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HIV Risk Perception Among Men who have Sex with Men (MSM): A Randomized Controlled Trial

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Background

- Despite greater access, PrEP has not been widely implemented in high-risk communities
- In Pre-Exposure Prophylaxis Accessibility Research and Evaluation (PrEPARE), 35% of MSM at STI testing clinic identified low HIV risk perception as primary barrier to PrEP uptake
- Providing information about objective HIV risk could improve PrEP uptake and alter HIV risk perception

Methods

- PrEPARE2 was an RCT to determine if providing MSM at risk for HIV with a calculated risk score affects future PrEP uptake
- Baseline asks about HIV risk-perception and risk behaviors
- Subjective HIV risk scores:
  -Self-perceived risk (SPR) score is based on 3 questions adopted from HIV self-perceived risk survey using Likert scales:
  1. How likely is it that you will become HIV positive in the next year?
  2. How likely is it that you will become HIV positive in your lifetime?
  3. My gut feeling is that I will NOT get infected with HIV

  Sum of 3 questions ranging from 0-13, divided into four risk categories: Low (0-3) Moderate (4-6) High (7-9) Very High (10-13)
  -HIVTransmission is percent likelihood from 0-100% that participants think they will become HIV-infected in the next year.
- Objective HIV risk score:

*Risk of HIV transmission in year = (1- [(1- tP_1)^{X1} * (1-tP_2)^{X2}]) * 12*

- P_1= condomless anal insertive risk (0.75% per act)*
- P_2= condomless anal receptive risk (1.4% per act)*
- X_1= number of insertive anal sex acts in past month
- X_2= number of receptive anal acts in past month
- t=2.5 if STI in the past month or herpes ever**

*Baggaley 2010, **Rottingen 2001

Total score and risk category:
Low: < 0.120
Moderate: 0.120 - 0.590
High: 0.591 to 5.9
Very high risk: > 5.9

- Primary outcome was proportion of PrEP uptake at week 8 with Fisher's exact test used to compare proportions between arms
- Cohen's Kappa Coefficient was calculated to assess agreement between the subjective and objective risk measure
- Self-perceived underestimation of HIV risk was defined if SPR risk category was below CalcR risk category.

Figure 1: Study Flow

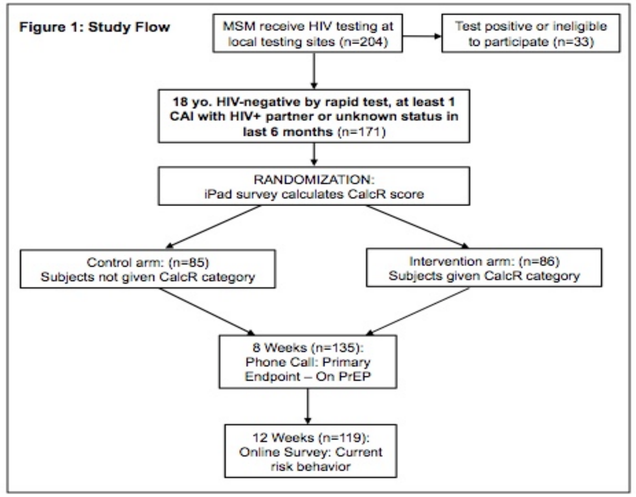


Table 1: Demographics and Baseline Risk Factors

	N (%)
Age**	32 (25-42)
Race	
White	102 (60%)
Black	13 (8%)
Other	56 (33%)
Latino Ethnicity	46 (29%)
Some college or >	157 (92%)
Monthly income <$3000	89 (55%)
Private Insurance	106 (62%)
Number of partners last 6 months	5 (3-10)
Substance Use	52 (30%)
Methamphetamine Use	8 (5%)
Popper Use	24 (14%)
PrEP Awareness	139 (81%)
Prior PrEP Use	9 (5%)
Perceived PrEP Candidacy	97 (57%)
SPR Score**	3 (2-5)
HIVTransmission**	15 (6-29)
CalcR Score	0.26 (0.1-0.44)
HIRI-MSM **	18 (13-22)
No differences between arms except education; ** Median (Interquartile ratio)	

Results: PrEP Uptake

- At week 8, n=135 participants were reached for follow up, n=59 (69%) in control and n=76 (88%) in the intervention arm (p=0.003)
- Attrition rate for the primary endpoint was 21% due to inability to reach participants
- Of those reached for follow up, n=14 (10%) started PrEP with n=6 in the control arm and n=8 in intervention arm
- N=93 (69%) considered starting PrEP with n=39 (66%) in control and n=54 (71%) in the intervention arm.
- No difference by arm in either PrEP uptake or consideration of PrEP

Table 2: Subjective versus Objective Risk

		CalcR			
		Low	Moderate	High/V.High	Total
SPR	Low	42 (25%)	**36 (21%)**	**12 (7%)**	90
	Moderate	10 (6%)	38 (22%)	**17 (10%)**	65
	High/V. high	8 (5%)	5 (3%)	3 (2%)	16
	Total	60	79	32	171

49% concordant, 38% underestimated risk and 14% overestimated risk (Kappa=0.124)

Table 3: Reasons for Not Starting PrEP

Reason	Control (n=53)	CalcR (n=68)	Total (n=121)
Did not think at risk	18 (34%)	25 (37%)	43 (36%)
Side effects/toxicity	12 (23%)	11 (16%)	23 (19%)
Waiting to get into study/see doctor	5 (9%)	13 (19%)	18 (15%)
No insurance or physician	6 (11%)	8 (12%)	14 (12%)
Too expensive	6 (11%)	3 (4%)	9 (7%)
Wanted more data/info	2 (4%)	3 (4%)	5 (4%)
Stigma	1 (2%)	1 (2%)	2 (2%)
No free study available	0 (0%)	1 (2%)	1 (1%)
HIV+ by NAT	1 (2%)	0 (0%)	1 (1%)
Other	2 (4%)	4 (6%)	6 (5%)

Results: Change in HIV Risk Perception

SPR (week 0 and 12)
- Trend towards decreased self-perceived risk overall (median=0, IQR: -2-1, p=0.06)
  No difference between study arms (p=0.29)

HIVTransmission (weeks 0, 8 and 12)
- Week 0 to 8: Significant decrease (median=-3.6%, IQR: -15-5.5%, p=0.006)
- Week 0 to 12: trend towards decreased predicted transmission risk overall (median=-1.8%, IQR: -11.5-5%, p=0.06)
- No difference by study arm (p=0.39)

Perceived PrEP candidacy (weeks 0 and 12):
- No change (57% versus 58%, p>0.99)

Limitations

- Study was underpowered
- Data capture different at 3 study visit time points
- CalcR score does not adjust for viral load of partners
- CalcR score and categories have not been validated in prospective studies of HIV incidence

Conclusions and Future Directions

- Despite underestimation of risk, providing an HIV risk score did not increase future PrEP uptake or change self-perceived HIV risk
- Discordance between perceived and actual risk is barrier to effective PrEP implementation
  - Research needed to understand constructs that shape perception
- HIV risk perception may be slightly higher around HIV testing→ excellent time to correct misperceptions about risk and discuss same-day PrEP initiation

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