

E-health interventions for addressing syndemics in MSM

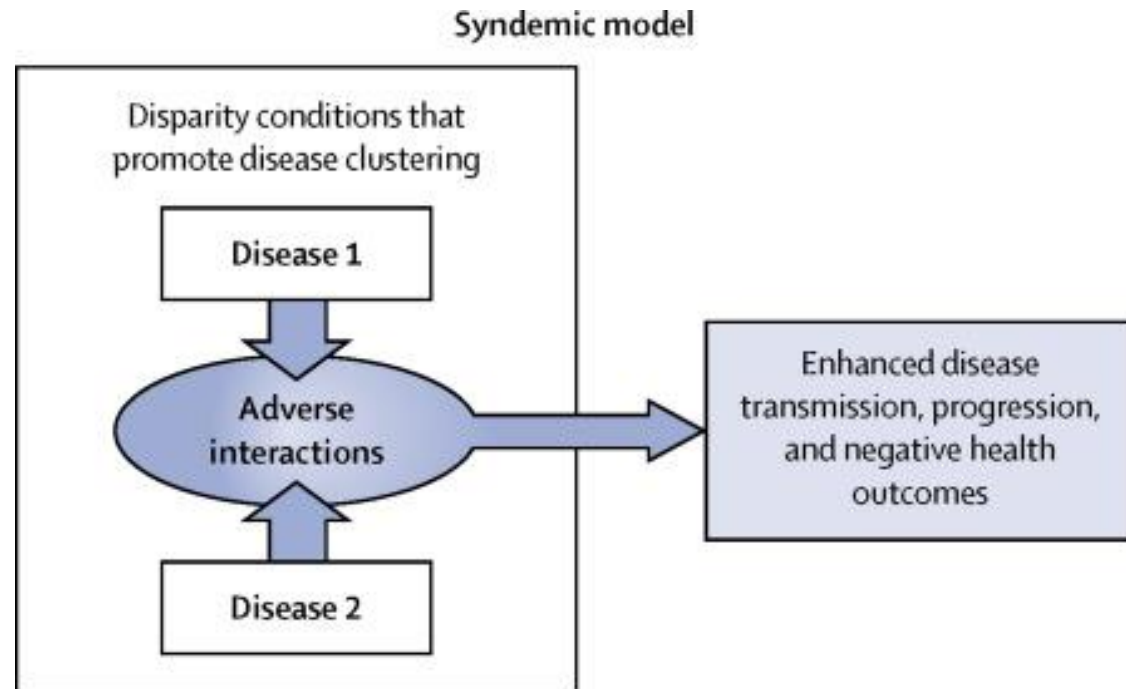
G.J. Melendez-Torres, Rebecca Meiksin, T Charles Witzel, Peter Weatherburn & Chris Bonell

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Background

- MSM experience highest HIV/STI incidence of any group in the UK.
- Simultaneous, mutually reinforcing epidemics with associations between **HIV & STIs, common mental illness and substance use.**
- NIHR funded review investigating potential approaches.



Research aims & methods

To search systematically for, appraise the quality of, and synthesise evidence to address the following research questions:

- What are the effects of interventions on HIV and STIs, sexual risk behaviour, alcohol and drug use, and depression and anxiety, overall and by intervention and client sub-group?
- Are such interventions cost-effective in reducing these outcomes?

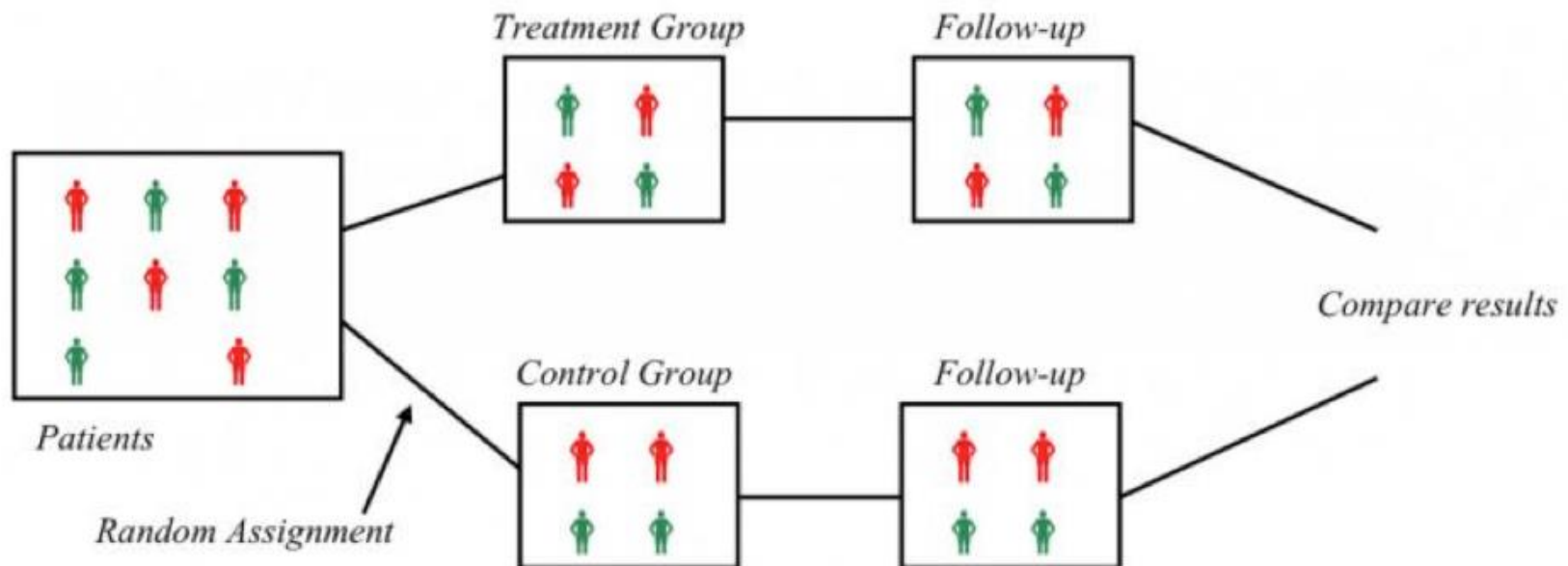
Studies synthesised through

- Narrative synthesis
- Meta-analysis

Inclusion criteria

Only included:

- randomised controlled trials;
- with interactive or non-interactive e-health interventions;
- delivered to populations consisting entirely or principally of MSM;
- in order to prevent HIV, STIs, sexual risk behaviour, alcohol and drug use or common mental illnesses.



Included studies



- 16 included studies from 14 trials
- 13 reported sexual health outcomes, 2 reported substance use outcomes and none mental health or alcohol use. 1 reported both sexual health and substance use outcomes.
- 13 compared active intervention against no treatment (standard of care), 1 was a 3 arm trial with 3 different interventions.

have fun. stay safe.

keep it up!

Author	Name	Type	Focus	Setting
Bauermeister 2019	MyDex	Modular	HIV prevention	US
Bowen 2008	WRAPP	Modular	HIV risk reduction	Rural USA
Carpenter 2010	Hot and Safe M4M	Modular	HIV/STI risk reduction	USA
Cheng 2019	China Gate HIV prevention programme	Modular	HIV prevention	China
Chiou 2020	Safe Behaviour and Screening	App	HIV prevention	Taiwan
Christensen 2013	SOLVE	Animated game	HIV prevention	USA
Davidovich 2006	Cognitive Vaccine	Tailored / non-tailored	HIV prevention	Netherlands
Hirshfield 2019	Sex Positive!	Video based intervention	HIV prevention	USA
Milam 2016		Tailored web-based intervention	Safer sex	USA (San Diego)
Mutanski 2013 & 2018	Keep it Up!	Multi-module, interactive	HIV prevention	USA (Chicago)
Rebeck 2019	TXT-AUTO	Text message intervention	Reduce substance use & HIV risk	USE (Los Angeles)
Rosser 2010	Sexpulse	Modular	HIV prevention intervention	USA

Low or very low for most studies, largely due to:

- high loss to follow-up
- selective outcome reporting (e.g. bias due to not reporting specific outcomes)
- minor issues with trial conduct (e.g. bias due to issues with randomisation)

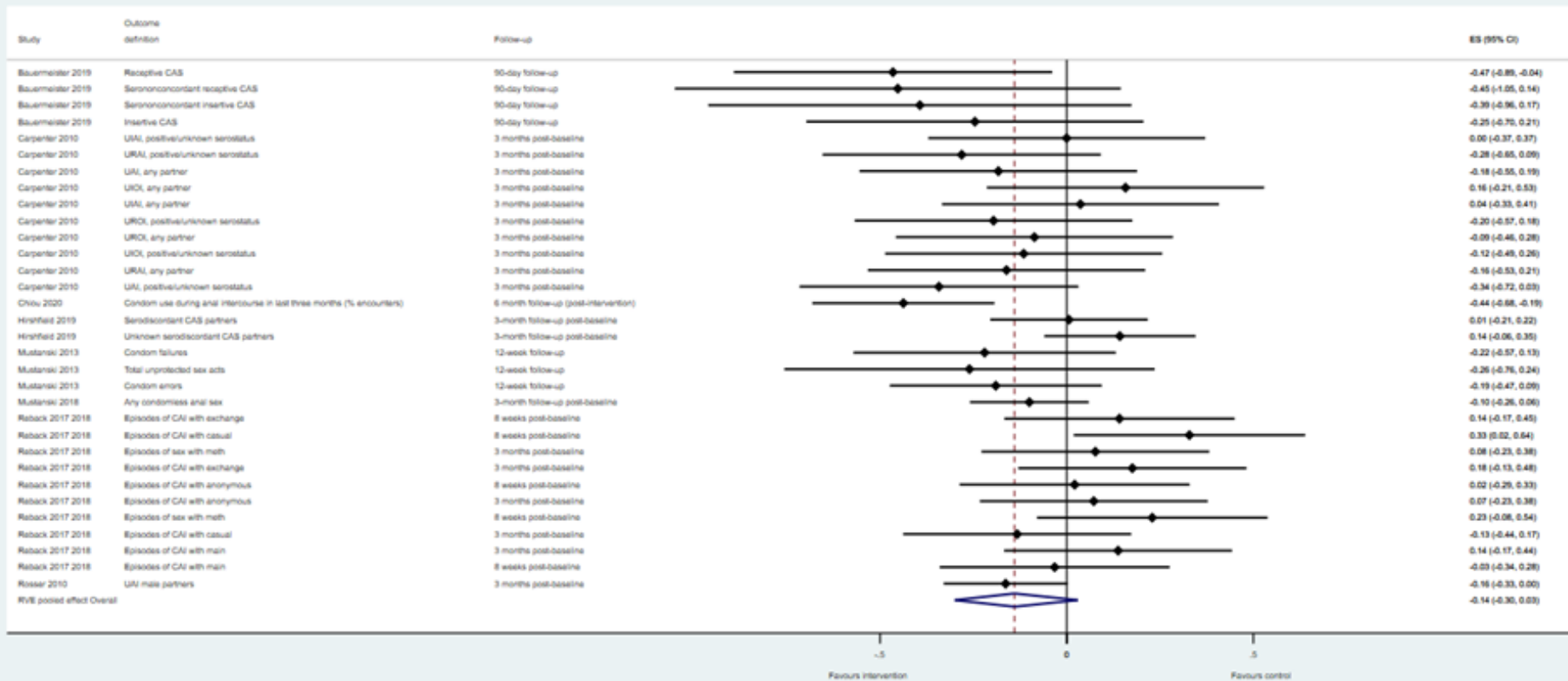
Sexual risk behaviour - short term (< 3 months)

Interventions	Condomless anal intercourse	Condom use	Serodifferent sex acts	Sex under influence of alcohol/drugs
Bauermeister 2019 (myDEx)	✓		○	
Carpenter (Hot and Safe M4M)	○		✓	
Christensen (SOLVE)	✓			
Mustanski (Keep it up!)	✓ ○	○		
Rosser (Sexpulse)	✓			
Reback (TXT-Auto)	X			✓
Chiou (Safe Behavior and Screening)		✓		
Hirshfield (Sex Positive!)			○	

✓ Positive impact
○ No difference
X Negative impact

Short-term estimates of intervention effects on sexual risk behaviours

Pooled data showed no statistically significant difference in impact on sexual risk outcomes when compared to standard approaches in the short-term.

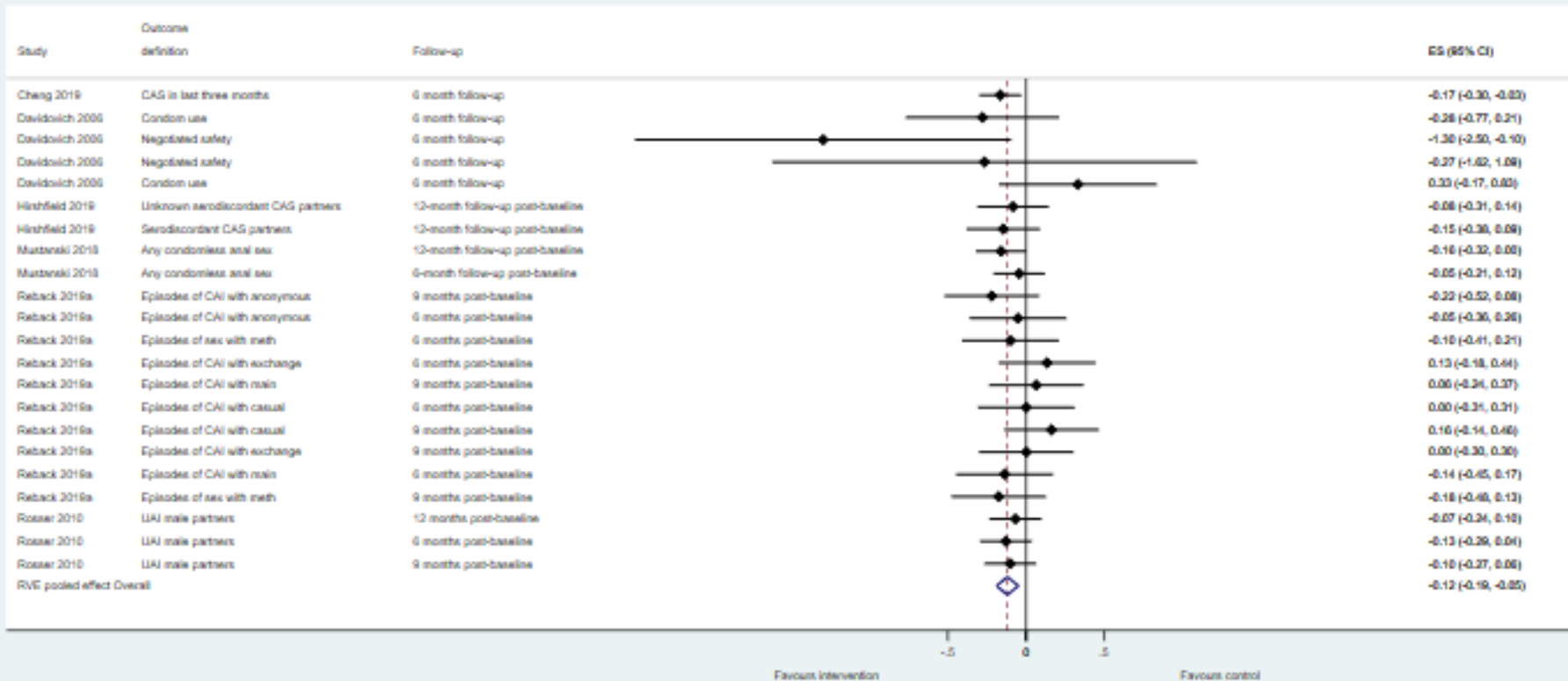


Sexual risk behaviour - mid term (3-12 months)

Interventions	Condomless anal intercourse	Condom use	Serodifferent sex acts	Sex under influence of alcohol/drugs	
Cheng (China-Gate HIV Prevention Programme)	✓				
Mustanski (Keep it up!)	✓				
Rosser (Sexpulse)	○				
Reback (TXT-Auto)	○			○	✓ Positive impact
Hirshfield (Sex Positive!)			○		○ No difference
Davidovich (cognitive vaccine)		○	✓		X Negative impact

Mid-term estimates of intervention effects on sexual risk behaviours

Pooled data showed e-health interventions significantly reduced sexual risk when compared to standard approaches in the mid-term.



HIV infections

Reported in two studies (Chiou 2020 & Mutanksi 2018).

- No significant differences observed in any trials,
- Short time frames and small sample sizes may have hindered analysis

STIs

Evaluated in 3 trials (Chiou 2020, Milan 2016 & Mutanski 2018)

- No evidence over the short term
- Keep it Up! Intervention of online modules showed significant decreases in mid-term (Mutanski)

Drug use outcomes

Reported in 2 trials

- App based intervention in Chiou 2020 found reduced recreational drug use in the short term
- Text message based intervention in Reback 2019 increased days of methamphetamine use (could have due to sample imbalances)

0:02 中華電信 4G 15%

INFORMATION PROVISION
SBS APP to make a test appointment and friend so easy.
Information Of Recreational Drugs

名稱	圖片	俗稱	類別	醫療用途	每次劑量	使用
MDMA		搖頭丸、快樂丸、E、衣服	中樞神經興奮劑	憂鬱症	1/4-1/2 顆	口服 紅蓋
GHB/GBL		G水、液態快樂丸、強森藥水	中樞神經抑制劑	嗜睡症	0.3-0.5 毫升	口服
K他命		K仔、褲子	中樞神經迷幻劑	麻痺	0.1-0.2 克	鼻吸 注射
FM2		十字架	中樞神經抑制劑	鎮靜、安眠	1/4-1/2 顆	口服
大麻		草、飯、麻仔、花	中樞神經迷幻劑	麻痺、食慾改善 癌症治療藥 肌肉、麻風	約 0.3 至 0.5 克	煙吸
安非他命		安、安仔、煙、冰毒	中樞神經興奮劑	無	0.1-0.2 克	鼻吸 注射
古柯鹼		可卡因、快克	中樞神經興奮劑	抗抑郁劑	0.1-0.2 克	鼻吸

名稱	圖片	俗稱	類別	醫療用途	每次劑量	使用
LSD		一粒沙、加州陽光、紙片、Acid、搖籃丸	中樞神經迷幻劑	無	1 小片	口服
嗎啡		泡池	中樞神經興奮劑	無	約 0.5 至 2 克	煙吸 鼻吸

Substance use information provided in Safe Behaviour and Screening App (Chiou 2020)

Only one report available for analysis

- Assessed one intervention focused on methamphetamine use: Automated messaging (TXT-AUTO)
- Included the costs of providing: facilities/offices, medical resources and general administration of the texting services.
- Cost an additional USD426/reduction in CAI compared to no text.
- Cost an additional USD37 per reduction in CAI when using methamphetamine
- These data generally is of very low quality

Conclusions

- Range of studies identified, mostly focused on HIV / STI prevention, 2 on substance use and none on mental health
- Effects were inconsistent
- Evidence suggests most useful for reducing sexual risk mid-term rather than short-term gains.
- Not enough evidence to assess impact on STI outcomes, drug use outcomes and none on mental health
- Few data from economic evaluations