

The State of the Science on Mental Health and HIV-Related Health Behavior Interventions

David Pantalone, PhD

University of Massachusetts, Boston

The Fenway Institute, Fenway Health

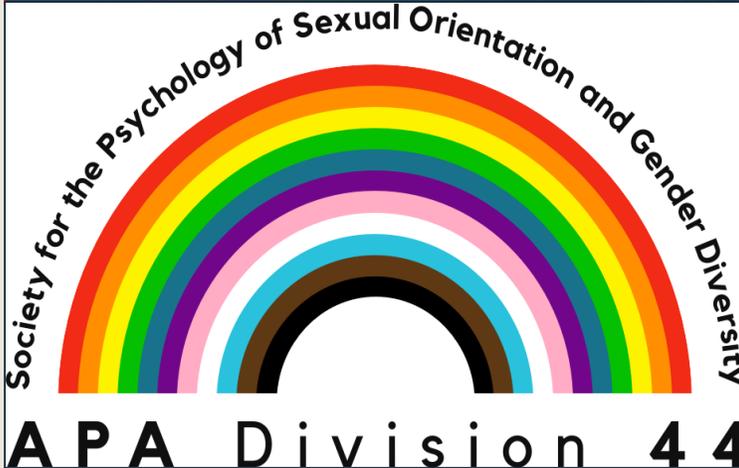
California HIV/AIDS Policy Research Centers
UCLA Luskin School of Public Affairs
February 19, 2019

Thanks to my amazing collaborators!

- **Keith Horvath**, PhD, University of Minnesota
- **Abigail Batchelder**, PhD, MPH, Mass General Hospital/Harvard Medical School
- **Kimberly Nelson**, PhD, MPH, The Miriam Hospital/Brown University
- **Christopher Chiu & Hamish Gunn***, University of Massachusetts, Boston



Who am I?



HIV infections in the U.S.

- The U.S. HIV epidemic (~1.1M) is primarily driven by sexual behavior, especially among MSM/sexual minority men (SMM)
- SMM have the highest incidence (68.1% of new infections) and prevalence (71% of total infections) based on the most recent CDC data
- HIV incidence plateaued for over a decade (~40k/year) and now seem to be decreasing (thanks, PrEP!), based on emerging data (Sullivan et al., 2018 IAS)
- HIV transmission frequently occurs when putatively HIV-negative individuals who are living with the virus but don't know it interact “unsafely” with HIV-negative individuals
- HIV transmission among HIV-positive individuals is virtually eliminated in the context of viral suppression (U=U)

This knowledge provides us targets for intervention development



HIV-related interventions

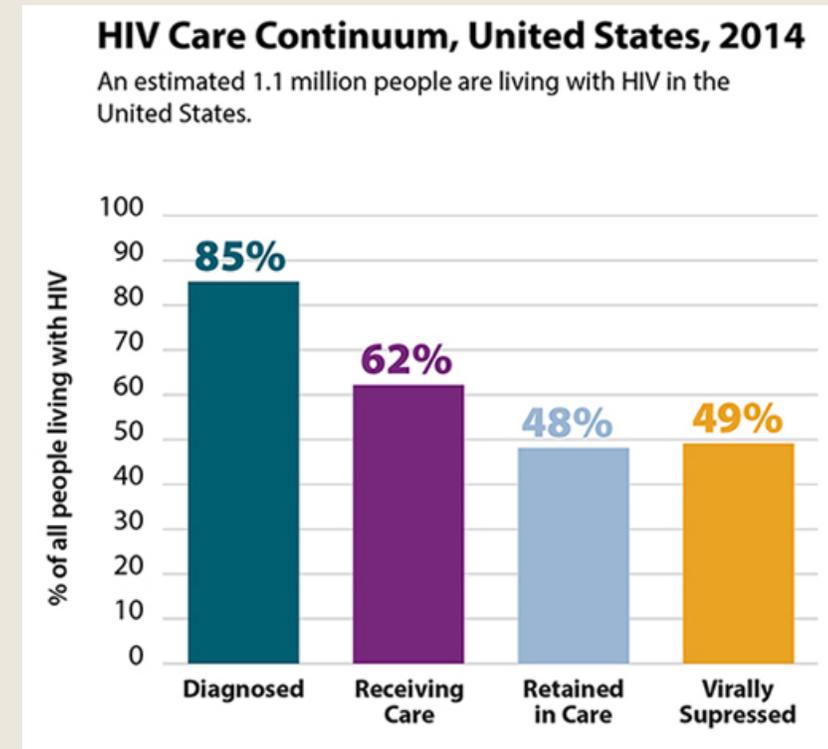
- Various populations (negative, positive), mode (individual, dyad, group), and delivery format (in-person, videoconference, app-based) across the HIV care cascade
- HIV prevention
 - HIV testing
 - Primary prevention, Secondary prevention
 - Behavioral, biobehavioral (PrEP, ARVs/TasP)
- HIV care
 - Engagement with care
 - Medication adherence, then persistence
 - Quality of life
 - Improve mental health symptoms
 - Improve coping with discrimination/stigma

So many interventions!

But, do they work...?

Not well enough, unfortunately

- Level HIV incidence for >10 years
- 1/3 PLWH not in care, 1/2 with detectable VLs (CDC, 2017)
- Clear areas for improvement throughout the cascade
 - *Testing, linkage to care, retention in care, ARV rx, ARV adh, viral suppression*



Who are the interventions helping?
Who aren't they helping?

Limitations of HIV-related interventions

- Don't work as well for individuals with significant mental health comorbidities (syndemics), those with unmet subsistence needs (structural)
 - The most marginalized of the marginalized...
- Extremely complicated individuals need longer, more intensive interventions
 - Interventions focused on health behaviors alone → “rational actor”
 - Not every problem can be addressed in <4 sessions
 - Ideally intervening across levels: individual, structural
- Need medical and behavioral health providers embedded within care settings to be trained in evidence-based techniques
 - But there are barriers there, too (for so many reasons/that's a different talk)

Candidate psychosocial factors

- Within the HIV and SMM mental health literature, there are two primary models—are intervention developers using them?
- Syndemics (Singer → Stall)
 - Multiple, co-occurring psychosocial epidemics that interact synergistically to increase the burden of disease, unique for each disease and population
 - CSA, partner abuse, mental health problems, polysubstance abuse
- Minority Stress Model (Meyer)
 - Distal stressors – discrimination, victimization
 - Proximal stressors – identity concealment, expectation of rejection, internalized homophobia

A call in the HIV intervention literature...

- Springing up all over the literature—Safren, Blashill, & O’Cleirigh (2011) commentary in *AIDS & Behavior*
- Need to focus on the development, testing, and dissemination of interventions that co-target syndemics and health behaviors
 1. *SMM have higher rates of MH problems vs. general population;*
 2. *these MH problems co-occur with each other and interact synergistically to increase HIV risk; and*
 3. *comorbid mental health problems may **compromise the impact of prevention programs**, and integrating treatment of mental health issues into prevention programs may **improve program efficacy**.*
- ... maybe it’s time to evaluate the response?

In-progress systematic review

- “Research synthesis”
 - *“Focus on published findings undertaken with the principal goal of integrating research findings so as to make claims about their collective results and, of course, identify the limits of these claims” (Cooper, 2003, p. 5)*
- Hence, my talk today! Here’s where we’re at...

Inclusion Criteria – Participants & Reports

- Enrolling men (cis, trans) who have sex with men or sexual minority (gay, bi, queer) men
 - Sample needs to include SMM as >50%
 - Or present a subsample analysis for the enrolled SMM
- Men of any HIV status
- Conducted in North America (U.S., Canada, Mexico) and Western Europe (UK, Belgium, France, Ireland, Luxembourg, Netherlands, Portugal, Spain)
- Published in English between 2000 and 2018

Inclusion Criteria – Interventions & Outcomes

- Testing interventions that **co-target** a syndemic and an HIV-related health behavior
 - Intervention had to be “behavioral” (not entirely pharmacologic)
 - Design: controlled or uncontrolled
 - Syndemics
 - CSA, PV, mental health, substance abuse
 - Including non-DSM dx mental health concerns like stress
 - Health behaviors relevant to the care continuum
 - Condomless sex, HIV testing, ARV or PrEP adherence, etc.
 - Including biomarkers, if reported
- Outcomes
 - Objective or subjective

Search Strategy

- (1) Thorough literature review using online databases.
 - *Academic Search Complete, CINAHL, MedLine, PsycInfo, PubMed*
 - *Boolean search terms: (MSM OR “men who have sex with men” OR “sexual minority men” OR “homosexual” OR “bisexual” OR “gay”) AND HIV AND Intervention AND (“Condomless anal sex” OR “condomless sex” OR “unprotected anal intercourse” OR “unprotected sex” OR “sexual risk behavior” OR “Pre-exposure prophylaxis” OR “Post-Exposure Prophylaxis” OR ARV OR adherence OR “treatment cascade” OR “HIV testing” OR “healthcare engagement” OR “viral load” OR “HIV care indicator” OR “CD4 count”) AND (“mental health” OR depression OR anxiety OR PTSD OR “post-traumatic stress disorder” OR “posttraumatic stress disorder” OR “childhood sexual abuse” OR “partner abuse” OR “substance use” OR “substance abuse” OR “alcohol use” OR “alcohol abuse” OR “drug use” OR “drug abuse”)*
- (2) Reached out to experts in the field for published or in-press articles, and recs for potentially eligible articles.
 - *Sent emails describing our eligibility criteria to various HIV and health psychology listservs as well as intervention researchers in our own professional networks.*
 - *Announced our review at formal and informal professional meetings.*
- (3) Systematically reviewed the reference lists of all full-text articles that we assessed for eligibility and relevant review articles for additional sources.

Data Extraction

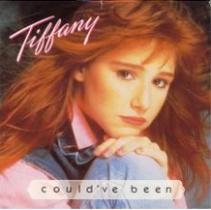
- Literature review to identify potentially eligible articles
 - RAs screens abstract for inclusion/exclusion (kappa = .89)
 - Authors review full-text article
- Standardized data collection instrument: 52 data elements/article
 - Study design elements
 - Sample characteristics
 - Intervention (& control arm) characteristics
 - Outcomes
 - Cochrane risk of bias characteristics
- Calculated effect sizes (Cohen's *d*) for the RCTs only
 - Pre-post between group differences using the most distal assessment
 - Disagreement about bias in within-group, pre-post intervention comparisons (lack of independence of scores)

Data extraction spreadsheet draft - Excel

david.pantalone@umb.edu

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ACROBAT

Clipboard: Cut, Copy, Paste, Format Painter
 Font: Calibri, 10, Bold, Italic, Underline, Color, Background Color
 Alignment: Wrap Text, Merge & Center
 Number: General, Currency, Percentage, Decimals
 Styles: Conditional Formatting, Table, Cell Styles
 Cells: Insert, Delete, Format
 Editing: AutoSum, Fill, Clear, Sort & Find & Filter, Select

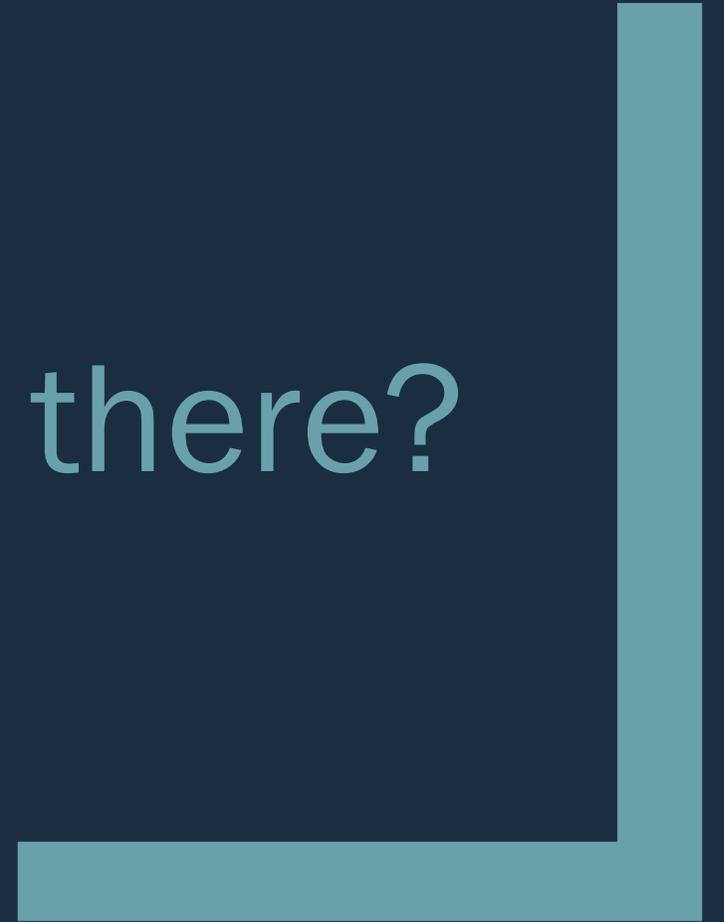
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
DATA CODER	Author names (publication year)	[1] N & [2] Demos of enrolled pts (M age; sexual orientation/% MSM or SMM; HIV status; % race/ethnicity, % of non-cis men)	[1] Recruitment procedures, [2] setting(s) of int delivery/data collection (univ, clinic, resh ctr) including geographic location (city, state, country), & [3] start & end years of data collection	[1] Inclusion & [2] exclusion criteria (make sure sample includes MSM/SMM)	[1] Study design type (uncontrolled pilot, pilot RCT, fully powered RCT) & [2] other imp design info (SMART design? 2 vs. 3 group trial?)	[1] Primary outcome(s)? [2] Secondary outcome(s)?	[1] Unit of intervention delivery (indiv, couples, group [M group size])	[1] Delivery format (in-person, phone) & [2] interventionist characteristics/training (peer/MA/PhD/RN/MD?)	[1] number & [2] Duration of ssns planned over [3] X int duration period (X wks/mos)	[1] Control group description (match info provided for int group)	[1] Intervention period & [2] visit schedule (BL, length of int period, time from BL to post-int FU, time to final FU assmt)	[1] Was the intervention content culturally tailored for sexual minority men? [2] If so, what was the process/what did they modify? (Was the control group content?)	[1] Were assessment visits incentivized? & [2] Were intervention ssns incentivized? (if yes to either, how much?)	Retention data: [1] avg # of ssns completed for int vs. control, [2] % completing all reqd' FU visits, & [3] was there differential attrition across groups?
1														
2			D1, D2, D3	E1, E2	F1, F2	G1, G2	H1	I1, I2	J1, J2, J3	K1	L1, L2	M1, M2	N1, N2	O1, O2, O3
3			Sample characteristics				Intervention Overview							
4														
5														
	data from included articles	coulda been so beautiful												

Cochrane Risk of Bias – Basic Items*

- Random sequence generation
- Allocation concealment
- Selective [outcome] reporting
- Blinding of pts and study personnel
- Blinding of outcome assessment
- Incomplete outcome data (differential attrition)
- Other bias

(*not all articles report the findings of randomized trials, so not all of the RoB criteria apply)

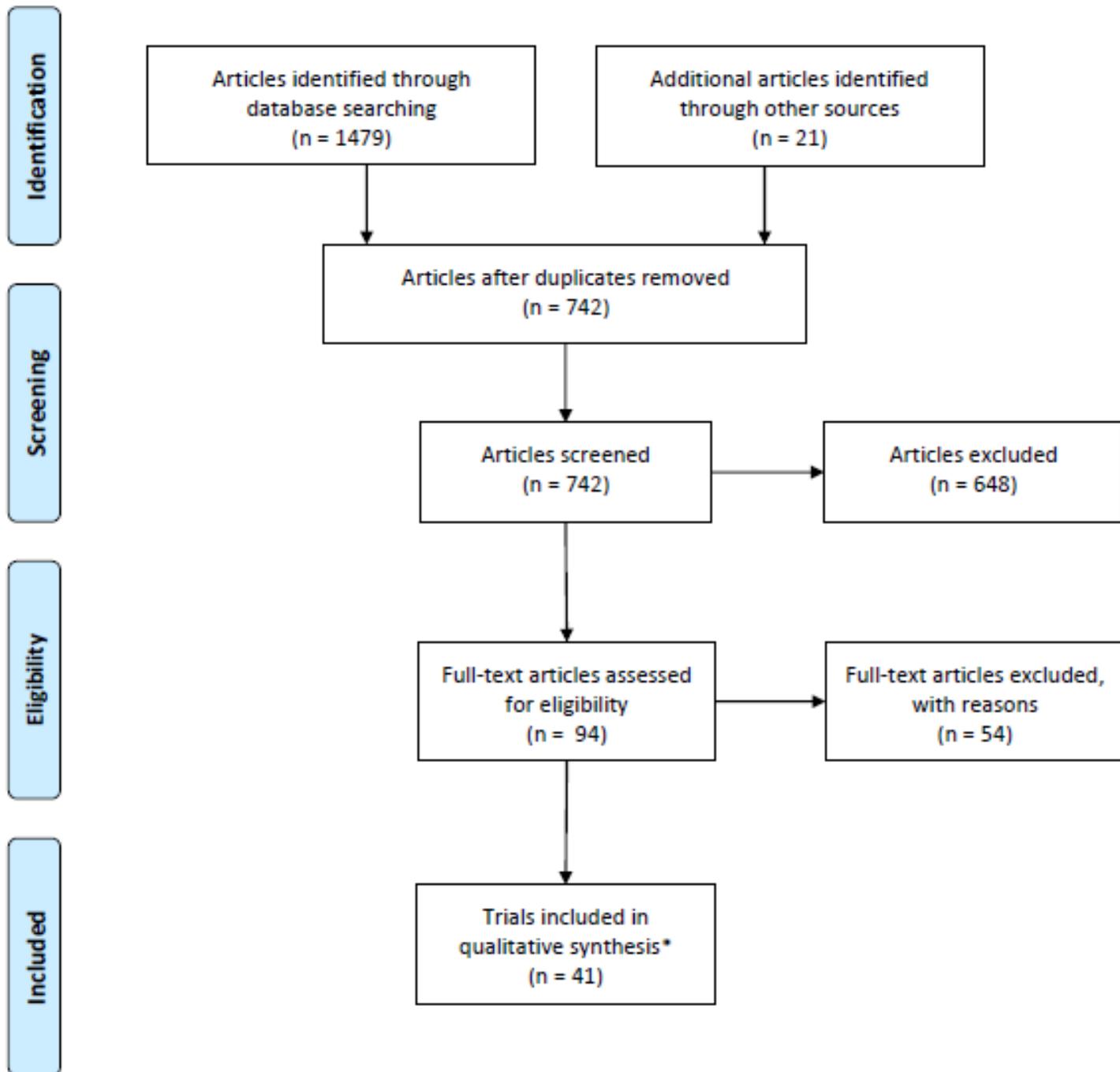
So, what trials are out there?



PRISMA Flow Diagram

* The trials, which report collectively on the results of interventions with 7,156 participants.

* One article (Carrico et al., 2014) presented the results of two trials. Thus, the sum of the full-text articles excluded and the trials included in the qualitative synthesis (95) is greater than the number of full-text articles assessed (94).



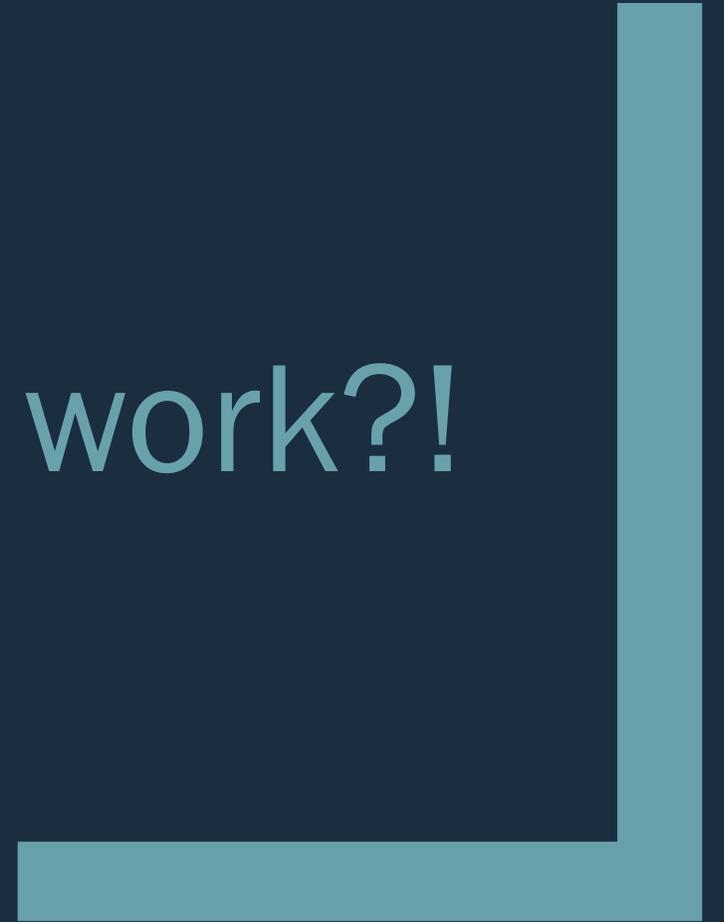
Intervention descriptives (1 of 2)

- Of the 41 trials, they showcased 30 distinct interventions, 93% based in the U.S.
 - 2 Canada, 1 Switzerland
- 80% limited to SMM
- Outcomes
 - 3 syndemics: mental health (22), alcohol use (18), drug use (24)
 - 3 HIV-related health behaviors: sexual behavior (31), ARV adherence (17), missed healthcare visits (1)
- Most used multiple recruitment strategies (32)
- 18 were identified as pilot trials
 - Avg N for pilots = 47
 - Avg # of int ssn 9.1 (SD 5.6)
- 23 non-pilot trials
 - Avg N for non-pilots = 274
 - Avg # of int ssns 12.4 (SD 12.3)
 - Skewed from 2 outliers with 48 ssns
 - With those removed, avg was 9.0 (SD 5.2)

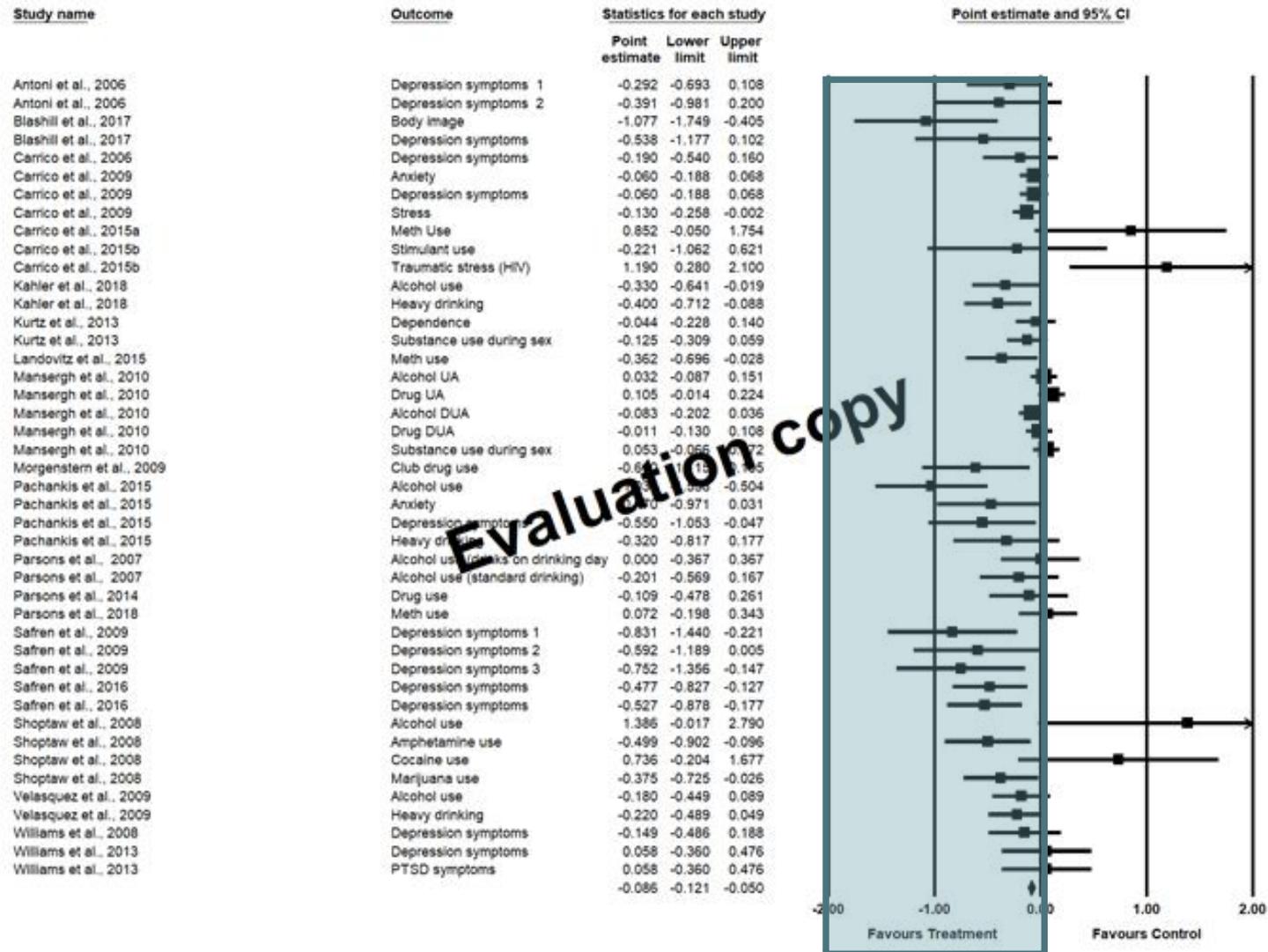
Intervention descriptives (2 of 2)

- In 14 trials, interventions were described as culturally tailored
 - Numerous interventions did not explicitly state that they were tailored to SMM, but were individually tailored to the unique circumstances of a give participant (many or all of whom were SMM) → substantively but not systematically tailored to SMM
 - 34-68% culturally tailored, depending on definition
- 31 provided incentives for intervention session attendance
- Substantial variation session completion
 - 16 trials reported an average of 74.8% completion of planned sessions by tx pts
 - 7 trials reported planned sessions completed in both the experimental (avg 71.1%) and control (avg 69.8%) arms
 - 4 trials reported the % of participants who completed all sessions (avg 42.5%)
- Follow-up assessment timing varied
 - Avg across all interventions 34.5 weeks (range = 6-64)
 - Avg % retention at the final assessment 80.8%, (range 58-100%)

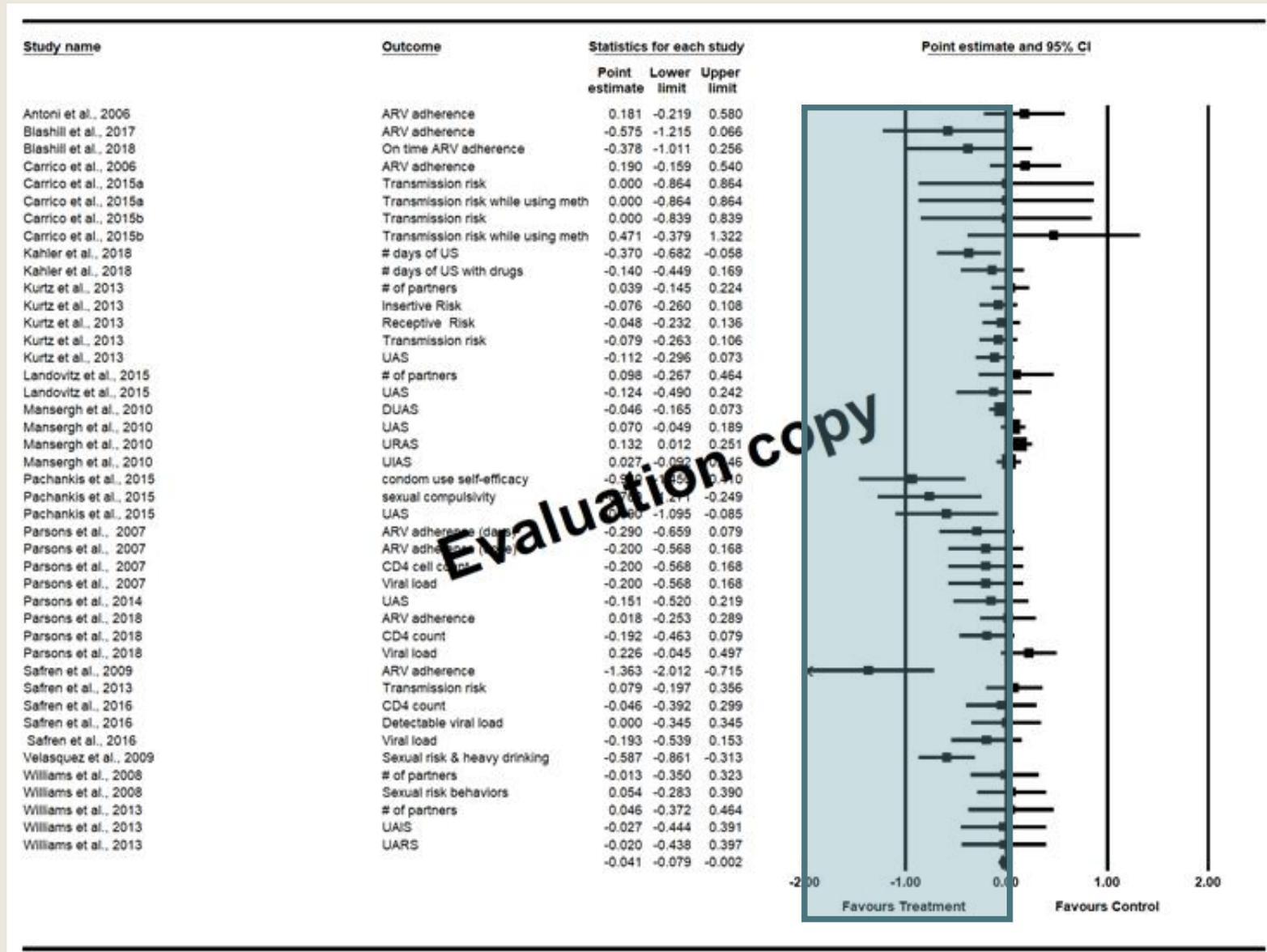
And did they work?!



Forest Plot: RCT Syndemic Outcomes



Forest Plot: RCT HIV-Related Health Behavior Outcomes



Intervention Outcomes

- Most trials targeted a single syndemic indicator and a single health behavior, most focused on drug use and sexual behavior
- Some promising evidence but definitely no slam dunk
- Modest effect sizes overall, many with tiny positive effects, calling into question the necessity of the combined approach given the resources
- Many pilot trials that need fully powered RCTs with the promise of greater efficacy
- We are working on the optimal way to present all of the various summaries across studies (aside: if you have ideas of ways that you'd like to see the data sliced, please don't be shy and tell us!)
- We remain hopeful!

Overall Implications (so far)

- Address multiple syndemics concomitantly
- Expand to include other levels of intervention (provider-level, structural)
- Lengthen intervention period
- Need trials in non-U.S. contexts
- Continue to focus on highest-risk subgroups of SMM, i.e., SMM of color
 - 55% of study participants across the 41 trials were men of color
- Only 1 intervention was technology-delivered
 - Need to increase reach
- Cultural tailoring appears to be associated with more favorable intervention outcomes
 - Does the tailoring address intersecting identities or sexual orientation only?



Thank you!

Questions?

david.pantalone@umb.edu