



MASSACHUSETTS
GENERAL HOSPITAL

GLOBAL HEALTH



HARVARD
MEDICAL SCHOOL

Optimizing Adherence Monitoring to Support Differentiated Care, Better Efficiency, and Improved Outcomes

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March 14, 2019

Disclosures

- I am/have been funded by the NIH, Bill and Melinda Gates Foundation, and USAID.
- I am/have been a paid consultant for the NIH, WHO, Merck, and Natera.
- I have no conflicts of interest to declare.

Outline

- Common adherence monitoring approaches in routine clinical care
- Additional available adherence monitoring options from research
- Currently utilized adherence interventions in routine clinical care
- Role for differentiated care
- Opportunity for efficiency and improved outcomes through adherence monitoring
- Taking a holistic approach

Adherence monitoring in routine clinical care



- Clinician assessment
- Self-report
- Pill counts (common for ART)
- Pharmacy pick up (typically independent of clinicians)
- Directly observed therapy (common for TB)

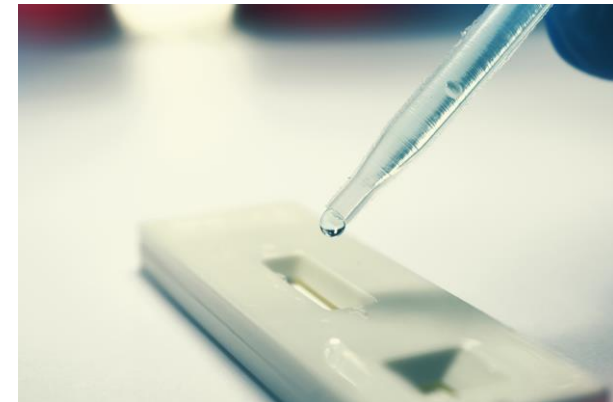
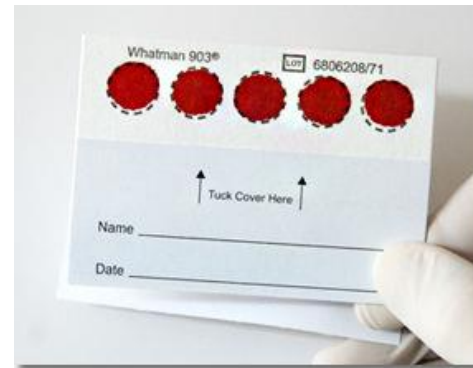
Additional adherence monitoring options from research

- Electronic monitors (e.g., MEMS, Wisepill)
- Digital pills (e.g., Proteus)
- Cellular connections (e.g., Wel-Tel)



Additional adherence monitoring options from research

- Pharmacologic measures
 - Hair
 - Red blood cells/dried blood spots
 - Peripheral blood mononuclear cells
 - Plasma
 - Urine



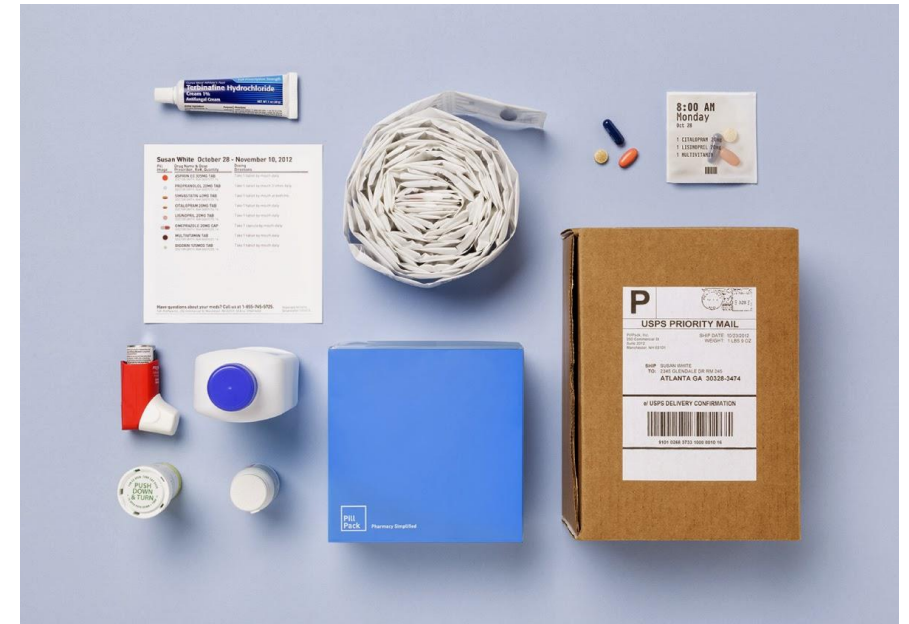
Adherence interventions in routine clinical care

- Individual
 - Education
 - “Counseling”
 - Counseling
 - Motivational interviewing
 - cognitive behavioral therapy
- Implemented with varying degrees of quality



Regimen simplification

- Fixed dose combinations



- Convenient pill packaging

Structural interventions

- Task-shifting
- Peer support/mentoring
- Community distribution of medications
- Fast-tracking
- Adherence clubs



Client

I have to walk a really long way to get to the clinic and still have to go every month to collect my ART – but I feel well and have other places to be.



National ART manager

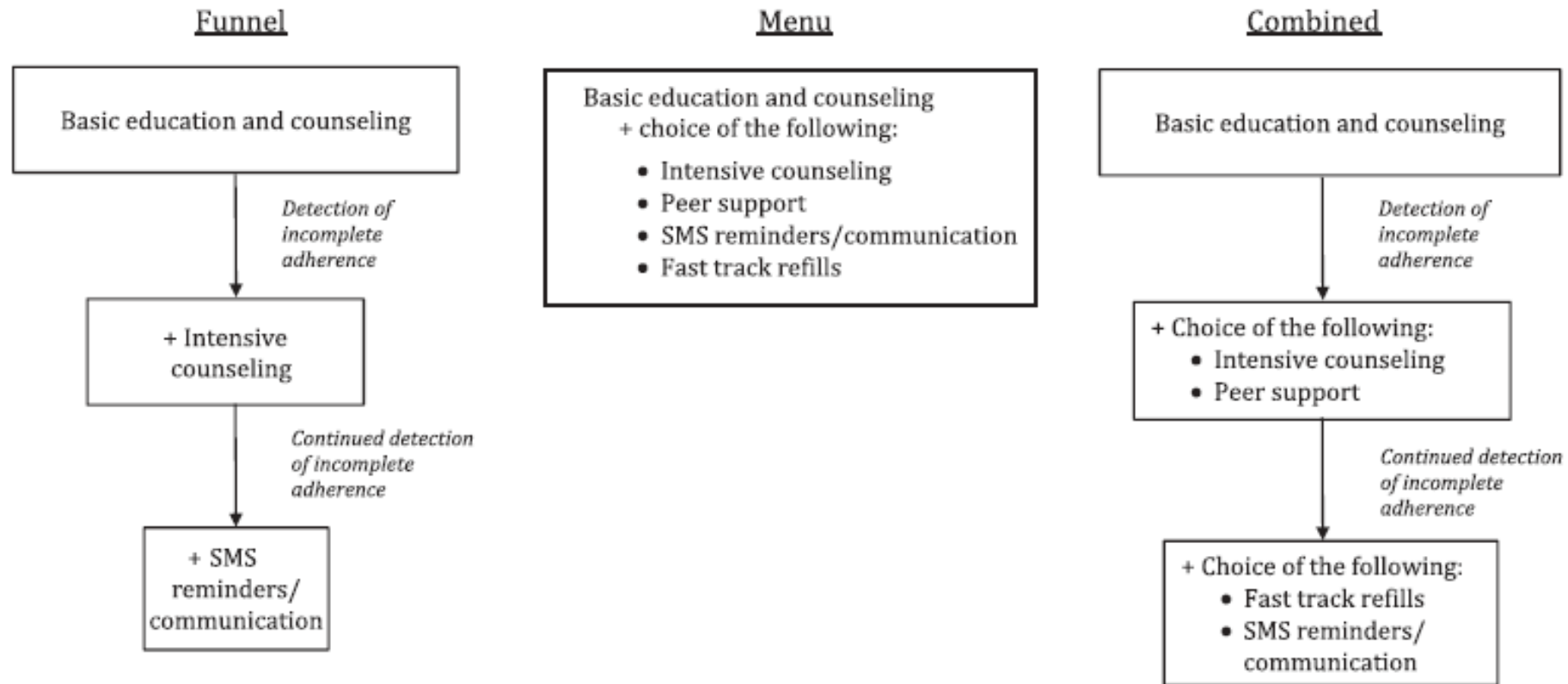
We need to reach 90-90-90 and implement “treat all”. How are we going to get there with the resources we have?

(IAS 2016)

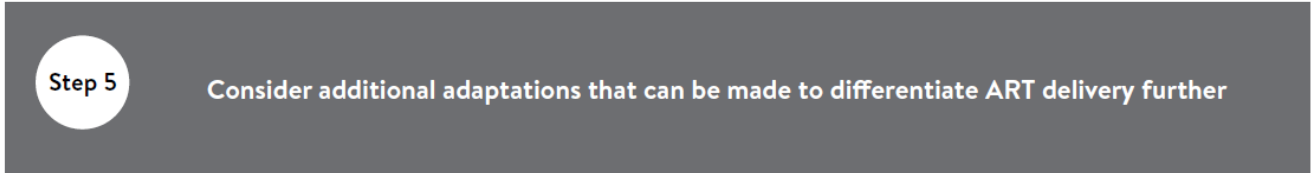
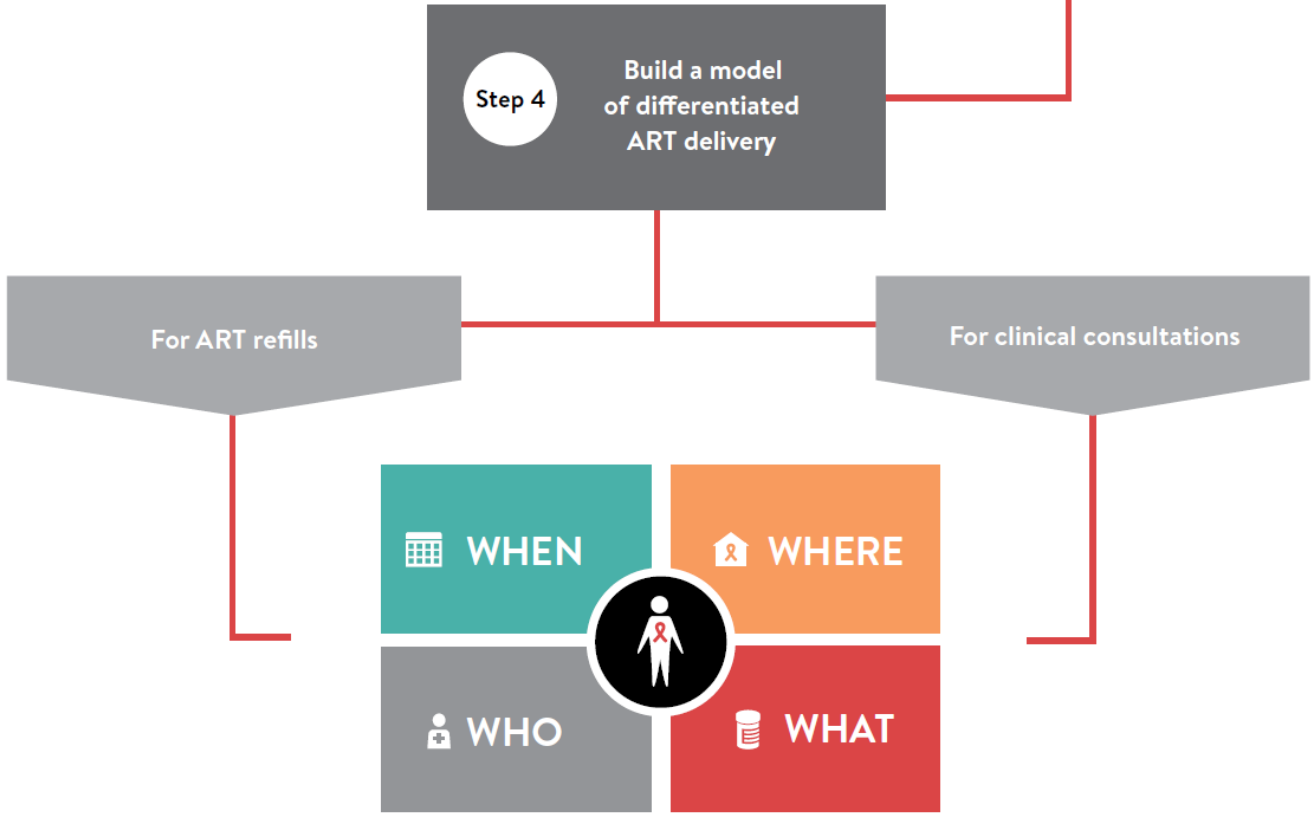
Differentiated care

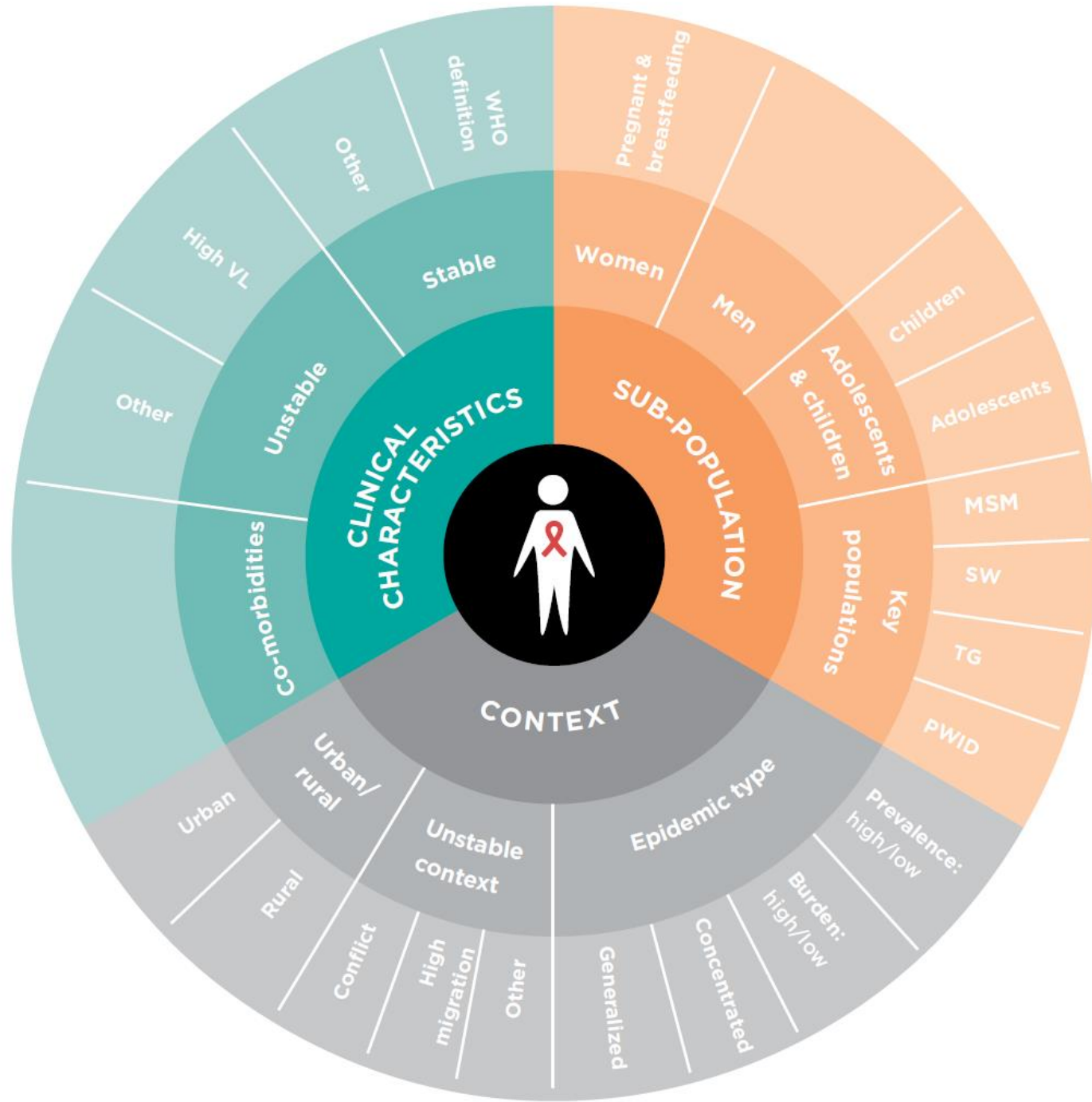
- Client-centered approach that simplifies and adapts care services to reflect the preferences and expectations of various patient groups while reducing unnecessary burdens on the health system
- Systematic review (Davis et al, AIDS Care 2018)
 - 13 articles
 - Higher retention, lower attrition, and less loss to follow-up
 - Reduced patient wait time, travel costs, and time lost from work for drug pick-up
- Adherence clubs in South Africa (Tsondai et al, JIAS 2017)
 - “Stable patients on long-term ART can safely be offered care options”

Differentiated/combination interventions can be best combined through effective adherence monitoring



(Haberer et al, JIAS 2017)

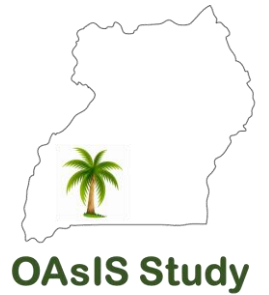




Current state of affairs

- Adherence monitoring in routine care is rare
 - Notable exceptions include ART and anti-TB therapy (to some degree)
 - Efforts growing for oral cancer medications, HCV, others
 - Use of accurate, objective adherence measures is typically lacking
- Adherence interventions are applied across systems of care and are not tailored to the individual
- Great potential remains for efficiency and improved outcomes through introduction of (better) adherence monitoring

Introducing adherence monitoring into routine care

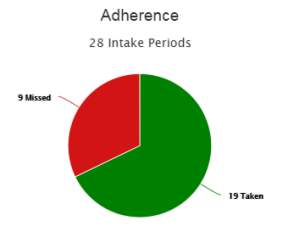
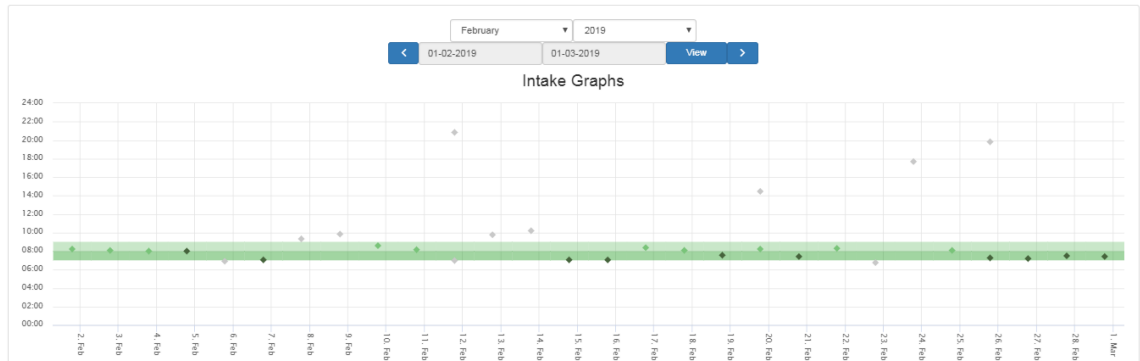


- OAsIS study (Optimizing Adherence through Implementation Science)
- Aims: To define, deploy, and optimize an implementation strategy for real-time electronic adherence monitoring plus associated interventions for routine HIV clinical care in Uganda
- Consolidated Framework for Implementation Science
- Activities to date
 - Qualitative interviews with multiple layers of stakeholders, including Ministry of Health, clinic directors, clinicians, and clients
 - Time and motion studies

- evriMED1000
 - Low cost real-time adherence monitor
 - Long battery-life
 - Streamlined user interface/process
- Intervention options:
 - 1-way SMS
 - 2-way SMS
 - Engagement of a social supporter
 - Alarms
- Use of adherence data
 - Improved counseling
 - Patient management



Adherence Calendar



Client Information

[Update](#)

Identification Code	KCRC201
Date of Birth	
Gender	Male
General Notes (HCP)	
Group	EviMED Uganda

Intake Settings

[Update](#)

Intake Rule:	Next Intake planned on:
Everyday - 7 day Week	2019-01-02 13:00

Device Assignment

[Update](#)

Device	None assigned
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Contact Details

[Update](#)

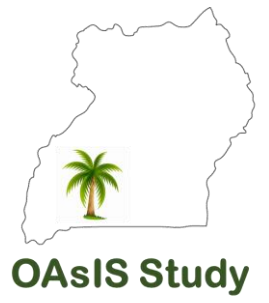
SMS	256123456789
SMS Intervention	Yes
SMS (Secondary)	256123456789
SMS (Secondary) Intervention	Yes

Hcp Information

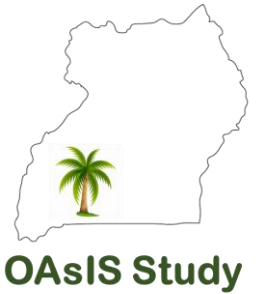
Wise Test	Healthcare Professional
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Options

[End Participation](#)



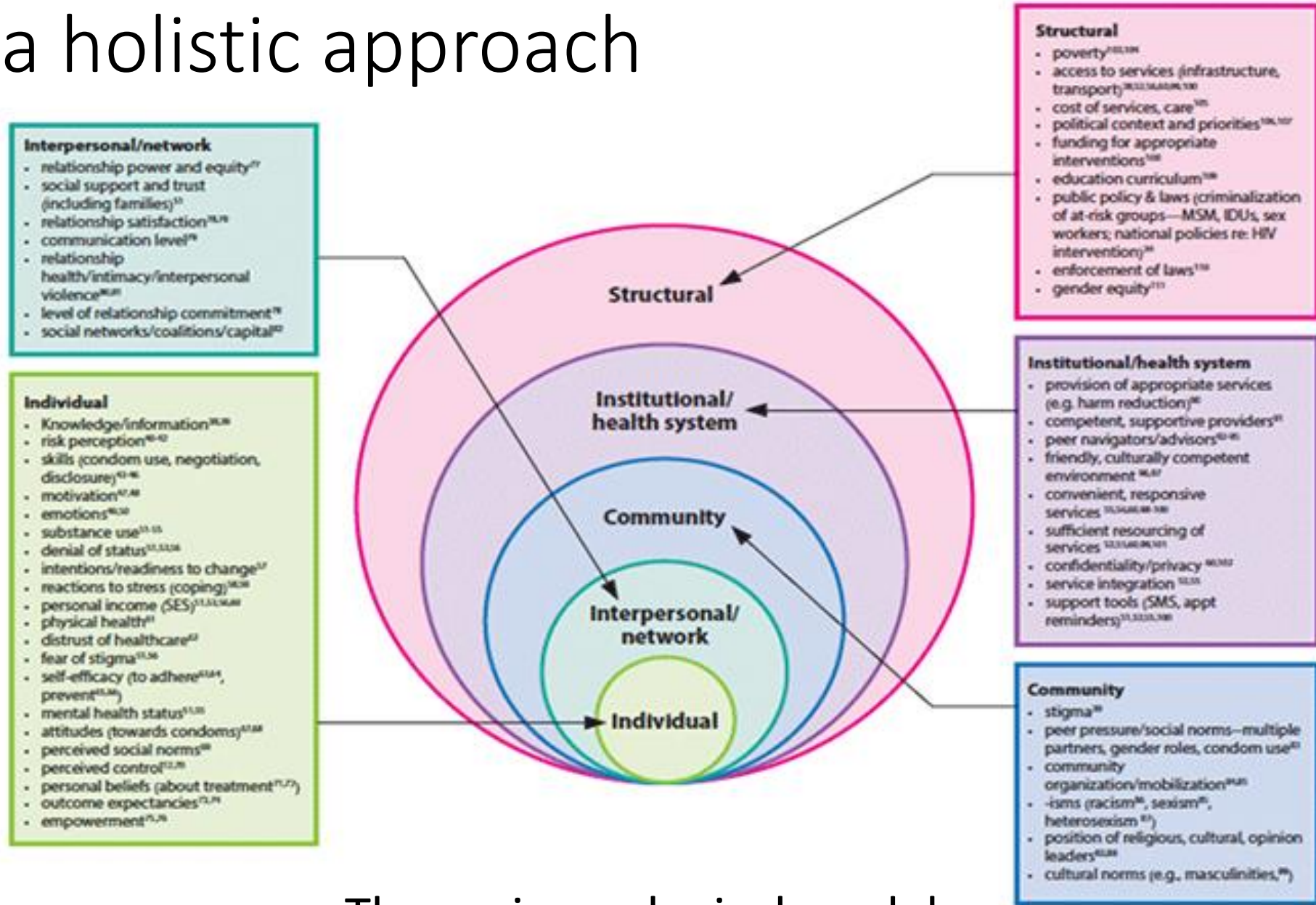
Preliminary findings



- Enthusiasm for the technology with suggestions for improvements
- Expectations for improved efficiency and effectiveness with adherence counseling
- Anticipated improvement in adherence through both use of the monitor and the SMS interventions
- Few concerns for privacy and confidentiality

- Time and motion studies show optimal engagement with triage nursing and counselors (not physicians)

Taking a holistic approach



The socio-ecological model

Cochrane review of adherence interventions

- 182 randomized controlled trials
- Highly heterogeneous and biased
- RCTs at lowest risk for bias involved complex interventions, tailored ongoing support from allied health professionals, often involved education/counseling or daily support (e.g., family/peers)
- 5 interventions improved both adherence and clinical outcomes, albeit with moderate effect sizes
- Recommendations for research
 - Improved design of feasible long-term interventions
 - Objective adherence measures
 - Power to detect improvement in patient-important clinical outcomes

Adherence improves...

- When patients understand what they are taking and why they are taking it
- When getting the medication is easy and affordable
- When support is available when taking medication is hard

- Our job is to design health care delivery systems accordingly
- A key missing piece is understanding when systems are failing patients... that is where monitoring is needed

Summary

- Adherence monitoring is poorly implemented for most routine clinical care
- Numerous evidence-based adherence interventions exist, but are often not implemented
- Differentiated care has been developed within HIV care delivery systems with good effect
- Potential still exists for further benefit (e.g., efficiency and improved clinical outcomes) by combining differentiated with effective adherence monitoring

Acknowledgements

- Study staff and participants
- K24MH114732
- Co-presenters

