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Potential Impact and Acceptability of Internet Partner Notification for Men Who Have Sex with Men and Transgender Women Recently Diagnosed with STD in Lima, Peru

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Abstract

We assessed the potential impact of internet partner notification (PN) among MSM and transgender women in Peru recently diagnosed with STD. Use of internet PN was anticipated for 55.9% of recent partners, including 43.0% of partners not currently expected to be notified, a 20.6% increase in anticipated notification outcomes.

Keywords

Men Who Have Sex With Men; Transgender Women; Partner Notification; Sexually Transmitted Disease; Peru

Notification of sexual partners following sexually transmitted disease (STD) diagnosis is a key component of STD control (1-6). Public health systems in Peru and other developing countries often lack resources to support provider-based notification and rely on patient-initiated practices (7, 8). New tools to support partner notification by patients are critical to improving STD control in developing countries.

Internet PN systems have been implemented in the US and other countries but not in Latin America. Prior surveys have found high levels of acceptability of internet-based notification (9-12) and operational statistics of web-based notification systems such as www.InSpot.org suggest frequent use (13, 14). However, studies assessing public awareness of inSPOT and actual use of the system among STD clinic patients have suggested low levels of penetration into these target groups (15, 16). The only randomized clinical trial data of internet PN among men who have sex with men (MSM) found poor uptake of internet PN (17). We surveyed MSM and transgender women (TW) in Lima, Peru recently diagnosed with STD to assess the overall acceptability of internet PN systems, identify individual/partnership

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characteristics associated with likely use of internet PN, and estimate the potential impact of an internet-based notification system on PN outcomes among MSM/TW in Lima, Peru.

We enrolled 397 MSM/TW diagnosed with STD at the Asociación Civil Impacta Salud y Educación clinical research unit or the Alberto Barton municipal STD clinic in 2011. Enrollment was limited to men or TW reporting a recent male or transgender female sex partner diagnosed with HIV, syphilis, genital herpes, genital ulcer disease (GUD), proctitis, and/or urethritis within the previous 30 days. Participants were compensated 10 *Nuevos soles* (\$4 USD). The study was approved by the bioethics committees of UCLA and Asociación Civil Impacta Salud y Educación.

Participants completed a survey addressing demographics, HIV/STD history, PN attitudes, and recent sexual partner characteristics. Likert scales addressed general attitudes about PN, notification norms among their peers and partners, likelihood of notifying their three most recent partners, and anticipated method of notifying each partner (in person, by telephone, by email, by SMS, other). Additional questions surveyed the acceptability and likely use of an internet PN system (“a free website where you could send an anonymous message informing someone they may have been exposed to an STD”) in general; with specific partner types (Main Partners [“Someone you have a stable or long-term relationship with”], Casual Partners [“Someone you have had sex with once or more, but don’t have a stable or long-term relationship”], and Commercial Partners [“Someone you have sex with in exchange for money, food or other items”]); and with each of their three most recent partners. Since anonymous partners by definition cannot be contacted or notified (“Someone you have had sex with but don’t know their full name or how to contact them”), anonymous partners were excluded from partner-specific analyses. The incremental increase in anticipated notification resulting from introduction of internet PN was estimated by subtracting the fraction of non-anonymous partners likely to be notified under existing conditions from the total fraction of partners likely to be notified if internet PN were available.

Logistic regression models were fit to assess factors associated with acceptability of internet PN in general and for use specifically with main, casual, and commercial partners (if applicable). Bivariate logistic regression models were fit using Stata 11.0 (Stata Corporation, College Station, TX) to assess the association of likely use of internet PN with age, education level, sexual identity, sexual role, number of partners in the previous three months, diagnosis (HIV only, HIV and another STD, or other STD only) and perceived importance of notifying main and casual partners. Odds ratios with 95% confidence intervals were calculated with likely use of internet PN as the dependent variable. Factors found to be significant associations on unadjusted bivariate analysis ($p < 0.1$) and *a priori* confounders were incorporated into an adjusted multivariable logistic regression model.

To assess partner-specific attitudes and anticipated notification behavior, we used generalized estimating equations (GEE) to analyze likely notification behavior and potential use of internet PN with each of the participant’s three most recent partners. Given that participants could report up to three partnerships, GEE were used to adjust for clustering by participant, assuming an unstructured covariance. GEE models included partner- and participant-level characteristics including partner type and gender as well as participant age, sexual identity, and HIV/STD diagnosis. Partnerships missing data for key variables were excluded from the model. No statistically significant patterns of missing partnership data were observed.

We enrolled 397 MSM and TW recently diagnosed with HIV and/or STD, the majority of whom had been recently diagnosed with syphilis (52.6%) and/or HIV infection (47.4%).

Acceptability of a hypothetical internet-based notification system was high, with 59.2% anticipating overall use, and 57.6% likely to use internet notification for a main partner, 54.6% for a casual partner, and 23.2% for a commercial partner. Detailed characteristics of 1,065 recent partners were provided by 397 participants: 345 Main partners, 444 Casual partners, 132 Anonymous partners, 128 Commercial sex clients, and 16 Commercial sex workers. Participants anticipated notifying 48.2% of non-anonymous recent partners under existing conditions (74.2% of Main partners, 45.3% of Casual partners, and 20.1% of Commercial partners).

Multivariable analysis addressed factors associated with likely use of internet PN (Table 1). Participants who considered notification of main and/or casual partners important were also more likely to anticipate use of internet PN (Adjusted Odds Ratio = 6.46 [95% CI = 1.63, 25.6] and 1.91 [95% CI = 1.09, 3.36], respectively).

In GEE analysis, internet notification was most likely to be used for primary (Relative Risk [RR] = 1.20 [95% CI = 1.05, 1.37]) and transgender female partners (RR = 1.20 [95% CI = 1.04, 1.63]), and least likely with casual partners. There were no significant differences observed in anticipated use of internet PN between participants diagnosed with HIV compared with other STDs.

Partner-specific patterns of anticipated use showed substantial increases in frequency of potential internet notification with commercial and casual partners and a more modest effect among primary partners (Table 2). Availability of a hypothetical internet-based notification system resulted in a 20.6% overall increase in the frequency of anticipated notification for recent partners (from 52.1% to 72.7% of partners reported). The absolute difference in anticipated notification following introduction of an internet notification system was much higher among casual (24.3% difference) and commercial (25.0% difference) partners compared with main partners (13.9% difference).

Internet-based PN has the potential to improve outcomes and transform the practice of patient-initiated partner notification among MSM and TW in Lima, Peru. The acceptability of a free, anonymous internet PN system was high among MSM and TW recently diagnosed with HIV and/or STD, with participants reporting likely use with 55.9% of recent, notifiable partners. More importantly, participants stated that if internet-based PN were available, they would be likely to use it with 43.0% of the non-anonymous partners that they were not planning to notify under current conditions, an absolute increase in anticipated PN of 20.6%.

Anticipated use of internet notification was more likely for primary than casual or commercial partners. However, frequency of projected use of internet systems for informing main partners (63.7% of partners) was lower than the baseline level of anticipated notification for these partners (74.2%). In contrast, anticipated use of electronic PN for casual and commercial partners exceeded their baseline frequency of likely notification by approximately 25% in both subgroups, suggesting that the introduction of free, anonymous internet PN could significantly improve outcomes in these high-risk sexual networks.

It is important to note that, since our analysis is based on anticipated notification behavior rather than actual PN outcomes, participants are likely to have overestimated their likelihood of notifying recent partners and of using internet systems for notification. Previous studies have found significant differences between acceptability or anticipated use of internet PN and observed impact on notification practices within MSM/TW communities (15-17). In addition, our survey presented a hypothetical internet-based system rather than a website prototype, requiring participants to anticipate possible advantages or disadvantages over traditional notification tools. Recent research from the U.S. and Europe has provided examples of how internet-based systems can be modified and integrated with existing PN

counseling or contact tracing services to improve outcomes associated with use of new notification tools (18-20). Future studies should address the impact of internet-based systems on actual PN outcomes as well as strategies to optimize design and implementation of new partner notification technologies in resource-limited settings.

Our study demonstrates that internet-based notification could have a substantial impact on PN among MSM/TW in Peru. Introduction of a hypothetical web-based PN system was projected to result in substantial increases in casual and commercial partner notification among MSM/TW recently diagnosed with HIV and/or STD. The dramatic increase in anticipated notification of secondary partners suggests that the introduction of a free, anonymous internet-based system for PN could provide an alternative channel for communication within partnerships unstructured by pre-existing social or romantic ties. Future research is needed to evaluate the acceptability and actual use of internet-based notification systems, and their impact on PN outcomes among MSM/TW in developing countries.

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Table 1

Crude and Adjusted Logistic Regression of Participant Characteristics Associated with Likely Use of an Internet Partner Notification System Among Men Who Have Sex with Men (MSM) and Transgender Women (TW) Recently Diagnosed with HIV/STD; Lima, Peru 2011

	Unadjusted		Adjusted	
	OR	95% CI	OR	95% CI
Age (Years)	1.01	(0.99, 1.04)	1.02	(0.99, 1.04)
Education (Secondary School Graduate)	1.23	(0.74, 2.05)	1.06	(0.59, 1.92)
Sexual Identity				
Heterosexual	Ref		--	
Bisexual	0.73	(0.24, 2.29)	--	
Homosexual	0.48	(0.17, 1.36)	--	
Transgender	0.63	(0.19, 2.02)	--	
Number of Sexual Partners (3 Months)	1.00	(0.99, 1.01)	1.01	(0.99, 1.02)
HIV/STD Diagnosis				
HIV Only	Ref		--	
HIV and Other STD	1.16	(0.62, 2.18)	1.10	(0.56, 2.17)
Other STD Only	1.30	(0.73, 2.30)	1.08	(0.60, 2.09)
Considers Notification of Main Partners Important	8.17**	(2.65, 25.2)	6.46**	(1.63, 25.6)
Considers Notification of Casual Partners Important	2.5**	(1.52, 4.12)	1.91*	(1.09, 3.36)

* p<0.05

** p<0.01

Table 2

Potential Impact of Internet Systems on Notification of Recent Partners Among Men Who Have Sex with Men (MSM) and Transgender Women (TW) Recently Diagnosed with HIV/STD; Lima, Peru 2011

	Main Partners (N=345)	Casual Partners (N=444)	Commercial Sex Partners (N=144)	All Partners* (N=933)
Recent Partners Likely to Be Notified with Existing PN Resources	74.2% (256/345)	45.3% (201/444)	20.1% (29/144)	52.1% (486/933)
Recent Partners Likely to Be Notified with Internet PN (All Partners)	63.7% (220/345)	54.5% (242/444)	41.7% (60/144)	55.9% (522/933)
Recent Partners Likely to Be Notified with Internet PN (Only Partners Unlikely to Be Notified with Existing Resources)	53.9% (48/89)	44.4% (108/243)	31.3% (36/115)	43.0% (192/447)
Recent Partners Likely to Be Notified with Traditional and/or Internet PN Resources	88.1% (304/345)	69.6% (309/444)	45.1% (65/144)	72.7% (678/933)

* Anonymous partners excluded