

# **Supporting and Monitoring ART Initiation and Adherence in Resource- Constrained Settings**

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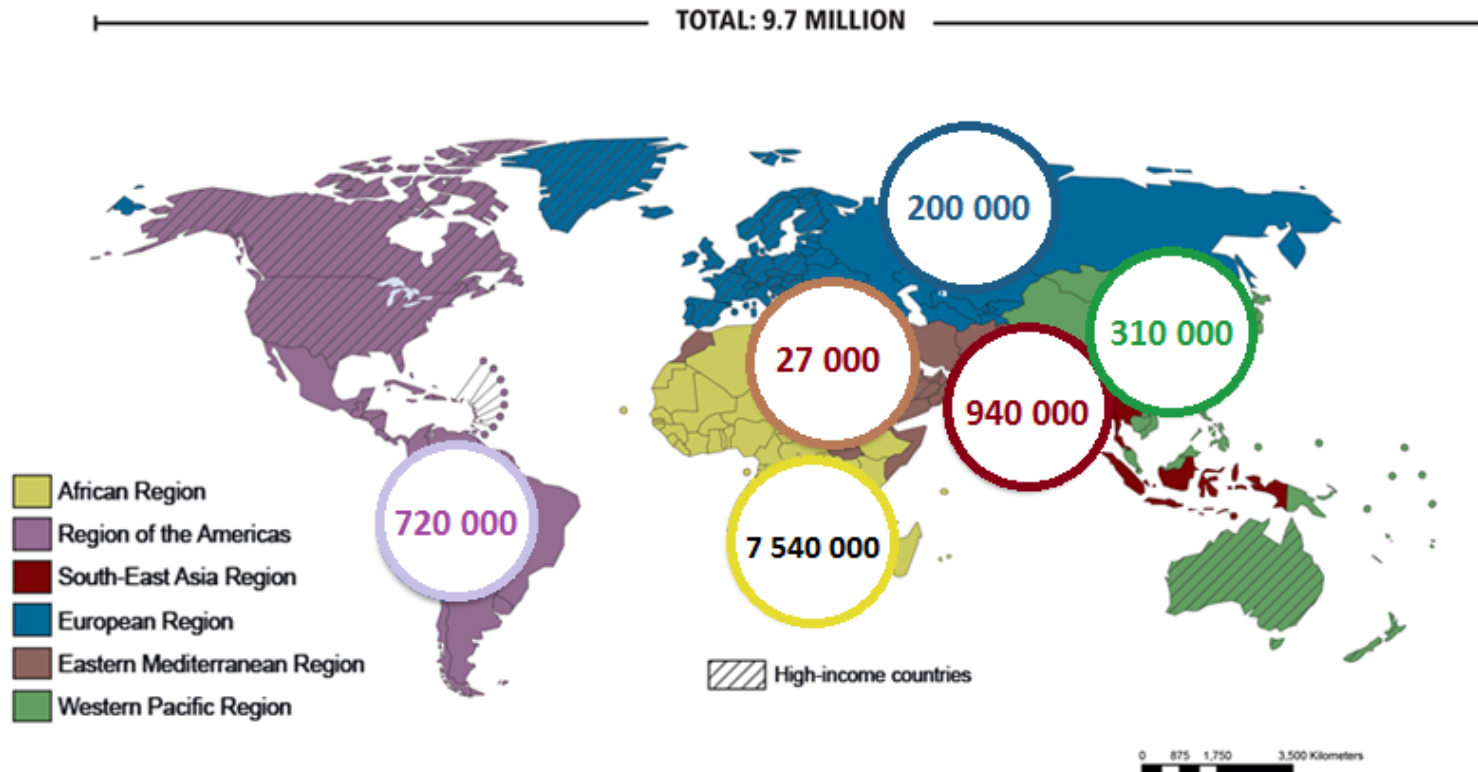


**HIV CENTER** for Clinical and Behavioral Studies  
at the New York State Psychiatric Institute and Columbia University

# Presentation Objectives

- Global context and need
- Evidence-based ART adherence interventions
- Describe the **long-term multi-collaborative process** of our team, over many years, to meet the real-world need and challenges
  - ▶ Potential for **multimedia technology** to address the education and counseling challenges in the South African context
  - ▶ Potential for **bio-assay innovation** to monitor ART adherence in clinical settings

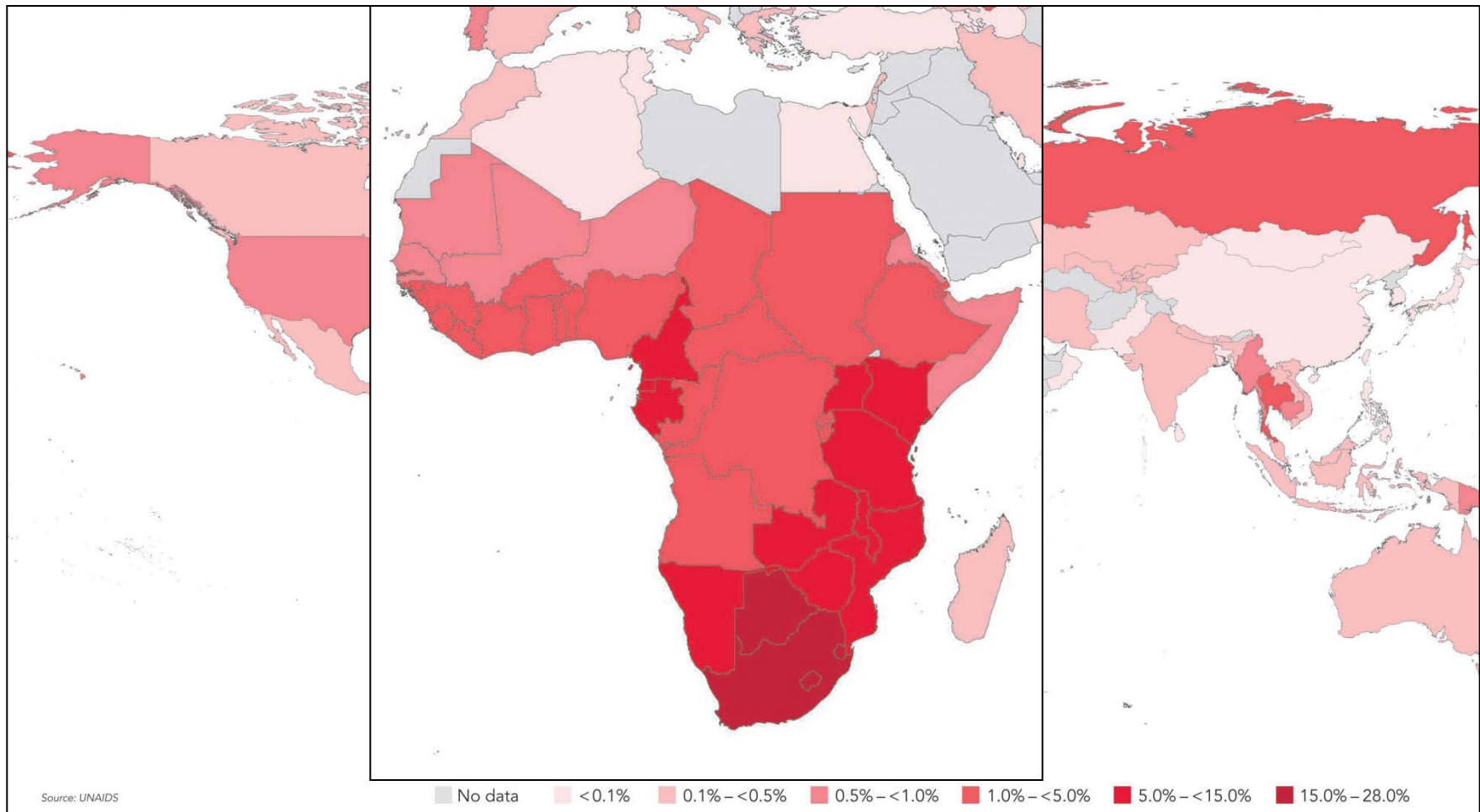
# The Global Epidemic



Source: Update from 2013 Global AIDS Response Progress Reporting (WHO/UNICEF/UNAIDS).



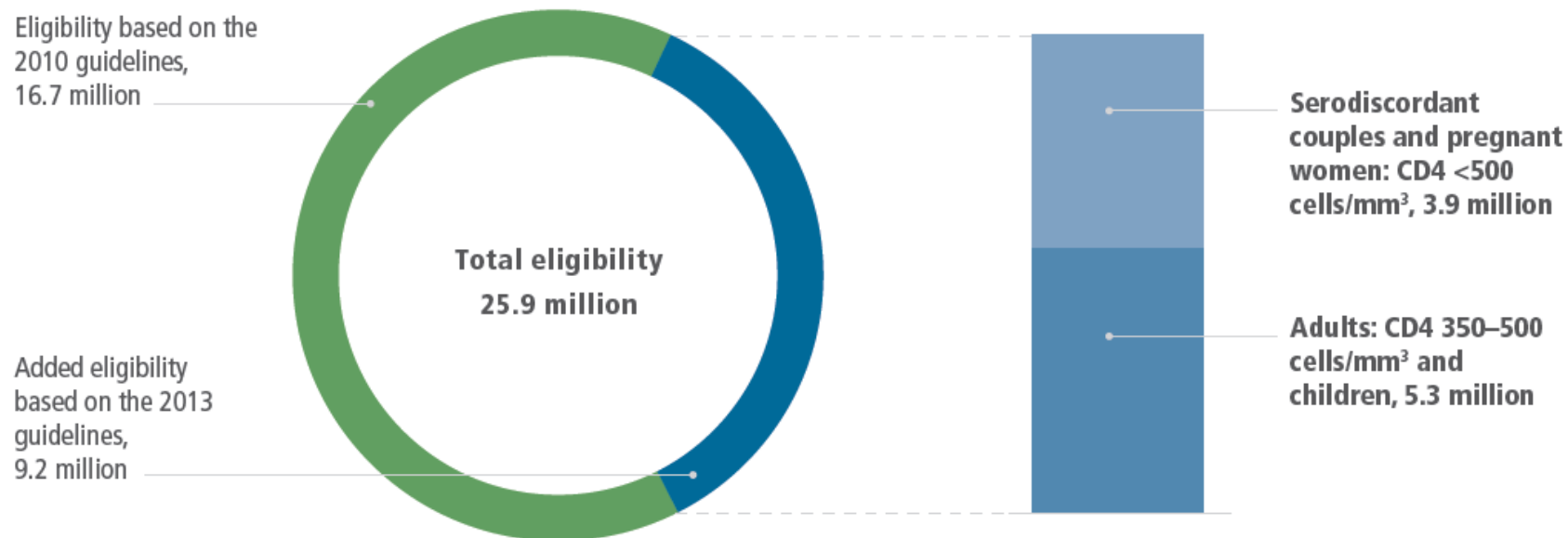
# Global Epidemic (prevalence)





# ART Scale-Up

Numbers of people eligible for antiretroviral therapy in low- and middle-income countries under WHO 2010 and WHO 2013 antiretroviral guidelines, based on the epidemic and response status at the end of 2012



# South African Context

- Highest burden of HIV/AIDS in the world
  - ◆ 6.3 million infected
  - ◆ 4.68 million eligible for ART based on WHO 2013 guidelines
  - ◆ 1 physician per 1,300 patients (US: 1 per 390)
- ART adherence and retention problems as a growing concern
- Health clinics task-shifting (task-sharing) to meet demands and allocate resources

# What Evidence Exists for Effective ART Adherence Interventions?

- 1. IAPAC ART Adherence Guidelines**
- 2. Centers for Disease Control and Prevention (CDC) Compendium**
- 3. Meta Analyses**



# *Annals of Internal Medicine*

## Clinical Guidelines for Adherence

Guidelines for Improving Entry Into and Retention in Care and Antiretroviral Adherence for Persons with HIV: Evidence-Based Recommendations From and International Association of Physicians in AIDS Care Panel; *Ann Intern Med.* 2012;156:817-833

Melanie A. Thompson, MD; Michael J. Mugavero, MD, MHSc; K. Rivet Amico, PhD; Victoria A. Cargill, MD, MSCE; Larry W. Chang, MD, MPH; Robert Gross, MD, MSCE; Catherine Orrell, MBChB, MSc, MMed; Frederick L. Altice, MD; David R. Bangsberg, MD, MPH; John G. Bartlett, MD; Curt G. Beckwith, MD; Nadia Dowshen, MD; Christopher M. Gordon, PhD; Tim Horn, MS; Princy Kumar, MD; James D. Scott, PharmD, MEd; Michael J. Stirratt, PhD; Robert H. Remien, PhD; Jane M. Simoni, PhD; and Jean B. Nachega, MD, PhD, MPH

# *Annals of Internal Medicine*

## Clinical Guidelines for Adherence

Systematic literature search restricted to RCTs and observational studies with comparators that had at least one measured biological or behavioral endpoint.

- 325 studies met criteria
- 39 recommendations including
  - ◆ **Strategies for clinical monitoring of entry and retention in care**
  - ◆ **Adherence tools**
  - ◆ **Education and counseling**
  - ◆ Health system and service delivery interventions
  - ◆ Future research

# The Medication Adherence Chapter of the CDC *Compendium*\*

- 12 HIV medication adherence evidence-based behavioral interventions (EBIs), identified from the scientific literature (through 2015)
- Interventions focus on medication adherence behaviors among persons living with HIV and represented the strongest behavioral interventions in the literature to date that were rigorously evaluated and had demonstrated efficacy in reducing HIV viral load or improving HIV medication adherence behaviors

\*Department of Health and Human Services Centers for Disease Control and Prevention: <http://www.cdc.gov/hiv/topics/research/prs/ma-chapter.htm>

# The Medication Adherence Chapter of the CDC *Compendium (cont.)*

- Adherence Through Home Education and Nursing Assessment (ATHENA)
- Directly Administered Antiretroviral Therapy (DAART) for Drug Users
- Directly Administered Antiretroviral Therapy (DAART) in Methadone Clinics
- Helping Enhance Adherence to antiRetroviral Therapy (Project HEART)
- Pager Messaging
- Partnership for Health
- Peer Support
- **Sharing Medical Adherence Responsibilities Together (SMART Couples)**

# The Medication Adherence Chapter of the CDC *Compendium (cont.)*

- Healthy Living Project (HLP)
- Care+
- In the Mix
- Managed Problem Solving (MAPS)



# Effective ART Adherence Behavioral Interventions (RCTs)

The most effective interventions were based on ***cognitive-behavior models*** and shared a core set of ***psycho-educational components***:

- educating about HIV, its treatment, and the importance of adherence;
- teaching self-monitoring skills;
- identifying barriers to adherence and improving problem-solving skills for those barriers;
- reframing treatment beliefs and attitudes to improve adherence self-efficacy; and
- facilitating positive social support for adherence

Simoni, Pearson, Pantalone et al., 2006; Robbins, Spector, Mellins et al., 2014

# Scale-up?

**How do we take these evidence-based interventions to parts of the world with the greatest need, different social and cultural contexts, and constrained resources?**

# The Adherence Context in South Africa

- Widespread poverty and stigma
- Alcohol and mental health problems
- Poor knowledge and understanding of non-adherence consequences (e.g., viral resistance)
- Insufficient patient-provider communication
- Local attitudes about traditional medicine; myths re: “Western medicine;” norm of NOT taking medicine when asymptomatic

# Townships



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# Adherence Counseling

- Mandated adherence counseling prior to ART initiation; “buddy” policy
- Reliance on “lay” counselors trained by the Western Cape AIDS Training, Information and Counselling Centre (ATICC)
  - ◆ 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 the adequacy of adherence counseling provided to patients

# “Serodiscordant Couples, Medical Adherence, and HIV”

R01MH61173, 1999-2004 (PI: R.H. Remien, Ph.D.)

- “SMART Couples” was the first study that developed and tested in a Randomized Controlled Trial (RCT) an intervention that included a “partner” in the behavioral intervention
- Positive outcomes for medication adherence in an “intention-to-treat” analysis of intervention participants vs standard of care.

Remien RH, Stirratt MJ, Dolezal C, et al., *AIDS*, 2005

Remien RH, Stirratt M., Dognin J, et al., *JAIDS*, 2006



# MASIVUKENI: A Multimedia ART Adherence Intervention for Resource-limited Settings

# A Theoretical Framework for Enhancement of Adherence

Social Action Theory (Ewart, 1991), focusing on

- Information / Knowledge
- Self Regulatory Processes: mood, motivation, alcohol & substance use
- Social Context: stigma and disclosure, local politics and culture
- Interpersonal Processes: social support, provider communication and behaviors (healthcare delivery system)
- Behavior: self-efficacy, skills, problem solving and maintenance of good adherence



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

# 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:

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

## 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 montly
  - (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."*

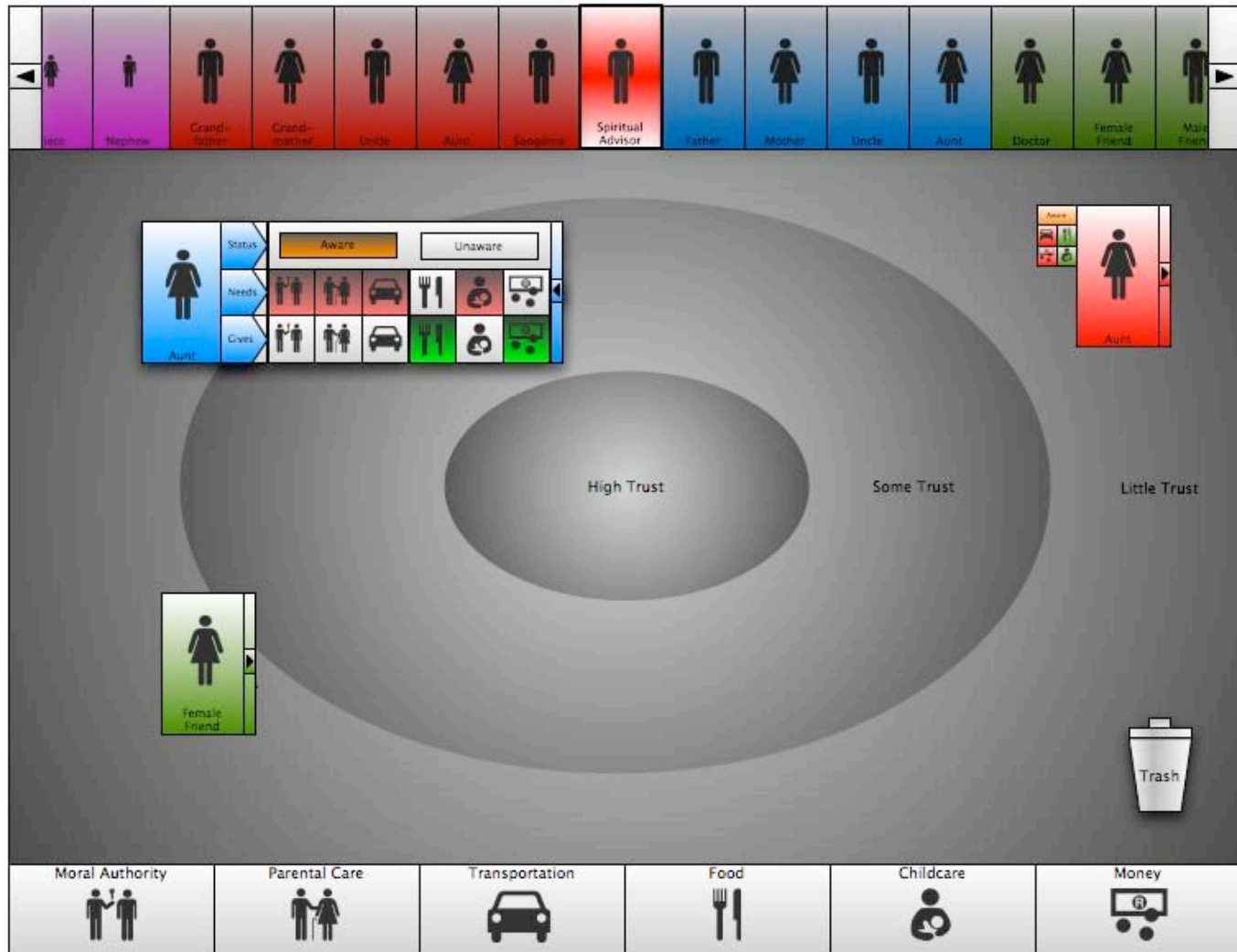
16-19: Brief counseling

>20: Serious problems, further diagnosis needed



# Evolution

## Social Support: *Take 1*



# Evolution

## Social Support: *Take 2*

**Add a Person to Your Support Network**

Name: Fundiswa

How much trust do you share with this person?

Little Trust    Some Trust    A Lot of Trust

How much contact do you have with this person?

Little Contact    Some Contact    A Lot of Contact

In terms of HIV status disclosure, this person is:

Aware    Unaware

How does this person give support?

Moral Authority	Parental Care	Transportation	Food	Childcare	Money
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How does this person need support?

Moral Authority	Parental Care	Transportation	Food	Childcare	Money
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Delete    Add

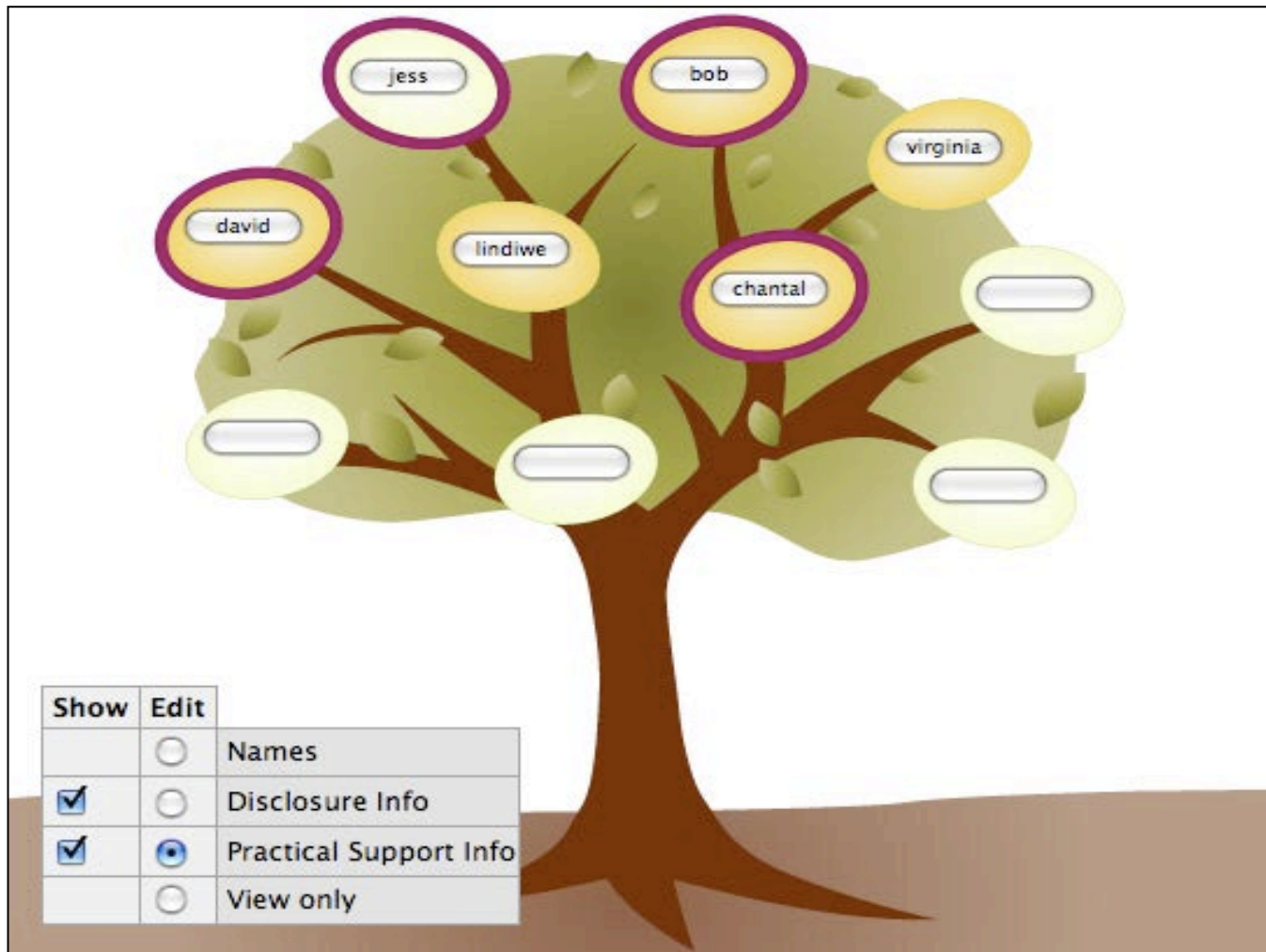


# Brainstorming



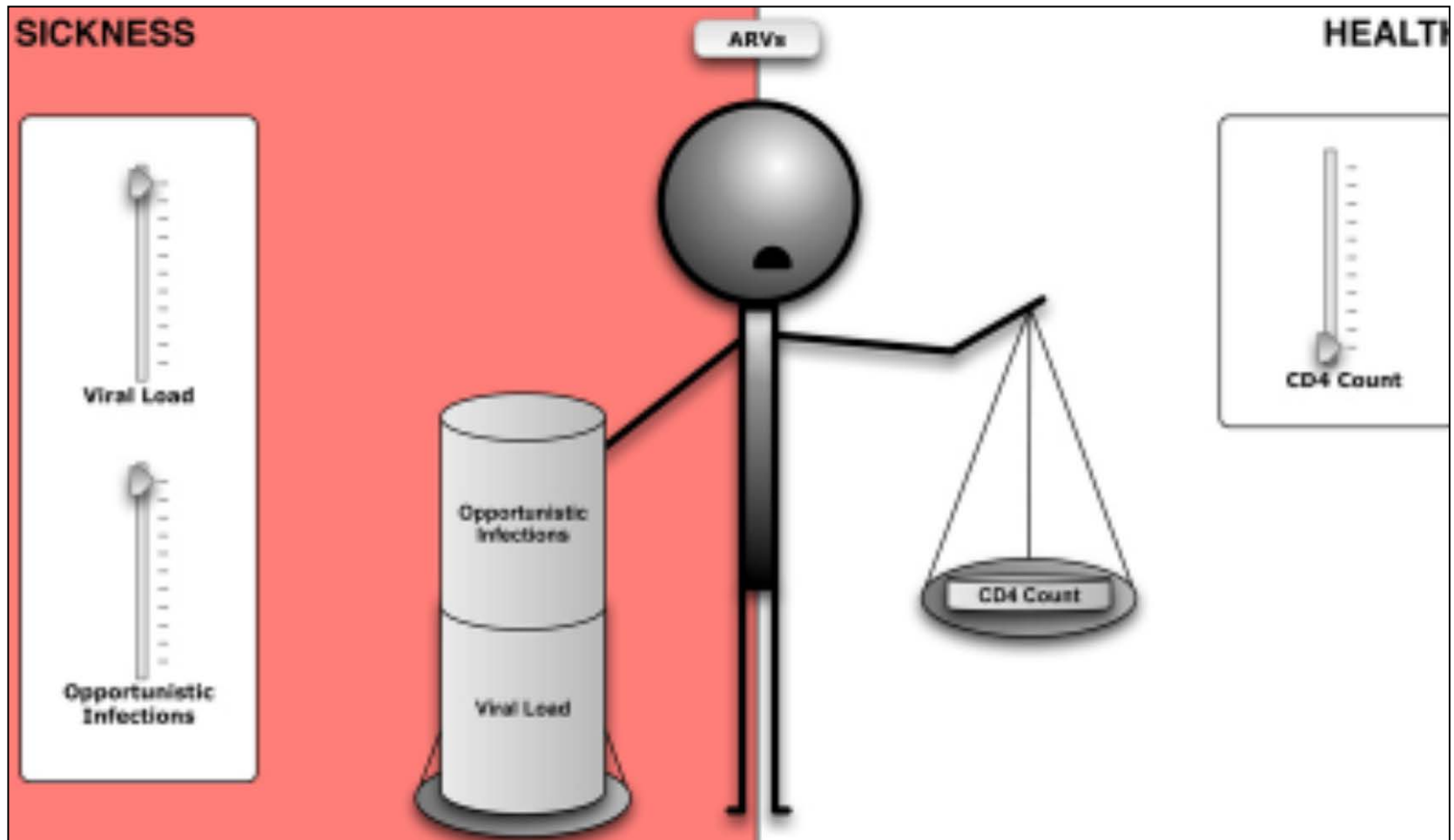
# Evolution

## Social Support Tree: Choosing a “Buddy”

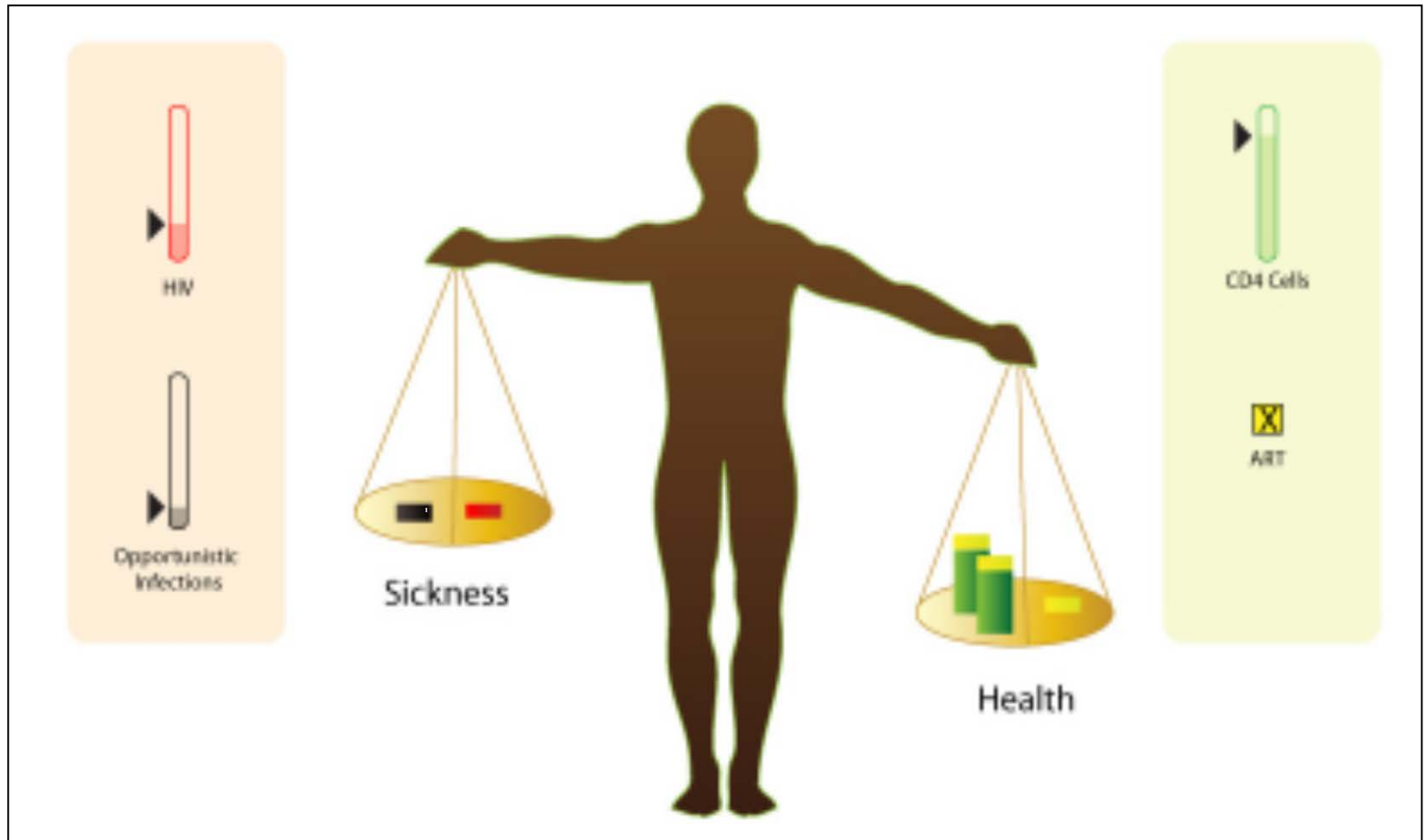




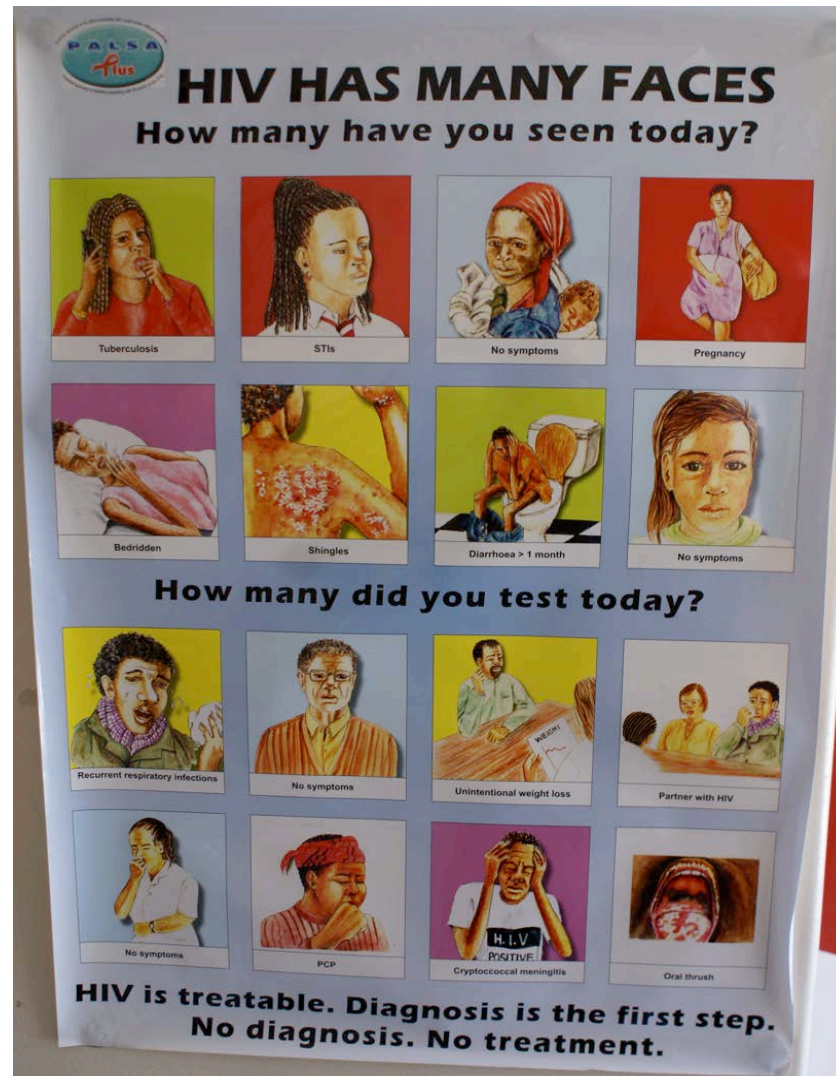
# Relationship Among Viral Load, CD4, OIs, Health, and ARVs: *Take 1*



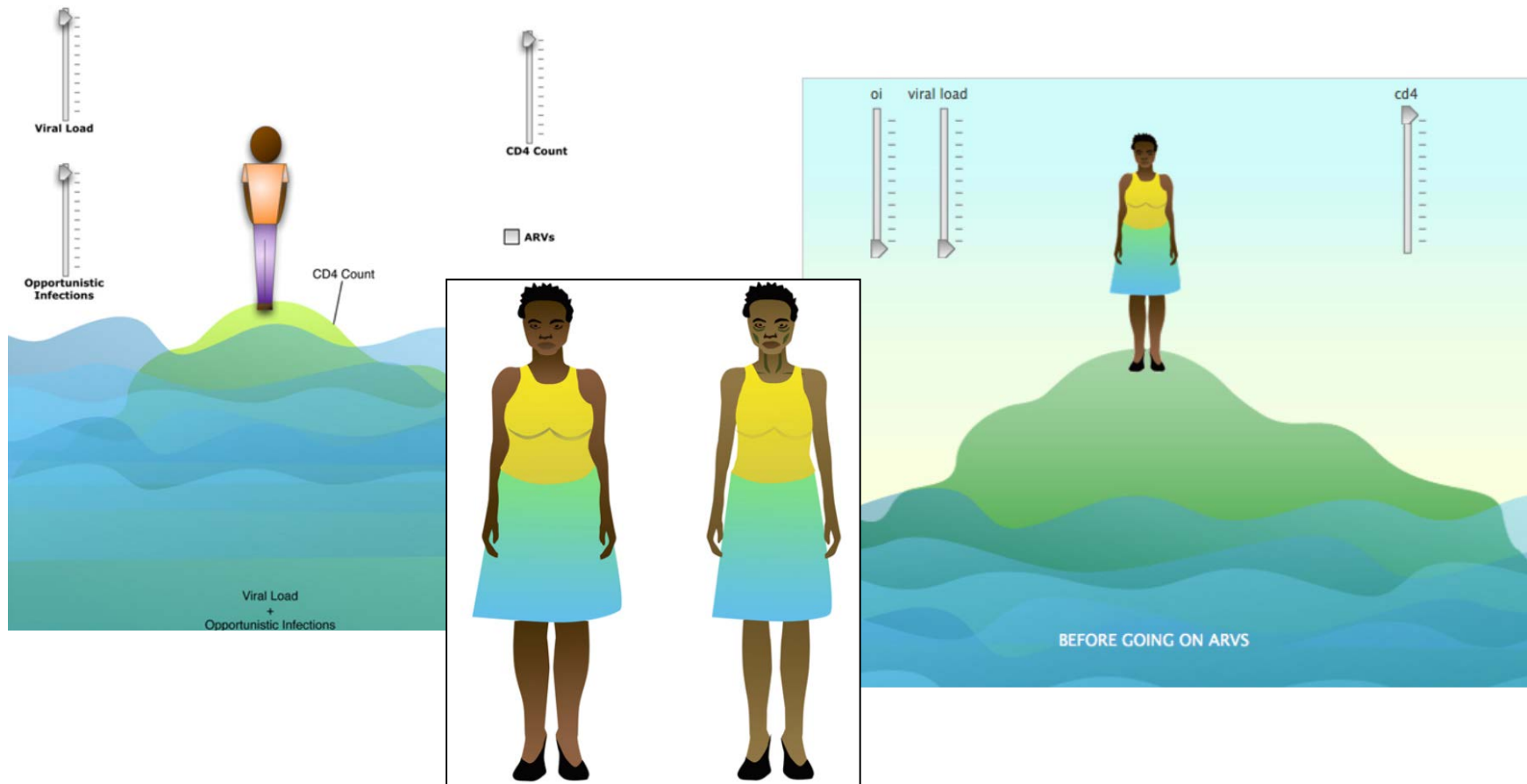
# Relationship Among Viral Load, CD4, OIs, Health, and ARVs: *Take 2*



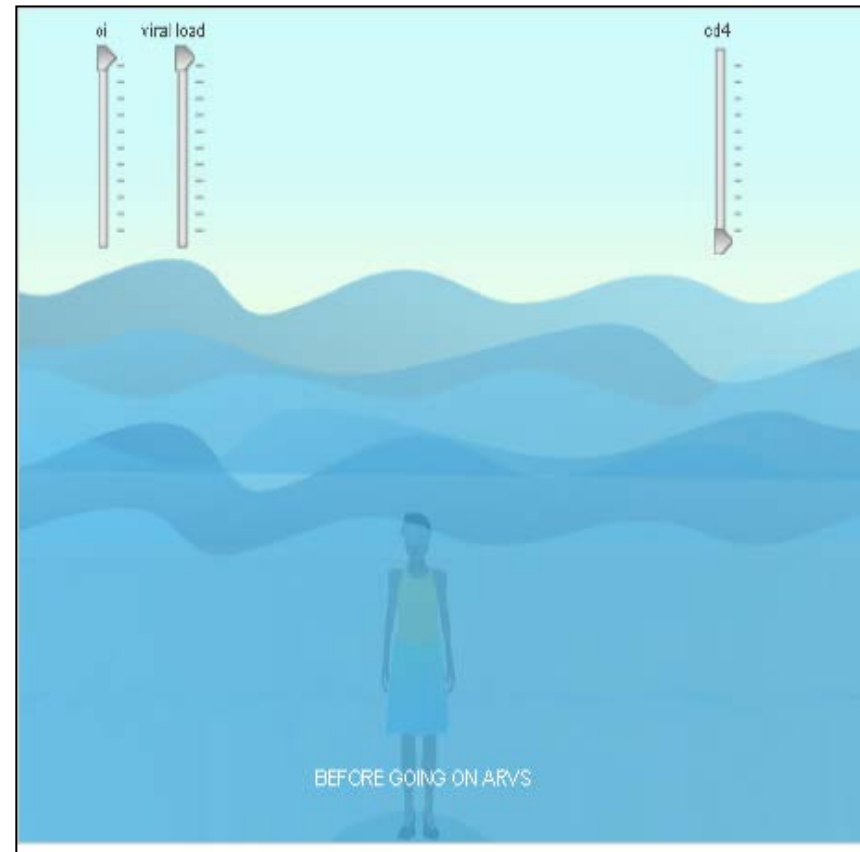
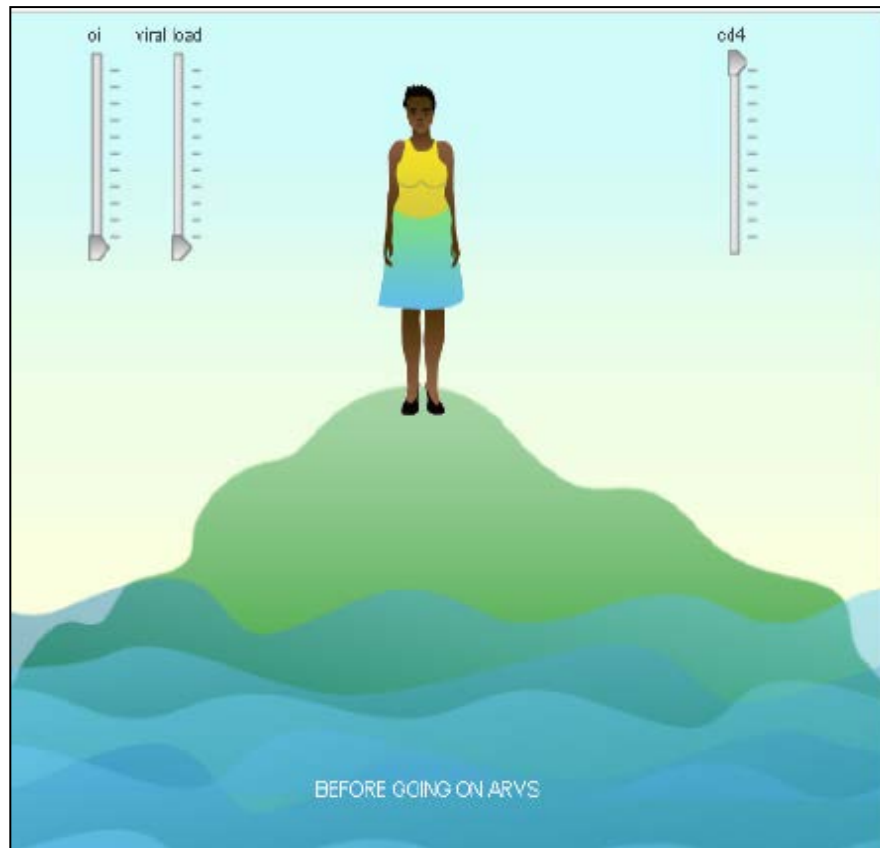
# Clinic Poster Depicting AIDS



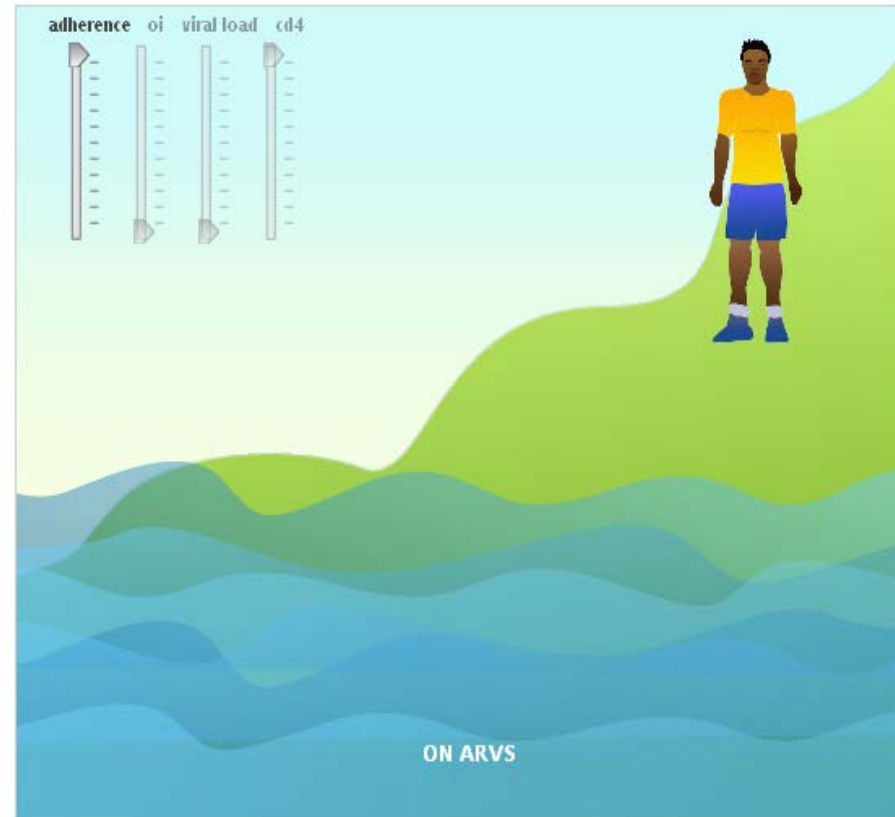
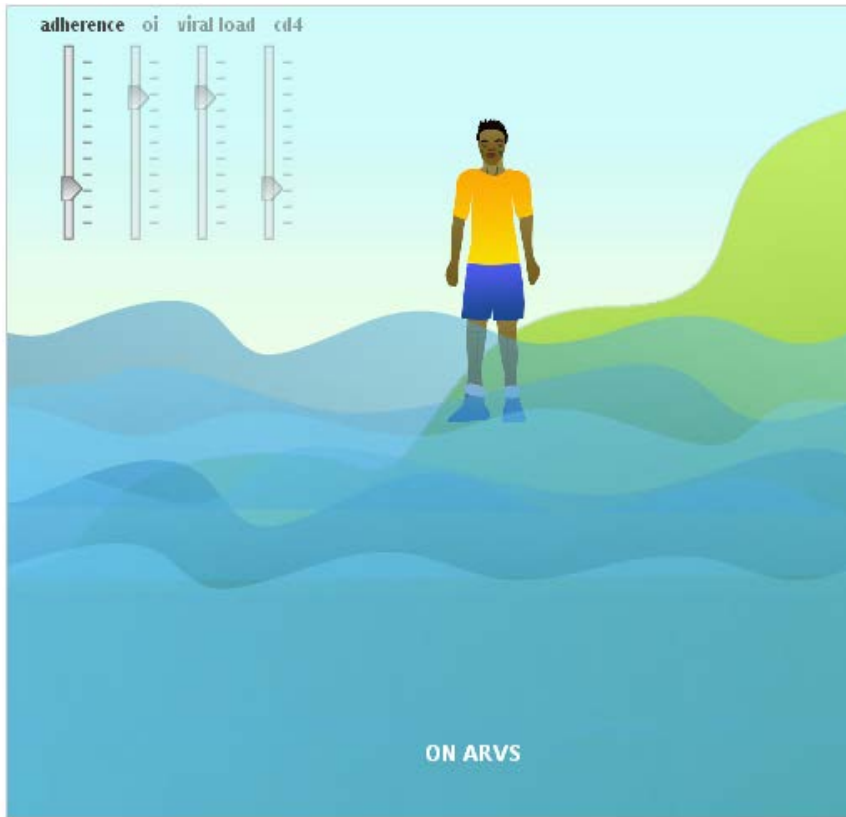
# Evolution: Island Activity



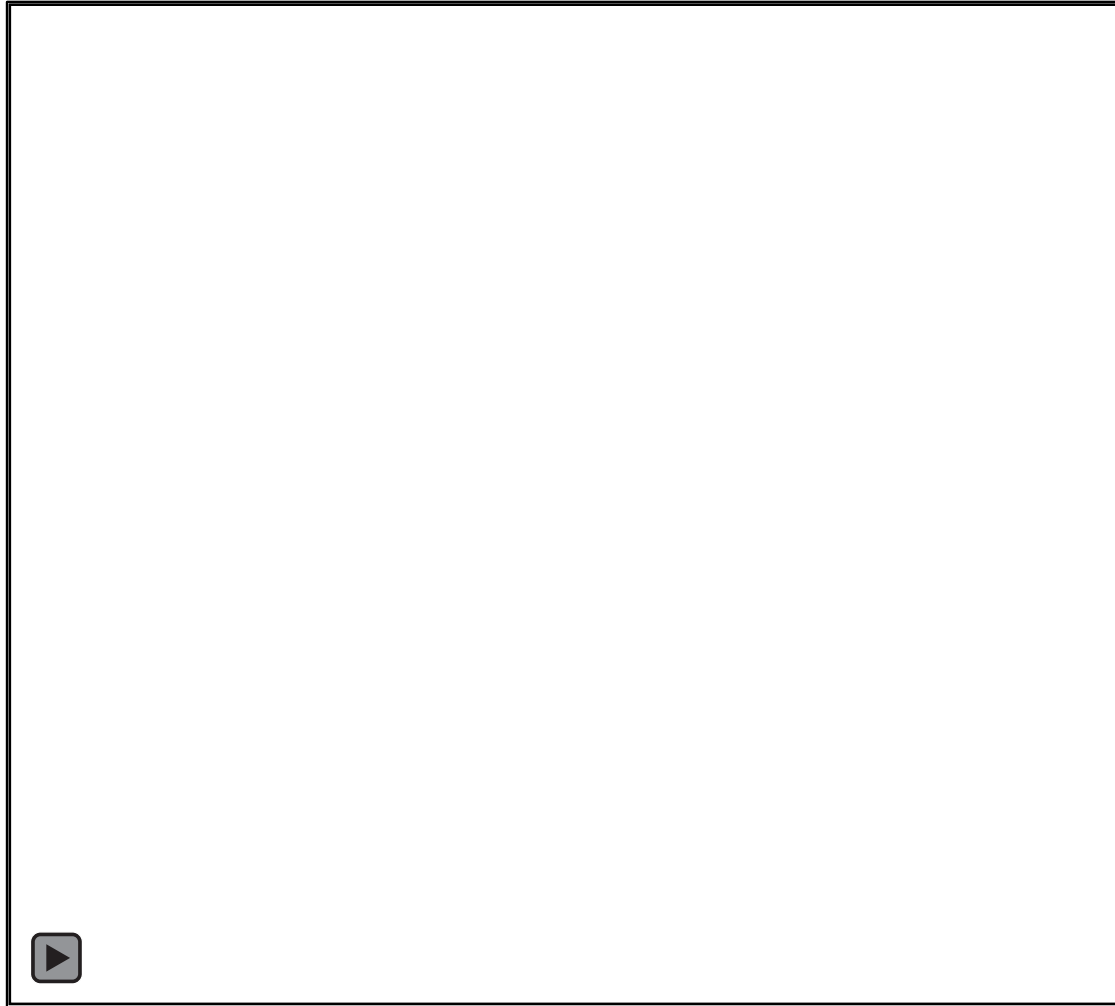
# Island Activity



# Relationship of Health to Adherence



# MASIVUKENI

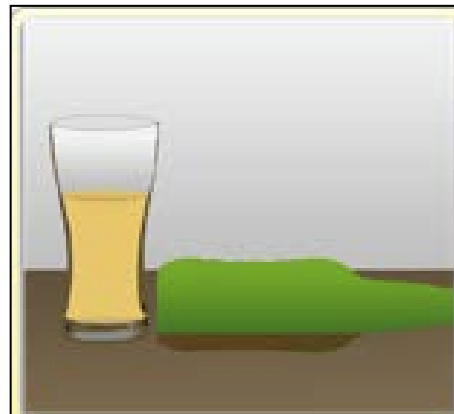


# Barriers to Adherence

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 Modeling Video

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



# The Story of Joseph and Hope



# Pilot Study (R34 grant) Sample (N=65)

- 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
  - ◆ Additional 1-month follow-up: 49

# Pilot Study Sample (N=65)

- 2/3 of participants were women
- <10% completed high school
- Most were not employed
- Majority were Xhosa speaking

# Hout Bay Main Road Clinic

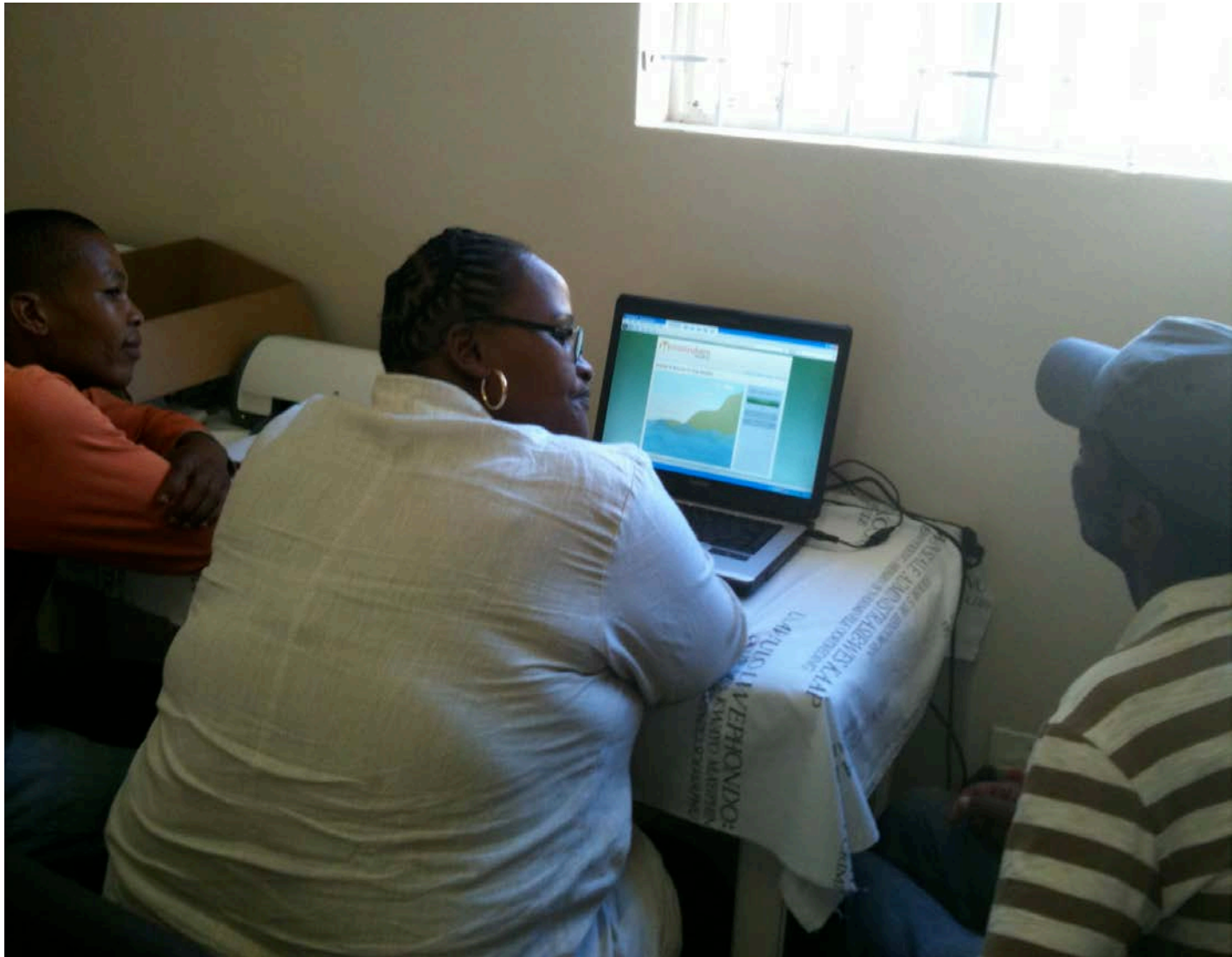




# Counseling Location



# Counselor with Patient and Buddy



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# 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 the clinic
  - ◆ For ALL participants when they initiate ART
- Like standardized and consistent messages for patients, which can reinforced by other clinic providers

*At Hout Bay, they have adopted the intervention and are training all providers on Masivukeni.*

# Policy Makers' Feedback

- Responses range from extreme “enthusiasm” to “skepticism”
- Strong need to improve current SOC counseling  
*“We need new and better ways of providing our initial counseling”*
- Want an intervention that is feasible for “roll-out”
  - ◆ Must fit within current model of counseling:  
“Lay” counselors providing three/four sessions at ART initiation
  - ◆ Is the “technology” feasible? Affordable?
- Serious concerns about patients “defaulting” during first year of treatment

# Pilot Study Outcomes

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



# Lessons Learned

- Poor understanding among both patients and counselors of how HIV treatment works and of the importance of strict adherence
- Strong reliance on “lay” counselors who have minimal training; supervision and quality assurance is very limited
- Widely variable and often quite poor quality of SOC counseling (both initial and ongoing)

# Lessons Learned (cont'd.)

- Unreliable pharmacy data; inflated self-reports; biomarkers assessed (1) prior to ART initiation, (2) at 4-6 months, and then (3) annually
- Six-session intervention not feasible; too much redundancy
- Core intervention content deliverable in three-four sessions; **need is for patients initiating ART**; problem solving for barriers can be open-ended
- Need for standardized messages (explanations) between providers and patients

# Lessons Learned (cont'd.)

- “Defaulting” growing concern among providers and policy makers
  - ◆ Many patients dropping out/showing poor adherence within first year of initiation
  - ◆ Patients stopping meds when feeling healthy; also stop when having side effects
- Recognition by policy makers of the need for evidence-based changes to current SOC counseling that is delivered at ART initiation



# Benefits of Multimedia Platform for Intervention Delivery

**Masivukeni shows promise to enhance counseling and to improve patients' adherence to care and treatment**



# Current Study: Primary Aim

## Masivukeni: A Multimedia ART Adherence Intervention for Resource-Limited Settings

R01 MH95576; PI: Robert H. Remien, Ph.D.; 2011-2016

- 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)]

# Current Study: 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.

# Wisepill Device

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



# Study Design

STUDY RECRUITMENT *at ART Referral* (N=433)

Baseline Assessment

***Standard of Care (SOC) N=145***

Three SOC sessions with  
lay counselor (over three weeks)

***Masivukeni (MSV) N=288***

Three multimedia sessions with  
MSV counselor (over three weeks)

INITIATION OF ART (within 1 month)

6-month (post-Baseline) Assessment

12-month (post-Baseline) Assessment  
*Primary test of intervention efficacy*

PRIMARY OUTCOMES:  
*Biological markers and Wisepill data*

Additional  
SOC sessions for  
adherence problems

Additional  
MSV sessions for  
adherence problems

# Methods of Monitoring Medication Adherence

<b>METHOD</b>	<b>ADVANTAGES</b>	<b>DISADVANTAGES</b>
<b>Patient self-report</b>	<b>Practical. Can enhance doctor-patient relationship</b>	<b>Patients/providers overestimate adherence</b>
<b>Pharmacy reports / pill counts</b>	<b>Objective information on whether pills are removed from bottle.</b>	<b>Pills can be stored, shared, stored, taken off schedule</b>
<b>Blood levels of medication</b>	<b>Objective information on whether medication is ingested</b>	<b>Covers a very short time frame/ can be manipulated</b>
<b>Directly observed therapy</b>	<b>Maximum certainty the patient put pills in mouth</b>	<b>Can be infantilizing and expensive; patient can spit out/vomit up pills.</b>
<b>Intramuscular long-acting medication</b>	<b>Certain and infrequent administration</b>	<b>Side effects difficult to address; most medications unavailable</b>



# “Objective” Assessment in Clinical Care Settings

- Important aspects of objective measures of ART adherence should be that they
  - ▶ impose minimal burden on patients/research participants and on healthcare systems
  - ▶ be usable in a variety of settings (e.g., clinic, home)
  - ▶ be valid and reliable;
  - ▶ provide information to facilitate timely intervention and clinical management
- Dried blood spot (DBS) and hair samples are
  - ▶ Minimally invasive (DBS) or non-invasive (hair)
  - ▶ Usually considered minimal risk
  - ▶ Inexpensive to collect (i.e., materials and personnel)
  - ▶ Suitable for repeated sampling/ongoing monitoring

# Monitoring ARVs in Blood & Hair

- Drug levels provide direct evidence of drug ingestion and allow for repeated sampling.
- Anderson et al. have developed an assay of the active ARV anabolite, tenofovir-diphosphate (TFV-DP), which has a much longer half-life in RBCs, reflecting drug ingestion over a longer period of time; Furthermore, they have adapted the assay to use dried blood spot (DBS) samples, thus providing distinct sampling advantages.
  - DBS:  $t_{1/2}$  in RBCs = 17 days → drug ingestion over a longer period
- Gandhi et al. have developed assays for assessing:
  - Accumulation of drug in hair over time (~1 cm. / ~100 strands)



# METHODS (Supplement to R01)

- 30 participants attended 5 visits over a 4-month period. At each visit:
  - ▶ Blood draw by phlebotomy for DBS sampling
  - ▶ Finger-stick for DBS sampling
  - ▶ Sampling for hair
  - ▶ Brief adherence self-report questions
  - ▶ Brief acceptability survey
- Clinic VL (4-month) was obtained by chart abstraction when available
- Adherence to once-daily regimen was monitored by Wisepill

# Pilot Study (N=30)

***We explored the utility of these assays as a measure of ART adherence in a real-world, low-resource clinic setting in South Africa.***

How do DBS-derived TFV-DP levels and Hair concentration levels relate to each other and how do they each relate to:

- ARV adherence as determined by an EMD (i.e., Wisepill openings)?
- ARV adherence as determined by self-report?

# Procedures



# Using Biomarkers to Monitor ART Adherence in Resource-Limited Settings

## R01-MH95576-03S1

- Utility of Dried Blood Spot-Derived ARV Biomarkers as an Objective Measure of Treatment Adherence in South Africa  
Patricia Warne, Reuben Robbins, Peter Anderson, Hetta Gouse, John Joska, Cheng-Shiun Leu, Yoliswa Mtingeni, Michelle Henry, Javier Lopez Rios, Jose Castillo-Mancilla, Bruce Levin, Claude Mellins, Robert H. Remien
- Feasibility and Acceptability of Hair- and Dried Blood Spot-Derived ARV Biomarkers as Objective Measures of Treatment Adherence in South Africa  
Reuben Robbins, Hetta Gouse, Yoliswa Mtingeni, Javier Lopez Rios, Claude Mellins, John Joska, Patricia Warne, Robert H. Remien

*Oral presentations at IAPAC Adherence 2015  
June 28-30, Miami FL*

# Preliminary Results

- 98% of the time, participants reported excellent – if not “perfect” – adherence to their HIV meds in the past month; thus no correlation with biomarkers of drug ingestion
- DBS and hair analyses were highly correlated
- Correlation between biomarkers of drug levels and WP adherence were weak to moderate
- Over time patient “acceptability” of DBS sampling grew while “acceptability” of hair sampling diminished

# Conclusions and Areas for Future Research

- Determining associations between DBS-derived TFV-DP levels and ART adherence was hampered by problems in Wisepill use in at least 20% of our sample.
- These device-use problems might not have been recognized without the TFV-DP assay results.

# Conclusions and Areas for Future Research

- Larger studies are needed to understand the strengths and limitations of DBS ARV anabolite assays / drug concentrations in hair samples, and EMDs as clinically meaningful objective measures of adherence.
  - ▶ Are moderate correlations between TFV-DP levels and % Wisepill openings due to use of the device, intra-individual pK variability, or both?
  - ▶ Can drug anabolite assays overcome the confounder of EMD adherence – i.e., by measuring actual medication ingestion rather than device use?

# Conclusions and Areas for Future Research

- These biomarker assays have potential as tools for monitoring adherence and helping patients manage their HIV disease.
  - ▶ How will providers interpret/use assay results?
  - ▶ Can assay results be used to motivate adherence among patients?
  - ▶ How should results be framed? How will patients understand/act on feedback?
  - ▶ How would point-of-care or home-testing versions of the assay be used?



# Conclusions and Areas for Future Research

- Could these assays have advantages over standard clinical markers (e.g., CD4+ cell counts, viral load) in detecting adherence problems?
  - ▶ Can the assays predict the development of viral breakthrough/viremia due to non-adherence?
  - ▶ How much advanced warning of viral breakthrough/viremia could regular (e.g., monthly) use of this assay give?

# Research to inform clinical practice

- Using multimedia technology, can we enhance the capacity of lay counselors to address ART adherence with high (and growing) volumes of patients?
  - ▶ Is medication adherence improved and sustained?
  - ▶ Are clinical outcomes improved?
  - ▶ Can we improve identification of, and treatment for, mental health and substance use problems?
- Can drug-level monitoring improve outcomes in routine clinical care?
  - ▶ Identify adherence problems before negative clinical consequences emerge?
  - ▶ Enhance provider-patient communication and problem-solving to address adherence problems?
- GOAL: improve treatment & retention, and improve health outcomes in high-need areas.

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## **Masivukeni demonstration on You Tube:**

<http://www.youtube.com/watch?v=MOGlicrnko0>

[Go to You Tube and search for **Masivukeni**]

# OAR: High Priority AIDS Research

## High Priority topics of research for support using AIDS-designated funds

- **Reducing incidence of HIV/AIDS** including: developing and testing promising vaccines, developing and testing microbicide and pre-exposure prophylaxis candidates and methods of delivery, especially those that mitigate **adherence issues**; and developing, testing, and implementing **strategies to improve HIV testing and entry into prevention services**.
- **Next generation of HIV therapies** with better safety and ease of use including: developing and testing HIV treatments that are less toxic, longer acting, have fewer side effects and complications, and easier to take and **adhere** to than current regimens. Additionally, **implementation research** to ensure initiation of treatment as soon as diagnosis has been made, retention and engagement in these services, and achievement and maintenance of optimal prevention and treatment responses.
- **Research toward a cure** including: **developing novel approaches and strategies** to identify and eliminate viral reservoirs that could lead toward a cure or lifelong remission of HIV infection, including studies of viral persistence, latency, reactivation, and eradication.
- **HIV-associated comorbidities, coinfections, and complications** including: **addressing the impact of HIV-associated comorbidities**, including tuberculosis, malignancies, cardiovascular, neurological, and metabolic complications, and premature aging associated with long-term HIV disease and antiretroviral therapy.

# OAR High Priority AIDS Research (cont.)

- **Cross cutting areas:** Basic research, health disparities, and training including:
  - **Basic Research:** understanding the basic biology of HIV transmission and pathogenesis; immune dysfunction and chronic inflammation; host microbiome and genetic determinants; and other fundamental issues that underpin the development of high priority HIV prevention, cure, co-morbidities, and treatment strategies.
  - **Research to Reduce Health Disparities** in the incidence of new HIV infections or in treatment outcomes of those living with HIV/AIDS.
  - **Research Training** of the workforce required to conduct High Priority HIV/AIDS or HIV/AIDS-related research.

# OAR: Medium Priority AIDS Research

Medium Priority topics of research for support using AIDS-designated funds include projects that demonstrate HIV/AIDS is a meaningful component of the project and/or knowledge about HIV will be enhanced by the project, as evidenced in the specific aims.

Several examples of research that could be considered as Medium Priority include:

- The project examines a fundamental **scientific question (or questions) that has a clear or potential link to HIV/AIDS**;
- The project includes **people** (or biological specimens from people) **who are living with HIV, are HIV exposed, and/or are at elevated risk for HIV infection** as part of a broader sample or as a comparative cohort;
- The project addresses **health and social issues that are clearly linked with HIV (transmission/acquisition, pathogenesis, morbidity and mortality, stigma) and examines them in the context of HIV** (i.e., in populations or settings with high HIV prevalence or incidence), such as other infectious pathogens and diseases, non-infectious pathogens and diseases, **substance use/addiction, and mental health disorders**;
- The project meaningfully includes HIV/AIDS (or SIV) outcomes/endpoints; or
- The results of the project will **advance HIV treatment or prevention and/or provide tools/techniques and/or capacity beneficial to HIV research (including training and infrastructure development)**.