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## Frequency, Patterns and Preferences of Lubricant Use During Anal Intercourse Within Male Sexual Partnerships in Lima, Peru: Implications for a Rectal Microbicide HIV Prevention Intervention

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### Abstract

Understanding current practices of lubricant use during anal intercourse can help to assess the contexts for the introduction of topical rectal microbicides as an HIV prevention tool for men who have sex with men (MSM). We used quantitative and qualitative methods to assess: current patterns of lubricant use; preferred characteristics of commercial lubricant formulations; and social and behavioral contexts of lubricant use within male sexual partnerships in Lima, Peru. Between 2007 and 2008, we conducted a quantitative behavioral survey with 547 MSM followed by qualitative individual and group interviews with 36 MSM from Lima, Peru. Approximately half of all participants in the quantitative survey (50.3%) reported using commercial lubricant during

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intercourse occasionally or consistently during the preceding two months, with lack of availability at the time of intercourse the most commonly reported reason for non-use. No clear preferences regarding the color, smell, taste, or viscosity of commercial lubricants were identified, and all participants who reported using a commercial lubricant used the same product (“Love-Lub”). In the qualitative analysis, participants characterized lubricant use as a sexual practice consistently controlled by the receptive partner, who typically obtained and applied lubricant independently, with or without the consent of the insertive partner. Quantitative findings supported this differential pattern of lubricant use, with men who reported sexual identities or roles consistent with receptive anal intercourse, including unprotected receptive intercourse, more likely to report lubricant use than MSM who claimed an exclusively insertive sexual role. Given the social, behavioral, and biological factors contributing to increased vulnerability for HIV and STI acquisition by the receptive partner in anal intercourse, delivery of a topical rectal microbicide as a lubricant formulation could provide an important HIV prevention resource for at-risk MSM in Lima, Peru.

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## Introduction

Recent clinical trials have demonstrated the effectiveness of biomedical approaches to HIV prevention, including promising early stage studies of rectal microbicides. However, additional research is needed to understand the social, behavioral, and cultural contexts for delivery of biomedical prevention interventions to ensure success in reducing HIV transmission under “real-world” circumstances. If rectal microbicides are shown to be effective in preventing HIV acquisition, understanding current patterns of lubricant use during anal intercourse can help to develop strategies to improve their acceptability and uptake among key risk groups like men who have sex with men (MSM).

Both the social structures of sexual partnerships between men in Peru and the biological dynamics of HIV transmission during sexual contact increase vulnerability to infection for MSM who engage in receptive anal intercourse. Interpersonal power dynamics in some Peruvian MSM relationships structured according to *activo* (insertive) and *pasivo* (receptive) sexual roles limit the *pasivo* partner’s control over condom use during intercourse (Caceres, 2002; Clark et al., 2012). At the same time, the increased epidemiologic risk of HIV acquisition in receptive anal intercourse disproportionately increases risk for HIV infection by the *pasivo* partner during unprotected sex (Vittinghoff et al., 1999). Accordingly, the MSM population in Peru provides an important setting to evaluate and introduce prevention interventions, such as topical rectal microbicides, that aim to reduce risk of HIV acquisition during receptive anal intercourse.

Detailed knowledge of the social contexts and behavioral practices that define anal intercourse is central to the design of effective clinical trials of rectal microbicides and to the introduction of any successful agents (McGowan, 2011). Researchers have used survey data to assess lubricant use practices among MSM in a variety of global settings, including Peru (Butler, Osmond, Jones, & Martin, 2009; Carballo-Diequez et al., 2000; Kinsler et al., 2010). These findings have suggested that commercial lubricants are commonly used, with regional variations in patterns of use and preferred characteristics (Javanbakht, Murphy, Gorbach, LeBlanc, & Pickett, 2010). However, these primarily quantitative analyses have not provided detailed information on the social or interpersonal contexts in which these behavioral practices are located. Specifically, the reasons why MSM do or do not use lubricant during intercourse, under what circumstances it is or is not used, and how/by whom it is applied, are all important questions to address prior to the introduction of a rectal microbicide as an HIV prevention tool. To improve understanding of these issues, we used

mixed quantitative and qualitative methods to assess patterns, preferences, and contexts of lubricant use among MSM in Lima, Peru.

## Methods

### Study Design and Population

We used quantitative and qualitative methods to study patterns, preferences, and contexts of lubricant use during anal intercourse among a convenience sample of MSM recruited from the *Centro de Referencia de ITS (CERITS)* “Alberto Barton” and surrounding neighborhoods in Lima-Callao. The study was completed in two phases: an initial behavioral survey and HIV/STI screening protocol, completed between May and December, 2007, and a series of in-depth interviews and group discussions completed in May, 2008.

### Quantitative Protocol

**Recruitment**—Participants were recruited from both clinic and community venues. The majority of participants (n=438) were enrolled at the CERITS Barton, a municipal clinic providing STI prevention and treatment services to MSM. An additional 122 participants were recruited in a series of community outreach visits conducted by clinic staff to promote HIV/STI testing among MSM in local neighborhoods. Enrollment was limited to adults born anatomically male who reported oral or anal sexual contact with a male or male-to-female transgender partner in the preceding twelve months. All participants provided written informed consent.

**Data Collection**—Participants completed a questionnaire using either a computer-assisted self-interviewing (CASI) system (for participants recruited from the clinic), or a paper survey that was transferred by study staff to the electronic database (for participants recruited at community venues). Participants completed the survey independently and in private, though counselors were available to provide assistance if needed. Individuals responded to questions about socio-demographic factors, sexual identity, sexual behavior, and use of “commercial lubricant” (not saliva or pre-lubricated condoms) during anal intercourse with male or male-to-female transgender sexual partners in the previous two months. Survey questions addressed sexual identity (Heterosexual, Bisexual, Homosexual, or Transgender), sexual role (*activo*/insertive, *pasivo*/receptive, or *moderno*/versatile), self-reported HIV status, and self-reported history of unprotected insertive and receptive anal intercourse (sex without a condom) during the previous six months.

Participants who reported using commercial lubricant during intercourse were asked a series of questions regarding their preferred lubricant characteristics, including color, scent, flavor, and consistency, as well as their behavioral practices surrounding lubricant use, including the type of lubricant used and who applied the lubricant (self, partner, or both). Participants who did not report consistent lubricant use were asked to select one or more reasons from a list of pre-specified options, or to write in a new option, to describe why they had not used lubricant during intercourse. Lubricant use questions were based on the survey developed by Carballo-Dieguez, *et al.* (Carballo-Dieguez, *et al.*, 2000), which was translated into Spanish and adapted to reflect local social and cultural contexts.

**Data Analysis**—Descriptive analyses were used to quantify the proportion of participants using lubricant during anal intercourse in the preceding two months and the reason(s) why lubricant was not used. Based on their reported use during the previous two months, participants were classified as “Consistent Users,” “Occasional Users,” or “Non-Users.” Due to similarities observed between “Occasional Users” and “Consistent Users” compared with “Non-users”, lubricant use was re-categorized into a dichotomous variable of “Non-use”

versus “Occasional or Consistent Use.” Patterns of lubricant use, availability of commercial lubricants, and preferred lubricant characteristics of Occasional or Consistent Users were quantified, with confidence intervals calculated at 95% (Altman, 1991).

Logistic regression was used to assess lubricant use as a dependent variable in association with age, recruitment venue, sexual identity, sexual role, recent history of unprotected anal intercourse, and self-reported HIV infection status. A multivariate model was constructed using backwards stepwise regression, incorporating both variables significantly associated ( $p < 0.05$ ) with lubricant use (sexual identity) as well as other potential confounding variables (age, sexual role, and recent unprotected receptive anal intercourse). Individuals with missing data were excluded from the affected analysis only. Stata 11.0 software was used for all analyses (Stata Corporation, College Station, TX).

### Qualitative Protocol

A series of individual and group interviews were conducted to explore the social context of issues addressed in the quantitative survey. Participants were recruited from neighborhoods surrounding the CERITS Barton by community-based outreach workers for a study on sexual identity and behavior among MSM and transgendered persons. Enrollment was limited to adults born anatomically male who reported oral or anal sexual contact with a male or transgender partner in the preceding twelve months. Participants were purposively sampled to ensure adequate representation of different MSM sexual identities. Four group discussions and eight individual interviews were conducted in May of 2008. All participants provided verbal informed consent.

Interviews and group discussions were conducted by native Spanish speakers in a private office using a semi-structured interview guide addressing issues of sexual identity, sexual behavior, risks for HIV/STI transmission, and lubricant use during anal intercourse. Interviews and group discussions were audio recorded and transcribed verbatim. Transcripts were reviewed by two readers and coded for thematic content using a grounded theory approach (Strauss & Corbin, 1998). Participants in individual interviews were identified by a pseudonym and their self-described sexual identity. Subjects in group discussions were identified according to the sexual identity most commonly reported in the group.

Quantitative and qualitative protocols were reviewed and approved by the Institutional Review Boards of the University of California, Los Angeles and Universidad Peruana Cayetano Heredia.

### Results

We surveyed a total of 560 MSM between May and December of 2007, and 547 provided information on lubricant use. The median age of study participants was 28 years (Inter-Quartile Range [IQR]: 23-35 years) and 78.4% (429/547) had completed secondary education. 27.6% (146/528) of participants identified themselves as Heterosexual, 4.0% (21/528) as Bisexual, 45.3% (239/528) as Homosexual, and 23.1% (122/528) as Transgender.

Participants were classified according to their self-reported lubricant use during anal intercourse in the previous two months as Non-Users (49.7%; 272/547), Occasional Users (32.9%; 180/547), or Consistent Users (17.4%; 95/547) (Table 1). For participants who did not consistently use lubricant during anal intercourse, the most commonly reported reasons were that none was available at the time (32.3%; 146/452) and/or that the participant used a pre-lubricated condom (23.9%; 108/452). The commercial lubricant most commonly used was a clear gel marketed in Peru as “Love-Lub” (93.7%; 253/270). Most participants who

used lubricant reported applying it either by themselves (55.9%; 132/236) or together with their partner (35.2%; 83/236).

The majority of participants did not express a preference regarding the color, taste, smell, or viscosity of commercial lubricant products, with opinions among those who did express a preference generally evenly divided between different characteristics (Table 2). Participants who expressed a preference for color and/or flavor generally favored colorless and unflavored lubricants.

On univariate analysis (Table 3), participants recruited from the community were less likely to report lubricant use (OR=0.59; 95% Confidence Interval [CI]=0.39-0.90) than participants recruited from the clinic, a difference partially attributable to the fact that the clinic recruitment site sometimes provided free packets of lubricant to patients. MSM who identified as heterosexual were less likely to be Occasional or Consistent Users than bisexual (OR=4.08; CI=1.59-10.48), homosexual (OR=5.72; CI=3.56-9.19), or transgender (OR=6.82; CI=3.96-11.74) participants. Similarly, *activo*-identified MSM were less likely to use lubricant than participants who reported a *pasivo* (OR=3.17; CI=2.03-4.94) or *moderno* (OR=4.28; 2.74-6.71) sexual role (i.e., men who sometimes or always practice receptive anal intercourse). MSM who denied unprotected receptive intercourse within the previous six months were less likely to report recent lubricant use than participants who had engaged in URAI (1.75; CI=1.19, 2.58). No significant differences in lubricant use according to unprotected insertive anal intercourse or self-reported HIV status were noted.

In multivariate analysis (n=411), only sexual identity was significantly associated with recent lubricant use (Table 3). Significant differences in lubricant use according to sexual role observed in univariate analysis were not maintained after controlling for sexual identity in multivariate analysis, though no statistically significant evidence of interaction between these multi-category variables was observed (LR Test of multivariate model with and without Interaction variable: p=0.11). After controlling for age, recruitment venue, sexual role, and recent URAI, MSM who identified as heterosexual were significantly less likely to report recent lubricant use than bisexual (OR=4.26; CI=1.32, 13.78), homosexual (OR=4.97; CI=2.00, 12.37), or transgender (OR=5.80; CI=2.08, 16.14) participants.

Qualitative findings provide additional depth to the quantitative survey data. Participants described reasons for and against lubricant use primarily in terms of pain and pleasure, with lubricant use commonly described as alleviating the discomfort of anal intercourse, “So that it doesn't hurt. Most people like to use lubricant... to dilate.” (Antonio, Bisexual) For both insertive and receptive partners, lubricant was described as a tool to facilitate the “abnormal” mechanics of anal penetration:

Lubricant helps you when you want to have anal sex, so that it doesn't hurt as much for the person you are having sex with, and so that you don't have pain when you insert your penis.... it's that the anus is a more closed ring, it's tighter, more closed, and more difficult to enter smoothly than the vagina, where it enters normally.

(Julio, Bisexual)

At the same time, the greater ease of penetration achieved with lubricant was also described as a problem:

I don't like it because it leaves you all lubricated, the sexual part of the person, so that the penis enters more easily and it hurts more.... With lubricant, it just goes in, and the man just wants to stick it in, that's all.

(Eclipse, Transgender)

Alternatively, some participants preferred the pain of “dry” sex either for their partners (“To make them feel pleasure and pain, so that they become more of a man to me, so that I can also get excited,” [Gay DGP]) or for themselves (“I love the pain, because he likes it when I feel pain.” [Gay DGP]). Other reasons for non-use included the belief that lubricants increase the risk of condom breakage or impair sensation so that, “you don’t feel anything ... because it’s less—it makes you limp.” (Luis, Bisexual) However, the most common reason for not using lubricant was simple lack of availability at the time of intercourse, “Because sometimes I don’t have it, or because it’s awkward.” (Alejandra, Transgender)

Participants consistently described lubricant as a product supplied and applied by the receptive partner. MSM who reported exclusively insertive intercourse typically did not have any knowledge of what lubricant they used or how it was obtained:

Luis: I’ve never seen it. I don’t know, it’s a gel and I don’t know what it’s called, what brand it is, no... Interviewer: But you’re not familiar with the lubricant?

Luis: No, he brings it, you know, he brings it. They give it to him, and he uses it.

(Luis, Bisexual)

Similarly, bisexual men denied using lubricant in anal or vaginal intercourse with female partners simply, “Because we don’t use it.” (Antonio, Bisexual) However, MSM who practiced primarily receptive intercourse described partners specifically asking for lubricant:

When you’re with a boy and you put lubricant on yourself, for them it’s a custom, they like it, they prefer lubricant. When they are going to have sex, they don’t bring their condom, but there are those who ask for lubricant.

(Gay DGP)

For situations where the insertive partner opposed lubricant use, participants described surreptitiously applying the product, stating that, “Sometimes the man doesn’t even realize when you apply lubricant, if you do it discretely.” (Gay DGP)

All of the interview participants who used a commercial lubricant reported using Love-Lub obtained from, “pharmacies, or sometimes the health centers,” (Transgender DGP) where it was intermittently provided by clinic staff. When commercial lubricants were not available, participants described using bodily fluids or household products, “cream, saliva, vaseline... one time I used cooking oil.” (Gay DGP) Another participant described a friend, “who used whatever he could find... all that mattered was that it was slippery.” (Gay DGP) However, participants generally considered these products inferior substitutes to commercial lubricants that could cause condom breakage, irritation to the anus, and increased risk of HIV transmission.

## Discussion

Lubricant formulations of rectal microbicides have the potential to be readily integrated into existing sexual behavior patterns and partnership structures of at-risk MSM in Lima, Peru. Approximately half of the participants in our sample reported using lubricant during anal intercourse in the previous two months, with the primary barrier to use being lack of availability, and only a small proportion stating that they preferred “dry” sex. Participants did not report clear preferences with regard to the taste, color, smell, or viscosity of potential lubricant formulations, though questions about preferences were based on abstract characteristics and participants may have expressed stronger preferences if presented with actual product formulations with distinct physical properties.



If biologically effective in preventing HIV transmission, lubricant-based rectal microbicides could provide a novel prevention tool for use within Peruvian male sexual partnerships. In both quantitative and qualitative analyses, participants described lubricant as a product obtained, applied, and controlled by the receptive partner. The association of lubricant use with receptive intercourse was reflected in the greater frequency of use among men who identified as *pasivo* or *moderno* and/or gay or transgender, subgroups of MSM more likely to engage in receptive intercourse. Similarly, the large proportion of lubricant users who applied the product either alone or in cooperation with their partner suggests that use of lubricant is culturally structured as a behavior controlled by the receptive partner. More importantly, the greater prevalence of lubricant use among participants who had recently engaged in unprotected receptive anal intercourse suggests that a rectal microbicide product could be a valuable prevention tool for this at-risk subgroup of MSM. As a result, integration of a microbicide agent with a lubricant product has the potential to address the multiple social and biological factors that contribute to the increased vulnerability to HIV/STI transmission among receptive partners in MSM partnerships in Peru.

Several factors may limit the generalizability of our findings. Our study population consisted of convenience samples recruited from a single STI clinic and surrounding neighborhoods in Lima and is not representative of the entire MSM population in Peru. Similarly, since many participants were recruited from a clinic where Love-Lub lubricant was sometimes provided free to patients, our sample may be skewed in terms of brand of lubricant used and frequency of use. Finally, the measures of sexual behavior (unprotected insertive and receptive anal intercourse) incorporate a larger time frame (six months) than the measure of recent lubricant use during anal intercourse (two months), complicating efforts to understand lubricant use as a HIV prevention option for MSM who practice unprotected anal intercourse.

Our findings quantify the frequency and patterns of lubricant use during anal intercourse among MSM in Lima, Peru and explore the behavioral and social structures guiding lubricant use within male and transgender partnerships. Our social and behavioral data provide support for the future development of lubricant-based rectal microbicides as an HIV prevention method and suggest that, if demonstrated effective in clinical trials, rectal microbicides could be readily introduced into the social context of sexual interactions between men in Peru as a unique prevention method controlled by the receptive partner during intercourse. Although our analysis was not designed to address the acceptability of rectal microbicides as an HIV prevention intervention or of potential devices for microbicide application (e.g., manually, with an applicator, as an enema, etc.), the information provided by our study provides an important introduction to lubricant use among MSM in Peru and can be used to design additional studies with larger samples of MSM addressing issues of rectal microbicide acceptability in Latin America. Additional research is needed to address the acceptability of rectal microbicides as a prevention intervention in this population and to assess the preferences of potential microbicide users for specific product characteristics and delivery systems.

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**Table 1**

Commercial Lubricant Use Patterns Among Men Who Have Sex with Men; Lima, Peru 2007.

		n/N	Prevalence (95% CI)
<b>Frequency of Use During Intercourse</b>			
	No Use	272/547	49.7% (45.6-53.9%)
	Occasional Use	180/547	32.9% (29.1-37.0%)
	Consistent Use	95/547	17.4% (14.4-20.8%)
<b>Reasons for Non-Use*</b>			
	No Lubricant Available	146/452	32.3% (28.2-36.7%)
	Used Pre-Lubricated Condom	108/452	23.9% (20.2-28.0%)
	Used Saliva as Lubricant	58/452	12.8% (10.1-16.2%)
	Could Not Afford Lubricant	37/452	8.2% (6.0-11.1%)
	Prefer "Dry" Sex	30/452	6.6% (4.7-9.3%)
	Did Not Have Time to Apply Lubricant	23/452	5.1% (3.4-7.5%)
	Participant Does Not Like Lubricant	17/452	3.8% (2.4-5.9%)
	Partner Did Not Like Lubricant	12/452	2.6% (1.5-4.6%)
	Other	113/452	25.0% (21.2-29.2%)
<b>Type of Lubricant Used**</b>			
	Gel (e.g., Love-Lub)	253/270	93.7% (90.1-96.0%)
	Vaseline	7/270	2.6% (1.3-5.2%)
	Cream (e.g., Pond's)	10/270	3.7% (2.0-6.7%)
<b>Who Applies Lubricant**</b>			
	Self	132/236	55.9% (49.5-62.1%)
	Partner	21/236	8.9% (5.9-13.2%)
	Both	83/236	35.2% (29.4-41.5%)

\* Non-Users and Occasional Users Only; Multiple responses permitted

\*\* Consistent Users and Occasional Users Only

**Table 2**

Preferred Characteristics of Commercial Lubricants Among Current Users; Lima, Peru 2007.

Characteristic Color		n/N	Prevalence (95% CI)
	Uncolored	68/272	25.0% (20.2-30.5%)
	Colored	19/272	7.0% (4.5-10.6%)
	Either	185/272	68.0% (62.2-73.3%)
<b>Flavor</b>			
	Unflavored	59/273	21.6% (17.1-26.9%)
	Flavored	24/273	8.8% (6.0-12.8%)
	Either	190/273	69.6% (63.9-74.7%)
<b>Scent</b>			
	Unscented	42/274	15.3% (11.6-20.1%)
	Scented	51/274	18.6% (14.4-23.6%)
	Either	181/274	66.0% (60.2-71.4%)
<b>Consistency</b>			
	Very thin	28/266	10.5% (7.4-14.8%)
	Slightly thin	26/266	9.8% (6.8-13.9%)
	Neither thin or thick	158/266	59.4% (53.4-65.1%)
	Slightly thick	40/266	15.0% (11.2-19.8%)
	Very thick	14/266	5.3% (3.2-8.6%)

**Table 3**

Factors Associated with Lubricant Use; Lima, Peru, 2007.

		<b>Occasional or Consistent Users % (n/N)</b>	<b>Crude Odds Ratio (95% CI)</b>	<b>Adjusted Odds Ratio (95% CI)</b>
<b>Age (Median ± IQR)</b>		29 (23-37)	1.02 (1.00, 1.04) *	1.01 (0.99, 1.04)
<b>Education Level</b>	Non-High School Graduate	49.2% (58/118)	Ref	-
	High School Graduate	50.6% (217/429)	1.06 (0.70, 1.59)	-
<b>Recruitment Venue</b>	Clinic	53.0% (228/430)	Ref	-
	Community	40.2% (47/117)	0.59 (0.39, 0.90) *	-
<b>Sexual Identity</b>	Heterosexual	21.2% (31/146)	Ref	Ref
	Bisexual	52.4% (11/21)	4.08 (1.59, 10.48) **	4.26 (1.32, 13.78) *
	Homosexual	60.9% (145/239)	5.72 (3.56, 9.19) **	4.97 (2.00, 12.37) **
	Transgender	64.8% (79/122)	6.82 (3.96, 11.74) **	5.80 (2.08, 16.14) **
<b>Sexual Role</b>	Activo	29.8% (50/168)	Ref	Ref
	Pasivo	57.3% (102/178)	3.17 (2.03, 4.94) **	0.62 (0.25, 1.54)
	Moderno	64.5% (118/183)	4.28 (2.74, 6.71) **	0.80 (0.33, 1.91)
<b>Unprotected Receptive Anal</b>	No	49.4% (117/237)	Ref	Ref
<b>Intercourse in Previous 6 Months</b>	Yes	63.1% (123/195)	1.75 (1.19, 2.58) **	1.22 (0.77, 1.92)
<b>Unprotected Insertive Anal</b>	No	55.4% (149/269)	Ref	-
<b>Intercourse in Previous 6 Months</b>	Yes	57.8% (96/166)	1.10 (0.75, 1.63)	-
<b>HIV Infection Status (Self-Reported)</b>	HIV-Negative or Unknown	48.6% (219/451)	Ref	-
	HIV-Positive	58.3% (56/96)	1.48 (0.95, 2.32)	-

\*  
p<0.05\*\*  
p<0.01