



The Impact of HIV Risk Reduction Behaviours on Sexually Transmissible Infections in HIV Negative Homosexual Men

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Overview



- **Methods**
 - The Health in Men (HIM) study
 - Incident sexually transmissible infections (STIs)
- **HIV risk reduction behaviours (RRB)**
 - Serosorting
 - Strategic positioning
- **Impact of RRB on STIs**
 - Compared with other means of UAI
 - Compared with no UAI
 - Adjustment for number of sexual partners and age

Background



- **HIV risk reduction behaviours are common and increasingly practised in homosexual men**
- **They have been shown to be effective in lowering HIV risk in this population in some settings**
- **Little is known how they affect incidence of STIs**



Methods



- **HIM study**
 - Prospective cohort study of HIV negative homosexual men
 - Community-based
 - Recruitment 2001-2004 & follow up to June 2007
- **Interview schedule**
 - Annual face-to-face interview
 - Annual telephone
- **Measurement of UAI: number of episodes**
 - By partner type (regular vs casual)
 - By partners' HIV status (negative, positive and status unknown)
 - By sexual positioning (insertive vs receptive)
 - Intra-anal ejaculation or not (in receptive UAI)

Incident STIs



- **Syphilis**
 - EIA (ICE Murex)
 - Confirmatory TPPA and/or FTA-Abs
 - RPR assists clinical staging and reinfection
- **Gonorrhoea and chlamydia (urethral and anal infections)**
 - NAAT (BD ProbeTec)
 - Positive anal NG results confirmed by PorA
 - Self-report of diagnoses since last interview
- **Herpes simplex virus types 1 and 2 (HSV-1 and HSV-2)**
 - Serology (Focus Technologies)
- **Anal and genital warts**
 - Self-report of diagnoses since last interview

RRB definition & analysis



- **Serosorting =**
Reporting UAI with known/presumed HIV negative partners
 - Regardless of sexual positioning / partner type
- **Strategic positioning =**
Reporting only insertive UAI
 - Regardless of partner type / partner's HIV status
- **“Serosorters” were compared to those reporting:**
 - any serodiscordant UAI (HIV+ &/or status unknown partners)
 - no UAI
- **“Strategic positioners” were compared to those reporting:**
 - any receptive UAI
 - no UAI

HIM demographics



- **1427 men recruited**
 - Median age: 35 (18-75)
 - Retention rate: 87% (1 year); 81% (2 years)
- **Median follow-up time: 3.9 years**
- **95% gay or homosexual self-identified**
- **53 HIV seroconversions during the study**
 - HIV incidence 0.78 per 100 person-years



Serosorting on bacterial STIs

(compared with serodiscordant UAI = non-serosorting)



	N	Incidence Per 100 PY	HR	95% CI	P value
Syphilis					0.011
Serosorting	3	0.18	0.19	0.05-0.68	
Non-SS	10	1.00	1	---	
Urethral NG					<0.001
Serosorting	35	2.15	0.41	0.27-0.63	
Non-SS	56	5.52	1	---	
Anal NG					0.004
Serosorting	39	2.40	0.54	0.35-0.82	
Non-SS	46	4.55	1	---	
Urethral CT					<0.001
Serosorting	99	6.06	0.55	0.42-0.72	
Non-SS	114	11.34	1	---	
Anal CT					<0.001
Serosorting	64	3.95	0.51	0.37-0.71	
Non-SS	80	7.93	1	---	



Serosorting on viral STIs

(compared with serodiscordant UAI = non-serosorting)

	N	Incidence Per 100 PY	HR	95% CI	P value
HSV-1					0.821
Serosorting	31	9.09	0.93	0.50-1.73	
Non-SS	15	9.53	1	---	
HSV-2					0.479
Serosorting	27	2.21	0.80	0.44-1.48	
Non-SS	17	2.63	1	---	
Genital warts					0.588
Serosorting	14	0.93	0.80	0.35-1.80	
Non-SS	10	1.14	1	---	
Anal warts					0.783
Serosorting	27	2.12	1.10	0.57-2.09	
Non-SS	14	1.91	1	---	

Serosorting vs non-Serosorting

(age and number of sexual partners adjusted)



	N	Incidence Per 100 PY	Adjust HR	95% CI	P value
Syphilis					0.023
Serosorting	3	0.18	0.21	0.05-0.81	
Non-SS	10	1.00	1	---	
Urethral NG					0.033
Serosorting	35	2.15	0.61	0.39-0.96	
Non-SS	56	5.52	1	---	
Anal NG					0.090
Serosorting	39	2.40	0.67	0.43-1.06	
Non-SS	46	4.55	1	---	
Urethral CT					0.136
Serosorting	99	6.06	0.80	0.60-1.07	
Non-SS	114	11.34	1	---	
Anal CT					0.109
Serosorting	64	3.95	0.75	0.53-1.07	
Non-SS	80	7.93	1	---	

Serosorting on bacterial STIs

(compared with no UAI)



	N	Incidence Per 100 PY	HR	95% CI	P value
Syphilis					0.143
No UAI	9	0.50	1	---	
Serosorting	3	0.18	0.38	0.10-1.39	
Urethral NG					0.832
No UAI	36	2.10	1	---	
Serosorting	35	2.15	1.05	0.66-1.67	
Anal NG					0.114
No UAI	28	1.63	1	---	
Serosorting	39	2.40	1.48	0.91-2.41	
Urethral CT					0.001
No UAI	61	3.56	1	---	
Serosorting	99	6.06	1.75	1.27-2.41	
Anal CT					0.072
No UAI	48	2.80	1	---	
Serosorting	64	3.95	1.41	0.97-2.05	

Serosorting on viral STIs

(compared with no UAI)



	N	Incidence Per 100 PY	HR	95% CI	P value
HSV-1					0.057
No UAI	24	5.51	1	---	
Serosorting	31	9.09	1.68	0.99-2.86	
HSV-2					0.901
No UAI	31	2.35	1	---	
Serosorting	27	2.21	0.97	0.58-1.62	
Genital warts					0.991
No UAI	15	0.96	1	---	
Serosorting	14	0.93	1.00	0.48-2.08	
Anal warts					0.222
No UAI	22	1.55	1	---	
Serosorting	27	2.12	1.42	0.81-2.49	

Serosorting vs no UAI

(age and number of sexual partners adjusted)



	N	Incidence Per 100 PY	Adjust HR	95% CI	P value
Urethral CT					<0.001
No UAI	61	3.56	1	---	
Serosorting	99	6.06	1.97	1.43-2.72	
Anal CT					0.013
No UAI	48	2.80	1	---	
Serosorting	64	3.95	1.62	1.11-2.36	
HSV-1					0.059
No UAI	24	5.51	1	---	
Serosorting	31	9.09	1.68	0.98-2.87	

SP on bacterial STIs

(compared with receptive UAI = R-UAI)



	N	Incidence Per 100 PY	HR	95% CI	P value
Syphilis					0.390
SP	2	0.29	0.52	0.11-2.33	
R-UAI	11	0.55	1	---	
Urethral NG					0.301
SP	28	4.11	1.27	0.81-1.98	
R-UAI	63	3.22	1	---	
Anal NG					0.005
SP	10	1.48	0.39	0.20-0.75	
R-UAI	75	3.83	1	---	
Urethral CT					0.548
SP	59	8.72	1.10	0.81-1.48	
R-UAI	154	7.86	1	---	
Anal CT					0.003
SP	21	3.10	0.49	0.31-0.78	
R-UAI	123	6.30	1	---	

SP on viral STIs



(compared with receptive UAI = R-UAI)

	N	Incidence Per 100 PY	HR	95% CI	P value
HSV-1					0.129
SP	7	5.53	0.54	0.24-1.20	
R-UAI	39	10.50	1	---	
HSV-2					0.747
SP	10	2.12	0.89	0.44-1.80	
R-UAI	34	2.44	1	---	
Genital warts					0.563
SP	7	1.14	1.30	0.50-2.06	
R-UAI	16	0.90	1	---	
Anal warts					0.181
SP	7	1.29	0.57	0.25-1.30	
R-UAI	33	2.26	1	---	

SP vs R-UAI

(age and number of sexual partners adjusted)



	N	Incidence Per 100 PY	Adjust HR	95% CI	P value
Anal NG					0.004
SP	10	1.48	0.38	0.20-0.74	
R-UAI	75	3.83	1	---	
Anal CT					<0.001
SP	21	3.10	0.44	0.27-0.69	
R-UAI	123	6.30	1	---	

SP on bacterial STIs

(compared with no UAI)



	N	Incidence Per 100 PY	HR	95% CI	P value
Syphilis					0.507
No UAI	9	0.50	1	---	
SP	2	0.29	0.60	0.13-2.76	
Urethral NG					0.008
No UAI	36	2.10	1	---	
SP	28	4.11	1.95	1.19-3.20	
Anal NG					0.784
No UAI	28	1.63	1	---	
SP	10	1.48	0.90	0.44-1.86	
Urethral CT					<0.001
No UAI	61	3.56	1	---	
SP	59	8.71	2.46	1.72-3.53	
Anal CT					0.745
No UAI	48	2.80	1	---	
SP	21	3.10	1.09	0.65-1.82	



SP on viral STIs

(compared with no UAI)

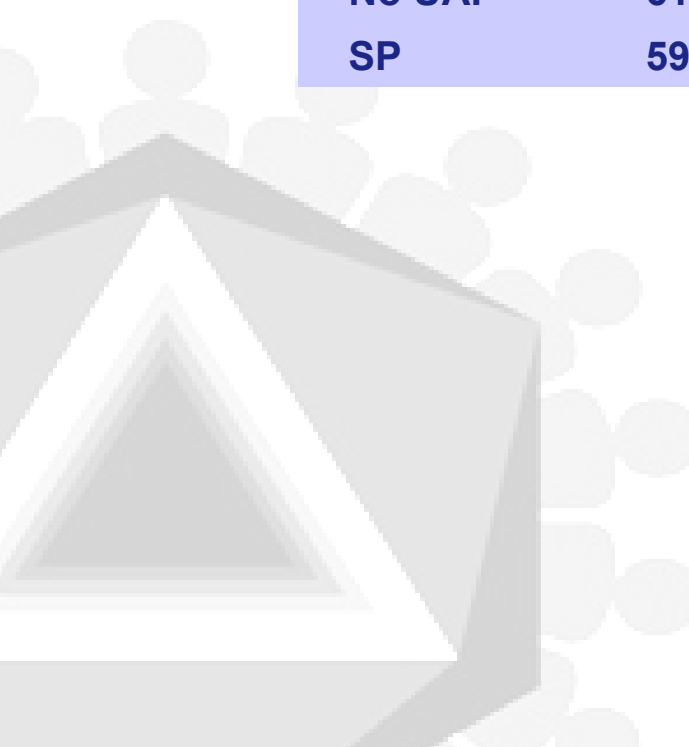
	N	Incidence Per 100 PY	HR	95% CI	P value
HSV-1					0.921
No UAI	24	5.51	1	---	
SP	7	5.53	1.04	0.45-2.42	
HSV-2					0.911
No UAI	31	2.35	1	---	
SP	10	2.12	0.96	0.47-1.96	
Genital warts					0.597
No UAI	15	0.96	1	---	
SP	7	1.14	1.27	0.52-3.13	
Anal warts					0.751
No UAI	22	1.55	1	---	
SP	7	1.29	0.87	0.37-2.04	



SP vs no UAI

(age and number of sexual partners adjusted)

	N	Incidence Per 100 PY	Adjust HR	95% CI	P value
Urethral NG					0.032
No UAI	36	2.10	1	---	
SP	28	4.11	1.72	1.05-2.83	
Urethral CT					<0.001
No UAI	61	3.56	1	---	
SP	59	8.71	2.22	1.55-3.18	



Conclusion



- **Compared with men who practised other means of UAI**
 - **Serosorting**
 - ↓ risk of syphilis & urethral gonorrhoea
 - **Strategic positioning**
 - ↓ risk of anal gonorrhoea and anal chlamydia

- **Compared with men who reported no UAI**
 - **Serosorting**
 - ↑ risk of incident chlamydia
 - **Strategic positioning**
 - ↑ risk of urethral gonorrhoea and urethral chlamydia

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