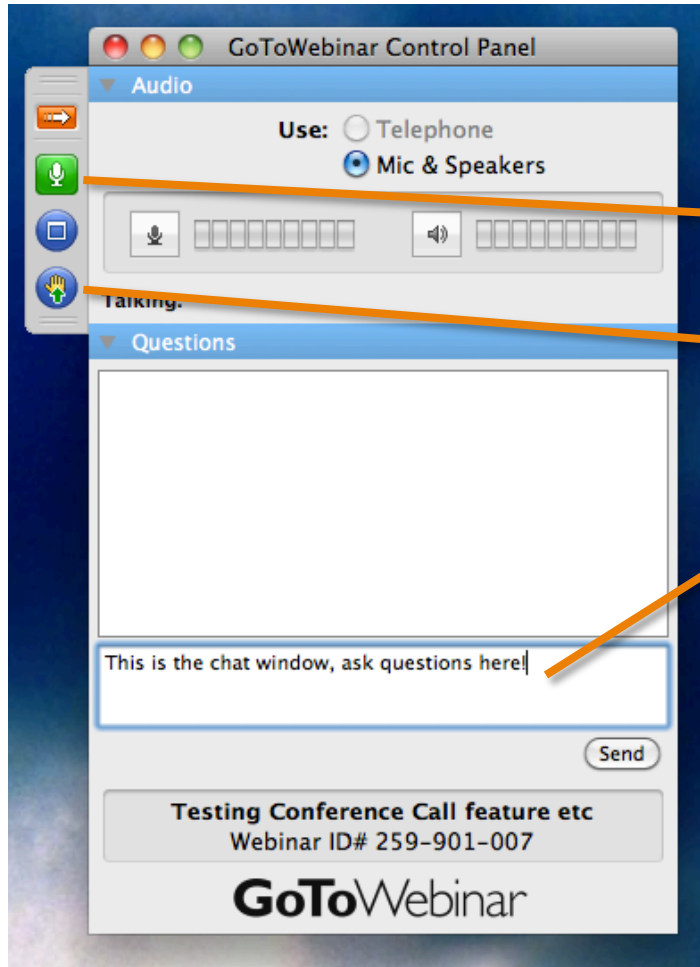


Welcome HIV QI Network!

Please familiarize yourself with the control panel. The webinar will begin at 9:00 am.



Mute / unmute bottom: ensure is green (unmuted)

Raise your hand

Chat box: Type questions for the moderator.

Welcome!

Engaging clients in care with mobile communication technologies:

Evidence, experiences, resources and dialogue

HIV Quality Improvement Network

Tuesday April 30th | 9:00 – 10:00 am



BRITISH COLUMBIA
CENTRE for EXCELLENCE
in HIV/AIDS

Overview

Dr. Richard Lester	Use of mobile technologies to engage clients in care, examples from WelTel in Kenya	15 min
Misty Bath	Implementation policies to support mobile technologies	10 min
Janice Jespersen	Experiences in practice: How we're using text messaging in the Health Outreach Program, Port Alberni	5 min
Karen Friesen	Experiences in practice: stories from the WelTel pilot at Oak Tree Clinic	5 min
	Questions & Dialogue	25 min





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Use of mobile technologies to engage clients in care, examples from WeTel in Kenya

Richard Lester, MD, FRCPC
Medical Head, STI/HIV Services, BCCDC
Founder, WeTel

Webinar: BC HIV quality Improvement
April 30th 2013, Vancouver, BC

Disclosures

Non-corporate

- PEPFAR
- CDC/CDC Foundation
- WHO
- BCCDC Foundation
- BC Lung Association
- IDRC/GHRI
- AMMI/CIHR/BMS
- Gates Foundation
- ICID (UManitoba)
- Grand Challenges Canada
- NIH
- CIHR

Corporate

- Bristol-Myers-Squibb
(WeITel NFP)

Conferences & speaking

- Abbott
- Nova clinical
- Merck
- Pfizer
- Maybe others

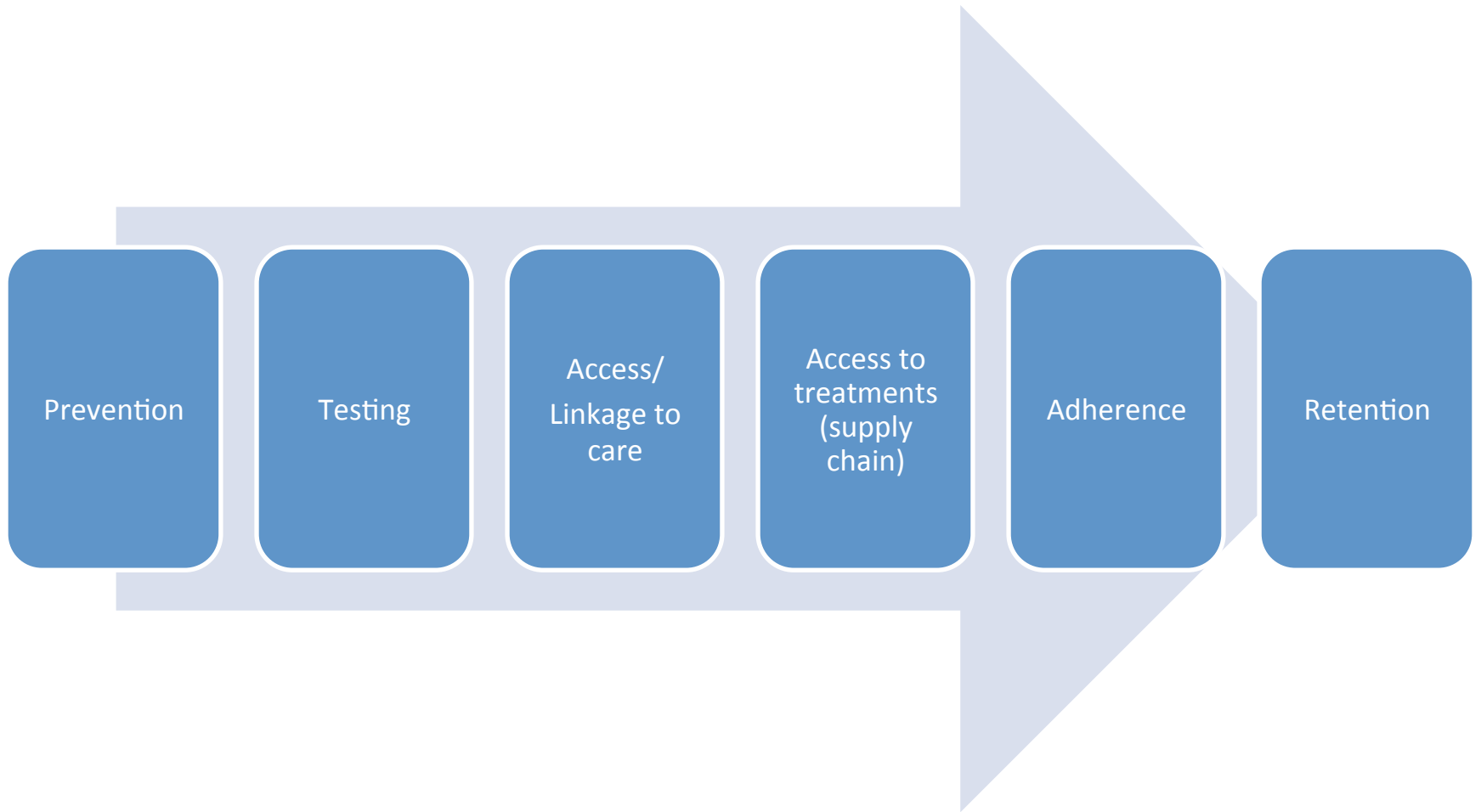
mHealth: mobile technologies for health purposes

- **mHealth** (also written as **m-health** or **mobile health**) is a term used for the practice of medicine and public health, supported by mobile devices. (*Wikipedia.org*)

- Education and awareness
 - Helpline
 - Diagnostic and treatment support
 - Communication and training for healthcare workers
 - Disease and epidemic outbreak tracking
 - Remote monitoring
 - Remote data collection
- ...more



HIV Cascade of care



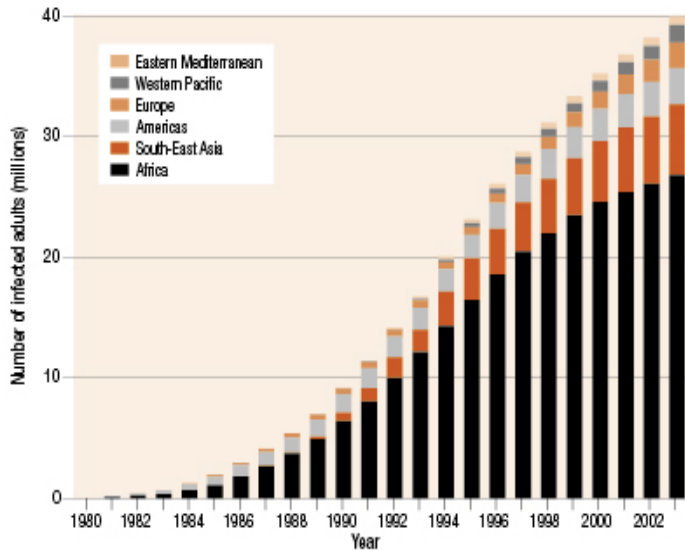
mPhones & Global Health



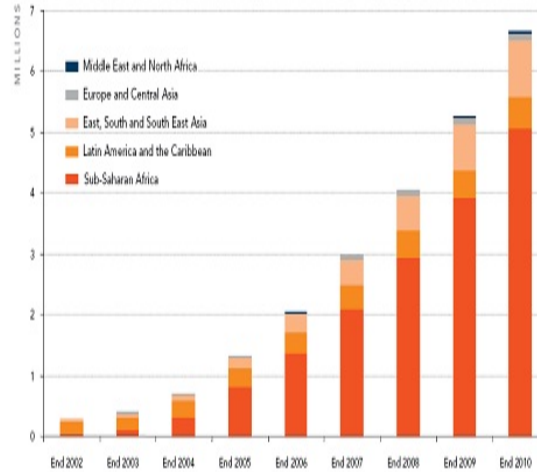
Problem: People living with HIV

Response: People on ART

People with mobile phones



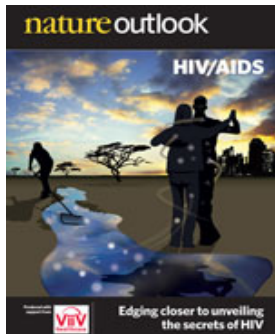
Access to antiretroviral treatment, by region, 2002 - 2010



Can cellphones improve HIV care?

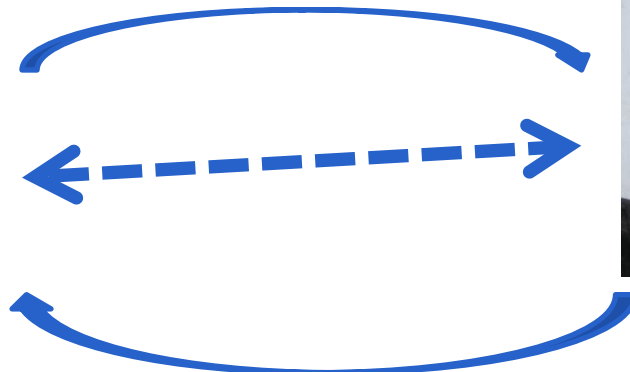
Developing solutions

There is more to combating HIV in the developing world than providing affordable drugs. **T. V. Padma** looks at the innovative new strategies being employed.



“Mambo?”

The single Kiswahili word for “How are you?” arrives in a weekly text message from the AIDS clinic in Nairobi.



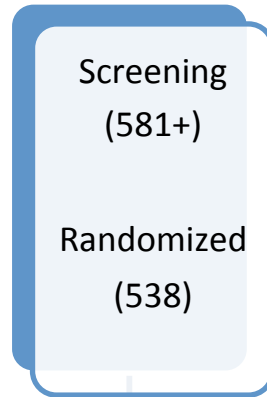


WelTel Kenya1: RCT



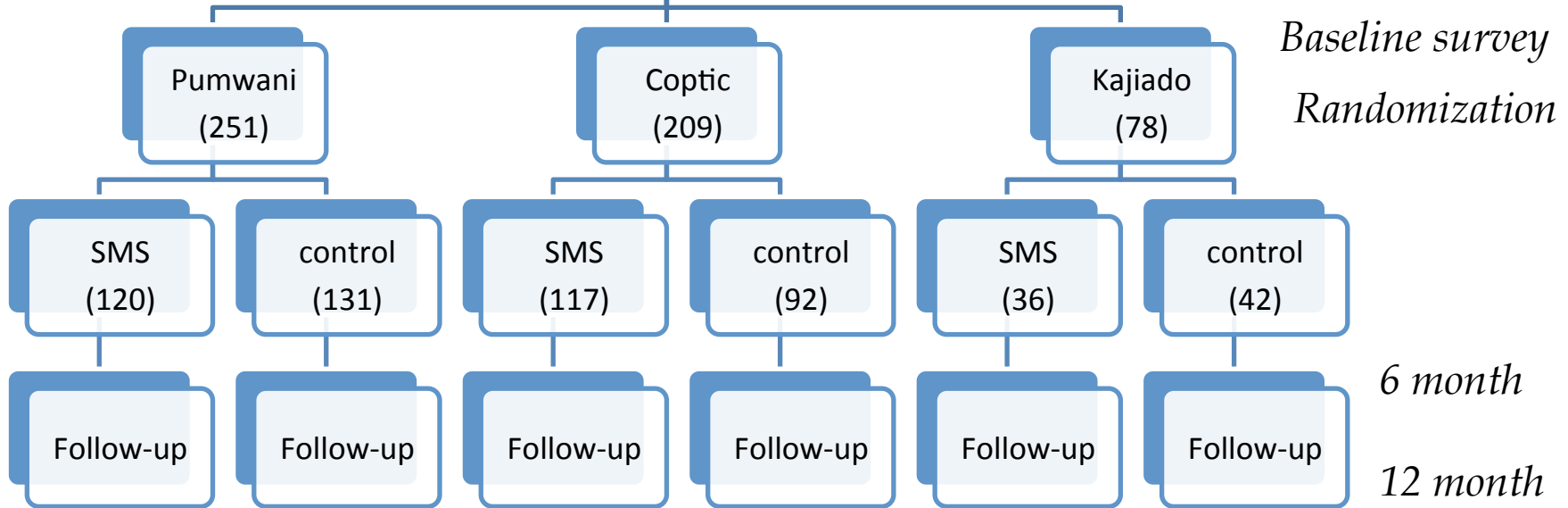
Exclusion (44)

Inadequate phone access
Refused/Unable



Inclusion

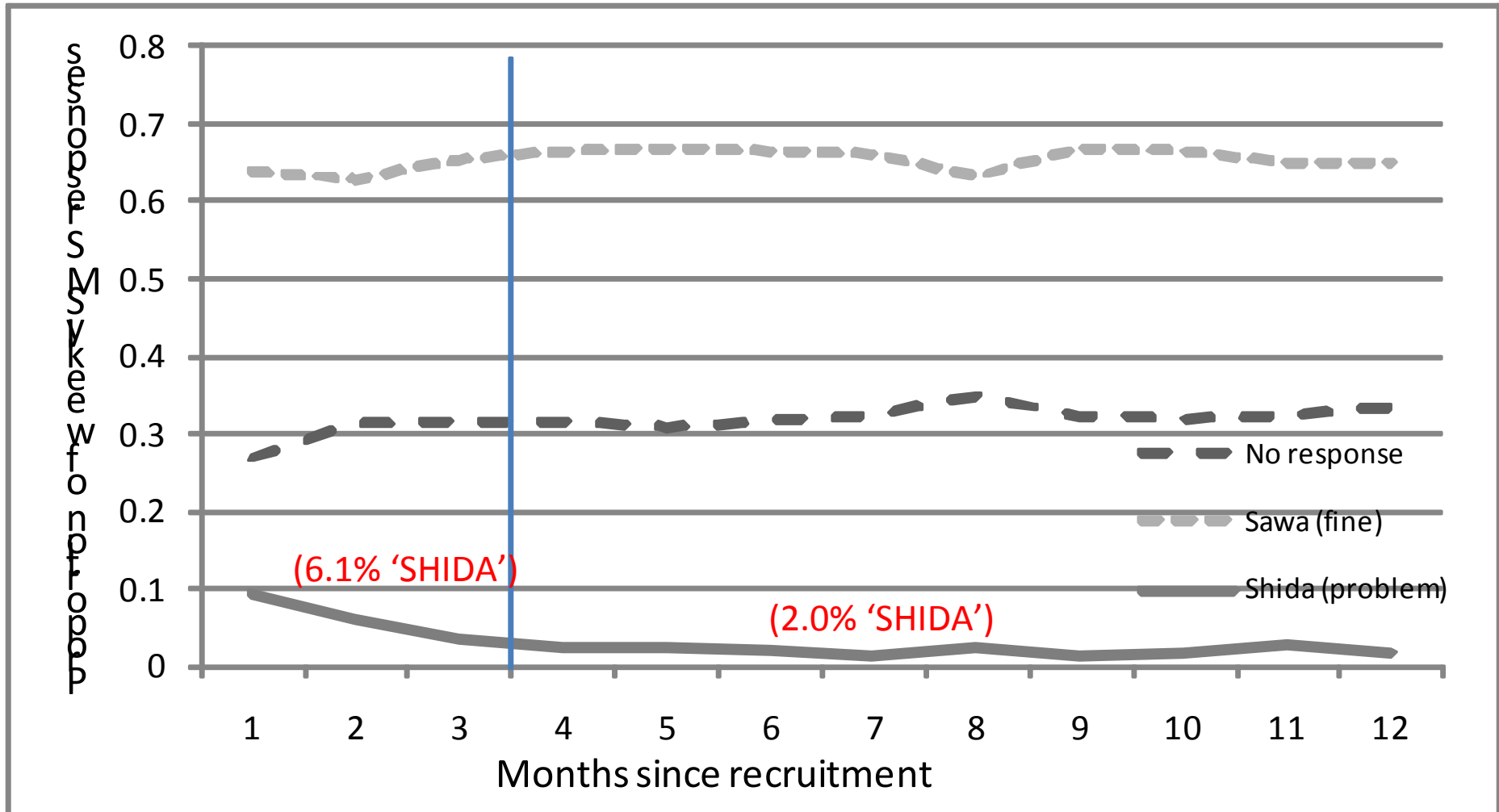
Adults (≥ 18 years) starting ART
Adequate phone access (owned/shared)
Informed consent



Powered to show 10% improvement in adherence

SMS n=273
Control n=265

Health worker efficiency (WeTel Kenya1).



n=11,983 SMS logs

– <http://www.scientificamerican.com/podcast/episode.cfm?id=text-message-outreach-improves-hiv-10-11-10>

WelTel Kenya1: Weekly SMS Check-ins

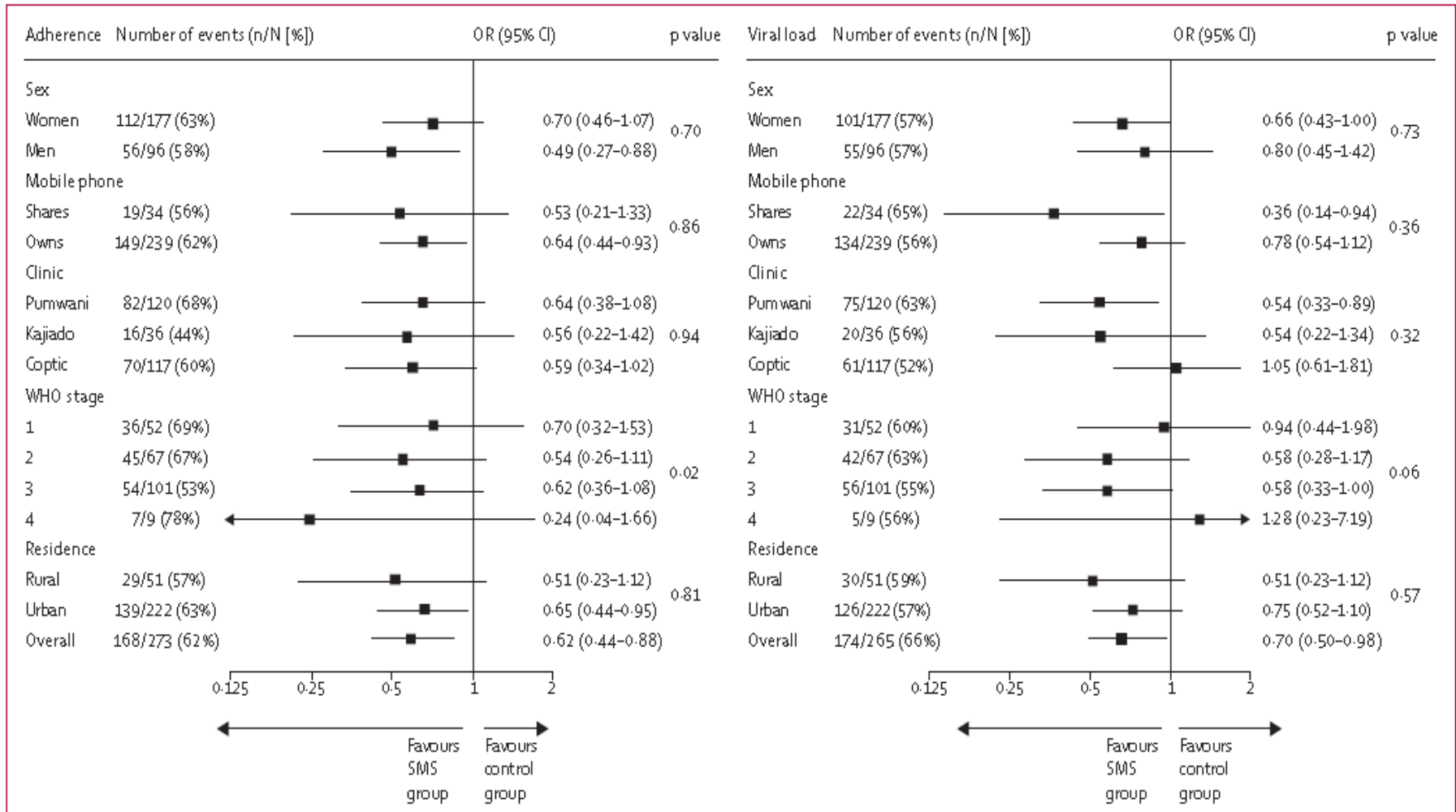


Figure 2: Subgroup analyses

Estimated intervention effects are reported as ORs and 95% CIs for risk of failure. p values for heterogeneity were derived from likelihood ratio statistics. OR=odds ratio. Lester et al. 2010

a. Improved adherence by 24%

b. Improved viral suppression by 19%

Table 3. Reasons for responding with a problem to the weekly SMS.

Reason	Problem responses [§]	Unique problem responses [^]
Total	377 (100)	140 (100)
Health issues	272 (72)	121 (86)
Gastrointestinal (abdominal pain, vomiting, etc.)	67 (18)	49 (35)
General malaise	68 (18)	40 (30)
Neurological (headache, back pain, etc.)	60 (16)	42 (28)
Respiratory (coughing, chest pain, dyspnea, etc.)	57 (15)	41 (29)
Dermatological (rash, itching, blisters, etc.)	43 (11)	21 (15)
In hospital	21 (6)	13 (9)
Oedema	12 (3)	9 (6)
Loss of appetite	11 (3)	9 (6)
Genitourinary (genital sores, discharge, etc.)	6 (2)	6 (4)
Other (palpitations, vision problems, etc.)	31 (8)	28 (20)
Other – unspecified	7 (2)	7 (5)
Non-health issues	40 (11)	33 (24)
Personal	13 (3)	11 (8)
Logistical – medication-related	13 (3)	11 (8)
Logistical – cell phone-related	9 (2)	9 (6)
Logistical – appointment-related	7 (2)	7 (5)
Data unavailable	67 (18)	50 (36)
Unreachable	32 (9)	22 (16)
Missing	27(7)	23 (16)
Unable to discuss	8 (2)	5 (4)

*Figures are numbers (percentages). Percentages do not sum to 100 because of non-mutually exclusive response categories.

[§]Includes repeat problems (i.e. includes problems indicated by the same participant on more than one occasion in response to the outgoing weekly “Mambo?” text message).

[^]Excludes repeat problems (i.e. only includes the first time a participant reported a particular problem; excludes reports of problems by the same participant for the same reason in subsequent weeks).

doi:10.1371/journal.pone.0046033.t003

van der Kop ML, Karanja S, Thabane L, Marra C, et al. (2012) In-Depth Analysis of Patient-Clinician Cell Phone Communication during the WeTel Kenya1 Antiretroviral Adherence Trial. PLoS ONE 7(9): e46033. doi:10.1371/journal.pone.0046033

<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0046033>

WeiTel: How does it work?

“often just knowing that we have supports that are there or knowing that we have the backup or the ability to make contact relieves so much anxiety.”

-Participant 24, Remote



What works?



What doesn't?

Two Randomized Controlled Trials (Kenya)

Articles



antiretroviral treatment adherence in Kenya (WeTel Kenya1): a randomised trial

Richard T. Lester, Paul Ritvo, Edward J. Mills, Antony Kariri, Sarah Karanja, Michael H. Chung, William Jack, James Habyarimana, Mohsen Sadatsafavi, Mehdi Najafzadeh, Carlo A. Marra, Benson Estambale, Elizabeth Ngugi, T. Blake Ball, Lehana Thabane, Lawrence J. Gelman, Joshua Kimani, Maria Ackers, Francis A. Plummer

Summary

Background Mobile cell phone communication has been suggested as a method to improve delivery of health services.

WeTel weekly SMS check-ins (two way):

- *24% improvement in achieving 95% adherence over 1y
- *19% improvement in achieving viral suppression at 1y

(NNT = 9 & 11)

Interpretation Patients who received SMS support had significantly improved ART adherence and rates of viral suppression compared with the control individuals. Mobile phones might be effective tools to improve patient outcome in resource-limited settings.

Funding US President's Emergency Plan for AIDS Relief.

Psychology, York University, York, ON, Canada (P. Ritvo PhD); Faculty of Health Sciences, University of Ottawa, Ottawa, ON, Canada (E. Mills PhD); Department of Global Health, Harvard School of Public Health, Boston, MA, USA (R. Lester);

Mobile phone technologies improve adherence to antiretroviral treatment in a resource-limited setting: a randomized controlled trial of text message reminders

Cristian Pop-Eleches^{a,b,*}, Harsha Thirumurthy^{c,d,*}, James P. Habyarimana^{e,*}, Joshua G. Zivin^f, Markus P. Goldstein^g, Damien de Walque^g, Leslie Mackeen^h, Jessica Haberer^{i,o}, Sylvester Kimaiyo^j, John Siddle^{k,l}, Duncan Ngarere^m and David R. Bangsberg^{n,p}

Objective There is limited evidence on whether improving mobile phone availability in

SMS reminders/motivation (one way):

- *Weekly (short) messages 32% improvement in 90% adherence (MEMS) over 1y
- *9% decrease in treatment interruptions
- *No adherence improvement with daily, longer reminders
- *No viral load/clinical outcomes

Nov 27, 2010

March 27, 2011

Western Kenya RCT: One-way SMS 'reminders'

Pop-Eleches et al. *AIDS*, 2011

Table 1. Content of short and long short message service reminders.

	English	Swahili	Dholuo
Short reminder	This is your reminder.	Hili ni kumbukumbu lako.	Ma en ote ma iparonigo.
Long reminder	This is your reminder. Be strong and courageous, we care about you.	Hili ni kumbukumbu lako. Uwe na ujasiri, tunakujali.	Ma en ote ma iparonigo. Bed motegno kendo bed gi chir, wageni.

Table 3. Proportion of at least 90% adherence according to intervention type by intention-to-treat and missing equals failure analysis.

	Time (weeks)				
	1–12	13–24	25–36	37–48	1–48
Summary groups					
Control (N = 139)	0.60	0.51	0.48	0.46	0.40
Daily (all) (N = 142)	0.60 (0.98)	0.54 (0.60)	0.44 (0.52)	0.46 (0.96)	0.41 (0.92)
Weekly (all) (N = 147)	0.63 (0.54)	0.58 (0.25)	0.54 (0.35)	0.54 (0.19)	0.53 (0.03)*
Short (all) (N = 143)	0.60 (0.94)	0.54 (0.64)	0.49 (0.90)	0.50 (0.54)	0.47 (0.27)
Long (all) (N = 146)	0.63 (0.57)	0.58 (0.23)	0.49 (0.85)	0.50 (0.50)	0.47 (0.24)
Subgroups					
Daily, short (N = 70)	0.56 (0.58)	0.51 (0.96)	0.49 (0.96)	0.46 (0.96)	0.40 (0.97)
Weekly, short (N = 73)	0.64 (0.51)	0.56 (0.48)	0.49 (0.88)	0.53 (0.31)	0.53 (0.07)
Daily, long (N = 72)	0.64 (0.56)	0.57 (0.42)	0.40 (0.27)	0.46 (0.98)	0.42 (0.85)
Weekly, long (N = 74)	0.62 (0.73)	0.59 (0.24)	0.58 (0.17)	0.54 (0.27)	0.53 (0.08)
Any treatment (N = 289)	0.62 (0.71)	0.56 (0.33)	0.49 (0.86)	0.50 (0.46)	0.47 (0.19)

P-value from comparison of each intervention group with control group is indicated in parentheses.

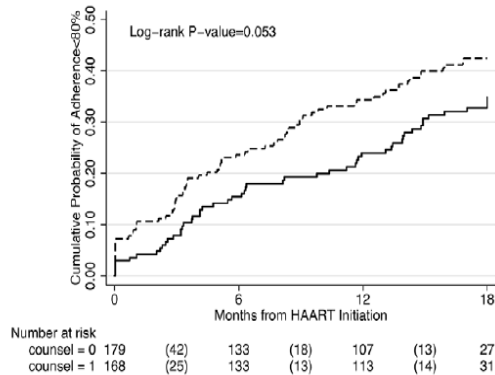
*P < 0.05.

Adherence by **MEMS caps**: daily vs. weekly & long vs. short reminders (VL not available.)

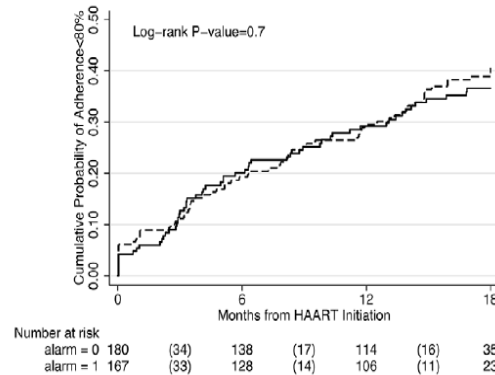
Reminders or Support?

A Adherence

Counseling



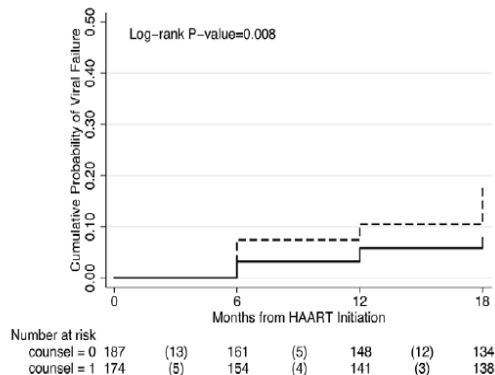
Alarm



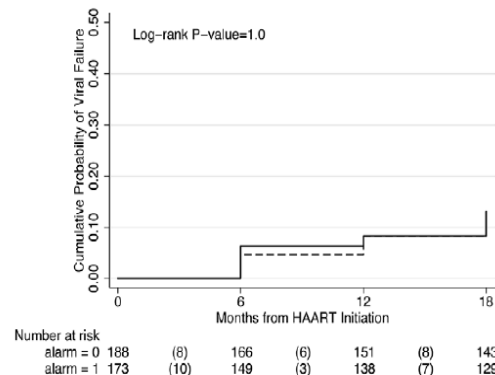
- Targeted adherence counselling
 - persistent effect on adherence and viral suppression

B Viral Failure

Counseling



Alarm



- A medication reminder alarm device
 - no effect on adherence or viral suppression



**THE COCHRANE
COLLABORATION®**

Horvath T, Azman H, Kennedy GE, Rutherford GW

243 references ID'd to Nov 2011:

Authors' conclusions

There is high-quality evidence from the two RCTs that mobile phone text-messaging at weekly intervals is efficacious in enhancing adherence to ART, compared to standard care. There is high quality evidence from one trial that weekly mobile phone text-messaging is efficacious in improving HIV viral load suppression. Policy-makers should consider funding programs proposing to provide weekly mobile phone text-messaging as a means for promoting adherence to antiretroviral therapy. Clinics and hospitals should consider implementing such programs. There is a need for large RCTs of this intervention in adolescent populations, as well as in high-income countries.

Guidelines for Improving Entry Into and Retention in Care and Antiretroviral Adherence for Persons With HIV: Evidence-Based Recommendations From an International Association of Physicians in AIDS Care Panel

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

An adherence benefit of dose-time reminder alarms has been reported (64, 65). Strategies using cellular technology (short message service communication) have demonstrated improvement in adherence and HIV-1 RNA. Methods ranged from texting dosing reminders with or without requesting a response (66–68) to texting weekly check-ins from the clinic with telephone follow-up for those requesting it (69). One study found better ART adherence was achieved with use of texting with expected reply (interactive) than simple 1-way reminders (66).

Would WeTel SMS be cost effective or cost saving?

Bella Hwang – mHealth Summit 2011

WeTel: PEPFAR (2.485M

+230,000 suppressed

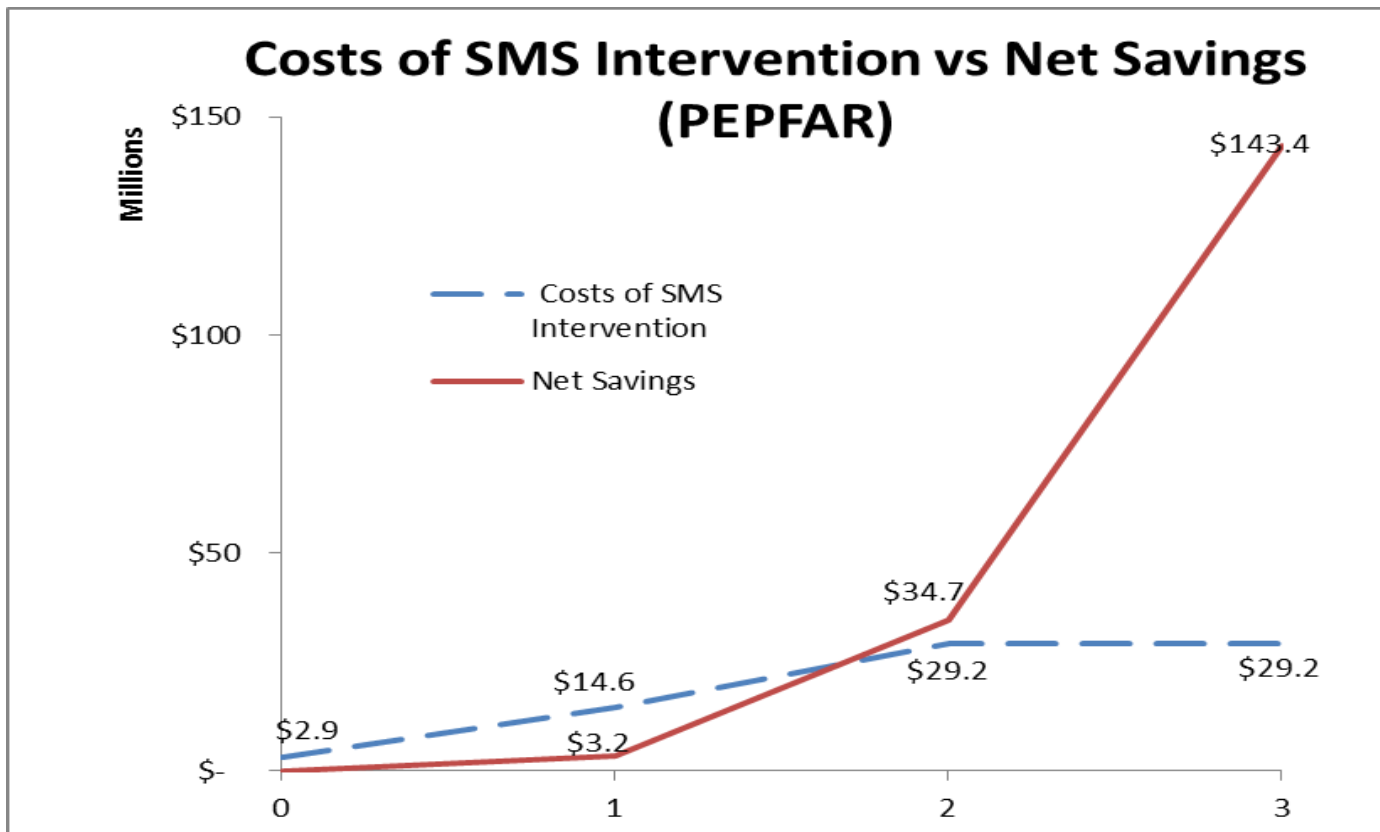
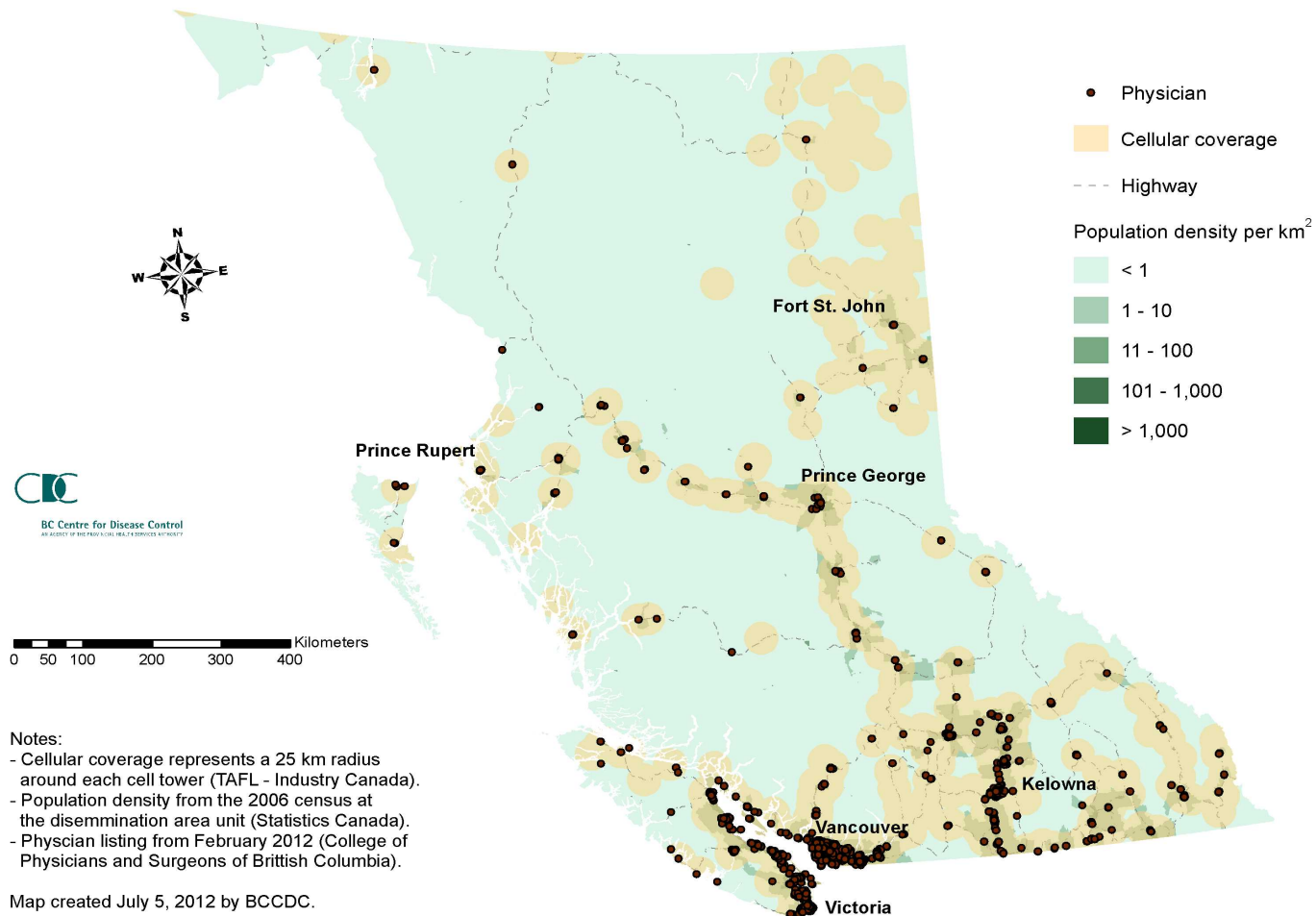


Figure . Costs of SMS Intervention vs. Costs Savings over 3 years for PEPFAR Global Cohort on ART (2.485M patients)

What about BC?

Geographic Distribution of Cellular Coverage and Physicians in British Columbia, 2012



CDC
BC Centre for Disease Control
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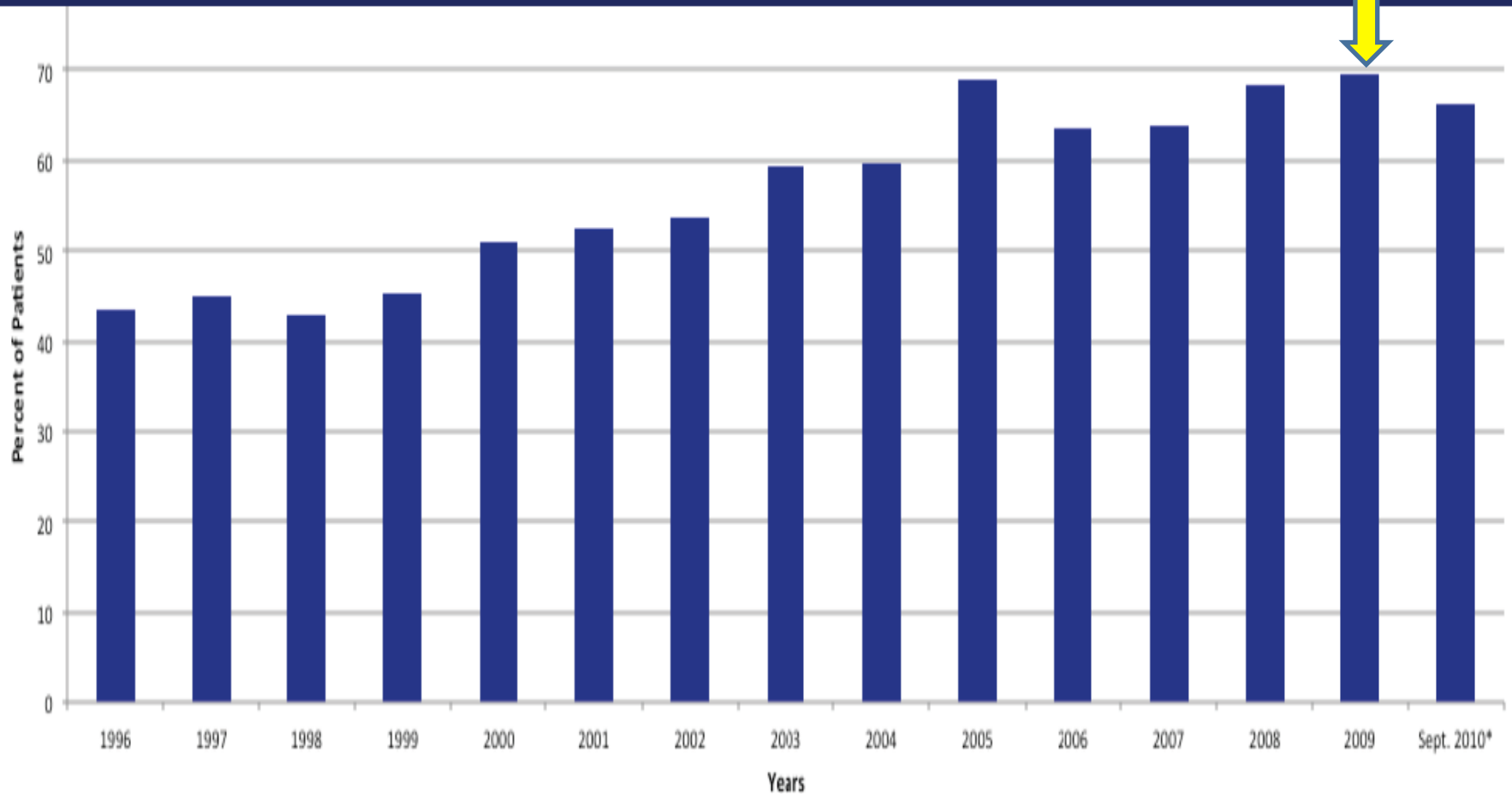


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Adherence $\geq 95\%$

(based on 1st year refill compliance) \uparrow 30+%





mHealth: How to Deliver?

WelTel SMS automated platform

www.welTel.org

welTel.verticallabs.ca/welTel/dashboard/study



WelTel International mHealth Society & Vertical Labs

Your health, in your hands.

June 21, 2012 15:

Login Successful

Overview

To Do

Patients

Templates

Dictionary

Users

Roles

Clinics

Logout

Pending

Unknown

OK

Not OK

Late

Find Patient

Search on the Patients page if you are looking for a patient whose study may not have begun.



Support: Bristol-Myers Squibb (BMS) through BCCDC Foundation

My take home messages

- **Keep it simple**
 - *Every extra step (complexity) loses someone*
- **Respect privacy**
 - *Stigma, security, standards*
- **Keep it low cost**
 - *Cost-effective, vulnerable groups*
- **Follow the evidence**
 - *What really works, and what doesn't?*

Richard.lester@bccdc.ca

Thank you.



BC Drug and Poison Information Centre - Poison Control Service 1.800.567.8911



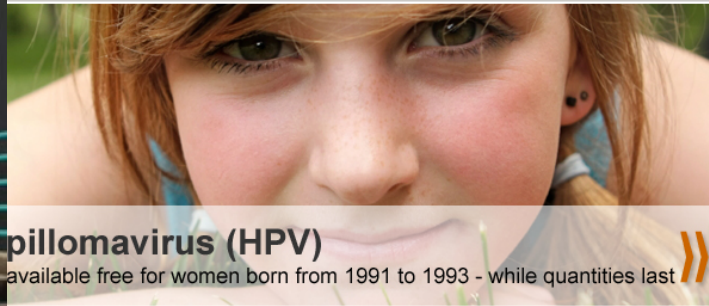
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illomavirus (HPV)
available free for women born from 1991 to 1993 - while quantities last

INFORMATION FOR...

- Health Professionals
- Aboriginal Peoples
- Media
- Travellers



NEW: Follow the BCCDC on Twitter

HEALTH ALERTS

- [Outbreak of Salmonella illness related to mangoes](#) August 27, 2012
- [Advisory - shellfish safety](#) July 26, 2012
- [Before travelling ensure your measles vaccination is up to date](#) May 1, 2012
- [People who have consumed Pomeberry Blend frozen berries in past 14 days may be eligible for hepatitis A vaccine](#) April 11, 2012
- [Pomeberry frozen berries may contain hepatitis A](#) April 5, 2012

[More Health Alerts](#)

CURRENT STATISTICS & RESEARCH

TOP 10



NEWS

[BCCDC supports flu vaccine for health care workers](#) August 23, 2012



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Clinical  Preventio
Services

Implementation Policies to Support Mobile Technologies

HIV QI Network-Webinar: Engaging Clients with Mobile Technology

Misty Bath RN(C), BSN, MPH

April. 30, 2013



Existing Guidelines

- Established in August 2012 for use in Youth populations
- Guidelines are specific for use with youth accessing VCH Public Health services
- Inclusive for texting and email
- The VCH Privacy Office is developing similar guidance for other VCH programs/services

Addressing Privacy & Safety

- Primarily addressed via the Youth Services Agreement, which clients sign
- Clients free to indicate what methods of communication they prefer to engage with
- VCH outlines our commitments and limitations in regards to using mobile tech

General Guidance: texting & email

- Attempts to contact made by phone first
- Releasing clinical information is discouraged
- Lengthy clinical discussions are discouraged
- All texts/emails to be deleted when follow-up completed & care documented in client record

General Guidance: texting & email

- Use of personal cell phones to contact clients is not allowed
- Clinic phones are password protected, numbers are not stored in the phone and the phone does not leave a secured, staff-only area
- One staff assigned to manage text/email follow-up

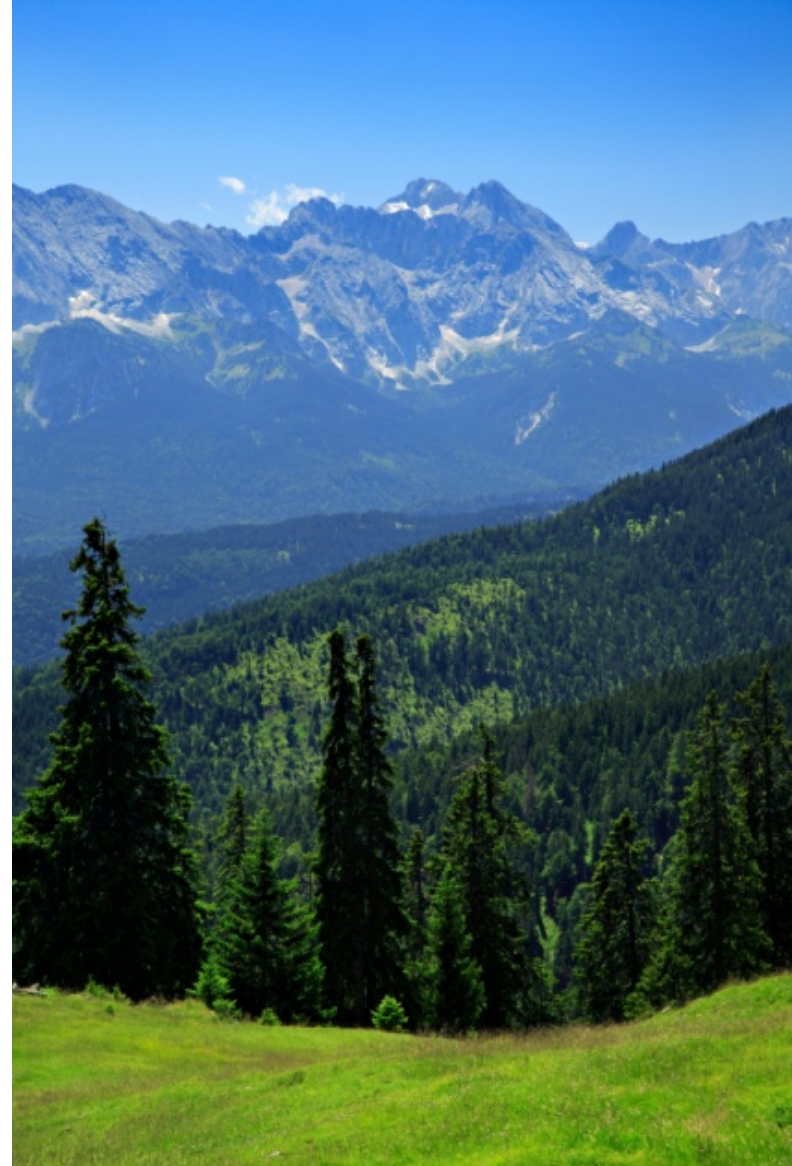
Experience to Date

- Most Youth Clinics have established shared email accounts & procured a designated clinic cell phone
- All clinics have developed workflows to initiate/respond to client texts & emails
- 1 site uses this method of communication daily with clients
- No negative response from clients or staff

PORT ALBERNI Health Outreach Program



Use of Text Messaging in
Support of STOP HIV/AIDS
Core Measures



Janice Jespersen

HOP OBJECTIVES



- To provide outreach services to individuals who face challenges in accessing the health system
- To find creative and innovative ways to extend health services to where the target population is located
- To support clients in self-management of their health care

Text Messaging Supports our Collaborative Core Measures

- Engaging clients lost to care
- Improving attendance at clinics
- Improved testing for Viral Load
- Improving uptake of Antiretroviral Therapy
- Improving client satisfaction with our program



Engaging Clients Lost to Care

- ▶ Transient clients, clients heavily into substance use, homeless, those involved in illicit business, can be the most difficult clients to connect to.
- ▶ When these individuals have cell phones they are often “text only”

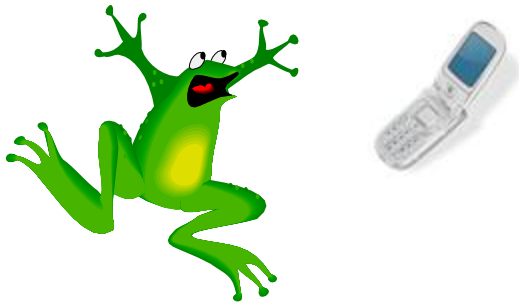


Text Messaging:

- ▶ Provides a point of connection that carries on even through multiple changes of phone numbers
- ▶ Allows contact through friends/family
- ▶ Provides an easy way for clients to re-initiate contact

Improved testing for Viral Load

- ▶ Not many people like getting blood work, but even less so if they are focused on survival or drug-seeking



Text Messaging:

- ▶ Provides reminders
- ▶ Allows for negotiation of incentives where required
- ▶ Connects people to transportation
- ▶ A means of reporting results

Improving uptake of Antiretroviral Therapy

- ▶ Confused lifestyles can make med adherence confusing

Text Messaging:

- ▶ Quick & easy way of sending reminders daily



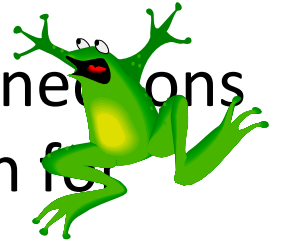
Improving Attendance at Clinics

- ▶ Clients who are on the move, focused on substance use and/or struggling with mental health or cognitive issues have major challenges keeping appointments



Text Messaging:

- ▶ Provides appointment reminders
- ▶ Provides a medium to negotiate incentives if required
- ▶ Allow easier connections to transportation for appointments



Improving client satisfaction with our program

People living in chaotic circumstances have limited control over their lives



Text Messaging:

- ▶ Allows clients easy access to us when they are looking for help.
- ▶ Allows them to set terms of engagement

Our Ground Rules

- Nothing in the text that the client would not want someone else to read
- Identify yourself every time you send a text
- Agree with the client how texting will be used
- Check with client as to how it is working
- Never use a personal phone
- Erase all messages sent and received from the phone
- Use codes in your address book,
not names





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Experiences in Practice:

WelTel BC1: A Pilot Study of Text Messaging to Support Patients with HIV/AIDS in British Columbia at Oak Tree Clinic



Karen Friesen, RN (C) BN, Oak Tree Clinic
Melanie Murray, MD, PhD, FRCPC, Oak Tree Clinic
Sarah Levine, RN BSN MSN (c),
Natasha Van Borek, BA MPH
Juanita Maginley, RN BSN MA





The 5X5 Groups



Youth :13-24 years of age.

Mature: 50 years of age and older.

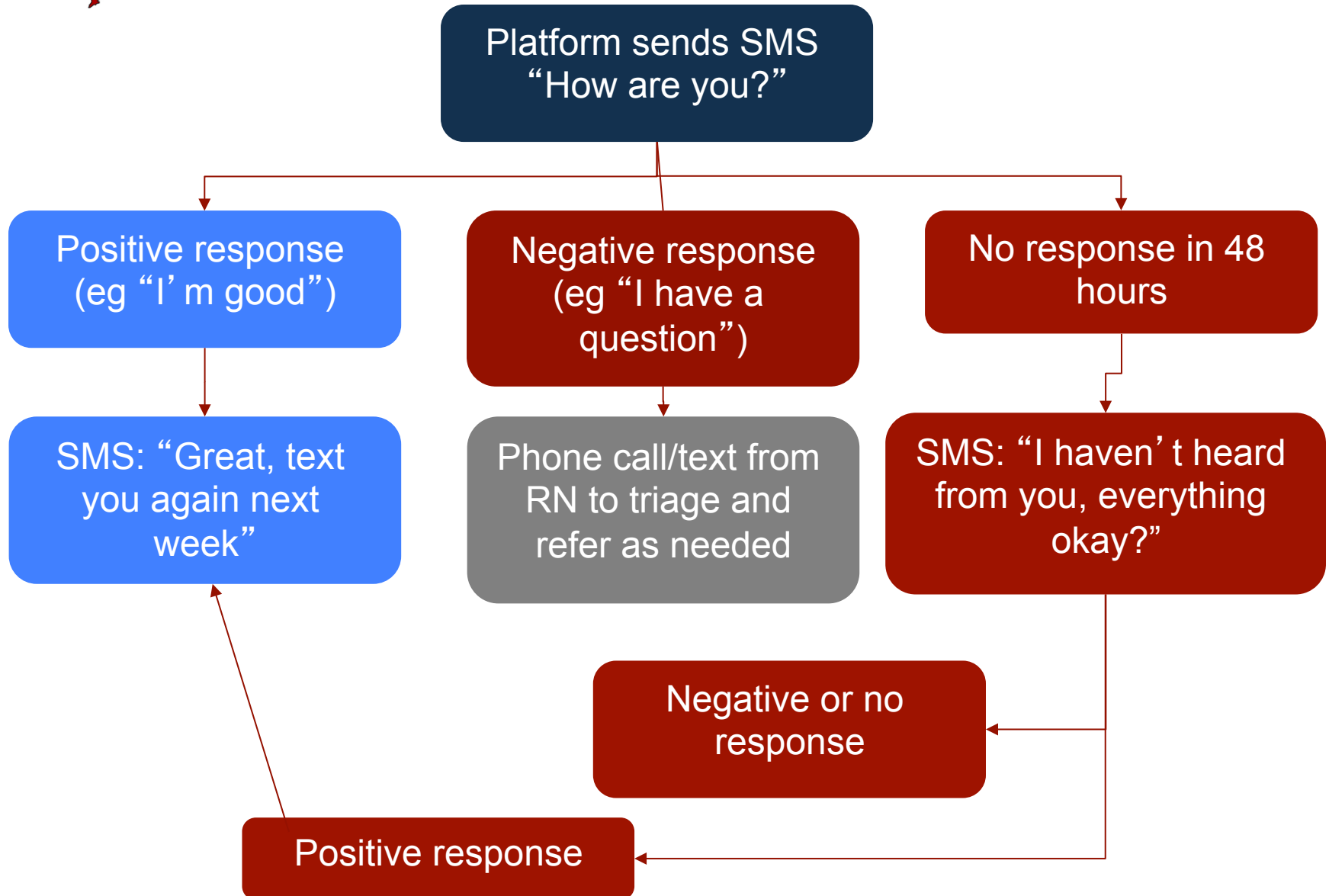
ESL: born outside of Canada, with English as a second language.

Remote: more than 3 hours travel time to reach clinic.

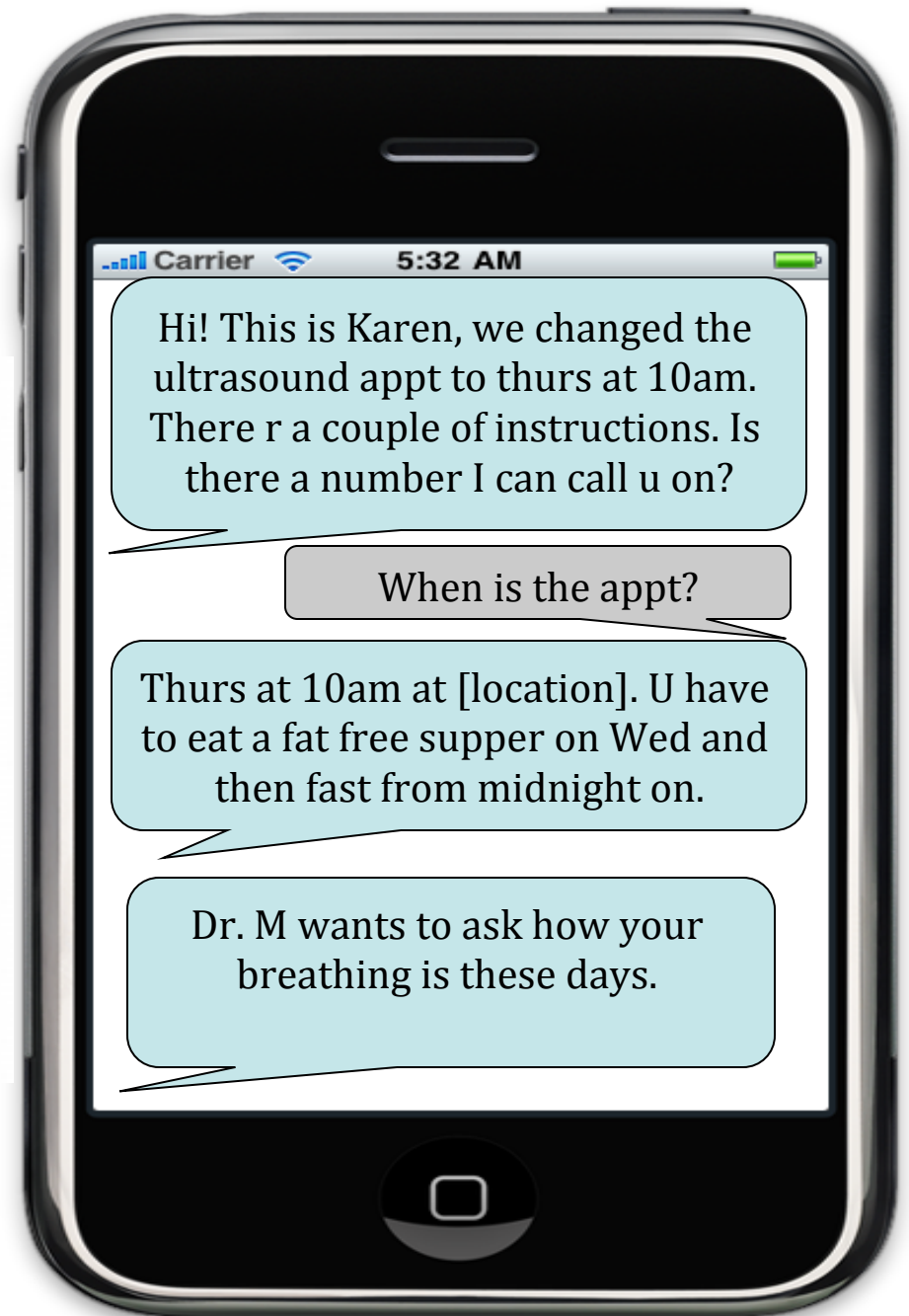
Non-suppressed: CD4 < 200 and viral load >250 on two consecutive occasions.



The Intervention



Nursing practice





Interest in texting

It wouldn't bug me, it would make me think that somebody cares, actually." - *Non suppressed*

I feel like with text messaging you can just ask whatever you want and it's not going to be something that's going to be like embarrassing or, like, I just feel more comfortable texting" - *Youth*

"Just a good reminder as well. You know, little things, and you know, keeping me on track, keeping me in touch, right, that's always a good thing." - *Mature*

"I'm really technology literate, and it would just make my life a lot easier to be able to text my doctor" - *Youth*

I could tell you right now that I have several clients that I think that would really benefit who right now we have no way of communicating with, right, and who are less likely to come to the clinic. - *Healthcare worker*

Texting would be great... I like to stay in contact with Oaktree. It's important to me because I haven't been well. So to be able to have continuous contact with them, and I haven't... because of lack of phone and stable living environment." - *Non suppressed*



Benefits (More identified than we can list here)

- Psycho-social health
- Improved adherence
- Perceived improvement in general health
- Engagement in care
- Improved quality of care
- Learning / improved ability to text

”That we, we’re not alone out there you know, cause sometimes I feel I’m alone, I’m not alone but I feel still very, well, judged with this ailment, and I know that you, as a clinic, that are helpful. I know there’s a positive side.”

– Participant #5, Mature

”My appointment still wasn't like for another couple of weeks, and I felt that I needed to be there like ‘ASAP’ . And through the texting we were able to get me up, within that week.”

– Participant #15, Low CD4

Interviewer: “What would you say are the greatest benefits that you received from being able to send and receive text messages with your healthcare provider?”

Participant: “The greatest thing I got out of that was really learning how to love myself and take care of myself, and value and appreciate myself and my life.”

Interviewer: “And that was through the texting?”

Participant: “Yes it was. It was a very valuable experience for me.”

• **-Participant 10, Low CD4**



Challenges

- Participants' learning how to text
- Assistance required to text
- Language related for ESL group
- Service provider issues
- Participants' changing phone numbers
- No or limited mobile phone reception
- Lost phones



Recommendations

- Keep intervention the same, no changes
- Increase frequency of weekly text
- Vary text message content
- Send text messages in other languages
- Texts to remind to take medications
- Want blood test results via text
- Expansion into other areas



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