with my drinking friends

Action
I will spend time this weekend with a friend who doesn't drink
Disclosure and Support: The Story of Joseph & Hope
Reasons to Stay Healthy

- becoming a grandfather
- being there for my son's we
- taking care of my mother
- going back to work
Sample Recruited

- 65 patients referred
  - Poor adherence (assessed by pharmacy data)
  - 33 in Masivukeni arm; 32 standard care arm
  - Most “buddies” selected different from one chosen at ART initiation
- Intervention Retention Rate: > 90% after completion of Session 1 (intervention arm)
- Study Retention Rate (assessments):
  - Post-test: 55
  - 1-month follow-up: 49
Sample (cont.)

• 2/3 of participants were women
• <10% completed high school
• Most not employed
• Majority Xhosa speaking
Wendy House
Counselor in Wendy House
Counselor with Patient & Buddy
Study Outcomes

- Despite small sample size, results promising
  - Masivukeni participants showed more positive change than control participants:
    - Days between pharmacy refill
    - Self-reported medication adherence
    - Psychiatric distress
    - Social support for adherence
    - HIV treatment knowledge
Pharmacy Refill

Patients are supposed to return to the clinic every **28 days** for ARV refills.
Self-Report Adherence

Thinking about the past 4 weeks, how often did you take all of your HIV antiretroviral medications as your doctor prescribed them?

Likert-type [1 to 5]: None to All of the time

Higher scores = Better Adherence
Thinking about the past 4 weeks, on average how would you rate your ability to take all your HIV antiretroviral medications as your doctor prescribed?

Likert-type [1 to 5]: Very Poor to Excellent

Higher scores = Better Adherence
Medication Specific Social Support

*How often has someone in the past three months …*

1. Helped you monitor your symptoms and medication side effects?
2. Reminded you to take your medications?
3. Called you specifically to ask how you were doing with your HIV medications?

8 Likert-type items [1 to 5]: Never to Very Often

Higher scores = more support
During the past month, about how often did you feel:

Tired out for no good reason?

So nervous that nothing could calm you down

Worthless?

10 Items – Likert-type [1 to 5]: None to All of the time

Higher scores = more distress
HIV Treatment Knowledge

12 Items True/False:

1. Antiretroviral medication aims to reduce or suppress the activity of the HIV virus in the body.

2. Resistance to a particular drug means that the drug is not working because the virus is no longer susceptible to it.

3. An elevated viral load over time will lead to a decline in CD4 count.

Higher scores = better knowledge
Participant Feedback

• Visually engaging
• Like interactive activities and videos
• Learned things had not understood before
  • Importance of adherence
  • How ARVs work
  • What viral resistance is
  • “I learned things about HIV and how the medications work in Masivukeni that I never got from my counselors before.”
• Get lots of support from buddies and counselors; learn to “solve problems” together
Support Partner Feedback

- Learn things that benefit their own health
- Like helping their “friend”
- Learned a lot from “problem solving”
  - “I helped her figure out how to drink less by hanging out with different people.”
- Liked the videos
Counselor Feedback

• Computer acts as support tool providing roadmap for each session and helps teach patients what they need to know
  • “It guides me through the sessions and helps me cover all the material - also, this helps me pay closer attention to the patient & buddy and engage with them more easily.”

• Able to provide referrals for patients for mental health and substance abuse services at the clinic
Clinic Provider Feedback

- Appreciate “standardized” counseling tool
- See positive change in some patients in program
- Want Masivukeni to be the standard intervention in clinic
  - For ALL patients when they initiate ART
- Like standardized and consistent messages for patients, which can reinforced by other clinic providers
  - At Hout Bay, they have adopted use of Masivukeni and are training all providers on Masivukeni
Benefits of Masivukeni

Masivukeni shows promise to enhance counseling and to improve patients’ adherence to care and treatment.

- Standardizes delivery of information
- Provides guided framework (“scaffold”)
- Empowers counselors
- Visually engaging; useful for low literacy
- Interactive; allows for personalized delivery
- Facilitates data collection
- Highly acceptable
- Preliminary evidence for “promise” of adherence behavior change
New R01 from NIMH

Masivukeni: A Multimedia ART Adherence Intervention for Resource-Limied Settings

R01 MH95576

Funded: August, 2011
R01: Primary Aim

• To determine if Masivukeni is effective in establishing and maintaining optimal ART adherence and improving biological outcomes compared to standard care at 12 months post-ART-initiation

• **Hypothesis**: Compared to standard care, patients in the Masivukeni arm will (a) achieve higher levels of ART adherence, assessed by electronic monitoring (Wisepills) and (b) demonstrate greater improvement in biological outcomes [reduced viral load (*primary*); increased cell CD4+ count (*secondary*)]
Wisepill Device

- Works with cell phone technology
- Signals opening of device in real time
- Has option of providing reminders to patients
R01 Secondary Aims

a. To determine whether, compared to standard care, (i) Masivukeni increases patients’ retention in care; and (ii) additional Masivukeni sessions improve ART adherence among patients who demonstrate adherence problems within the first year of initiating ART.

b. To investigate how outcomes are mediated by theoretical constructs in our Social Action Theory (SAT) model (e.g., contextual, social regulation, and self-regulation factors).

c. To explore whether Masivukeni enhances counselors’ capacity to screen for mental health and substance use problems, and make referrals for services when indicated.
R01 Recruitment

**ART Initiation**

(N=360)

Baseline Assessment

**Masivukeni**

Focus on core content and mental health and substance abuse screening

As needed for pts w/ non-adh during study

Focus on problem solving strategies

**Standard Care**

Standard care for pts w/ non-adh during study

Monitor what is done in SOC

Primary Outcomes:

*Biological markers, Wisepill*

Assessments:

- 6-months
- 12-months
Collaborators

- **HIV Center/NYSPI and Columbia University**
  - Robert H. Remien; Claude A. Mellins; Reuben N. Robbins; Jenifar Chowdhury; Cheng-Shiun Leu
  - Ryan Kelsey; Jessica Rowe, Frank Moretti, Elizabeth Day, Marc Raymond
  - Elaine Abrams
  - Susan Witte; Nabila El-Bassel
  - **Consultant**: Jeffrey D. Fisher; University of Connecticut

- **University of Cape Town**
  - Dan Stein; Nuruneesa Lalkhen; John Joska; Landon Myer; Victoria Mayer; Lara Hoppe; Tanya Vollenhoven; Miriam Fokoti; Zodwa Ndlovu

- **City and Provincial Health Departments**
  - David Pienaar; Karen Jennings; Virginia Zweigenthal

- **Hout Bay Main Road Clinic**
  - Esther Carolus; Jackie Oliver; Eve Mendel; Patients & Patient Advocates
Implications

NIH Research Funding Priorities Making Use of Technology
e.g. mHealth Tools to Promote Effective Patient-Provider Communication, Adherence to Treatment and Self Management of Chronic Diseases in Underserved Populations (NINR PA-11-332)

• Technology’s Role in Intervention Research

• How Technology-Enhanced Intervention Research Can Impact University Education

• Achieving Acceptability/Feasibility through CBPR
THANK YOU!