HIV Vaccine Acceptability & Risk Behavior Intentions among Multi-Ethnic Groups at Risk for HIV Infection in Los Angeles

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- What if a preventative HIV vaccine were available?

Availability ≠ Uptake

- 50,000 U.S. adults die each year from diseases for which safe and effective vaccines already exist

Health Disparities

- Disparities in uptake of existing vaccines by race/ethnicity

Sub-optimal Uptake

- Non-institutionalized US adults 18-64y (IOM, 2000)
  - 26% influenza vaccine; 13% pneumococcal vaccine
- African Americans, Latinos, low SES
  - Up to 50% lower coverage rates
- MSM
  - 9% HBV coverage (CDC goal 50%)

Estimated Need vs. Probable Uptake of HIV Vaccines

High efficacy (80-90%)

- Need: 690 million courses
  - 22% of 15 – 49 year-olds worldwide
- Uptake: 38% of need

Low efficacy (30-50%)

- Need: 260 million courses
  - 8% of 15 – 49 y/o worldwide
- Uptake: 19% of need

(WHO/UNAIDS/IAVI, 2003)

Bridging the Gap

- Bridging the gap between estimated need & probable uptake for HIV vaccines represents a major public health challenge for the future

HIV vaccine acceptability is not guaranteed.

Each year of delay in eventual HIV vaccine roll-out means millions of infections that might otherwise have been averted.

Risk Behavior Increases?

- Due to perceived immunity
- Partially efficacious vaccines
- Modest increase in risk behaviors can undermine vaccine benefits

Purpose

1. Assess acceptability of future FDA-approved HIV vaccines among individuals from vulnerable communities at elevated risk for HIV infection in the U.S.
2. Quantify the impact of possible vaccine attributes on acceptability
3. Estimate possible changes in post-vaccination risk behaviors

Methods

Survey Recruitment

- Venue-based 3-stage probability sampling
  - Stage I: Randomly selected sites from 3 venue-based strata using PPES

Survey Recruitment

- Stage II: Randomly selected sessions of ~4 hours within each site (morning, afternoon, evening)
  - Total of 75 sessions from each stratum sampled (225 sessions across 3 strata)
- Stage III: Randomly selected participants within each session at selected sites

Survey Recruitment

- Site eligibility criteria
  - Serve communities vulnerable to HIV/AIDS
  - Potential venue for HIV vaccine dissemination
    - LA County STD clinics (n=433)
    - Latino CBOs (n=425)
    - Needle exchange programs (n=407)

Survey Recruitment

- Participant eligibility criteria
  - >= 18 years old; English-speaking
  - Not employee of recruitment site
  - Not known to be HIV+

Survey Data Collection

- 60-minute survey questionnaire
- Conjoint analysis
  - 8 hypothetical vaccines
  - 7 dichotomous characteristics

Hypothetical HIV Vaccine

- Participants rated their likelihood of accepting each of 8 different vaccines, presented concurrently in a set of laminated cards

This HIV vaccine:

- Is 99% effective at preventing HIV infection
- Lasts 10 years
- Works against U.S. but not international strains of HIV
- Is given by 1 injection (shot)
- Has no side effects
- Costs $10

Conjoint Analysis

- Fractional factorial experimental design
- Decompositional approach

Conjoint Analysis

- We estimated the impact of each attribute on vaccine acceptability using within-subjects ANOVA, then aggregated across individuals

Conjoint Analysis Scenarios

Efficacy	99% vs. 50%
Side effects	none vs. minor
Cost	$10 vs. $250
Duration of protection	10 years vs. 1 year
Doses	1 vs. 4
Route	oral vs. injection
Protection (cross-clade)	multiple types vs. one type

Results

Sociodemographic Characteristics of Survey Participants (N=1,164)

Median age	37 years
Gender	56% male
Ethnicity	
African American	22%
Latino	50%
White	18%
Sexual Orientation	
Gay	12%
Lesbian	2%
Bisexual	7%
Heterosexual	79%

Sociodemographic Characteristics of Survey Participants (N=1,164)

Unemployed	40%
No health insurance	50%
Income	
Median monthly income	$1190 USD
Relationship status	
Single	63%

Conjoint Scenarios

Hypothetical Vaccines	Efficacy	Side Effects	Cost	Duration of protection	Number of doses	Route	Cross-Clade Protection
1	50%	none	$10	1 year	4	injection	multiple types
2	99%	none	$250	1 year	1	mouth	multiple types
3	50%	minor	$250	1 year	1	injection	one type
4	99%	minor	$10	1 year	4	mouth	one type
5	50%	none	$250	10 yrs	4	mouth	one type
6	99%	minor	$250	10 yrs	4	injection	multiple types
7	50%	minor	$10	10 yrs	1	mouth	multiple types
8	99%	none	$10	10 yrs	1	injection	one type

Note. Preferred features of attributes are highlighted in yellow and non-preferred features are highlighted in red. Minor side effects = temporary body aches, skin rash and fever.

HIV Vaccine Acceptability

HIV vaccine acceptability mean (SD)*	Efficacy	Side effects	Cost	Duration of protection	Doses	Route	Protection (cross-clade)
88.6 (21.4)	99%	None	$10	10 years	1	Injection	One type
68.6 (29.9)	99%	None	$250	1 year	1	Mouth	Multiple
60.8 (32.9)	99%	Minor^	$250	10 years	4	Injection	Multiple
60.0 (32.3)	99%	Minor	$10	1 year	4	Mouth	One type
47.3 (32.3)	50%	None	$10	1 year	4	Injection	Multiple
41.5 (32.7)	50%	None	$250	10 years	4	Mouth	One type
41.1 (31.8)	50%	Minor	$10	10 years	1	Mouth	Multiple
28.4 (30.9)	50%	Minor	$250	1 year	1	Injection	One type

- Range: 28.4 - 88.6 (100-point scale)
- Mean: 54.5 (SD=18.8)

Impact of HIV Vaccine Attributes on Acceptability

HIV vaccine attributes	Attribute values	Acceptability of vaccine with preferred attribute - mean (SD)	Acceptability of vaccine with non-preferred attribute - mean (SD)	Impact on vaccine acceptability - mean (SD)
Efficacy	99% vs. 50%	69.5 (19.9)	39.6 (25.2)	29.9 (25.3)*
Side effects	None vs. minor	61.5 (20.0)	47.6 (23.5)	13.9 (22.1)*
Cost	$10 vs. $250	59.3 (20.0)	49.8 (22.1)	9.5 (18.9)*
Duration of protection	10 years vs. 1 year	58.0 (19.8)	51.1 (21.2)	6.9 (16.1)*
Doses	1 vs. 4	56.7 (18.6)	52.4 (21.7)	4.3 (14.6)*
Route	Mouth vs. injection	52.8 (21.0)	56.3 (19.1)	-3.5 (13.9)
Protection (cross-clade)	Multiple vs. one type	54.4 (20.7)	54.6 (19.6)	-0.2 (14.4)

Risk Behavior Intentions by HIV Vaccine Efficacy

	n	%, 95% CI	n	%, 95% CI	p*
Condom use, vaginal sex (n=938)					
No change/increase condom use	386	86.0, 333 - 439	460	94.0, 396 - 523	<.001
Possibly/def'ly use condoms less	63	14.0, 42 - 83	30	6.0, 17 - 43	
Condom use, anal sex (n=687)					
No change/increase condom use	297	86.8, 248 - 347	320	93.0, 269 - 371	0.025
Possibly/def'ly use condoms less	45	13.2, 28 - 62	24	7.0, 11 - 37	
Number of sex partners (n=987)					
No change/decrease # partners	422	87.0, 363 - 481	464	92.3, 403 - 525	0.038
Possibly/def'ly increase # partners	63	13.0, 43 - 84	38	7.7, 17 - 60	
Share needles for IDU (n=260)					
No change/decr. needle sharing	130	96.6, 89 - 171	125	99.1, 80 - 170	0.154
Possibly/def. share needles more	5	3.4, -0.68 - 9.9	1	0.9, -.75 - 3.08	

*All numbers are weighted and adjusted for sampling design effect; p-value from chi-square tests

Discussion

HIV Vaccine Acceptability

- Future HIV vaccine uptake is not guaranteed among vulnerable communities
- The moderate level of vaccine acceptability suggests hope
- Initial HIV vaccines are more likely to mirror the least acceptable of the vaccine scenarios presented

Risk Behaviors

- Modest risk behavior increases may be expected in response to an approved HIV vaccine
- Education & social marketing efforts should emphasize the limitations of “partial efficacy” vaccines & promote combination prevention

Implications for Future HIV Vaccine Dissemination

- Social marketing interventions to promote acceptability of partially efficacious HIV vaccines may be a key component of programs to facilitate uptake of initial HIV vaccines

HIV Vaccine Cost Subsidies

- The impact of out-of-pocket cost on HIV vaccine acceptability suggests the importance of proactive government policies to subsidize HIV vaccine costs for low income adults

Future Directions

- Social-behavioral research in clinical trials may contribute evidence to support future dissemination
- Formative research on future acceptability is needed in different socio-cultural contexts to support appropriate interventions
- Social & political reactions to HPV vaccine dissemination may be instructive

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