Undetectable=untransmittable (U=U) messaging increases uptake of HIV testing among men: Results from a pilot cluster randomized trial

DTHF/ UCT

- Philip Smith
- Andrew Medina-Marino
- Linda-Gail Bekker

U Penn

- Alison Buttenheim
- Laura Schmucker
- Harsha Thirumurthy

UCLA and UCT

- Dvora L. Joseph Davey

Matchboxology

- Cal Bruns

Presented at UNAIDS Global Men & HIV Technical Working Group

Undetectable equals Untransmittable U=U

Can tailored messaging about being U=U increase HIV testing uptake in men?

Background

- Young men have lower rates of HIV testing, prevention and treatment
- High rates of HIV infection, morbidity, mortality
- Solutions need to overcome real and perceived barriers

OPEN ACCESS Freely available online

PLOS | MEDICINE

Gender Differences in Survival among Adult Patients Starting Antiretroviral Therapy in South Africa: A Multicentre Cohort Study

Men are less likely to test

Rates of HIV testing and diagnosis in South Africa: successes and challenges

Johnson, L., et, al. AIDS 2015, 29:1401-1409

THE LANCET
Global Health
Volume 4, Issue 9, September 2016, Pages e642-e653

Articles

Mortality trends and differentials in South Africa from 1997 to 2012: second National Burden of Disease Study

Dr Victoria Pillay-van Wyk PhD [a] ✉, William Msemburi MPhil [a], Ria Laubscher BCom [b], Prof Rob E Dorrington MPhil [c], Pam Groenewald MBCHB [a], Tracy Glass BCom Hons [a], Beatrice Nojilana MPH [a], Jané D Joubert PhD [a], Richard Matzopoulos PhD [a, d], Megan Prinsloo MPH [a], Nadine Nannan MSc [a], Nomonde Gwebushe BSc Hons [b], Theo Vos PhD [e], Nontuthuzelo Somdyala MDS [a], Nomfuneko Sithole MPH [a], Ian Neethling MSc [a], Edward Nicol PhD [a], Anastasia Rossouw FC (Neurol) SA [a], Debbie Bradshaw DPhil [a, d]

Background

- People don’t want to think about their vulnerability
  - “We are sick and tired of hearing about AIDS, AIDS, AIDS!” (Levine & Ross, 2008)
- **Let’s think differently!**

Undetectable = Untransmittable

- PLHIV who take ART and have an
- undetectable viral load (<200 copies/mL)
- cannot sexually transmit HIV

- A compelling formulation of
- “TREATMENT AS PREVENTION” messaging


ORIGINAL ARTICLE

Antiretroviral Therapy for the Prevention of HIV-1 Transmission

M.S. Cohen, Y.Q. Chen, M. McCauley, T. Gamble, M.C. Hosseinipour, N. Kumarasamy, J.G. Hakim, J. Kumwenda, B. Grinsztejn, J.H.S. Pilotto, S.V. Godbole, S. Chariyalertsak, B.R. Santos, K.H. Mayer, I.F. Hoffman, S.H. Eshleman, E. Piwowar-Manning, L. Cottle, X.C. Zhang, J. Makhema, L.A. Mills, R. Panchia, S. Faesen, J. Eron, J. Gallant, D. Havlir, S. Swindells, V. Elharrar, D. Burns, T.E. Taha, K. Nielsen-Saines, D.D. Celentano, M. Essex, S.E. Hudelson, A.D. Redd, and T.R. Fleming, for the HPTN 052 Study Team*

tigation

ctivity Without Condoms and
nsmission in Serodifferent Co
e HIV-Positive Partner Is Usi
Antiretroviral Therapy

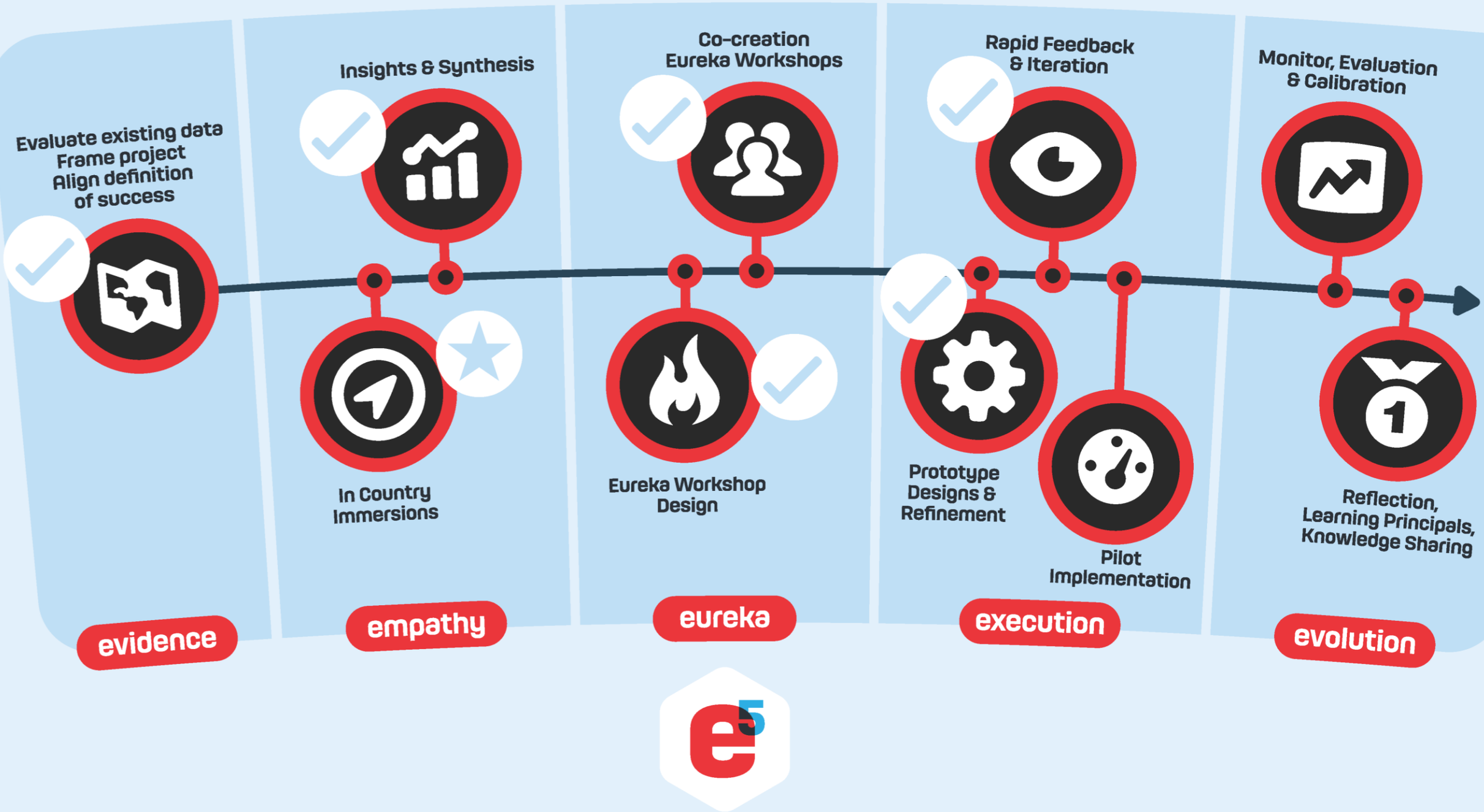
Valentina Cambiano, PhD[1]; Tina Bruun, RN[2]; et al

HE LANCET
393, Issue 10189, 15–21 June 2019, Pages 2428-2438

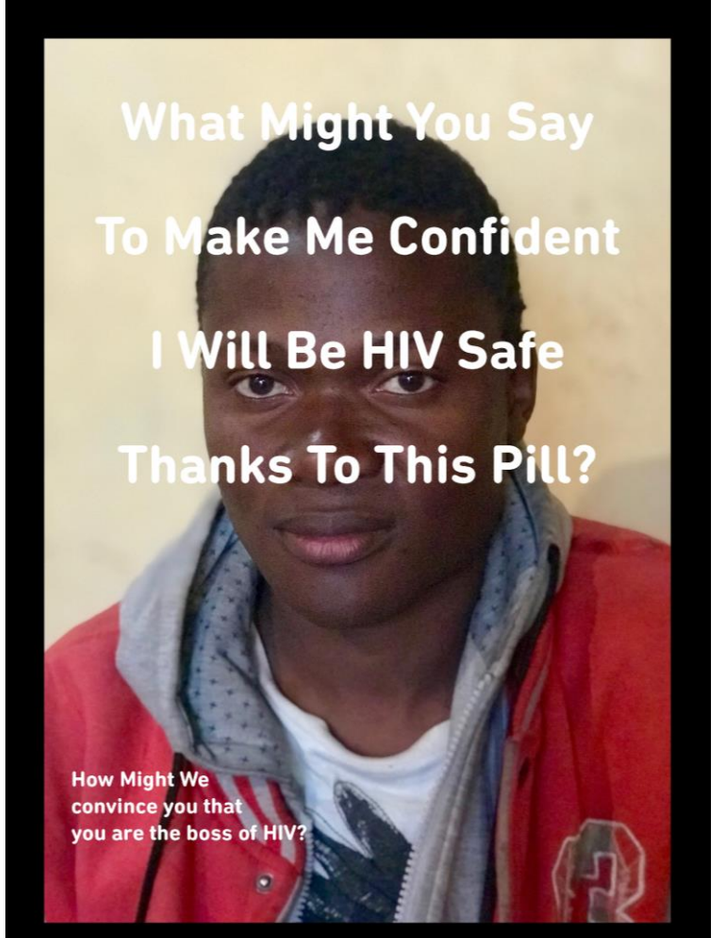
of HIV transmission through condomless
n serodifferent gay couples with the HIV-
tive partner taking suppressive antiretrovi
apy (PARTNER): final results of a multicen
pective, observational study

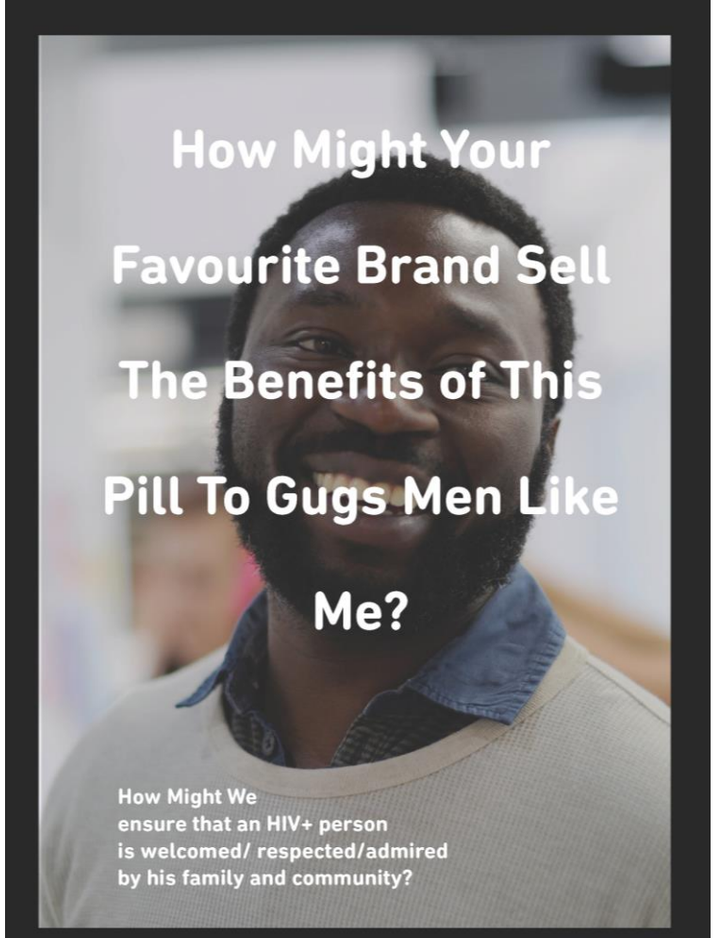
J Rodger FRCP [a], Valentina Cambiano PhD [a], Tina Bruun RN [b], Prof Pietro Vernazza MD [c],

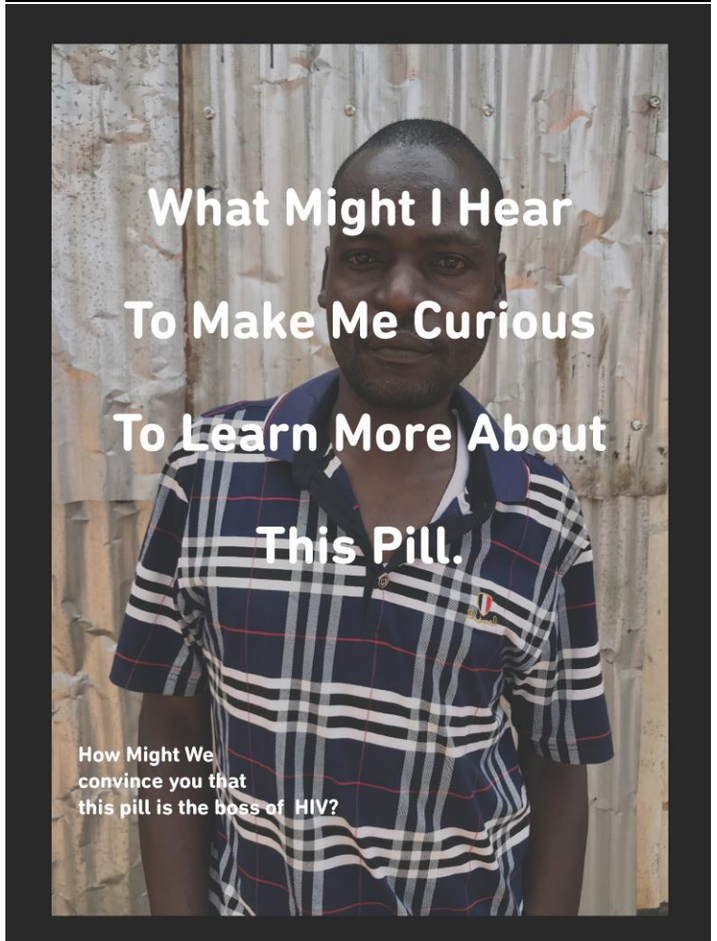
matchboxology



Co-creating the U=U message


What Might You Say
To Make Me Confident
I Will Be HIV Safe
Thanks To This Pill?
How Might We
convince you that
you are the boss of HIV?


How Might Your
Favourite Brand Sell
The Benefits of This
Pill To Gugs Men Like
Me?
How Might We
ensure that an HIV+ person
is welcomed/ respected/admired
by his family and community?


What Might I Hear
To Make Me Curious
To Learn More About
This Pill.
How Might We
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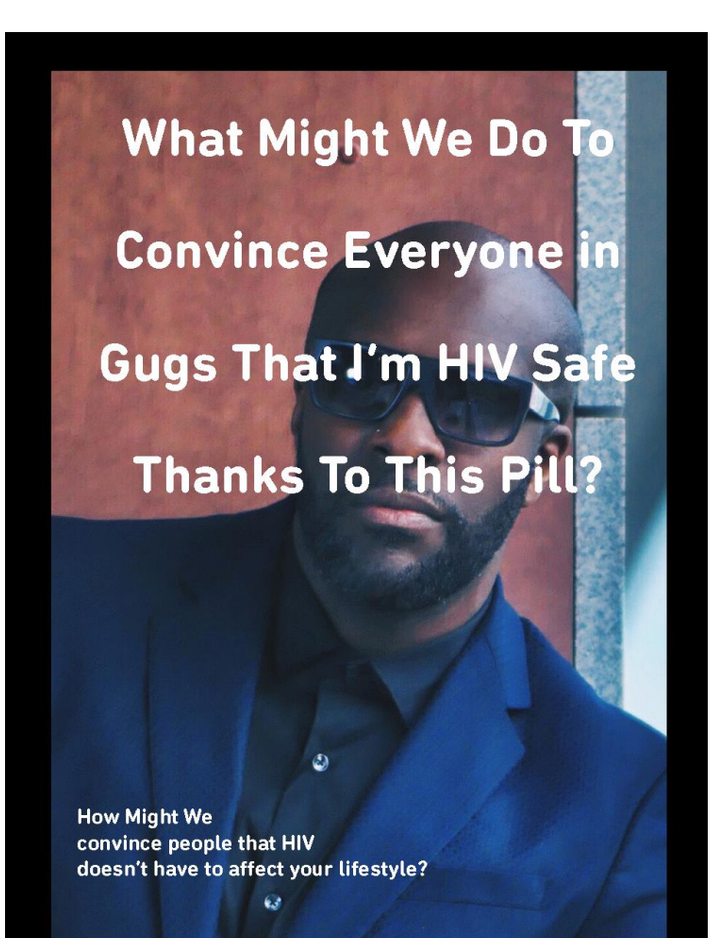
this pill is the boss of HIV?


What Might We Do To
Convince Everyone in
Gugs That I'm HIV Safe
Thanks To This Pill?
How Might We
convince people that HIV
doesn't have to affect your lifestyle?

U#2 =

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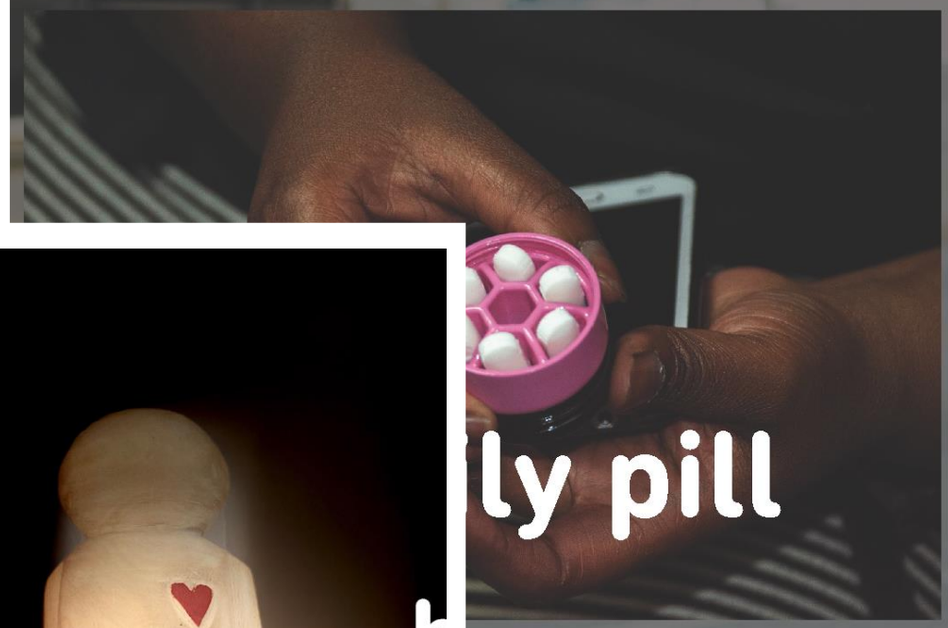
even if we don't use a co

Insight #1:
Introduce the modern ARV

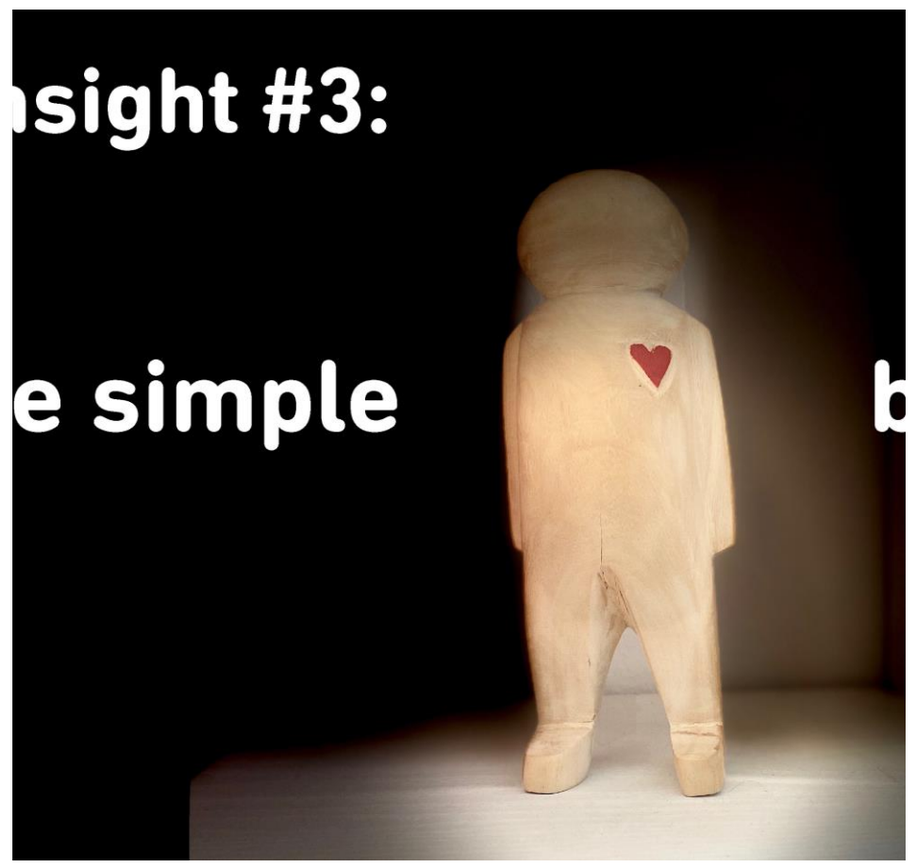


ly pill

sight #3:

e simple

b



Insight #2:

Redefine the bad guy

#1 =
where's the virus?

you're not cured but they are so defeated they can't be seen

Co-creating the U=U Message

- Participants emphasized three main insights in developing the U=U message:

- "Introduce" the benefits of the antiretroviral pill,
- Positively redefine the man for whom the pill is intended, and
- Reframe the benefits of ART to be simple and straightforward for men to understand.

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Participatory Prototyping of a Tailored Undetectable Equals Untransmittable Message to Increase HIV Testing Among Men in Western Cape, South Africa

Philip J. Smith, Dvora L. Joseph Davey, Laura Schmucker, Cal Bruns, Linda-Gail Bekker, Andrew Medina-Marino, Harsha Thirumurthy, and Alison M. Buttenheim

Published Online: 5 Nov 2021 | https://doi.org/10.1089/apc.2021.0101

U=U

Message


Date:____/____/2020
Time delivered:
US-0001
KHUSEL'IKAS
LAM
U=U
IMPILO
REDUCES HIV
SO YOU DON'T PASS IT ON!
U=U Mahala HIV testing
at Amajita Tutu Tester
Undetectable = Untransmittable
US-0001
Date:____/____/2020
Time delivered:
DESMOND TU
HIV FOUNDATI


Date:____/____/2020
Time delivered:
KHUSEL'IKAS
LAM
U=U
IMPILO
REDUCES HIV
SO YOU DON'T PASS IT ON!
U=U Mahala HIV testing
at Amajita Tutu Tester
Undetectable = Untransmittable

U=U Message

- Hi! My name is XX, and I work for Desmond Tutu Centre.
- Do you know “iMpilo”?
    - iMpilo is the latest mahala ARV pill that you take once a day if you are infected with HIV.
- Did you know that iMpilo protects you FROM GETTING SICK because it reduces HIV in the body-- so much so that you can’t infect your partner and family. This is called U=U.
- It protects you even if you don’t use a condom.
- Even if you’re drinking. Did you know that?
- So in no time you’re “Ugrand” and protecting your partner(s) and family. Your life stays the same and doesn’t change.
- You and I can show our kasi how to do this thing one by one, protecting our kasi “Khusela ikasilam”
- The Tutu Tester (point to location) can quickly tell you your HIV status and iMpilo for mahala. Take this invitation with you. See you there!

Study design

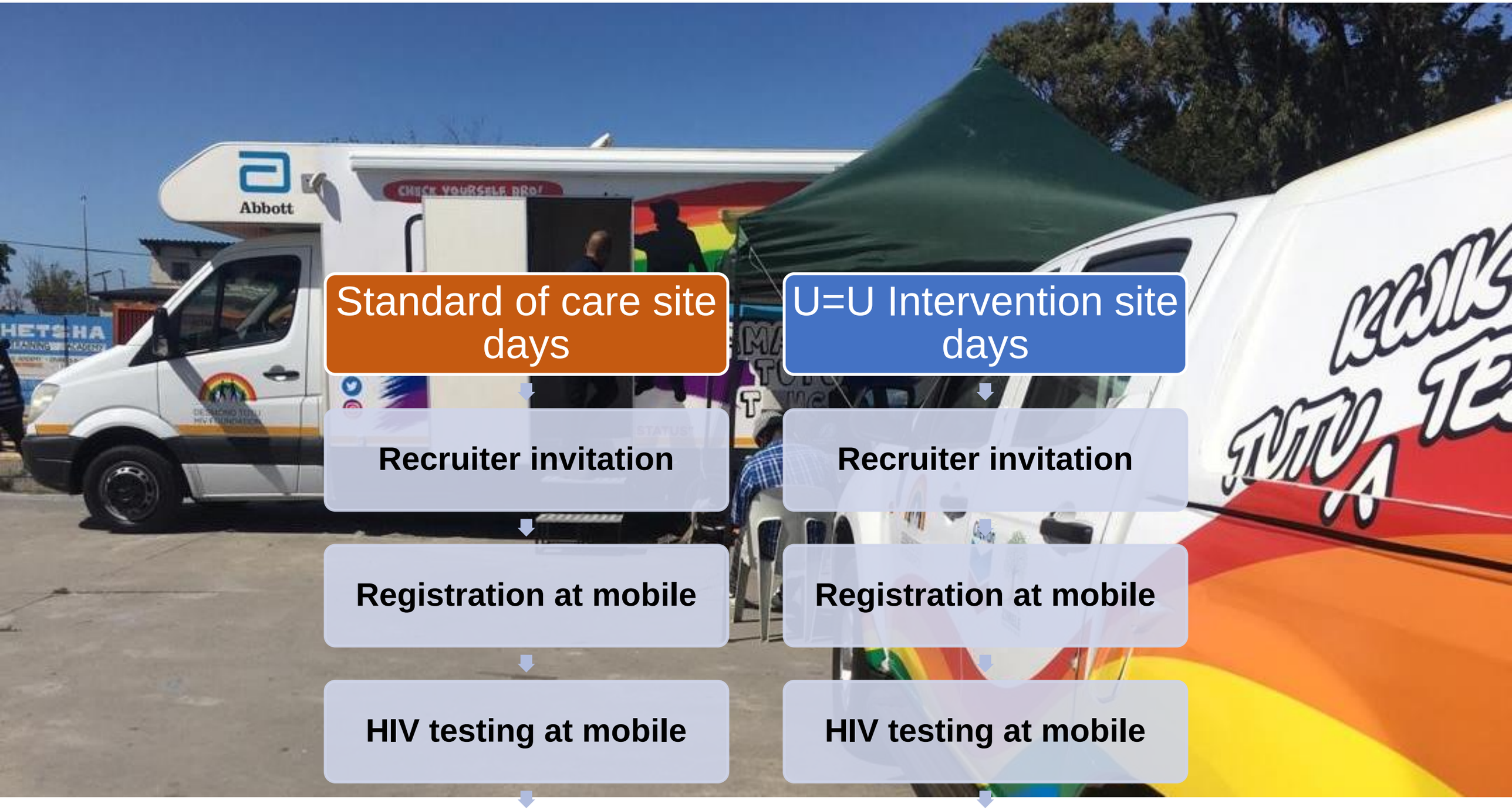
Invite 4000 men to test at the Tester

40-48 days clinic days at 6 sites will be randomized to intervention or control

24 Standard message days

24 U=U message days

100-125 men per day



Standard of care site days	U=U Intervention site days
Recruiter invitation	Recruiter invitation
Registration at mobile	Registration at mobile
HIV testing at mobile	HIV testing at mobile
HIV positive participants referred for care	HIV positive participants referred for care
HIV positive participants followed-up (NHLS)	HIV positive participants followed-up (NHLS)

COVID19 lockdown discontinuation

1049 men to test at the Amajita Truck

12 clinic days at 5 of the 6 sites were randomized to intervention or control

100-125 men per day

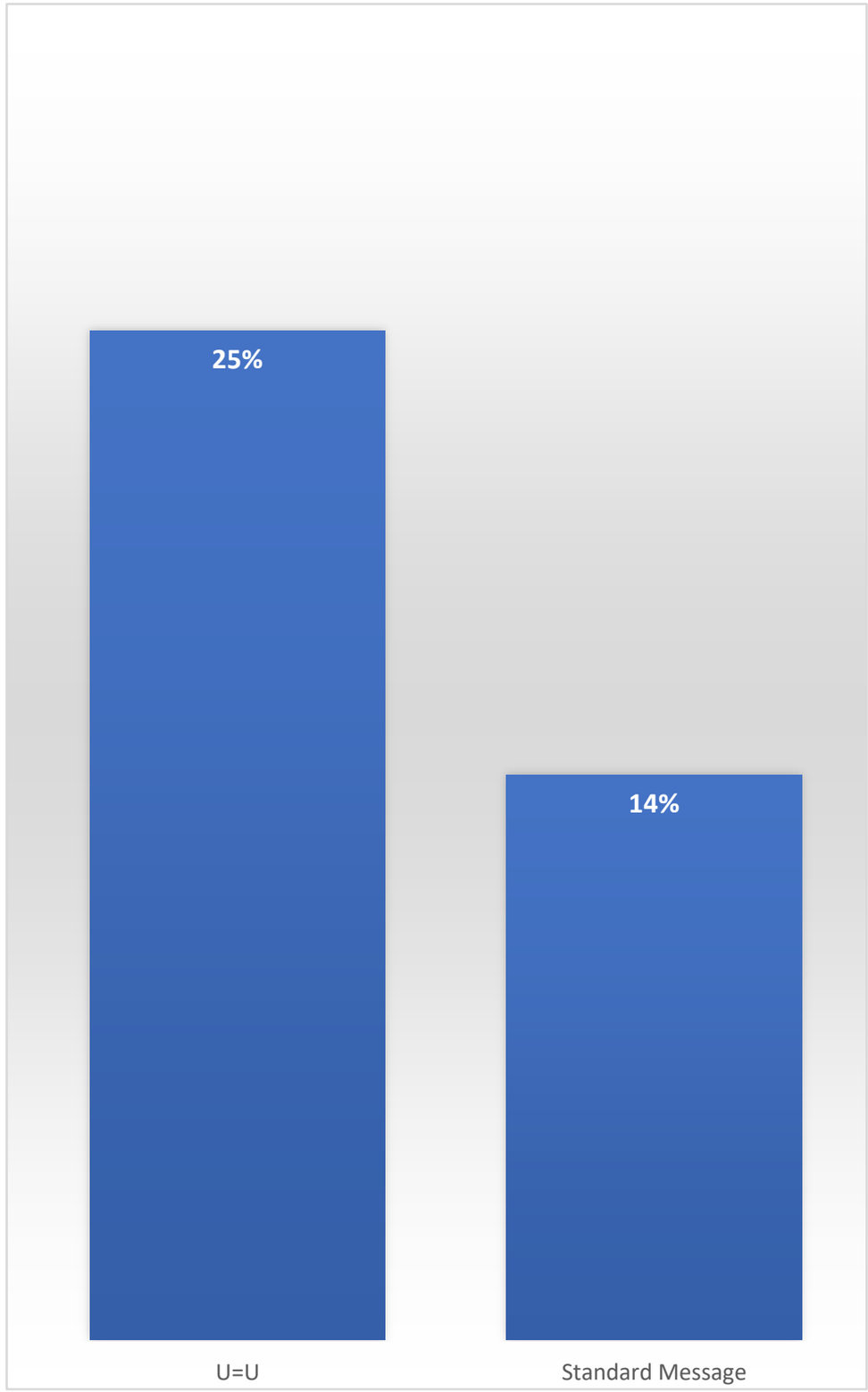
5 Standard message days

7 U=U message days

Randomisation

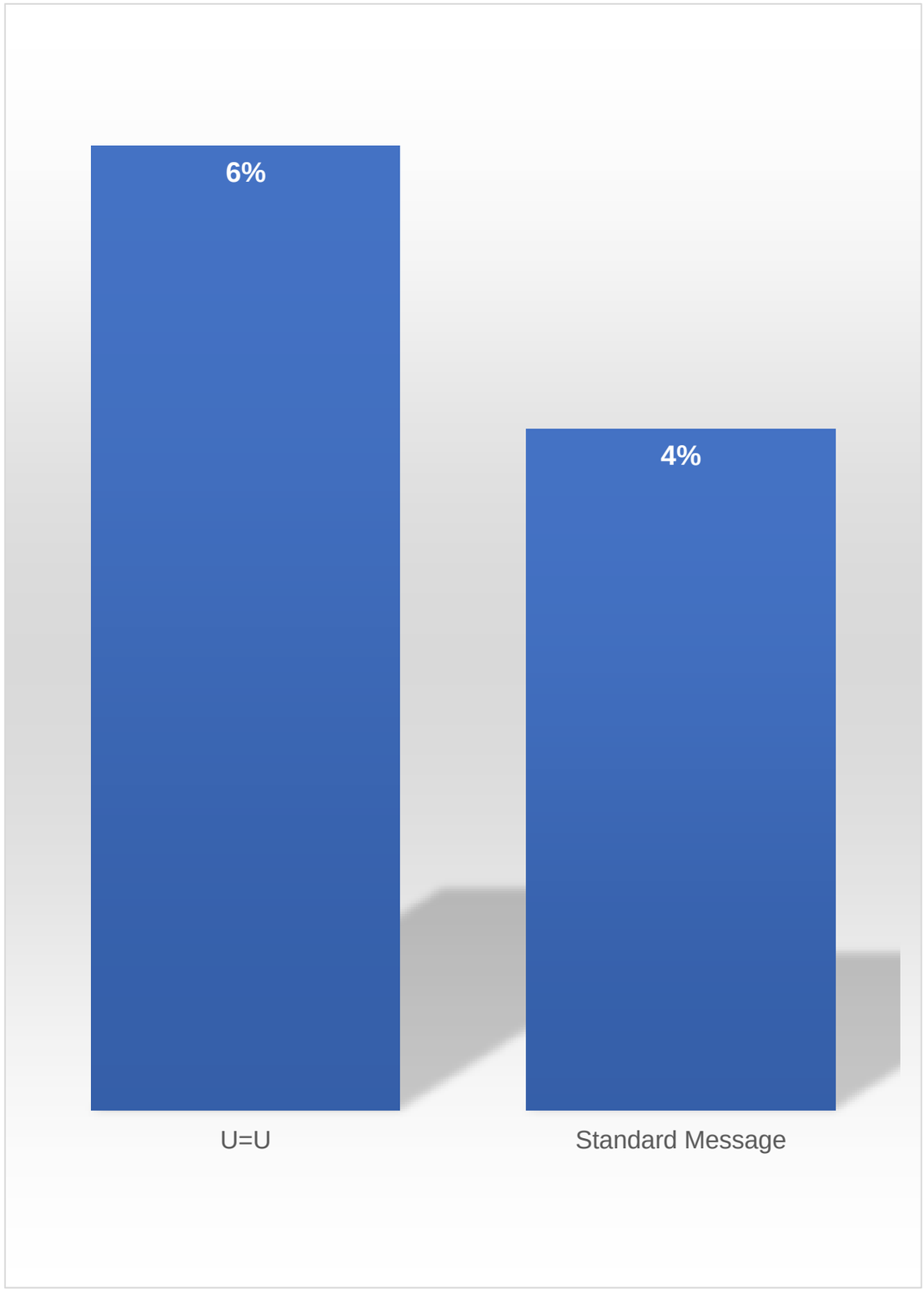
Main outcome: % of invitees who came for testing (N=1049)

- aOR = 1.61 (0.99, 2.60) adjusted for clustering on study day and location fixed effects



Secondary outcome: Yield (% positive) among testers (N=180)

- % of testers who tested HIV-positive (p = 0.41)



Results 1

Demographic and HIV risk factors in men testing in Tutu Tester by U=U intervention vs. standard of care arm in Cape Town, South Africa (Feb-Mar, 2020)					
	Total (n=180)	Standard of care (n=68; 13%)	U=U intervention (n=112; 22%)	Test statistic*	p-value
Age (median, IQR)	35 (27-45)	34 (26-44)	35 (28-46)	z=-0.81	0.42
Education (% completed secondary or above)	62 (34%)	23 (34%)	39 (35%)	chi^2=0.02	0.89
Employed	100 (56%)	45 (66%)	55 (49%)	chi^2=4.75	0.03
Monthly income (>$200/m; R3000)	75 (42%)	34 (50%)	41 (37%)	chi^2=7.24	0.12
Informal housing	87 (48%)	35 (51%)	52 (46%)	chi^2=1.04	0.59
Water in home	113 (63%)	46 (68%)	67 (60%)	chi^2=1.72	0.42
Current relationship status				chi^2=1.54	0.81
Married/cohabiting	102 (57%)	40 (59%)	62 (55%)		
Single	64 (36%)	25 (37%)	39 (35%)		
Other (divorced, widow)	13 (7%)	3 (4%)	10 (9%)		
Prior HIV test	173 (96%)	63 (93%)	109 (97%)	chi^2=2.22	0.13
Partner HIV test	73 (41%)	29 (43%)	44 (39%)	chi^2=1.40	0.23
Number of sex partners in past 6m (mean, SD)	1.5 (0.96)	1.5 (0.94)	1.5 (0.98)	t=-0.18	0.86
Ever exchanged gifts, money for sex	5 (3%)	2 (3%)	3 (3%)	Fisher's exact=1.0	0.609
Hazardous consumption of alcohol (6+ drinks monthly or more)	111 (62%)	40 (59%)	70 (63%)	chi^2=2.62	0.69

Results 2

HIV beliefs and encouragement to test in men who tested in mobile tester by study arm, Cape Town, South Africa (February to March, 2020)					
	Total (n=180)	**Standard of care (n=68)**	**U=U intervention (n=112)**	**Test statistic (chi²)**	**p-value**
Beliefs about HIV transmission					
If partner is HIV+, likelihood of infection is very likely	140 (78%)	57 (84%)	83 (74%)	0.06	0.13
ART can reduce infectiousness of HIV (strongly agree-agree =>5)	166 (92%)	64 (94%)	101 (90%)	0.86	0.36
Viral load measures amount of HIV in blood (strongly agree-agree =>5)	160 (88%)	64 (94%)	95 (85%)	3.55	0.06
Those who have low VL cannot transmit HIV (strongly agree-agree =>5)	145 (80%)	53 (78%)	94 (84%)	1.01	0.32
Heard of U=U before?	126 (70%)	41 (60%)	85 (76%)	4.90	0.03
Where heard it (n=126 who heard of U=U before)				22.8	<0.001
Peer promoter	72 (57%)	11 (27%)	61 (72%)		
Family/friend	18 (14%)	10 (24%)	8 (9%)		
Clinic	27 (21%)	15 (37%)	10 (12%)		
TV/Radio	11 (9%)	5 (12%)	4 (5%)		
Other			2 (2%)		
Did peer promoter tell you about U=U? (n=126 who heard of U=U before)	81 (64%)	16 (39%; 13% of total)	63 (74%, 50%)		<0.0001
Did information about U=U (n=85):					
Encourage you to test?			80 (94%)	-	-
Encourage you to disclose your HIV status?			76 (89%)		-
How did this information about ARVs reducing HIV in the body so much so that you can't infect your partner make you feel?					-
(n = 112 in intervention)					
Relieved			59 (53%)	-	-
Confused			2 (2%)	-	-
Confident to test			18 (16%)	-	-
Need more information			6 (5%)	-	-
No feeling/don't know			26 (23%)	-	-

Results 3

Logistic regression models to evaluate the effect of U=U messaging on men returning to test, HIV testing, positivity and linkage to ART

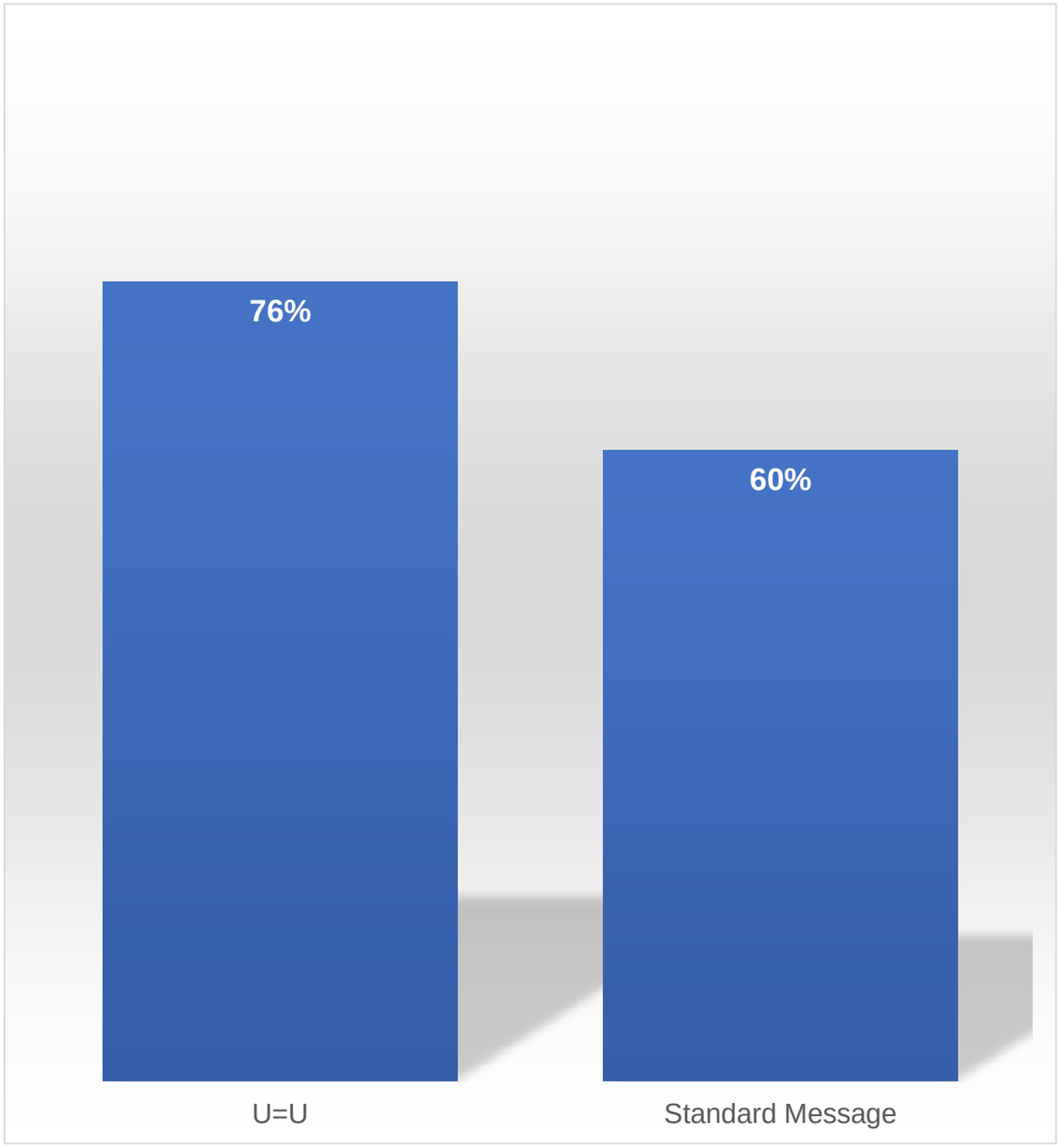
	Standard of care	U=U intervention	OR (95% CI)*	aOR (95% CI)*	Test statistic for aOR	p-value
Invited and came for HIV testing	76 (14%)	125 (25%)	2.03 (1.48, 2.78)	1.61 (0.99, 2.60)	z=1.87	0.06
Invited and tested for HIV	68 (13%)	112 (22%)	2.00 (1.44, 2.78)	1.89 (1.21, 2.95)	z=2.81	0.01
Tested HIV-positive	3 (4.4%)	7 (6.23%)	1.44 (0.36, 5.78)	1.42 (0.46, 4.37)	z=0.68	0.41
Linked to ART	2 (67%)	3 (43%)	0.41 (0.01, 7.81)	--	Mid-P exact=0.29	0.58

*Models included clustering on study day; adjusted model included location

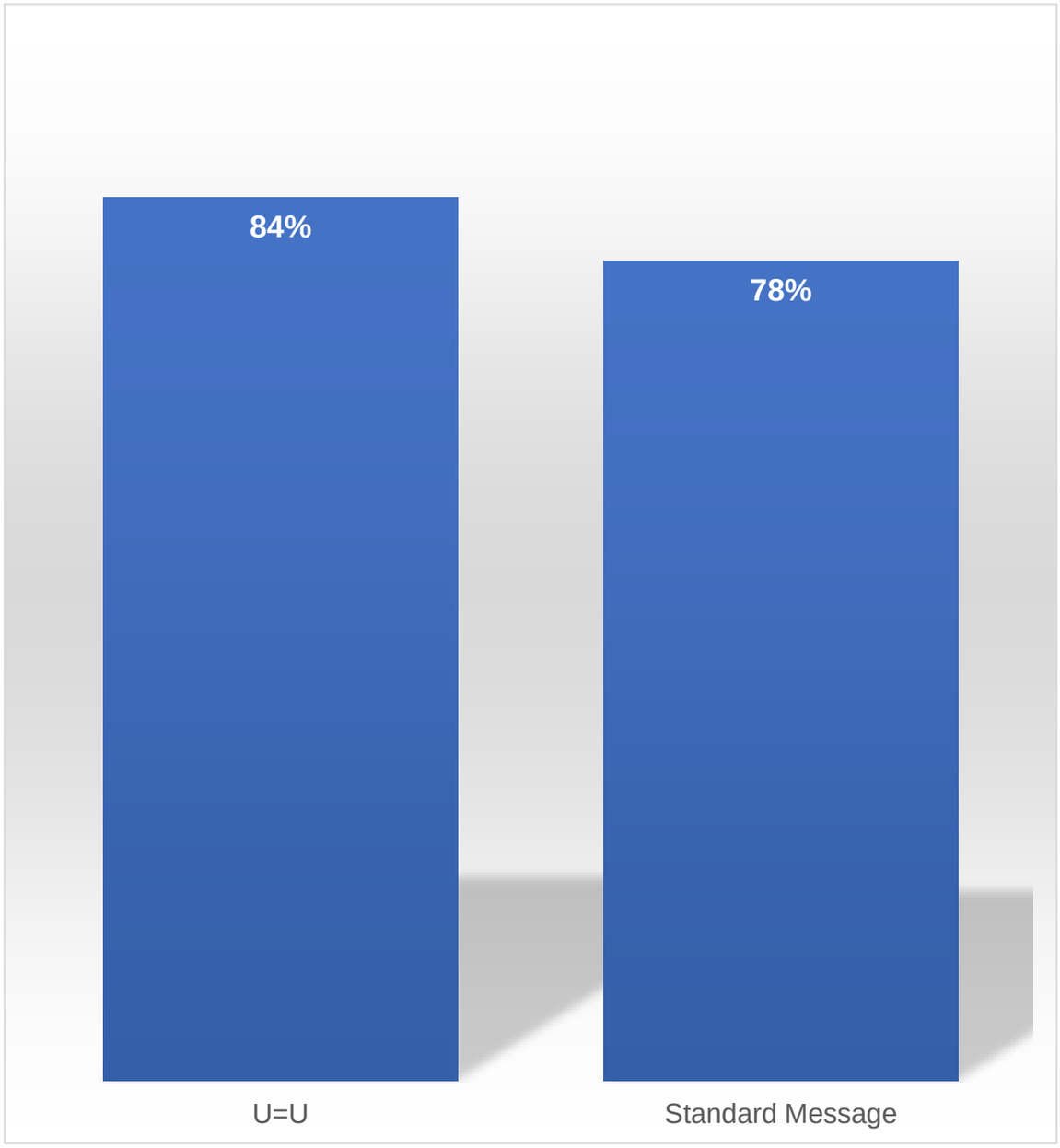
Men in **U=U group almost 2x odds of testing for HIV** and had higher positivity

Most men accessed ART (some were unreachable by telephone)

U=U knowledge among testers (N=180)

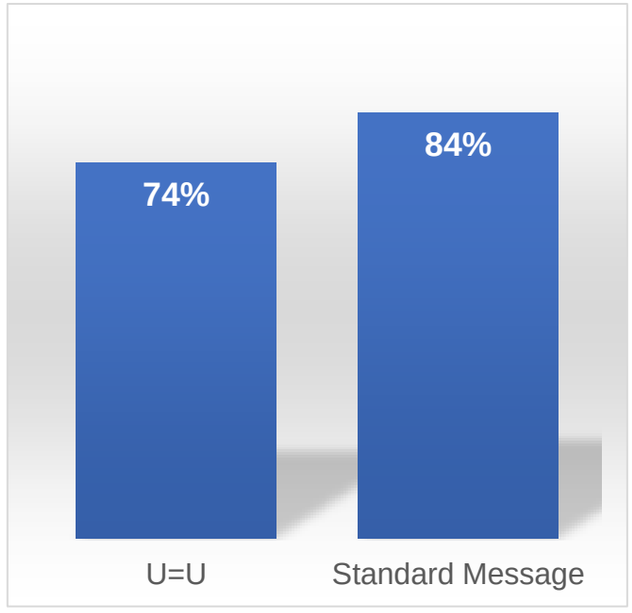


Heard of “U=U” before? (p = 0.03)

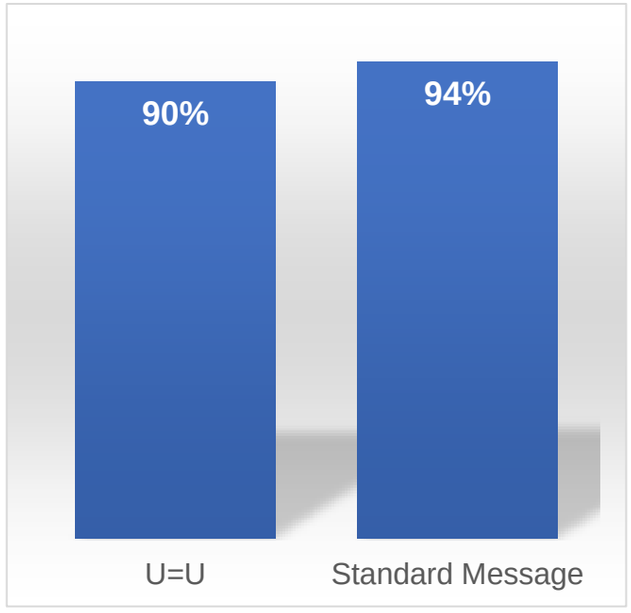


Those with a low viral load cannot transmit HIV (p = 0.32)

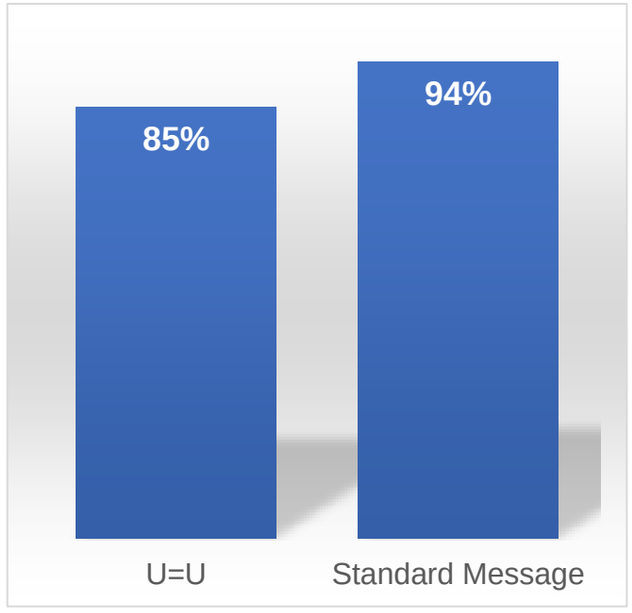
NO DIFFERENCES IN BELIEFS ABOUT HIV TRANSMISSION (N=180) ($p > 0.05$)



If partner is HIV+, infection is very likely



ART can reduce infectiousness of HIV



Viral load measures amount of HIV in blood

U=U Discussion

- U=U almost doubled HIV testing
- Slightly lower U=U comprehension in U=U group
- Counterintuitive: lower knowledge in U=U
- Social desirability?
- Possible contamination?

Limitations

- Sample size was reduced to ¼
- Counterintuitive findings may resolve with apt sample size
- Inability to go back and ask open ended/qualitative questions re: understanding

Discussion

- U=U significantly improved HIV testing uptake in men
- Reported knowledge about U=U seemed high in both groups
- U=U group yielded higher HIV positive diagnoses (6% vs 4%)
- Referrals lack contact details

Thank you!

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