Protocol for a county-randomized comparative implementation trial of two delivery strategies for an evidence-based eHealth HIV prevention intervention

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PSMG virtual grand rounds, October 6, 2020

Northwestern | Institute for Sexual and Gender Minority Health and Wellbeing

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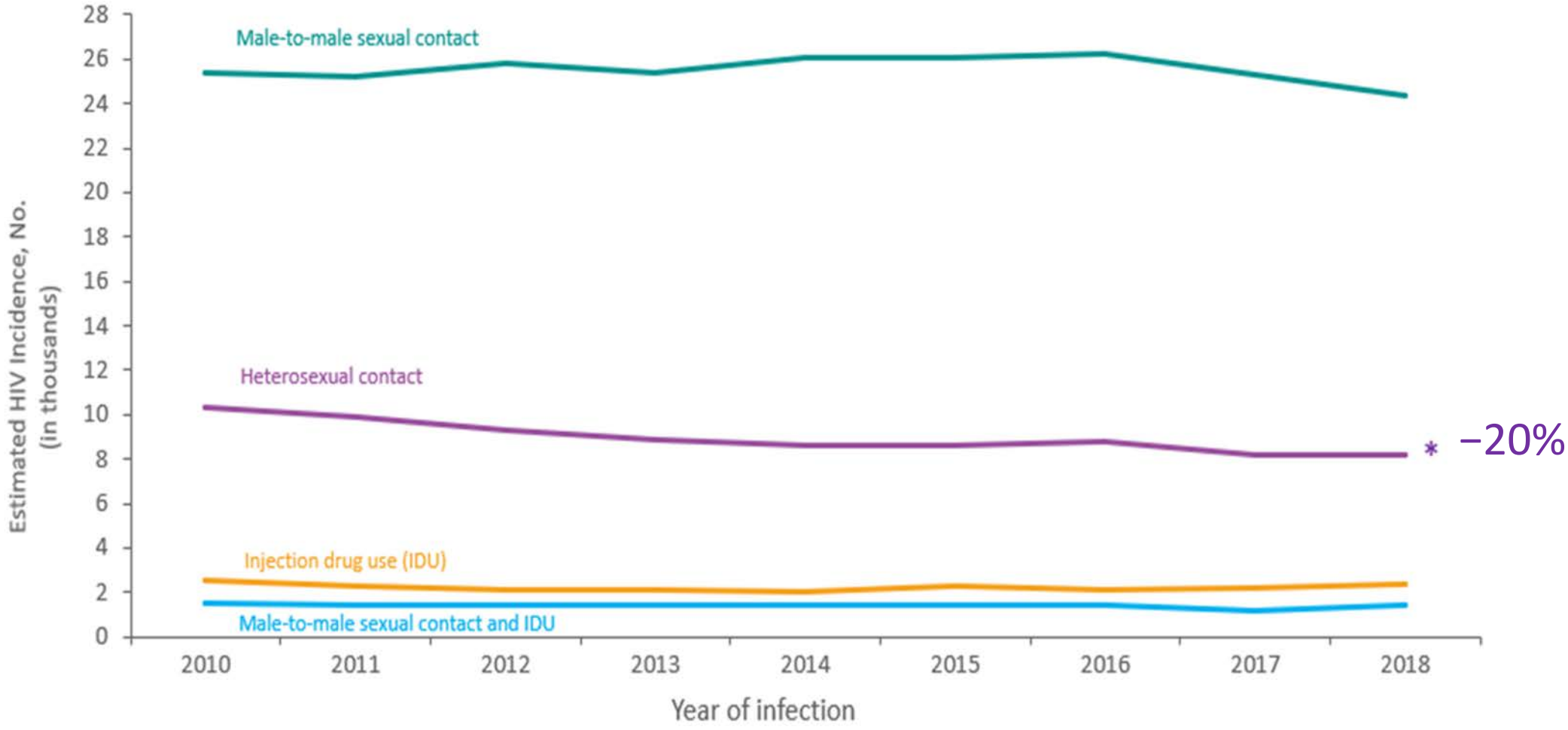
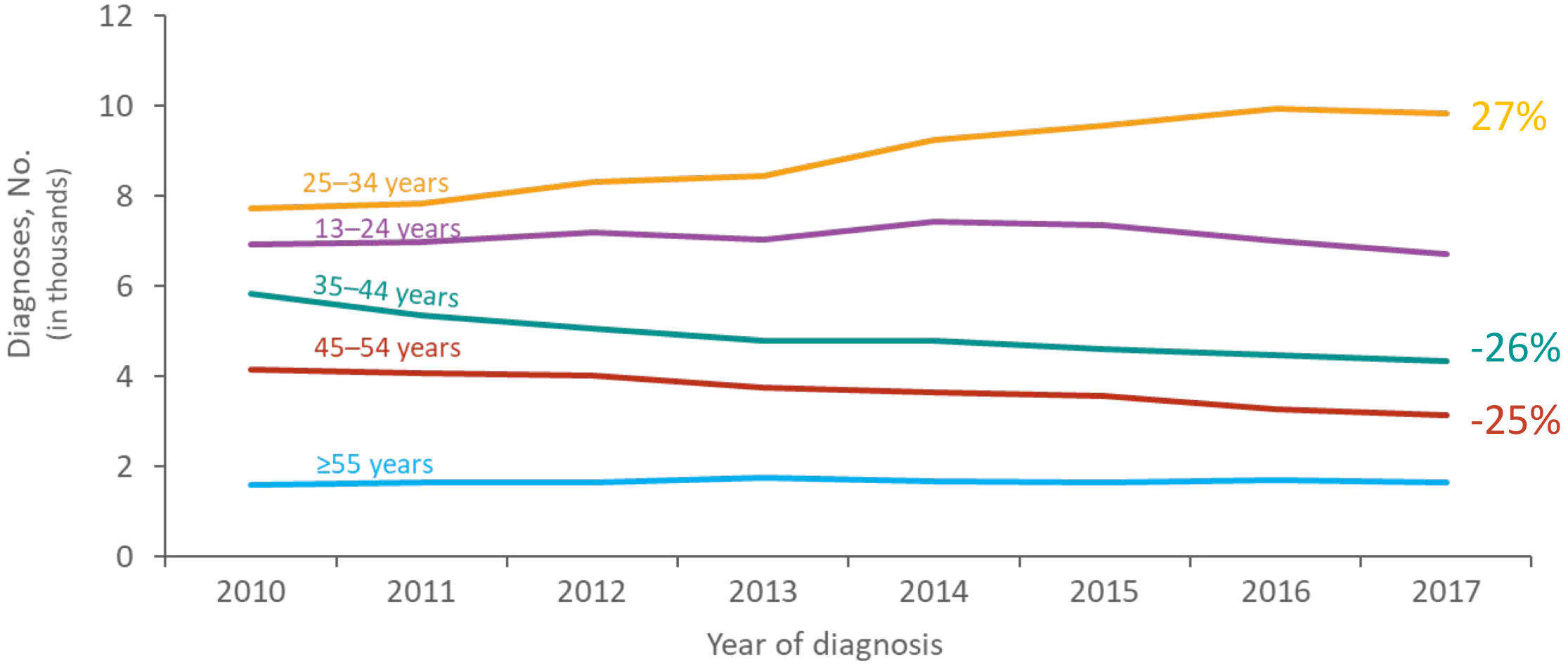
Estimated HIV Incidence among Persons Aged ≥13 Years, by Transmission Category 2010–2018—United States



Note. Estimates were derived from a CD4 depletion model using HIV surveillance data. Data have been statistically adjusted to account for missing transmission category. Heterosexual contact is with a person known to have, or to be at high risk for, HIV infection.
* Difference from the 2010 estimate was deemed statistically significant ($P < .05$).

Diagnoses of HIV Infection among Men Who Have Sex with Men by Age at Diagnosis, 2010–2017—United States and 6 Dependent Areas



Note: Data have been statistically adjusted to account for missing transmission category. Data on men who have sex with men do not include men with HIV infection attributed to male-to-male sexual contact *and* injection drug use.

Keep It Up! Program of Research

2007-2011

KIU! 1.0

NIMH R34 to develop and demonstrate feasibility and acceptability

2012-2014

KIU! 1.5

CDPH-funded service implementation in Chicago, IL

2012-2018

KIU! 2.0

NIDA and NIMH R01 to test efficacy of *KIU!* in three cities with behavioral and biomedical outcomes

2017-2019

KIU! 2.5

ViiV-funded service implementation in Jackson, MI

2018 - 2022

KIU! 3.0

NIMH/NIDA/OD R01 to compare two national implementation strategies with behavioral and biomedical outcomes

HIV/AIDS
HIV Basics
HIV by Group +
HIV Risk and Prevention +
HIV in the Workplace
HIV Testing +
Research −
Intervention Research −
Effective Behavioral Interventions (EBIs)
Replicating Effective Programs (REP)
Compendium of Evidence-Based Interventions and Best Practices for HIV Prevention
Biomedical Research +
Demonstration Projects +
Policy, Planning, and Strategic Communication +
Program Resources +
HIV Funding and Budget +

HIV/AIDS > Research > Intervention Research > Compendium of Evidence-Based Interventions and Best Practices for HIV Prevention

Compendium of Evidence-Based Interventions and Best Practices for HIV Prevention

- NEW Structural Interventions (SI) Chapter
- Linkage to, Retention in, and Re-engagement in HIV Care (LRC) Chapter
- Medication Adherence (MA) Chapter
- **Risk Reduction (RR) Chapter**

Risk Reduction (RR) Chapter

The Prevention Research Synthesis (PRS) Project has been conducting on-going systematic reviews (i.e., Risk Reduction (RR) Efficacy Review) to identify evidence-based interventions (EBIs) that show evidence of efficacy in changing sex or drug-injection behaviors that directly impact HIV-transmission risk. Additional details about the RR Chapter or PRS can be obtained by contacting PRS.

Updated on January 26, 2018

- Starting in December 2016, Risk Reduction interventions focused on non-priority populations and published over 10 years ago will be archived. Please see the Archived Interventions page for further information.
- Beginning in 2015, PRS will focus only on evaluating RR interventions for priority populations, in line with DHAP's High-Impact Prevention (HIP) approach. More information about upcoming changes to the PRS RR review process .

NEW Risk Reduction Interventions for 2018

- Couples HIV Intervention Program
- Keep It Up! 2.0 ***ILI – BEST***
- Think Twice ***ILI – BEST***

Team	Delivery of direct-to-consumer (DTC) strategy	Delivery of community based organization (CBOs) strategy	Technology	Methodology
Purpose	Online advertising and recruitment of YMSM and delivery of KIU in the direct-to-consumer arm.	Distribute request for proposals to CBOs, evaluate and select grantees, provide training and technical assistance.	Develop and support KIU intervention content and the technology platform that will allow for the delivery of KIU across both implementation strategies.	Oversee collection of outcome data from YMSM as well as DTC, CBO and technology teams, and CBO staff. Provide expertise in implementation science, health economics, and statistics. Perform all analyses.
Leads and Scientific Members	Macapagal	Benbow	Mustanski (lead), Saber	Brown (lead of implementation science methodology), Schackman (lead of health economics), and Janulis (lead of statistical analyses). Smith, Linas, and Murphy (members)
Supporting Research Centers	Institute for Sexual and Gender Minority Health and Wellbeing (ISGMH)	Institute for Sexual and Gender Minority Health and Wellbeing (ISGMH)	Center for Behavioral Intervention Technology (CBIT)	Center for Prevention Implementation Methodology (Ce-PIM), Center for Health Economics of Treatment Interventions for Substance Use Disorders, HCV, and HIV (CHERISH), Third Coast Center for AIDS Research (CFAR)

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CHERISH

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What is *Keep It Up!*?

- Online HIV risk reduction intervention designated as “Best Evidence” by CDC
- First eHealth HIV prevention program to show significant effects on a biomedical outcome (40% reduction in STIs at 12 months post-intervention; Mustanski et al., 2018. *American Journal of Preventive Medicine).*
- In a multisite RCT, found to be acceptable and effective among racially diverse young MSM ages 18–29

Why an implementation/pragmatic trial?

- eHealth is an opportunity for “low cost interventions with high reach potential”
- Many other eHealth HIV interventions currently being supported by NIH for development and efficacy testing
- How to scale up eHealth programs is still largely unknown
- Need to maximize return on investment

Specific Aims

Aim 1: Compare two implementation strategies using a cluster randomized trial. The type III hybrid implementation-effectiveness design prioritizes empirical comparison of implementation strategies while also collecting evidence of effectiveness.
Strategy 1: Traditional model of community based organizations competing for funding to implement KIU! in their routine testing with YMSM.
Strategy 2: Innovative direct-to-consumer where HIV testing and intervention delivery is done remotely.

Aim 2: Examine adoption characteristics that explain variability in implementation outcomes. Drawing from CFIR we will examine domains such as county characteristics, adaptations, support from organization leadership, and approach to planning adoption.

Exploratory aim: Explore sustainment of KIU! at the completion of the study. CBO will be provided with materials to facilitate applying for ongoing funding and we will examine factors that predict applying for funding and ongoing sustainment. In the direct-to-consumer arm we will explore sustainment strategies through consultation with CDC, CBA providers, health departments, and Health 2.0 businesses.

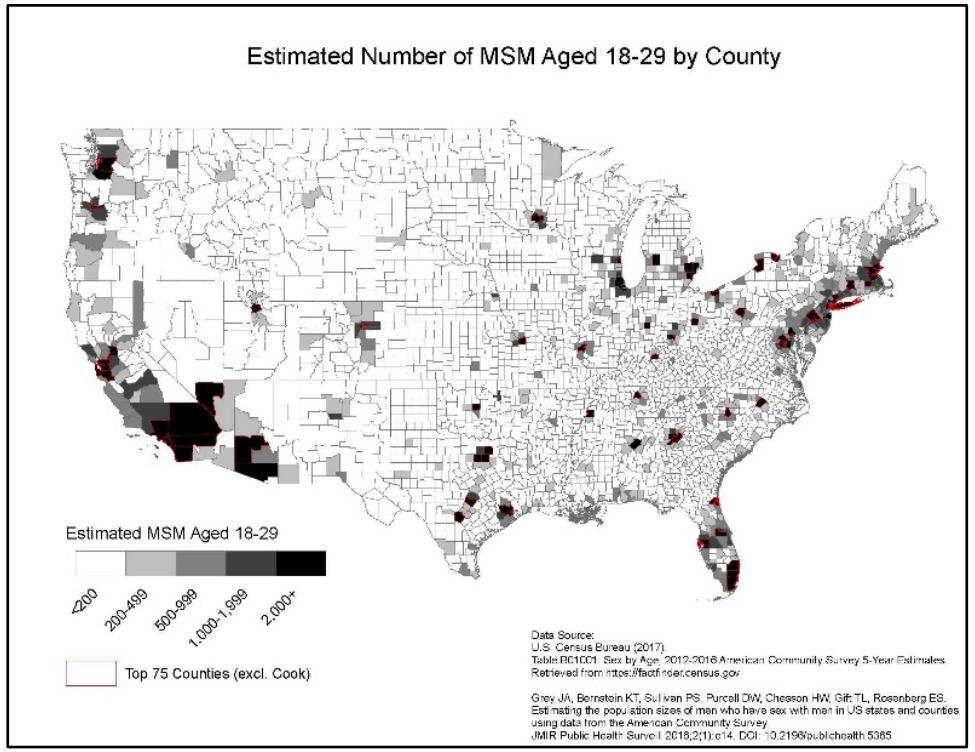
KIU! 3.0 Study Design

- **Type 3 effectiveness–implementation hybrid trial**
  - Primary focus: compare two strategies on implementation outcomes
    - Direct-to-consumer (DTC)
    - Community-based organization (CBO)
  - Secondary focus: ensure *KIU!* is still effective on individual outcomes

- **Cluster randomized trial**
  - 66 counties with most YMSM
  - CBO:DTC strategy, 2:1 randomization
  - RFP for CBO counties
  - Prioritizing pragmatic practices

- **Primary outcomes**
  - Public health impact (reach x effectiveness)
    - Let P_{ic} represent HIV prevalence based on age and race for each subject *i* in county *c*
    - Let $R_{ic}^1 – R_{ic}^0$ represent change in HIV risk from outcome to baseline, determined by observed changes in condomless anal sex, STI incidence, and adherent PrEP use
    - $PHI_c = \Sigma_i P_{ic} * (R_{ic}^1 – R_{ic}^0)$
  - Cost per infection averted
    - Estimated based on effectiveness and cost of delivery per subject

- **Secondary outcomes**
  - Adoption, implementation, maintenance



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66 counties randomized	
2 : 1	
44 counties randomized to CBO strategy	22 counties randomized to DTC strategy

Request for proposals from CBOs in 44 counties	
Applications reviewed and scored	
22 top scoring applications (1 per county) funded.	
Customization of KIU	
CBO staff deliver KIU to YMSM who test HIV negative through their routine HIV testing programs. STI testing through CBO or remotely. CBOs receive quarterly coaching from Northwestern.	
CBO staff engage YMSM in KIU!	Research staff assure survey completion
12 month STI testing performed at CBO or through remote testing.	

Advertising campaign designed and launched for 22 counties.	
At least 100 YMSM are recruited in each county.	
Eligible YMSM receive kit through the mail for HIV/STI self-testing.	
KIU! engagement by NWU DTC staff.	Research staff assure survey completion
12 month STI testing performed through remote testing.	

County Selection

- Originally proposed sampling frame of counties with ≥2,000 YMSM
- Concern re: intervention bleed in contiguous counties
- Once removed contiguous counties, insufficient counties remained in sampling frame
- Expanded sample frame to include counties with ≥1,500 YMSM
  - Yielded an initial sample frame of 113 counties.

County Selection (Cont'd)

- Identified clusters vs standalone counties
  - Standalone counties automatically included in sample
  - Counties in clusters selected through iterative process using highest proportion of young African-American and Latinx men as decision rule
    - In some cases (e.g., New York City area), the selection of the county with the highest proportion of YMPOC led to smaller clusters in which we applied the same decision rule until we exhausted all county options in that area.
- Following the iterative process, we had identified 64 counties, 2 short of the needed 66. We chose to include Maricopa (Phoenix) County, AZ and Clark County (Las Vegas), NV due to assumptions regarding topography.
- Resulting 66 counties randomized 2:1 => CBO:DTC => 44:22 counties
- RFP disseminated in 44 CBO counties to solicit applications for funding
  - 14 CBOs funded in first RFP round.
  - IS scientists conducted balance simulations to identify first 14 DTC counties
  - 2nd RFP round in Fall 2019 identified 8 additional CBOs
  - In Winter 2020, remaining 16 CBO and DTC counties will launch in a 2nd cohort.

Framework

- Framework to translate research into practice with focus on:
  - **R**each
  - **E**ffectiveness
  - **A**doption
  - **I**mplementation
  - **M**aintenance
- Widely used in implementation science and applied to eHealth and HIV prevention

- Recommendation to use mixed-methods approaches when assessing RE-AIM elements
- KIU! collects:
  - **Quantitative data** on Reach, Effectiveness, and Implementation in Aim 1 and Maintenance at study end
  - **Mixed-methods data** on Adoption in Aim 2

RE-AIM - Primary KIU Outcomes

- Adherent PrEP Use
  - Measured at baseline, 3-, 6-, and 12-months post-intervention
  - Initiation & Adherence
- Condom Use
  - Measured at baseline, 3-, 6-, and 12-months post-intervention
  - Number of condomless anal sex acts with casual and serious male partners in last three months
  - Condom use at most recent sexual encounter with casual and with serious male partner
- STI Incidence
  - Participants tested at baseline and 12 months post-intervention
  - Gonorrhea & Chlamydia
  - Rectal & Urethral

Composite HIV Risk Index

Based on CDC risk calculator for encounters with an HIV+ partner

- Sexual Position (Insertive vs. Receptive)
- Condom Use
- Adherent PrEP Use
- STI Status

Application of RE-AIM to KIU! 3.0 implementation trial

Measure	Source
REACH	
Proportion of YMSM in county screened for KIU.	Screening logs. Emory CAMP models of YMSM by county.
Proportion of invited YMSM who begin KIU.	Number of study pin codes activated and provided.
Proportion of KIU! participants that are Black or Latino.	YMSM self-report in enrollment survey.
Proportion of KIU! participants with an STI at enrollment.	CBO medical records or self-testing kits.
Proportion of KIU! participants who engaged in unprotected sex (no condom or PrEP) in prior 3 months.	YMSM self-report in enrollment survey.
EFFECTIVENESS	
1 year change in unprotected sex	YMSM self-report at 3, 6, 12-month surveys
Rectal STI incidence at 12 months	CBO EMR or self-test kit
Rate of PrEP initiation over 12 months	YMSM self-report at 3, 6, 12-month surveys
Obtained 1+ HIV test(s) over 12 months	YMSM self-report at 3, 6, 12-month surveys
ADOPTION	
Adoption characteristics are not comparable across arms. Measured differently by arm See Aim 2.	
IMPLEMENTATION	
Mean number of KIU! modules completed by participants.	System analytics. Metrics of activity within modules.
Intervention Acceptability	YMSM self report at intervention completion points
Cost of intervention delivery per participant	Interviews, study logs, and CBO financial information
Cost of intervention delivery per infection averted	Estimated based on effectiveness and cost.
MAINTENANCE/SUSTAINMENT	
Maintenance characteristics are not comparable across arms.	

Adoption – Mixed Methods Approach

- CFIR - Evaluate factors from 5 domains:
  1. Outer setting (county characteristics, network links to other orgs, policies & incentives)
  2. Inner setting (implementation support from CBO leaders, implementation climate, and implementation culture)
  3. Characteristics of users (YMSM demographics and acceptability of KIU!)
  4. Characteristics of the intervention (local adaptations, staff perceptions of quality, and relative advantage over alternatives)
  5. Process characteristics
- CFIR data collected in waves => implementation (Wave 0/1) and then 4, 12, and 24 months following
  - Not all factors assessed at each wave – selected based on phase of implementation
  - Mix of quantitative and qualitative measures

Sustainment – An Exploratory Activity

- CBOs provided materials to apply for funding following trial
  - Report on their site-level implementation outcomes (e.g., # YMSM reached, effectiveness at reducing HIV risk)
  - Budget Impact Tool (allow CBO to calculate monetary impact and estimate cost for continued delivery of KIU!)
  - Draw from Sustainability Measurement System to examine factors that predict applying for funding and sustaining use
- Explore sustainment of DTC arm
  - Compile implementation outcomes (e.g., cost per infection averted)
  - Report to group of strategic advisors (e.g., CDC Division of HIV Prevention, Third Coast CFAR CAB, and Health Departments)
  - Work with consultant Levine for connections to Health 2.0 business community
  - Consult with NU's Innovation and New Ventures Office

Keeping it up: Updating and upgrading an evidence-based eHealth HIV intervention across contexts and over time

Dennis H. Li, Rana Saber, Brian Mustanski

@denhli

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The promises of eHealth interventions

Accessibility

Efficiency/ Scalability

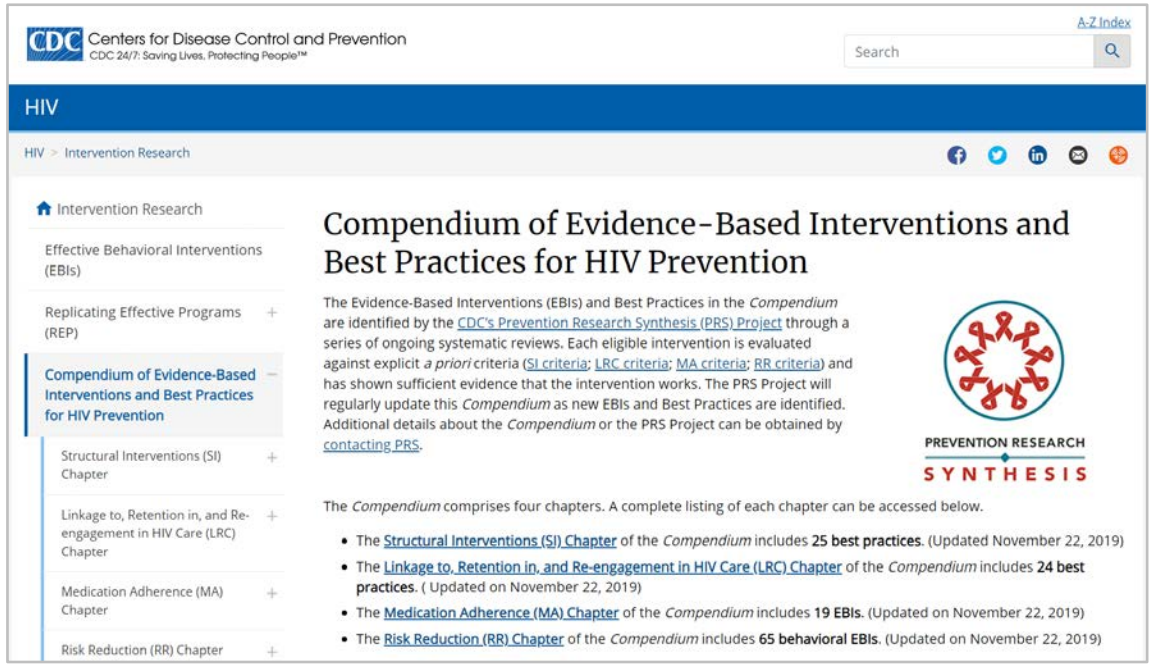
Integration

New Design Elements

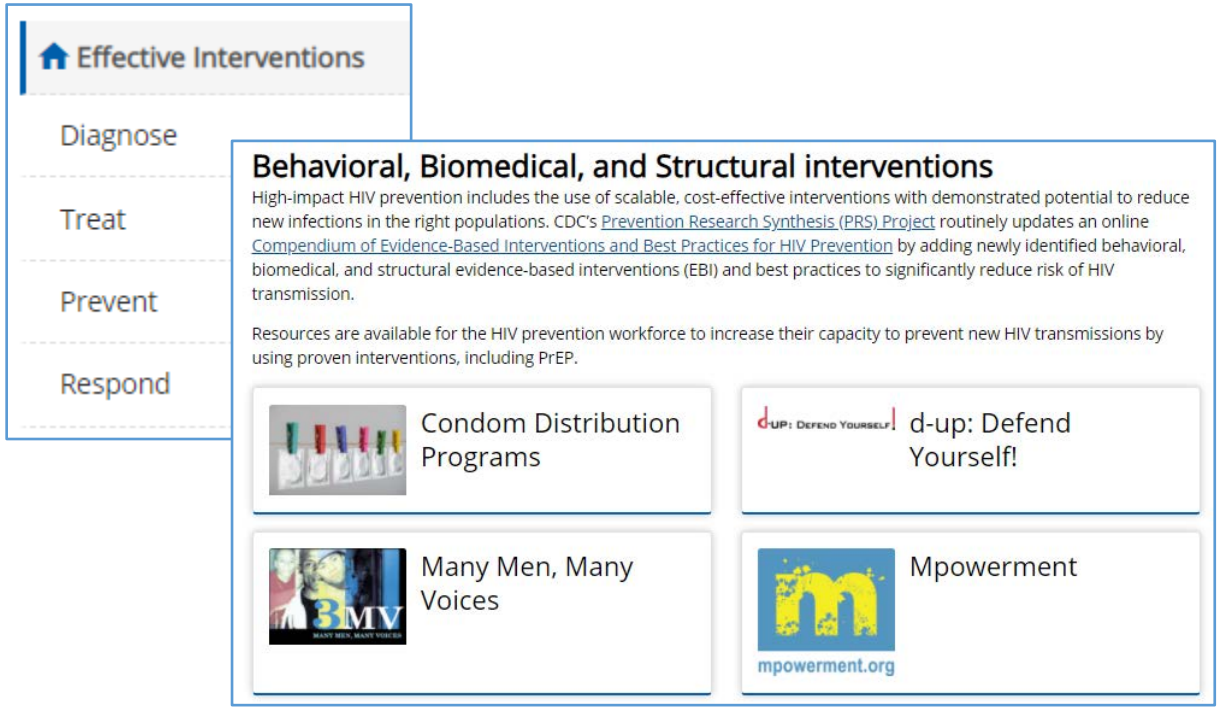
Fidelity

Schueller et al. 2013. Curr Dir Psychol Sci.

Limited implementation despite large investment



Some eHealth interventions have made it in



Zero are supported for dissemination

Adaptation to local context

Changes in science and practice

Sociotechnical shifts

Software bugs

Software updates

Improvements

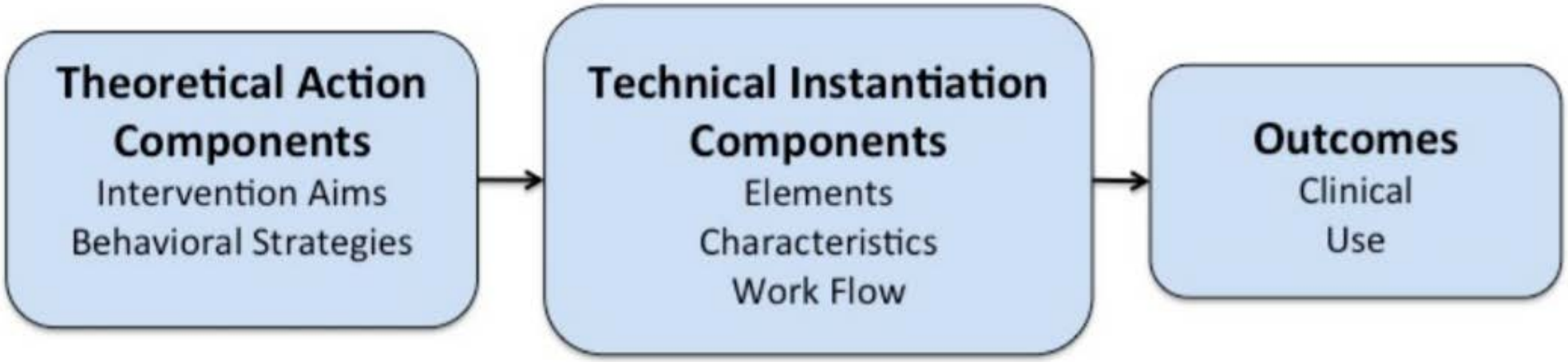
Li et al. 2019. Curr HIV/AIDS Rep

Our charge in KIU! 3.0

Methods

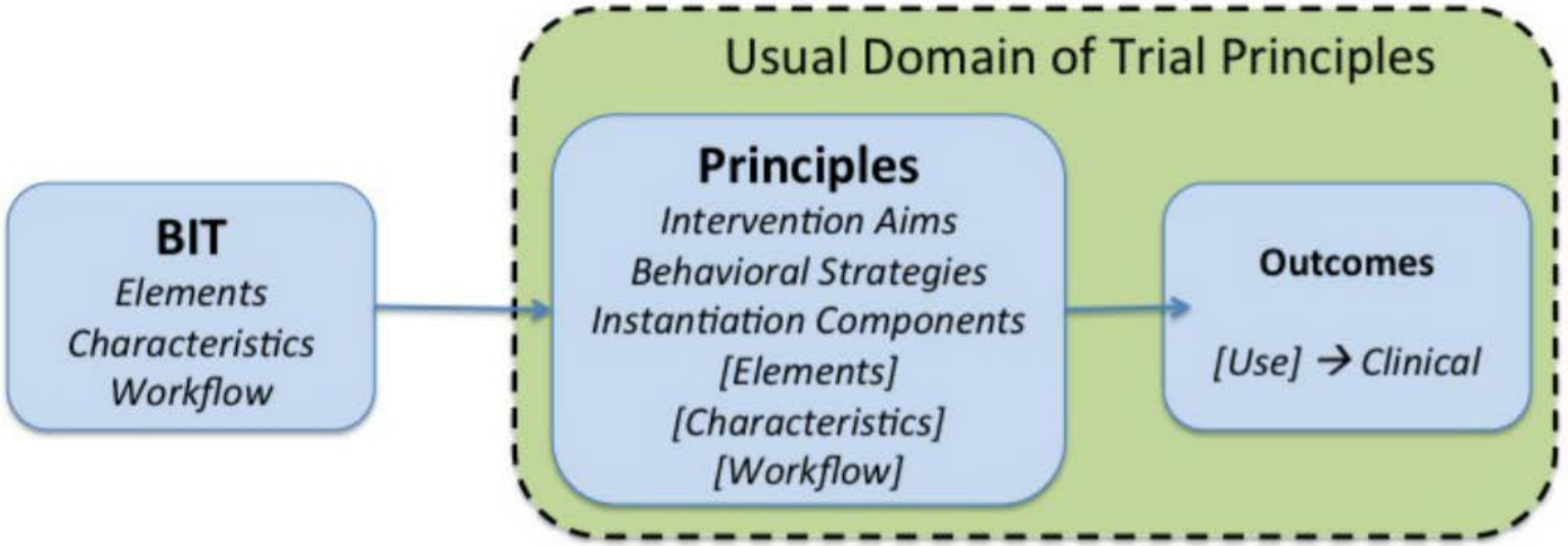
Trials of Intervention Principles Framework

- Proposed by Mohr et al. to deal with necessary changes during an RCT
- We applied it for eHealth intervention adaptation generally
- eHealth interventions characterized by:



Mohr et al. 2015. J Med Internet Res.

eHealth interventions in TIPs



- BIT = behavioral intervention technology = eHealth intervention
- Green box = intervention principles = things you cannot change
- [Bracketed text] = may or may not be part of the intervention principles

Mohr et al. 2015. J Med Internet Res.

Decision-making in TIPs

1. Bug fixes (including major usability issues) are necessarily implemented.
2. Larger features changes weighed by investigators against questions (e.g.):
   - Does the change interfere with the primary intervention principle(s)?
   - Does the change create an alternative explanation for success in the trial?
   - What is the consequence of not making the change?
3. Test usability as much as possible.
4. Document feature changes.
5. [Ensure updates do not compromise the comparative implementation trial.]

Mohr et al. 2015. J Med Internet Res.

Sources of potential adaptations

- Content review by Content Team
  - Information and instantiation components that need updating.
  - Potential areas for different instantiation components or additional content.
- Feedback from YMSM end users
  - KIU! 2.0 participants
  - KIU! 2.5 participants
  - Online Youth Advisory Council
- Implementation needs suggested by CBO advisory board
  - Desired local customizations
  - Usability needs (e.g., dashboards) for administrators
- Software needs identified by Technology Team

Results

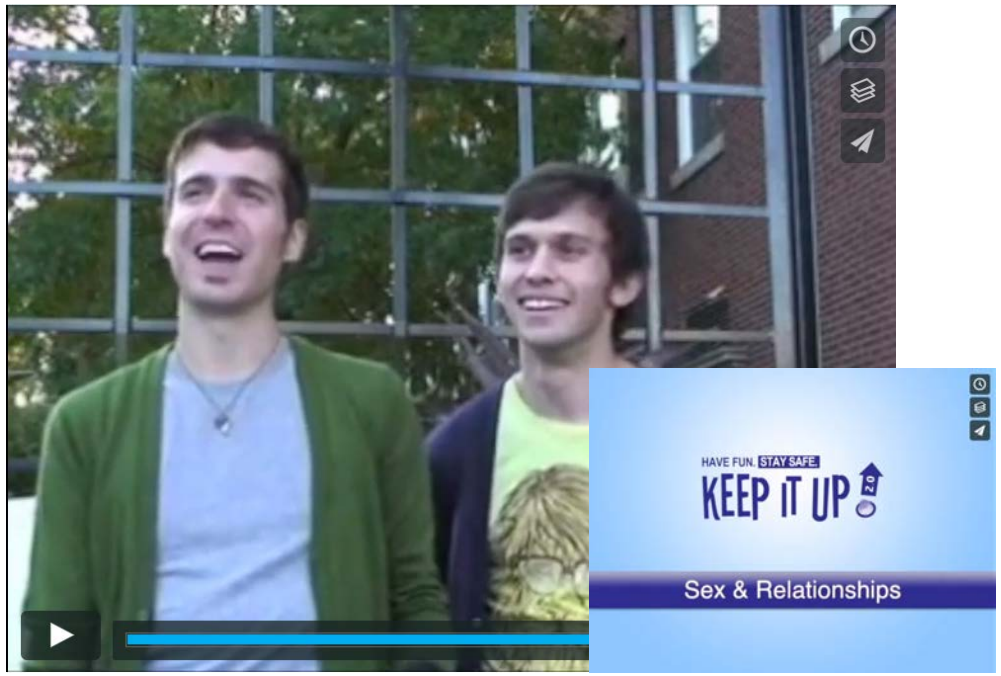
Examples from KIU!

KIU! 3.0 Content

1	2	3	4	5	6	7	B1 (3 m)	B2 (6 m)
In Your Community (optionally location specific)	Hooking Up Online	With Friends (soap opera)	In Bars and Clubs	On Dates	In Relationships (Healthy communication)	In the Future (goal setting)	Knowing Your Status (regular testing, goal review)	In Love (prevention in relationships)

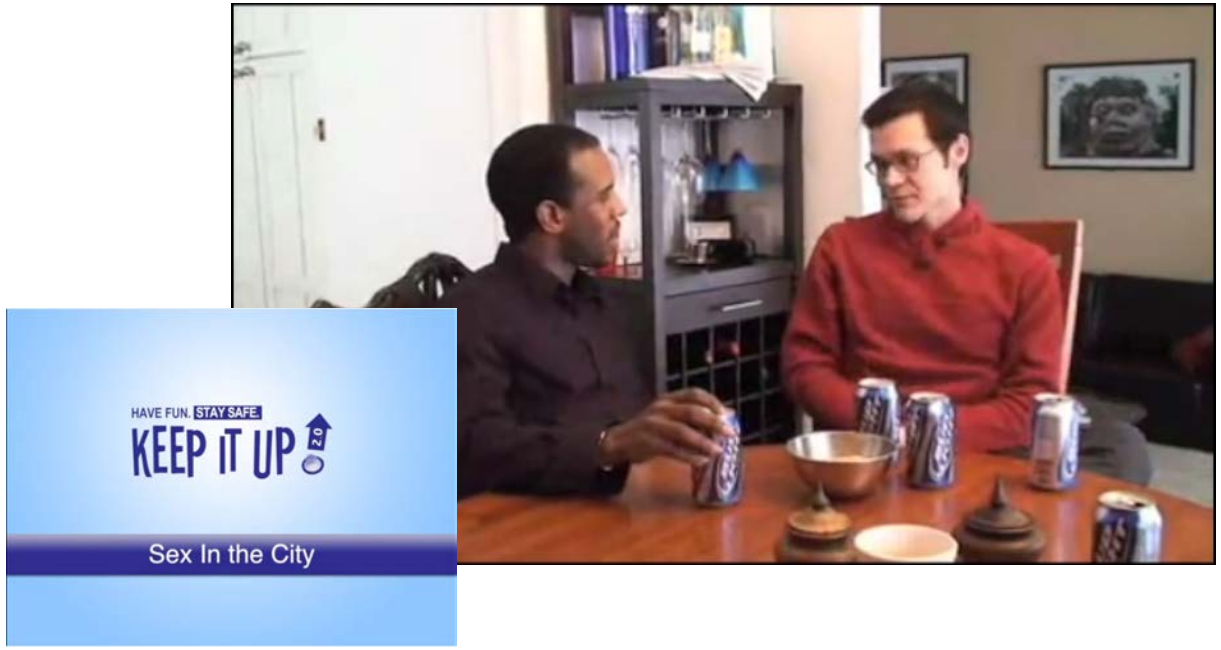
Module 1: Sex and relationships MOS video

2.0 action component	Using role model stories to target peer norms, participants will be able to (1) describe how being single/in a relationship affects their whole person and (2) describe benefits of using condoms.
2.0 instantiation component	Candid interviews with regular guys on the street about community. Sex and relationships questions grouped with safer sex questions in the same video. Fun, positive messages.
3.0 changes	Made safer sex its own video, added questions about PrEP, and placed it later in the intervention.



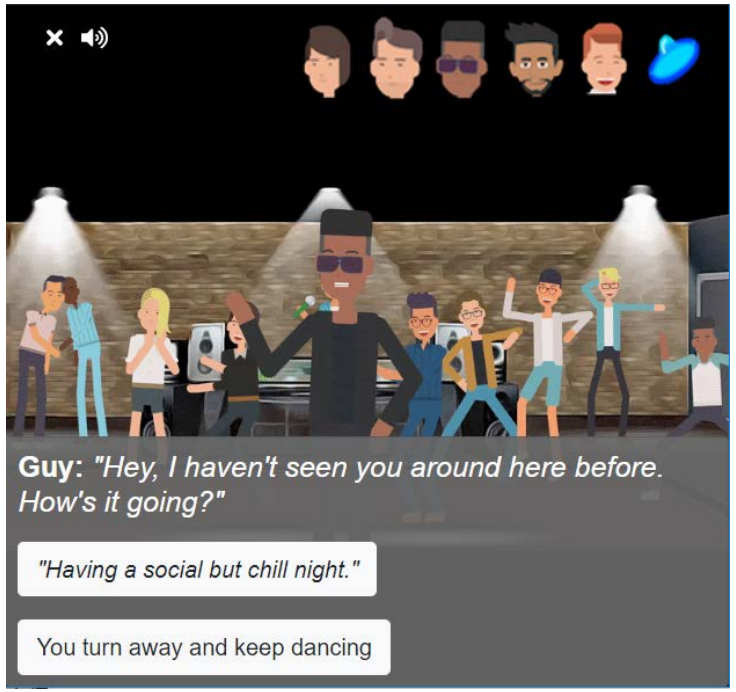
Module 3: Soap opera

2.0 action component	Using dramatic relief, participants will believe that being clear about monogamy with sexual partners (and not just assuming so) is important to protecting their sexual health.
2.0 instantiation component	Professionally filmed, scripted soap opera about a group of friends. Each episode focused on one friend and one assumption or issue. Uses cliffhangers before intervention break.
3.0 changes	Updated script and title. Intertwined storylines (including boosters) / added depth to characters.



Module 4: Club Game / Club KIU

2.0 action component	Using scenario-based risk information, participants will be able to describe factors (i.e., physical attraction, drinking/drug use) that can impair a person's judgment.
2.0 instantiation component	Information delivered through conversations with bar patrons while exploring a simulated bar. Participants can navigate in an open-world game area.
3.0 changes	Updated animations and platform. Enhanced personalized normative feedback.

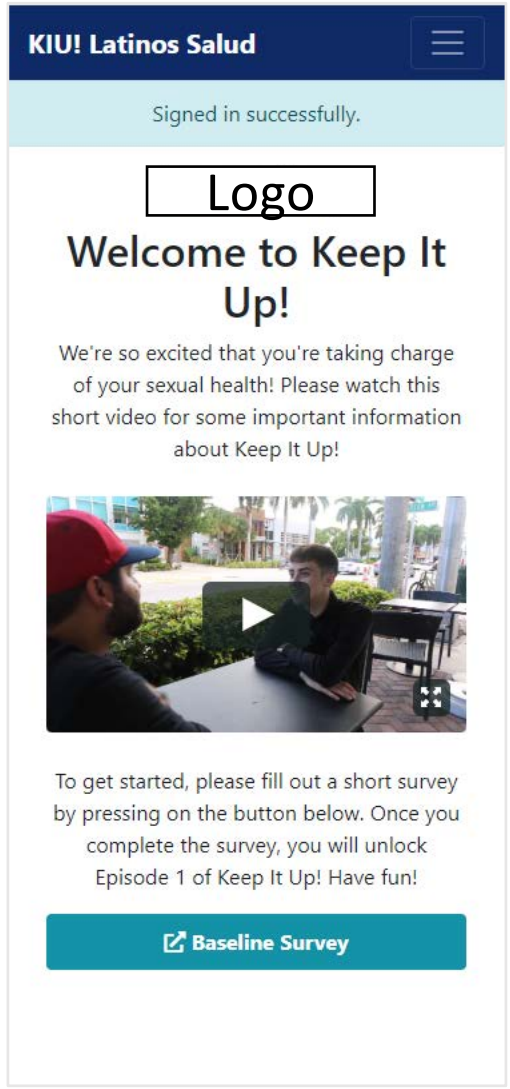


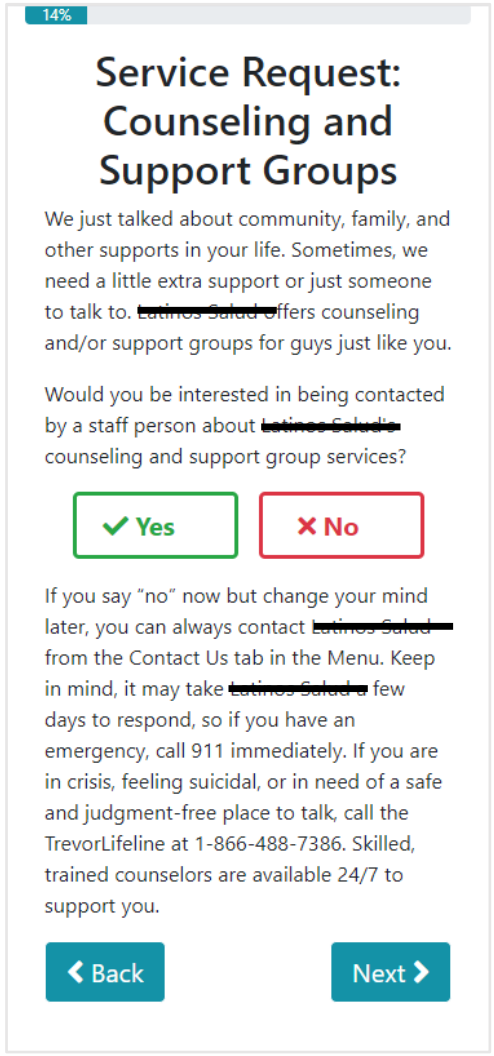
Module 6: Anecdote from person living with HIV

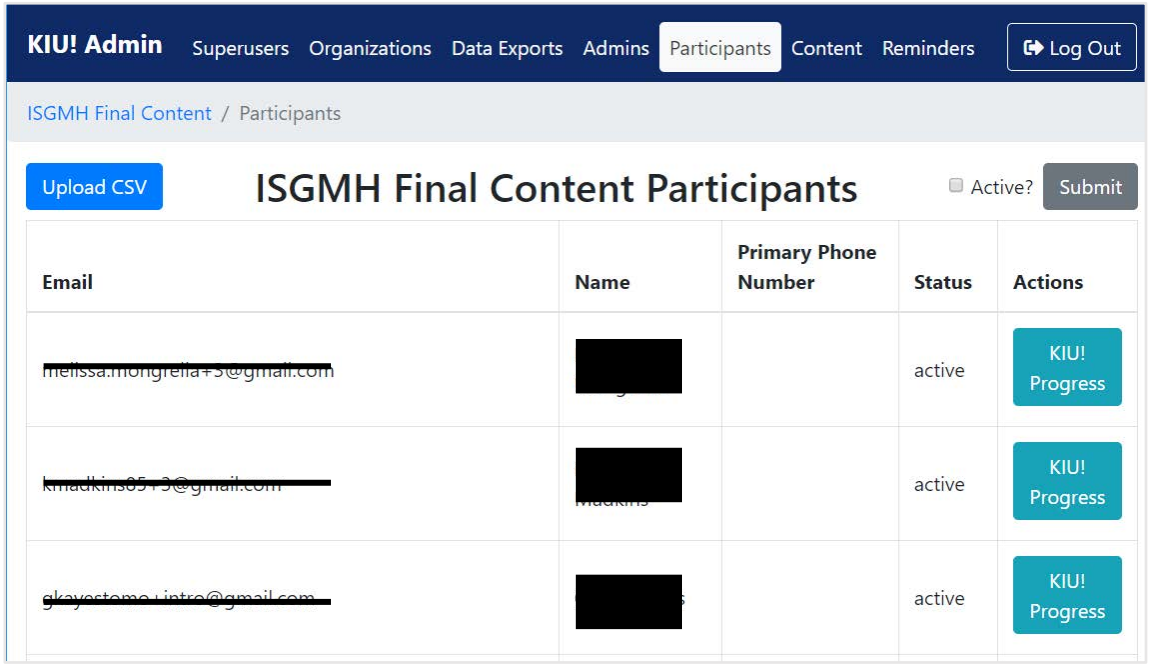
2.0 action component	Using consciousness raising, participants will believe that (1) communicating about sex and boundaries is important and (2) it is possible serious partners can mess up and cheat.
2.0 instantiation component	Personal anecdote from someone living with HIV about how he cheated on his partner, acquired HIV, and transmitted it to his partner.
3.0 changes	Did not change.

"When I first found it I was HIV-positive, it wasn't my test. It was my partner's test that came back positive…. [We found out] I was the one who had infected my partner. That was when I had to spill the beans and let him know that I had gone to a bath house and had sex with other people and not disclosed that to him."

CBO-arm-specific features







Conclusions and lessons learned

- The TIPs framework was useful in deciding how to refresh KIU! while retaining the intervention principles of 2.0.

- TIPs can be integrated with other frameworks and protocols of intervention development and adaptation (e.g., Intervention Mapping). Its unique contribution is the breakdown of instantiation components.

- Ran up against some limitations set by the technology being used. Often had to scale things back for feasibility and/or mobile compatibility.

Next steps and future directions

- We will monitor user feedback logs and regularly test usability across multiple devices and platforms.
- Guided by the TIPs framework decision rules, we will make feature edits when necessary to ensure continued relevancy of action components and/or instantiation components.

IS implications:

- TIPs can potentially be applied to non-technology-based interventions as part of the paradigm shift toward dynamic sustainability.
- eHealth researchers should use TIPs in conjunction with other IS methods like hybrid designs to monitor effectiveness as the intervention evolves.

Thank you funders, collaborators, and staff!

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Considerations for implementing a direct-to-consumer (DTC) model of Keep It Up!, an eHealth HIV prevention intervention for young men who have sex with men

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PSMG virtual grand rounds, October 6, 2020

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@KeepItUp3_
@ISGMH

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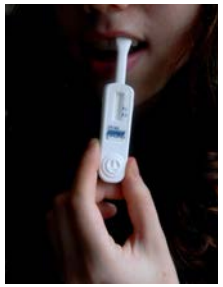
Direct-to-consumer (DTC) interventions

- Implementation of HIV prevention EBIs historically focused on in-person clinics, CBOs
- DTC interventions can overcome implementation challenges particularly for low-contact interventions (Santucci, McHugh, & Barlow, 2012)
- Few technology-enabled interventions for HIV prevention that are used in real world
- Studying their implementation is critical

DTC approach of KIU 3



- Prospective user sees and engages with advertisement
- Ad directs user to registration page & participant gains access to KIU
- Study eligibility assessed via survey within KIU app
  - Nearly all get access to KIU as a service
  - Only eligibles get access to HIV/STI testing, incentives, surveys
- Iterative changes to this process to reduce bottlenecks

DTC approach of KIU 3

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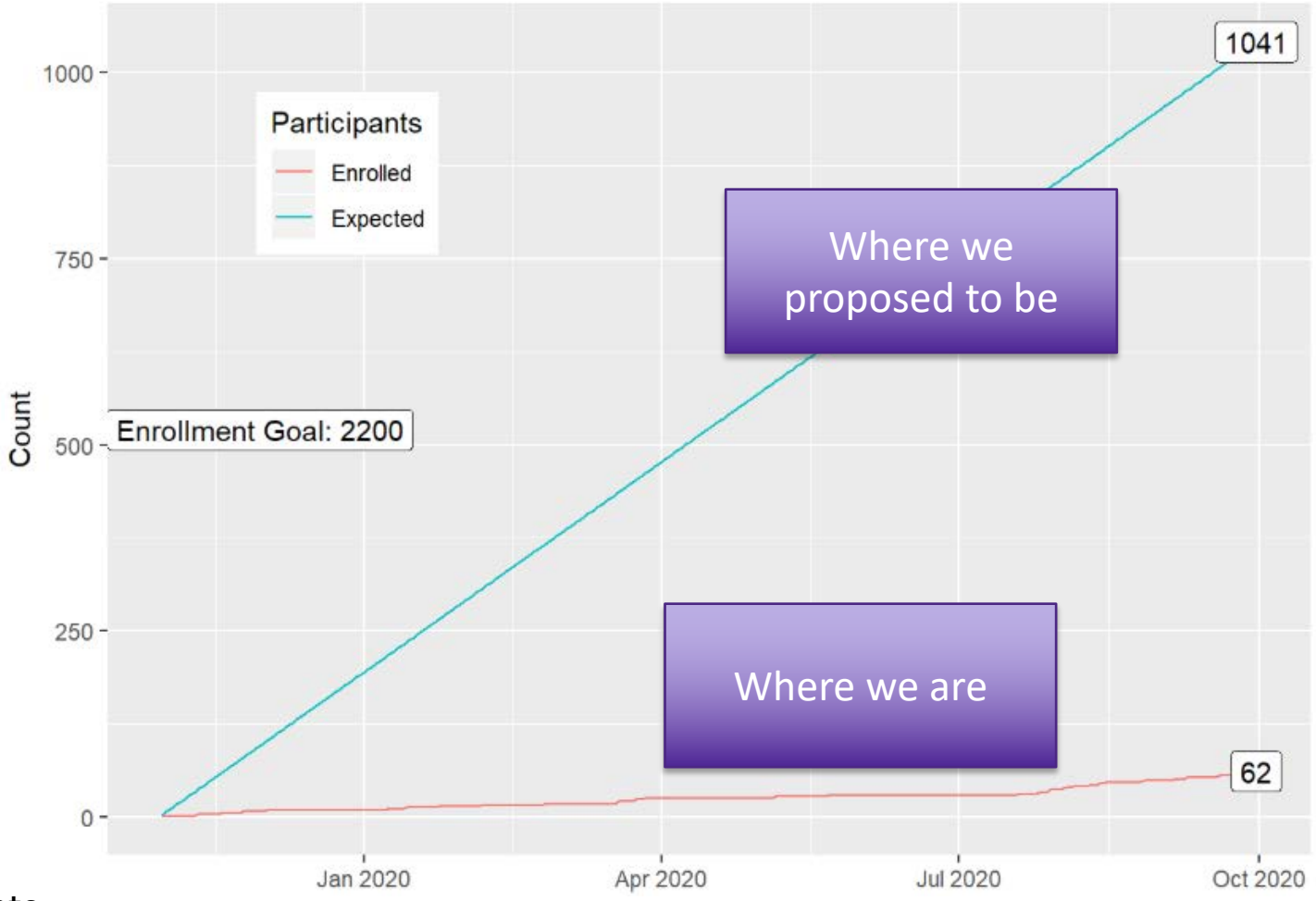
- Launched October 2019 in 14 counties; 8 counties in December 2019
- DTC team wears two hats – as researchers and implementers
  - Decisions carefully made to emulate real-world implementation while maintaining scientific rigor
- Despite careful planning with youth and prevention/implementation scientists, implementing DTC KIU 3 as a service poses distinct challenges

Recruitment challenges & strategies

Enrollment status of DTC arm of KIU trial as of 9/30/2020



Enrollment by County

- Target: 100 participants
- Current expectation: 47 participants
- Current enrollment: no county above 10 participants

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Top reasons for ineligibility: outside DTC county, no condomless sex, >age 29

TOTAL BASELINES COMPLETED: N=141

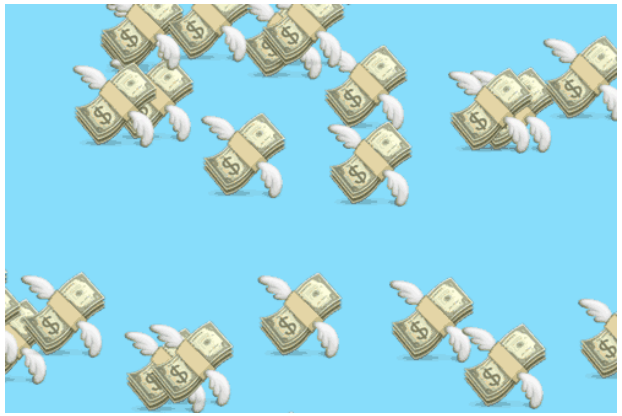
Ineligibility: Reasons (may flag for multiple) | TOTAL # Participants Ineligible (N=71)

	N	% of Total	% of Ineligble
County	36	25.5%	50.7%
Bot	0	0.0%	0.0%
Age - too young	2	1.4%	2.8%
Age - too old	21	14.9%	29.6%
Sex assinged at birth	3	2.1%	4.2%
Gender identity	1	0.7%	1.4%
HIV status	1	0.7%	1.4%
PrEP use & adherence	8	5.7%	11.3%
Condomless Anal Sex	31	22.0%	43.7%

Recruitment challenges & strategies

- Online advertising to 22 counties has been difficult & costly
  - Geographic targeting is imprecise, if available at all
  - Limited advertising budget (to date, spent $19,427 out of $27,000)
  - More restrictions on ad content and targeting in last few years
  - …lead to increased costs of advertising

- Initially did not have guaranteed financial incentives but…
  - A MAJOR motivator to participate in RCTs that we underestimated!
  - Learned that most CBOs planned to incentivize KIU
  - Eventually received permission from NIMH to pay participants $$ in July 2020

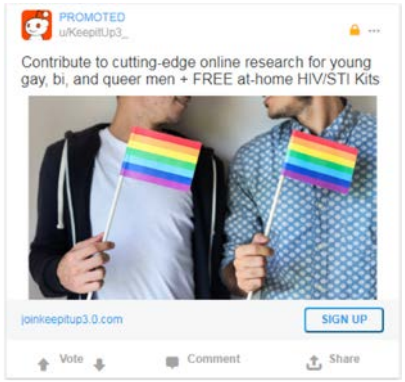


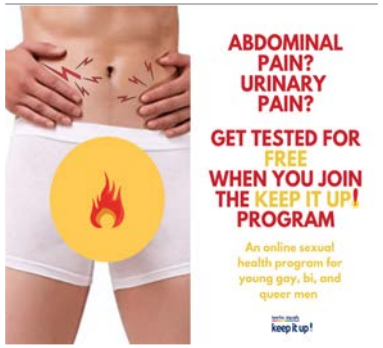
Extensive arsenal of recruitment strategies deployed, but limited yield

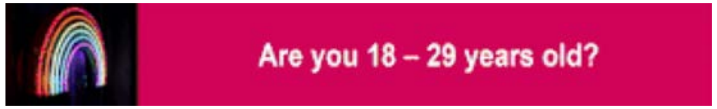
Strategies tried/trying (*most successful)
Paid Strategies
Partner with LGBTQ Marketing Agency – Commando
Social Media (Facebook, Instagram, Snapchat, Twitter) *
Sexual Networking Apps (Grindr, Growlr) *
Porn sites (Porn Hub)
Collaboration with social media influencer - JahLove
Third party recruitment - Trialfacts
Snowball Recruitment
Free Strategies
Online forums/marketplaces (Reddit groups, Craigslist, Doublelist)
Research Participant Registries *
Emails to CBOs & Health Departments
Emails to University Clinics & LGBT Affinity Groups
Leveraging personal/professional networks of HIV/LGBT researchers and clinicians in DTC counties
Outreach to gay recreation/sports leagues/bars
Intern in DTC county as “local champion” / promoter of KIU

Potential Recruitment Strategies
In pipeline
The New Normal website
Re-engagement with Universities
Sharing KIU trailer with potential partners
More Research Needed
Tumblr
Chat Apps (WhatsApp, Omegle, Monkey, WeChat)
Dating Apps (OKCupid, Hornet)
Social Networking Apps (Yubo, House Party, Amino)
LiveMe
Flyers in venues (post-COVID)
Provide HIV/STI test kits only upon completion of intervention; making testing an incentive

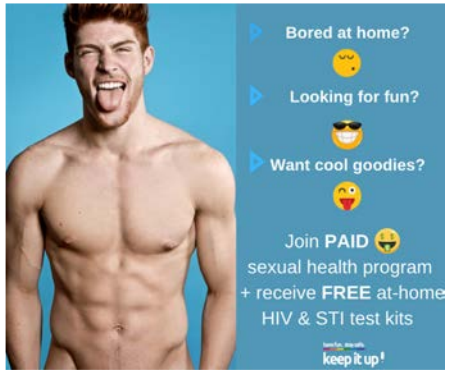
Pre-COVID Ads: Focus on different motivations for participation

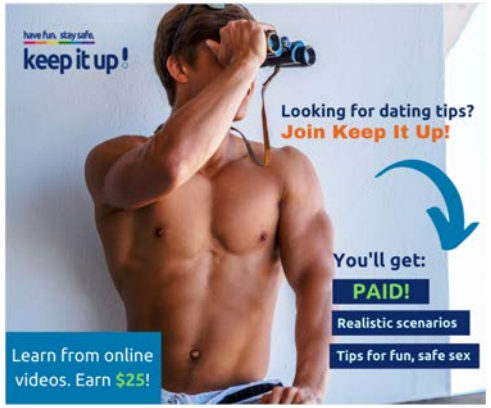


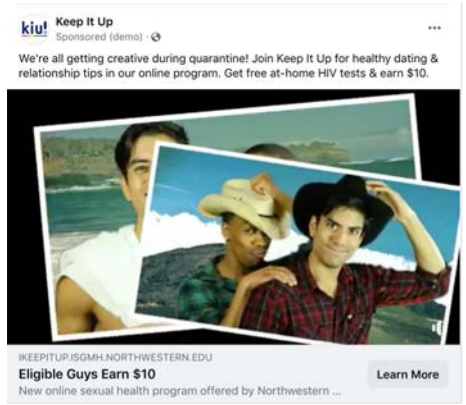




Post-COVID Ads: Additional focus on testing/learning from home, incentives



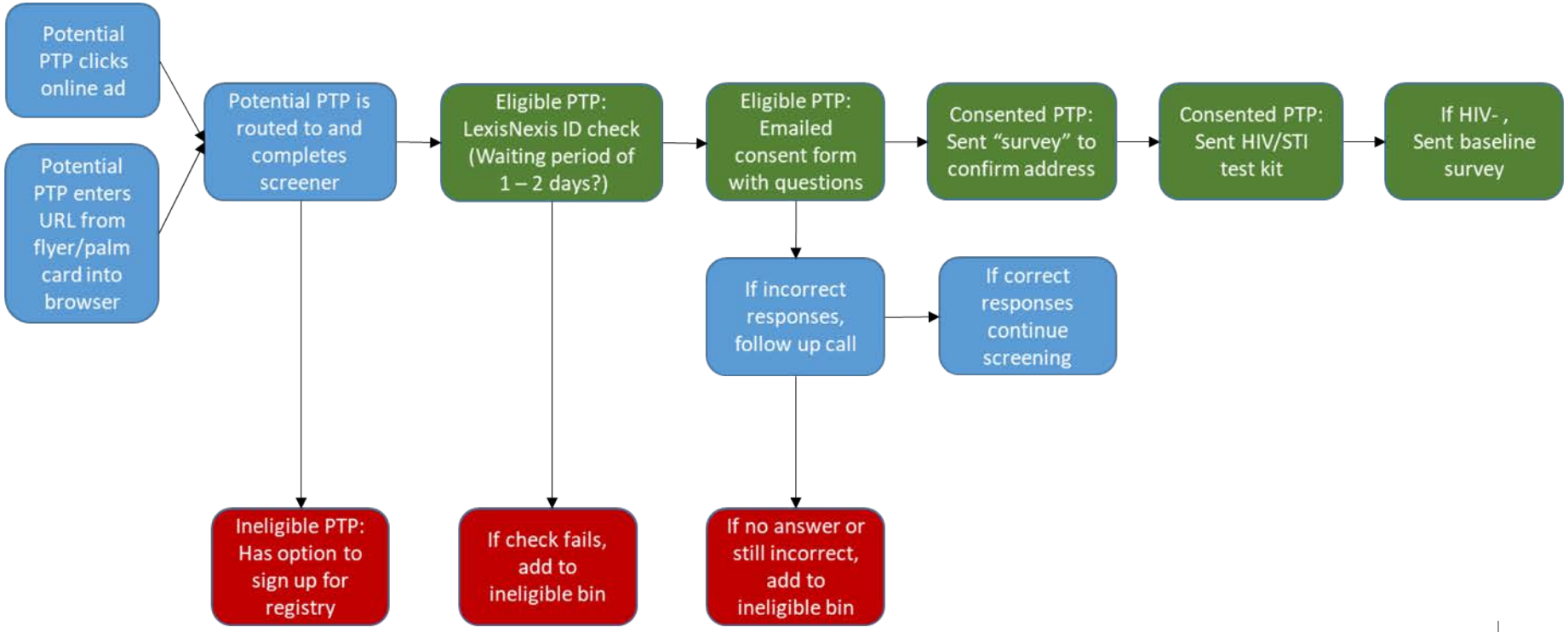




Enrollment and retention challenges & strategies

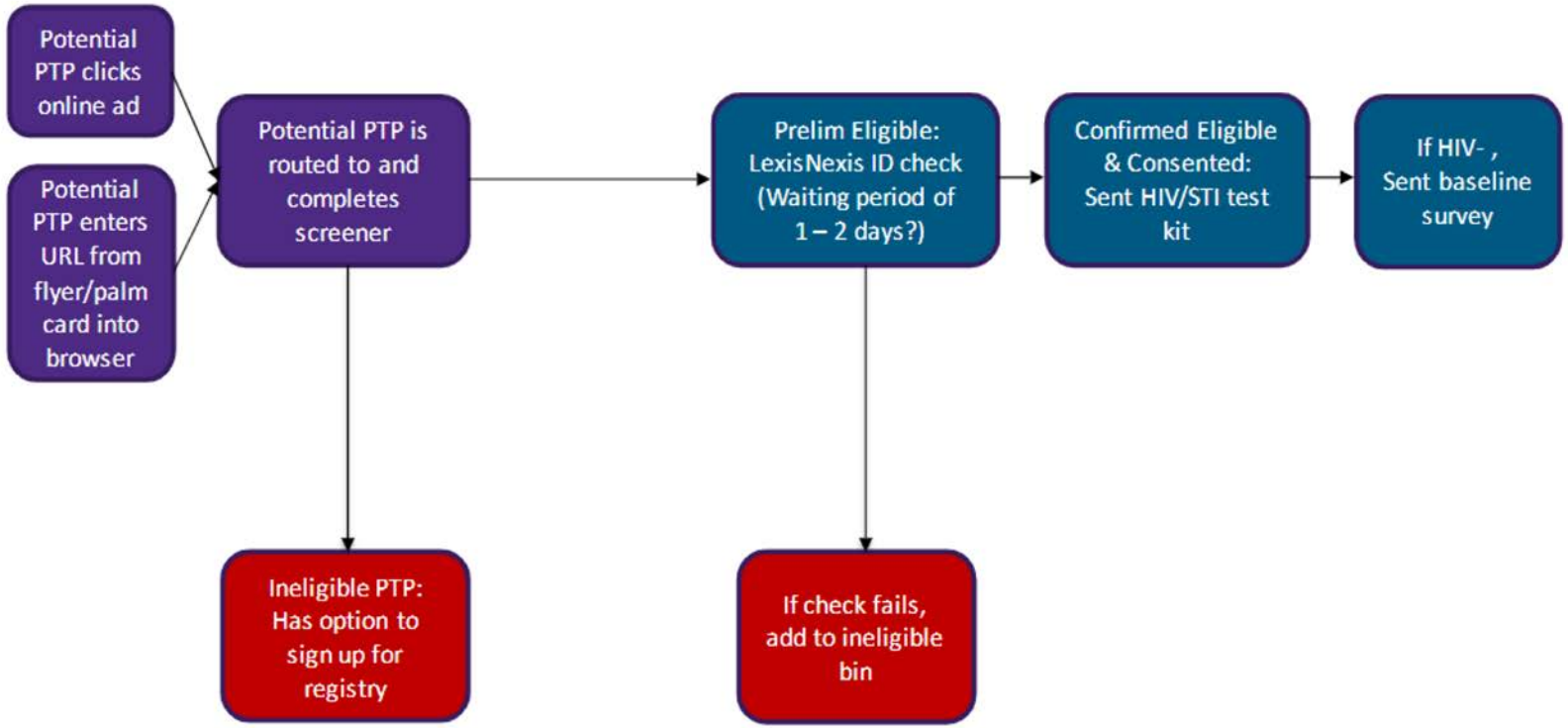
Enrollment challenges and strategies

- Paid participants in KIU 2.0 went through numerous steps to get into study to deter fraudulent entries (e.g., ID check)

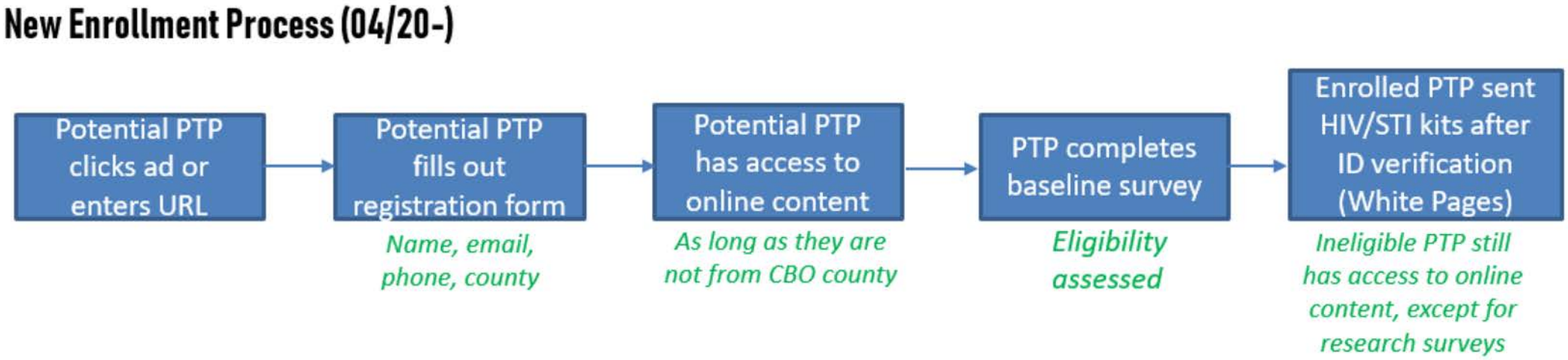


Enrollment challenges and strategies

- We streamlined the enrollment process after seeing few people move through the pipeline, but there were still too many obstacles



Streamlined enrollment process



- Fewer obstacles + guaranteed $ = modest bump in recruitment/enrollment

- BUT – we are still not where we want to be. Why?
  - Giving any personal info a deterrent
  - Prevention not a priority right now
  - Restricting ad spend to conserve costs
  - Participants may expect more incentives
  - …and so on

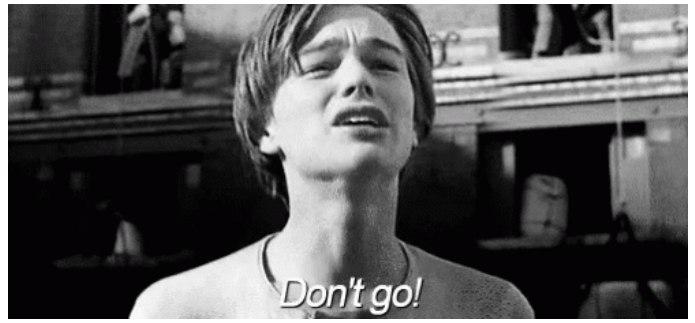
Enrolled: 62

HIV result uploads: 50

STI results returned: 39

Main intervention completed: 30

Retention challenges and strategies



- We researched different incentives, anticipating this may be an issue
  - Charitable donations, choices of token incentive, describing retail value of intervention
  - Previously, giveaways well-received, but were paired with $$
  - We currently provide raffle prizes, HIV/STI test kits with $ value described, small incentives
  - Youth wanted guaranteed $

- Apart from $, HIV and STI self-testing another major motivator
  - But not all want the intervention that goes with it – assumption it's irrelevant/already know info
  - Exploring whether provision of HIV/STI test kits can be contingent on completing KIU

- Staff interact with participants little if at all – how might that affect engagement?

- Competing priorities related to COVID-19, civil unrest, economy

In participants' own words

TOO BUSY: It's been really difficult the last couple of months dealing with school, mental health, family and other aspects of life and I'm trying to get back to the online material as soon as possible. Thanks for being so patient with me

OUTSIDE DTC COUNTY: I'm from Chicago, but live in Minnesota for school and I'm very interested in participating in your study. Would I be allowed to?

ASSUME KIU IS NOT RELEVANT: I'm on PrEP now and see no benefit to being in the study since it's all info I've heard before

WANTS TEST KIT ONLY: I'm interested in the test kits, but not the content

FELT KIU AND TESTING HELPFUL: I am very thankful for KIU! and all that it offers as I have learned a lot from the program thus far and the HIV test result gave me a lot of peace of mind

Concluding thoughts

Implementation of DTC eHealth HIV prevention: More questions than answers

- Under what conditions are people motivated to engage in and stick to DTC HIV prevention interventions in the real world?
- How do you market a program that is unlike anything people have done/seen before? (like the iPhone?)
- User engagement with self-help apps high initially, and few users sustain engagement over time (Baumel, Muensch, Edan, & Kane, 2019)
- Are there other DTC implementation models that may work better?
- Is it feasible to implement DTC online interventions in small jurisdictions (school/county/city) vs. larger ones? (state/region/nationwide)

Silver lining – we have learned so much!

- We tried to emulate what we thought it would look like to deliver a DTC online HIV prevention intervention in the “real world” and quickly found out what didn’t work

- Enrollment challenges likely related to a combination of inclusion criteria + study workflow/obstacles + incentives + recruitment budget + COVID-19 – attempting to disentangle this is fun and hard!

- As few technology-enabled HIV prevention interventions have been translated to real world settings, our experiences provide important implementation knowledge to inform others’ work

Thank you!

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Special thanks to: NIMH, NIDA, and NIH OD for funding (R01MH118213, PI: Mustanski), KIU 3 Youth Advisory Council

DTC team pre-COVID: Krystal, Reno, Kathryn, Josephine

NIH National Institute of Mental Health

NIH National Institute on Drug Abuse
The Science of Drug Abuse & Addiction

NIH National Institutes of Health
Office of Behavioral and Social Sciences Research

NIH National Institutes of Health
Office of Disease Prevention

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Making it Real: Approaches to ensure validity in community-based settings within a pragmatic implementation trial of an eHealth HIV prevention intervention for Young Men Who Have Sex with Men

Nanette Benbow, Justin Jones, C. Hendricks Brown, JD Smith, Brian Mustanski

Northwestern Medicine®
Feinberg School of Medicine

Center for Prevention
Implementation Methodology
FOR DRUG ABUSE AND HIV

Background

eHealth interventions are relatively new and little is known about how to scale-up in community-based organizations (CBO) that provide HIV prevention services. Pragmatic implementation trials can inform scale-up of evidence-based interventions in real-world settings. This talk describes the steps taken to inform and carryout a pragmatic implementation trial in CBO settings by:

- Assessing the CBOs arm design according to the nine PRECIS-2 domains
- Applying PRECIS framework to present CBO-arm pragmatic design and extending its use to reflect a hybrid implementation trial design

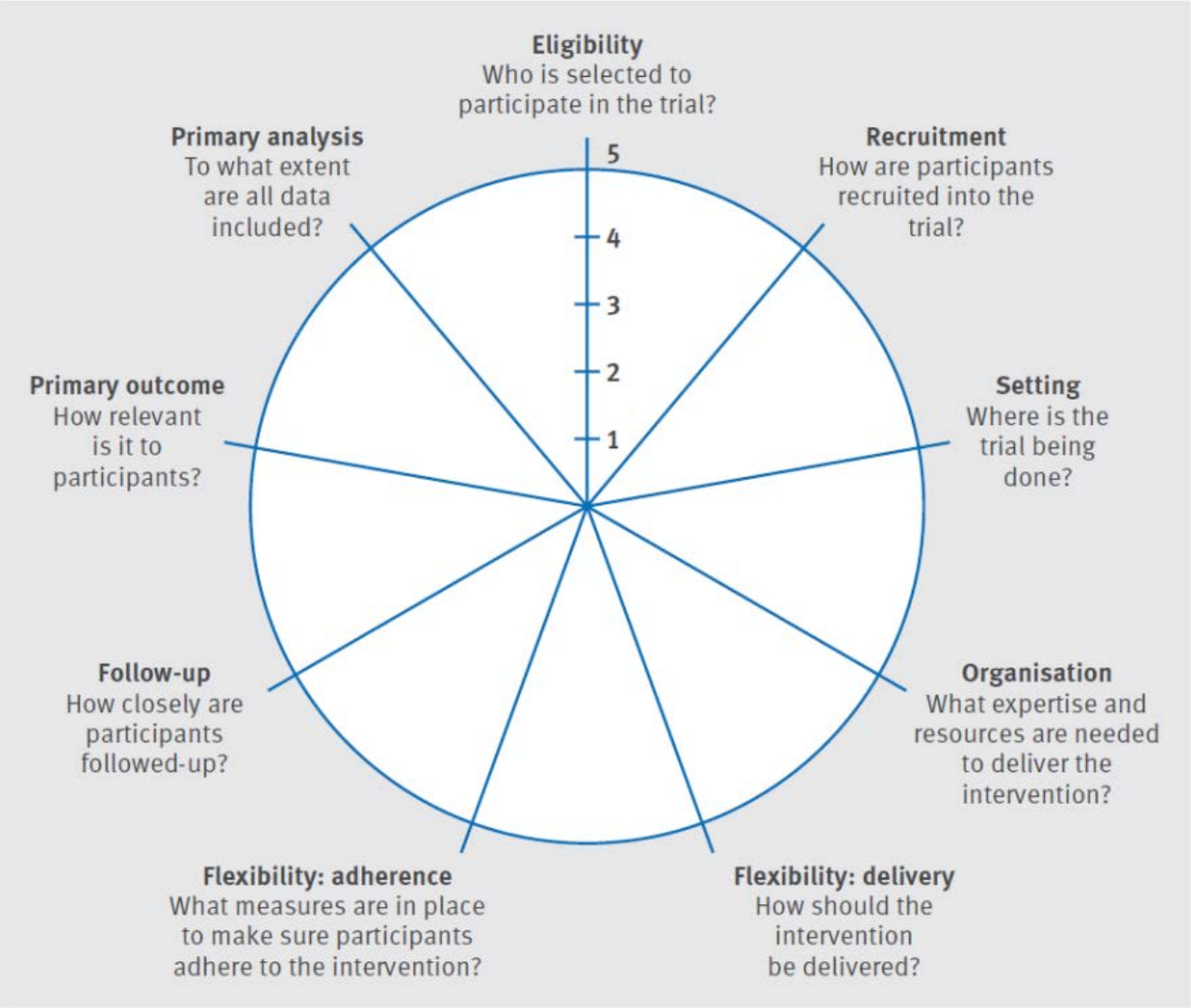
CBO-Arm Design Summary

- All decisions made about the design of the study started with the question: *How would this work when implemented in the real world?*

- CBOs apply, and are selected for, funding to deliver KIU! as part of their routine HIV testing and prevention programs.
- CBOs were selected through a Request for Proposal (RFP) process
- Provided training to CBO staff on the intervention and how to integrate it into routine HIV testing through capacity building assistance (Informed by CDC capacity building provider tools)

- KIU! hosted centrally at Northwestern and deployed by local CBO staff, an approach considered viable by CDC

PRECIS – 2 (PRagmatic-Explanatory Continuum Indicator Summary)



1. Very explanatory
2. Rather explanatory
3. Equally pragmatic and explanatory
4. Rather pragmatic
5. Very pragmatic.

"The aim of a highly pragmatic trial would be to maximize applicability of the intervention to usual care across a range of local and distant settings."

Loudon K, Treweek S, Sullivan F, et al. The PRECIS-2 tool: designing trials that are fit for purpose. BMJ 2015;350:h2147

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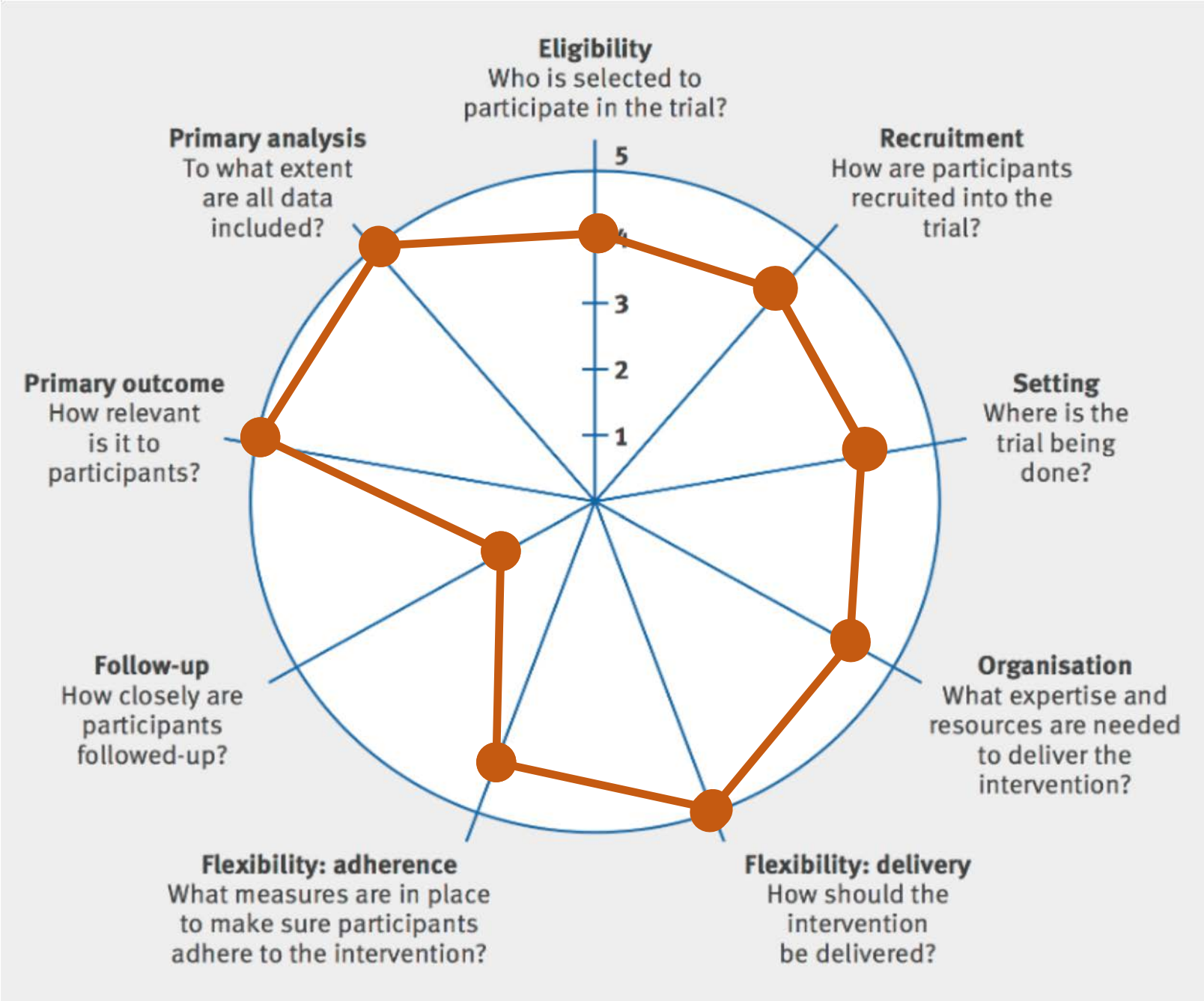
Application of PRECIS-2

- For each domain we present 2 levels, standard PRECIS-2 focus and implementation science focus when relevant
  - Participants – receive the intervention
  - Providers (CBOs) – deliver the intervention
- Three coders ranked each domain and discussed differences. Scores presented reflect consensus rank
- Usual care/practice = Community-based organization (CBOs) settings who would adopt the intervention as part of their HIV prevention services

CBO-Arm PRECIS – 2



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Eligibility - To what extent are the participants in the trial similar to those who would receive this intervention if it was part of usual care?

- Score = 4 – Rather pragmatic
- Participants: HIV negative young men who have sex with men (YMSM) are eligible for the implementation trial.
  - YMSM are a key target population for prevention activities for HIV negatives
  - Participants who do not want to participate in the research are still eligible to take the intervention
  - However, participants may not be followed up if they do not meet eligibility "at-risk" eligibility criteria
- CBOs: All CBOs providing HIV prevention services for YMSM in randomized counties were eligible to participate in the study
  - Minimal exclusion criteria (e.g. small number of clients served)
  - Made adjustments to STI testing procedures to increase inclusion of CBOs who do not typically conduct this in-house

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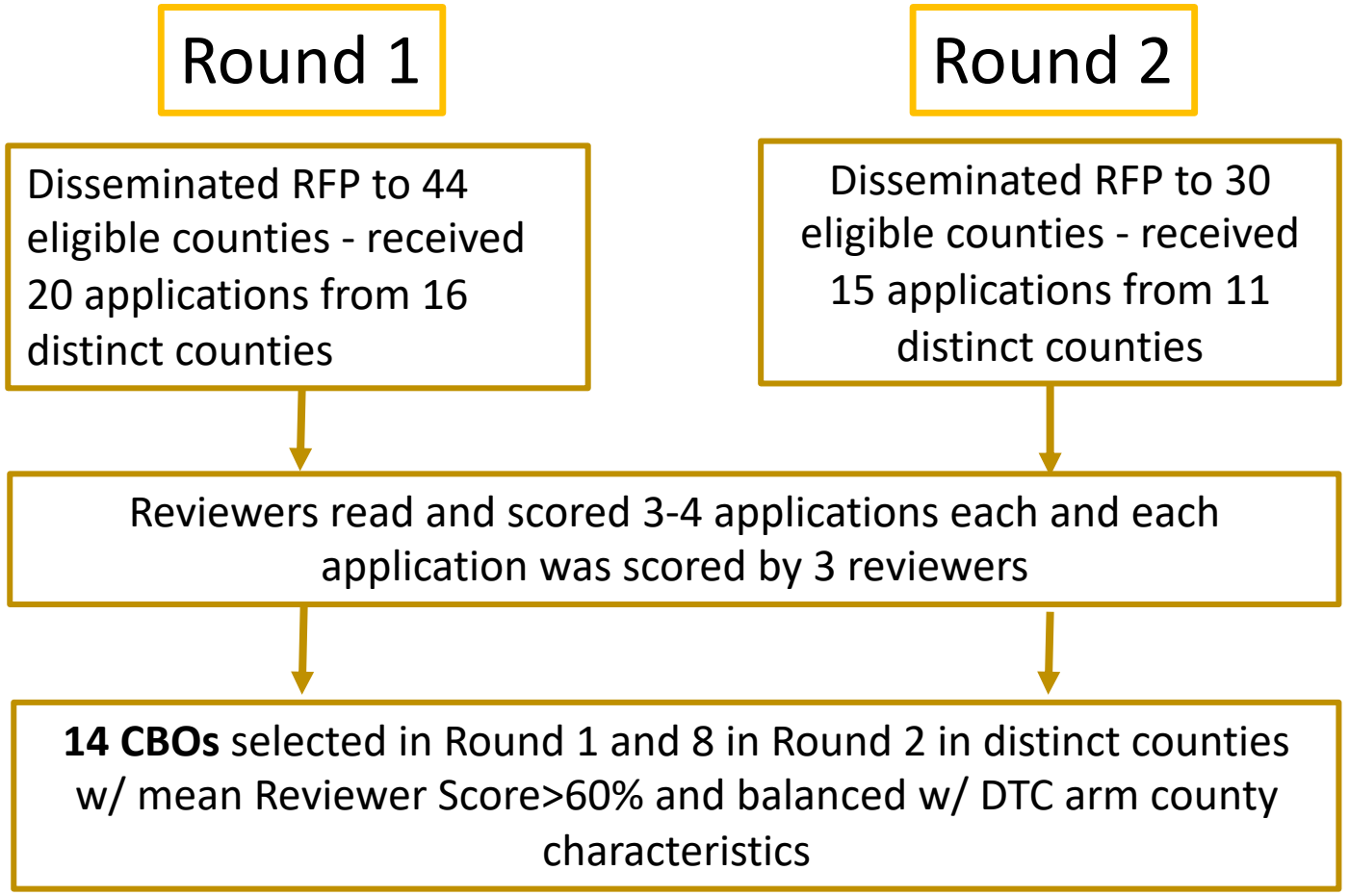
Recruitment - How much extra effort is made to recruit participants over and above what would be used in the usual care setting to engage with patients?

- Score = 4 – Rather pragmatic
- Participants: HIV negative YMSM are recruited through routine and targeted HIV testing and prevention services.
- CBOs: Selected using standard procedures used by CDC and health departments to identify and fund qualified CBOs to conduct HIV prevention services
  - However, CBOs who could not obtain STI test results on clients were excluded from consideration

Recruitment: CBO Recruitment & Selection (N=22)



Recruitment: CBO Application Evaluation Criteria

Criteria	Maximum Score
Documented experience and capacity providing HIV testing and other prevention services for YMSM offered in-house, including number of staff to provide these services	15
Documented capacity conducting referrals to external HIV prevention and care services if not all offered in-house	10
Documented capacity offering STI testing or a clear strategy for facilitating it	15
Soundness of plan to recruit 100-300 YMSM in their county	20
Comprehensiveness and soundness of proposed program approach and work plan to deliver the intervention	30
Soundness of proposed budget and respondent's financial capacity and stability to manage proposed program	10
Total Maximum Points:	100

Setting - How different is the setting of the trial and the usual care setting?

- Score = 4 – Rather pragmatic
- Participants: Representative of the population served
  - Counties with large numbers of YMSM from different race/ethnicity groups
- CBOs: Are representative of qualified CBOs that apply for, and provide HIV prevention services for young MSM
  - Large number of CBOs (N=22) selected to represent the universe of CBO offering HIV prevention services across different geographic locations
  - Selected through RFP process based on types, extent, and experience providing HIV prevention services
  - However, some CBOs may have been deterred from applying based on less than usual funding amount of funding provided to them for implementation

Organization - How different are the resources, provider expertise and organization of care delivery in the intervention arm vs. those in usual care?

- Score = 4 – Rather pragmatic

- Participants: N/A

- CBOs: Offer intervention to participants as they would with other prevention services. However, eHealth interventions are not typically provided in CBO settings and thus require slight modifications to procedures and possibly resources, to implement.
  - Reminders to complete the intervention may vary from standard practice
  - CBO staff may not have existing expertise with eHealth interventions, and/or may need to have electronic devices available for participant to use
  - Similar staffing as usual care

Organization: Informing Staffing and Cost of Delivery

- The study design was informed by formative research with 6 health departments (HD) about the viability of our implementation strategies.

- All were excited about the results of the KIU! 2.0 trial and generated practical ideas for how KIU! could be funded and implemented through existing HIV prevention activities:
  - Staffing effort
  - Staff titles

Organization: CBO training

- Project staff provide initial group video-trainings and webinars to CBOs on ways to promote recruitment for HIV testing with diverse YMSM, use of the KIU! technology platform, and approaches to retain participants in HIV prevention services.

- Trainings are available for those unable to attend or for new staff assigned to work on the project.

- One-on-one trainings via video-conferencing will be offered for CBOs who require further training or as challenges arise.

  - The training approach is reflective of that offered by intervention developers who offer capacity building support for CDC interventions

Flexibility (Delivery) - How different is the flexibility in how the intervention is delivered from the flexibility likely in usual care?

- Score = 5 – Very pragmatic

- Participants: Are offered and receive the intervention as they would for any other prevention service for HIV negative clients in a CBO setting, and have the option to not participate in the intervention or study

- CBOs: Can offer KIU along with any other HIV prevention services, as is standard in usual care/practice.
  - CBOs have the flexibility to determine how they incorporate KIU into their current HIV prevention services
  - CBOs can customize elements of application that are specific to their community but not alter core intervention content, including CBO logo, embed information about the CBOs services, and select from a library of welcome videos

Flexibility (Adherence) - How different is the flexibility in how participants must adhere to the intervention and the flexibility likely in usual care?

- Score = 4 – Rather pragmatic

- Participants: Are sent electronic reminders to complete the different stages of the intervention. Participants typically receive reminders for providers, however some electronic reminders in the study may be a departure from usual care.

- CBOs: Are required to meet a certain number of individuals who complete the intervention based on their history of number of clients served. These requirements are similar to those expected of usual funders.

Follow-up - How different is the intensity of measurement and follow-up of participants in the trial and the likely follow-up in usual care?

- Score = 2 – Rather explanatory
- Participants: Must complete surveys during, and at the end of, intervention to measure project outcomes. This follow-up and data collection are not part of usual care.
- CBOs: Must complete surveys during, and at the end of, intervention to measure project outcomes. This follow-up and data collection are not part of usual care.

Primary Outcome - To what extent is the trial's primary outcome relevant to participants?

- Score = 5 – Very pragmatic
- Participants: Primary outcome, participant's STI test result is relevant to participant.
- CBOs: Secondary outcomes such as cost per infection averted are relevant to CBO providers

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Primary Analysis - To what extent are all data included in the analysis of the primary outcome?

- Score = 5 – Very pragmatic
- Participants: Intent to treat analysis
- CBOs: N/A

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Conclusions (1)

- In keeping with pragmatic implementation trials, we designed and are executing a CBO selection process that faithfully resembled how CBOs conduct HIV prevention.

- Mirroring real-world conditions led to complexities not typically encountered in more closely controlled research studies, such as:
  - Reaching the number of CBOs needed to meet sample size requirements – This required a second round of RFP process
  - Retaining CBOs - After learning more about the intervention, one CBO thought the intervention was not closely aligned with their HIV prevention messaging. We were able to identify another eligible CBO eligible from RFP process in a like county

Conclusions (2)

- Applying the PRECIS-2 framework helped determine domains in which the study is more or less pragmatic
  - We identified domains where the trial departs from real-world practices that will require closer monitoring to determine implications for implementation when scaled-up
- There is an opportunity to further develop/expand PRECIS to include implementation trials and allow for comparisons of multiple strategies
- In the process of applying PRECIS-2 to the DTC-arm
- Input and on-going involvement from stakeholders and practitioners who fund and carry out HIV prevention services play an essential role in ensuring relevance in real-world settings

Funding Acknowledgments

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Questions, Comments?

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@Mustanski

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Office of Disease Prevention

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