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Trajectory of use over time of an oral tablet and a rectal gel for HIV prevention among transgender women and men who have sex with men

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Abstract

We examined product adherence among 187 men who have sex with men (MSM), and transgender women (TW), enrolled in MTN-017, a phase II, crossover trial comparing safety and acceptability of oral emtricitabine/tenofovir disoproxil fumarate tablet (daily oral) and tenofovir 1% reduced-glycerin gel used rectally (daily gel) or before and after receptive anal intercourse (RAI) (rectal gel) for HIV prevention in the US, Thailand, Peru and South Africa. Participants reported adherence via daily text messages during 8-week periods of product use. Trajectory analysis identified weekly adherence patterns. Polytomous logistic regression identified characteristics associated with higher probability of being in a particular trajectory group. We identified 3 groups per product: high-adherers (72% daily oral, 70% daily gel); decreasing-adherers (20% daily oral, 22% daily gel); and low-adherers (8% daily oral, 9% daily gel). Daily oral high-adherers (compared with low-adherers) were more likely to self-identify as male [odds ratio (OR)=4.76, 95% confidence interval (CI):1.35–16.67], to have more sexual partners (OR=1.67, 95% CI:1.04–2.63), and to find the tablet easy to swallow (OR=2.22, 95% CI:1.08–4.76), and less likely to report not liking the tablet as a reason for not using it (OR=0.43, 95% CI:0.19–0.96). Daily gel high-adherers (compared with low-adherers) were more likely to be older (OR=1.16, 95% CI:1.05–1.28), to find gel application easier at the last few applications (OR=2.27, 95% CI:1.01–

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5.00), and to report a change in routine as a reason if gel was not used (OR=5.26, 95% CI:1.23–100.00), and less likely to report not liking the gel as a reason for not using it (OR=0.10, 95% CI: 0.02–0.59). Characteristics of participants likely to be high-adherers to product use vary according to product and regimen. Evaluation of acceptability is recommended prior to phase II/III trials among MSM and TW to identify participants likely to maintain high adherence.

Keywords

PrEP; microbicides; adherence; SMS; trajectory

Introduction

A proper evaluation of biomedical HIV-prevention trials relies on participants maintaining high adherence to product use throughout. Several such trials have been unable to demonstrate efficacy due to low adherence by participants. (Corneli et al., 2014; Marrazzo et al., 2015; Rees et al., 2015; Van Damme et al., 2012) Furthermore, often researchers can only measure adherence at specific time points, such as periodic study visits, however such information seldom allows the researcher to investigate participants' true adherence throughout the study. Therefore, collecting daily or weekly adherence data is preferable as it aids researchers' understanding of patterns of adherence over time, thereby increasing knowledge of actual product use. (Leu et al., 2013; Tolley et al., 2010)

Within biomedical HIV-prevention trials, participants' adherence to product use (e.g., rectal gel, tablet, or vaginal rings) may vary over time. Understanding factors associated with different patterns of product use may provide opportunities to target participants with certain characteristics who may be more likely to maintain high adherence. Trajectory analysis is a statistical method to cluster individuals based on temporal changes in an outcome of interest. (Bauermeister et al., 2017) Once participants are classified, researchers then can understand the relationship of adherence behavior of a population to its associated factors. For example, a study of patterns of adherence to antiretroviral therapy (ART) identified behavioral groups associated with improving and worsening adherence over time. (Glass et al., 2010) Predictors of improved adherence included simplified regimen, changing type of ART, less time on ART, and starting co-medications. Predictors of worsening adherence included younger age, less education, substance use, depression, longer time with HIV and changing care provider.

Compared to research examining the ART adherence patterns of people living with HIV, little is known about patterns of adherence among HIV-uninfected populations taking new HIV prevention products (e.g., pre-exposure prophylaxis, or PrEP) or participating in early phase trials of prevention candidates (e.g., rectal gel microbicides) or technologies (e.g., diaphragms). One study of women taking oral PrEP found that liking the pill color was positively associated with good adherence, while use of oral contraceptives at enrollment was negatively associated with good adherence. (Corneli et al., 2014) Another study of placebo gel used rectally in the context of receptive anal intercourse (RAI) among men who have sex with men (MSM) and transgender women (TW) found that participants who had

more frequent RAI and reported trying a greater number of positions when inserting the gel were more likely to have high adherence across 12 weeks. (Bauermeister et al., 2017) A study examining adherence to a diaphragm as an HIV-prevention method found that older women and those reporting baseline adherence to condoms were more adherent to diaphragm use, while younger women and those with more high-risk behaviors and high-risk partners were less adherent. (van der Straten et al., 2009) However, few studies have applied trajectory analysis to examine adherence patterns in this field, and none have examined rectal microbicide gel use. In this study, we used the adherence data collected daily via short message service (SMS) during MTN-017, a Phase 2 safety and acceptability crossover study that included comparisons of daily oral emtricitabine/tenofovir disoproxil fumarate (FTC/TDF) tablet to daily reduced-glycerin 1% tenofovir (RG-TFV) gel applied rectally, to construct a trajectory analysis to characterize patterns of adherence over time by study regimen. We aimed to identify potential factors associated with adherence patterns to guide recruitment of the best candidates for future efficacy studies of rectal microbicides and targeted interventions for oral PrEP users.

Methods

Study design and regimens

The study took place at eight sites in four countries: Cape Town (South Africa); Bangkok and Chiang Mai (Thailand); Lima (Peru); San Francisco, Pittsburgh, and Boston (US mainland); and San Juan, Puerto Rico (US territory). Participants, recruited via social and traditional media, online advertising, flyers, community engagement, and word of mouth, included MSM and TW over the age of 18, non-HIV infected, in general good health, with a history of RAI at least once in the past three months. More details on participant eligibility criteria appear in the primary study paper. (Cranston et al., 2017) The study was reviewed and approved by the Institutional Review Boards at all participating institutions, and participants provided written informed consent.

MTN-017 included three regimens: daily oral (oral FTC/TDF), daily gel (RG-TFV gel applied rectally) and RAI gel (RG-TFV gel applied before and after RAI). The study consisted of one 8-week period per regimen with a one-week washout period between regimens (Fig. 1). Study visits were at the beginning, middle and end of each period. Participants were randomly assigned to use the regimens in one out of six possible sequences.

During the daily regimens, participants were instructed to take one tablet orally or to insert one dose of gel rectally per day at approximately the same time every day. We only studied daily regimens in this paper since trajectory analysis of the RAI gel regimen, which did not require daily use, was not feasible.

SMS

All participants underwent an SMS Readiness Assessment at screening to determine mobile phone ownership and familiarity with sending SMS. Those who did not own a mobile phone for individual use were given one to use for the study. At enrollment, participants were

trained to use the SMS reporting system and completed an initial reporting session in the presence of study staff.

During each period, participants received a daily short message service (SMS) reminder, programmed to arrive at a time of their choosing, requesting they send a password to initiate the session. Upon sending the password, participants received an SMS asking them to report the number of times they had used the product since their last report. After sending a number, participants received a final daily text thanking them for reporting (See Figure 1). The SMS script was limited to one primary study question to reduce participant burden and to facilitate collection of the most essential daily product adherence data. Messages were programmed in all of the regional languages of cities participating in the study. If a participant sent anything other than a password or a number, the system responded by asking them to report product use with number digits (See Fig. 1).

Participants received compensation for each completed SMS session, plus a bonus for completing 6/7 sessions per week. At US sites, the compensation per session ranged from \$1-\$2, and the weekly bonus was \$2-\$5. Non-US sites chose compensation amounts according to local standard of living. In Thailand, the compensation per session was 30 Baht (approximately \$1 USD), and the weekly bonus ranged from 30 Baht to 200 Baht (\$1-\$6 USD). In South Africa, the compensation per session was 4 Rand per day (approximately \$0.30 USD) with a bonus of 50 Rand (\$3.50). In Peru, the compensation per session was 0.16 Peruvian Soles (approximately \$0.05 USD) with a bonus of 20 Peruvian Soles (\$6).

Data cleaning

SMS reporting was monitored daily from the study office at Columbia University in New York, US. This involved ongoing data cleaning to eliminate duplicate reports, monitor incomplete sessions and identify other anomalies. When participants did not report within 48 hours, the staff in New York contacted the site staff so they could contact the participant to follow-up on potential problems.

Data cleaning was necessary in cases where the texting pattern required interpretation. For example, a participant started a texting session one day, but completed the session the following day. On Day 2, it appeared as if two sessions were completed. However, participants could only complete one session per day, so the first session counted towards Day 1, which appeared to have an incomplete session. Furthermore, if a participant reported twice within a short time period, resulting in two completed sessions for one day, the first response was noted as a participant error with only one completed session credited.

Computer Assisted Self-Interview (CASI)

At enrollment, participants underwent a baseline assessment via CASI, which measured demographics (including age, level of education, gender identity), number of sexual partners in the previous eight weeks, and HIV risk perception (likelihood of getting HIV in lifetime). In addition, upon completing eight weeks of product use, participants completed a follow-up assessment via CASI, which measured product acceptability (liking the product, ease of product use at first few and last few applications, and likelihood of using the product in the future for HIV prevention) and reasons for not using the product as instructed (including

forgetting, not having it with me, partner did not want me to use it, not having necessary privacy, not liking it, product made me feel ill, I was drinking or using drugs, or there was a change in my regular routine).

Statistical analysis

For each participant, we aggregated the SMS data to create a weekly summary of adherence to each regimen over an 8-week period. These weekly summary variables were used to group study participants based on their trajectory of adherence via latent class trajectory analysis using the PROC TRAJ command in SAS v. 9.4. This approach allowed us to cluster participants reporting similar adherence patterns over each 8-week period of the trial. The Expectation Maximization (EM) algorithm was applied throughout the trajectory analysis to handle missing data.

Once group membership was identified for each study participant, we employed polytomous logistic regression to examine the association between the covariates of interest and the probability of being in a particular trajectory group. Covariates of interest included participants' baseline demographic characteristics, number of sexual partners, HIV risk perception, product acceptability, and reasons given for not using product measured by CASI as listed above. Due to the study's crossover design, we also included two period indicators (i.e., period 2 vs. period 1 and period 3 vs. period 1) as covariates in the model to adjust for period effect. We also examined whether age, gender, HIV risk perception and country were potential confounding factors in these bivariate association analyses; none were found to be confounders, so here we only report the unadjusted findings. Although several statistical hypotheses were tested simultaneously, we did not adjust for multiple comparisons given the exploratory nature of this analysis which aimed to identify potential predictors of behavior patterns. We declared findings with a p-value of less than or equal to 0.05 as statistically significant. In addition, we also reported results that trended towards, but fell slightly short of, statistical significance (i.e., p-value greater than 0.05 but less than or equal to 0.10) as the trend associations provide additional information for identifying potential preferable study populations to recruit for future research. We reported the adjusted odds ratio (AOR) and corresponding p-value and 95% confidence interval (95% CI) to indicate the strength of association between the pattern of adherence and the covariates of interest. With a sample size of 187 participants, this study was able to declare a small to moderate standardized effect size (between 0.29 and 0.61) as statistically significant with 80% power. We used SAS Version 9.4 (SAS Institute, Cary, NC) and IBM SPSS Statistics for Windows, Version 23.0 (Armonk, NY: IBM Corp.) for our analyses.

Results

Sample

The sample included 187 participants with a mean age of 31 years and a mean of 12 years of education. Over three-quarters of the participants were employed and over one-quarter was in school. Nearly half of the participants (42%) resided in the United States, with 29% in Thailand, 19% in Peru, and 10% in South Africa. Most identified as male, with 12% identifying as TW, and the majority identified as gay/homosexual.

Daily oral

Latent group trajectory analysis identified three trajectories of adherence to the daily oral regimen: the high-adherers (maintaining high adherence throughout the 8-week study period) represented 72% of participants, the decreasing-adherers (adherence decreased consistently over time) represented 20% of participants, and the low-adherers (having low adherence throughout the 8-week study period) represented 8% of participants (see Figure 2 below for the trajectory estimation and group membership as well as the model fit statistics). In constructing the polytomous logistic regression analysis, we chose the high-adherers as the comparison group, as we aimed to identify the characteristics of a potential preferable population for future efficacy/effectiveness studies.

Table 2 summarizes the results of regression analysis examining whether the potential predictors are associated with trajectory of adherence to the daily oral regimen.

High-adherers vs. low-adherers

Significant Associations.—Findings suggested that MSM were more likely to be high-adherers than TW (OR=4.76, 95% CI=1.35, 16.67, $p=0.015$). The more sexual partners participants had (OR=1.67, 95% CI=1.04, 2.63, $p=0.033$) and the easier they found swallowing the tablet (OR=2.22, 95% CI=1.08, 4.76, $p=0.031$), the more likely they were to maintain high adherence (as high-adherers). However, when participants reported not liking the tablet as a reason for not using it, they were more likely to be low-adherers (OR=0.43, 95% CI=0.19, 0.96, $p=0.040$).

Trend associations.—Increasing age (OR=1.06, 95% CI=0.99, 1.15, $p=0.085$) and higher educational levels (OR=1.22, 95% CI=0.98, 1.52, $p=0.078$) increased the probability of being a high-adherer, though results were not statistically significant.

High-adherers vs. decreasing-adherers

Significant associations.—Compared to decreasing-adherers, the easier that participants found swallowing the tablet (OR=1.61, 95% CI=1.05, 3.03, $p=0.032$) and the more they liked it (OR=1.59, 95% CI=1.14, 3.03, $p=0.012$), the more likely they were to be high-adherers. Increasing age also increased likelihood of being a high-adherer (OR=1.06, 95% CI=1.01, 1.11, $p=0.021$).

Trend associations.—Increased perception of one's likelihood of getting HIV (OR=1.64, 95% CI=0.94, 2.86, $p=0.081$) and increased likelihood of taking the tablet to prevent HIV (OR=1.43, 95% CI=0.94, 2.08, $p=0.088$) both increased the probability of being a high-adherer. However, those who forgot to take the tablet were more likely to be decreasing-adherers (OR=0.37, 95% CI=0.12, 1.09, $p=0.072$), though these findings were not statistically significant.

Daily gel

Similar to the daily oral regimen, we identified three groups with distinct trajectories of adherence to daily gel: 70% of participants were high-adherers, whereas 22% were

decreasing-adherers, and 9% were low-adherers (see Figure 3 below for the trajectory estimation, group membership and model fit statistics).

High-adherers vs. low-adherers

Significant associations.—Increasing age meant increasing likelihood of being a high-adherer (OR=1.16, 95% CI=1.05, 1.28, $p=0.002$). Also, if participants found that the last few applications of the gel were easier (OR=2.27, 95% CI=1.01, 5.00, $p=0.048$) or reported that a change in their regular routine had prevented them from using the gel (OR=5.26, 95% CI=1.23, 100.00, $p=0.031$) rather than not having necessary privacy or not liking the gel, they were more likely to be high-adherers. Those who reported not liking the gel as a reason for not using it were much less likely to be high-adherers than low-adherers (OR=0.10, 95% CI=0.02, 0.59, $p=0.011$).

Trend associations.—The more participants liked the product (OR=1.82, 95% CI=0.98, 3.23, $p=0.056$) and the more they liked the gel applicator (OR=1.69, 95% CI=0.93, 3.03, $p=0.090$), the more likely they were to adhere to the regimen. In addition, the more partners they had (OR=1.39, 95% CI=0.98, 1.96, $p=0.065$) the more likely they were to be high-adherers. On the other hand, those who lacked the privacy needed to use the product were less likely to be high-adherers (OR=0.20, 95% CI=0.04, 1.12, $p=0.067$).

High-adherers vs. decreasing-adherers

Significant associations.—Compared to the decreasing-adherers, the more participants liked the gel applicator (OR=1.72, 95% CI=1.16, 2.44, $p=0.006$) and the gel overall (OR=1.75, 95% CI=1.18, 2.50, $p=0.005$), the more likely they were to be high-adherers. Similarly, the easier participants found applying the gel, overall (OR=1.61, 95% CI=1.00, 2.63, $p=0.050$) and the last few times (OR=2.04, 95% CI=1.20, 3.45, $p=0.009$), the more likely they were to be high-adherers. If participants reported high likelihood of future gel use for HIV prevention, they were more likely to be high-adherers as compared to those who did not (OR=1.47, 95% CI=1.05, 2.08, $p=0.023$). Our findings also suggested that with increasing age comes an increased probability of being a high-adherer (OR=1.04, 95% CI=1.01, 1.09, $p=0.042$).

Trend associations.—There were no trend associations found between the potential predictors and the trajectory groups of high-adherers versus decreasing-adherers.

Discussion

The majority of participants persisted in their adherence to product use (both oral tablet and rectal gel) throughout the eight-week study period, based on their SMS reports, which is encouraging. Nevertheless, over one-fifth of participants deflated in their adherence over the study period during both regimens, while less than 10% maintained low adherence to product use throughout the periods.

The trajectory analysis of the daily oral regimen demonstrated that finding the tablet easy to swallow and liking it predicted persistently high adherence over an eight-week period. Disliking the tablet predicted resisting product use throughout the period and forgetting to

take it predicted deflating adherence. These findings are consistent with previous literature on adherence to ART, in which not liking the tablet (e.g., color, side effects) and having difficulty remembering to take it have been reported as barriers to adherence over time. (Ammassari et al., 2002; Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000) In addition, those with greater numbers of sexual partners were more likely to persist in high tablet adherence rather than resist tablet adherence throughout. Having a greater number of partners may increase participants' perceived susceptibility to HIV, thereby increasing consistency in adherence to the tablet as a risk reduction strategy. We also found that older participants were more likely to be high-adherers than decreasing-adherers and trended towards being high-adherers rather than low-adherers as well. This points to the potential need to consider differences based on age groups when designing adherence interventions.

Regarding the daily gel regimen, finding the gel easy to apply at the last few applications was predictive of persistent high adherence when compared to low-adherers and decreasing-adherers. Liking the gel and the applicator and reporting a high likelihood of using the gel in the future were also predictive of high-adherers. These findings are consistent with existing literature, which showed that satisfaction with the gel and, in particular, the applicator were associated with likelihood of using a rectal gel. (Bauermeister et al., 2016) Finally, being older was also predictive of persistent high adherence to the daily gel regimen when compared to both low-adherers and decreasing-adherers.

Given that most of the characteristics associated with being a high-adherer were related to product acceptability both for the oral tablet and the gel, implementing prescreening procedures to understand attitudes towards the product after allowing time for examining the product (tablet size and color; gel consistency and applicator), or even better, after a brief period of product use, may help identify the potential high-adherers for trials that aim to demonstrate product efficacy. Our acceptability measures were collected after participants had used the products for eight weeks. This could help to select those most likely to maintain high adherence, and will facilitate demonstrating product efficacy.

Few demographic variables were predictive of product use trajectories, with the exception of age (for both regimens) and being TW (for the oral tablet). Findings on acceptability and likelihood of use from this study (Carballo-Diéguez et al., 2017) and from another on oral PrEP (Sineath et al., 2013) also demonstrated no association with demographic variables. Two studies of vaginal microbicide gel use demonstrated lower adherence among a younger age group. (Marrazzo et al., 2015; Rees et al., 2015) Possibly, older age may be associated with a more stable lifestyle, (Brose, Scheibe, & Schmiedek, 2013) which could facilitate daily product use, and older age has been associated with better adherence to antiretroviral therapy. (Hinkin et al., 2004) TW were less likely than MSM to be high-adherers than low-adherers to the oral regimen. This finding is supported by the iPrex study, in which TW had lower adherence overall to a daily oral tablet than men. (Deutsch et al., 2015) This highlights the importance of disaggregating the data of men from those of TW and of recruiting sufficient numbers of TW to have the statistical power to conduct analyses, so that researchers can understand better the biomedical HIV prevention needs of this key population.

This study has several important limitations. First, it was not designed to identify predictors of adherence trajectories. Therefore, selection of variables for the analysis was done post-hoc, and it is possible that relevant predictors were not measured or identified in our analysis. In addition, the measures used in our study were by self-report, including both adherence and acceptability, which could be highly correlated or subject to bias. Also, the small sample of low-adherers may not have allowed for a thorough analysis of the factors contributing to consistent low adherence. While the distribution of the outcome did not differ by country, a larger study may be needed to further assess whether these trends of association between the outcome and the potential predictors differs by country. Finally, participants were recruited from a convenience sample and therefore our findings may not have great generalizability.

Nevertheless, our findings provide important information on trajectories of daily product use over eight weeks and the characteristics associated with maintaining high adherence. For future studies, selecting participants who demonstrate high acceptability of the products could be beneficial to ensuring high adherence over time thus improving efficacy evaluations and decreasing costs.

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Figure 1.
MTN-017: SMS question tree

Group	Parameter	Estimate (SE)	t	p
1: Low-adherers	Intercept	-0.19 (0.05)	-3.65	<.001
	Linear	-0.07 (0.01)	-5.55	<.001
2: Decreasing-adherers	Intercept	0.95 (0.05)	18.80	<.001
	Linear	-0.07 (0.01)	-5.55	<.001
	Quadratic	-0.02 (0.00)	-5.05	<.001
3: High-adherers	Intercept	1.10 (0.04)	31.09	<.001
	Linear	0.11 (0.02)	4.72	<.001
	Quadratic	-0.02 (0.00)	-5.05	<.001
<i>Probability of Group Membership:</i>				
1: Low-adherers: N=14 (8%); 2: Decreasing-adherers: N=38 (20%); 3: High-adherers: N=135 (72%).				
<i>Model Fit Statistics:</i>				
BIC = -932.67 (N=1496); BIC=-923.31 (N=187); AIC=-908.77.				

Figure 2.
MTN-017: Adherence to oral regimen over time

Group	Parameter	Estimate (SE)	t	p
1: Low-adherers	Intercept	-0.26 (0.07)	-3.61	<.001
	Linear	-0.06 (0.01)	-4.68	<.001
2: Decreasing-adherers	Intercept	0.87 (0.05)	16.69	<.001
	Linear	-0.06 (0.01)	-4.68	<.001
	Quadratic	-0.02 (0.00)	-5.58	<.001
3: High-adherers	Intercept	0.99 (0.03)	28.57	<.001
	Linear	0.13 (0.02)	5.77	<.001
	Quadratic	-0.02 (0.00)	-5.58	<.001
<i>Probability of Group Membership:</i>				
1: Low-adherers: N=16 (9%); 2: Decreasing-adherers: N=41 (22%); 3: High-adherers: N=130 (70%).				
<i>Model Fit Statistics:</i>				
BIC = -957.13 (N=1496); BIC=-947.77 (N=187); AIC=-933.23.				

Figure 3.
MTN-017: Adherence to daily rectal regimen over time

Table 1.

Sample characteristics of participants in MTN-017 (N=187)

	Mean (SD)	Range
Age	31.4 (9.3)	18–64
Education (years)	12.3 (1.9)	0–13
	N *	% *
Currently working full- or part-time	144	79%
Currently in school full- or part-time	52	28%
Country of residence		
Peru	36	19%
South Africa	18	10%
Thailand	54	29%
United States (including Puerto Rico)	79	42%
Gender		
Man	163	88%
Transgender Woman	23	12%
Sexual identity		
Gay/homosexual	164	91%
Bisexual	13	7%
Straight/heterosexual	3	2%
	Mean (SD)	Range
Frequency of receptive anal intercourse (past 8 weeks)	4.4 (5.7)	0–40

*
Ns may not sum to 187 due to missing data; percentages are of those with non-missing data.

Table 2.

Potential predictors of participant characteristics based on trajectory of adherence to daily oral regimen in MTN-017 – polytomous logistic regression.

Regimen: Daily Oral						
	High-adherers vs. Low-adherers *			High-adherers vs. Decreasing-adherers *		
Potential predictors	OR **	95% CI	p-value	OR **	95% CI	p-value
<i>Age</i>	1.06	0.99, 1.15	0.085	1.06	1.01, 1.11	0.021
<i>Male</i>	4.76	1.35, 16.67	0.015	0.88	0.24, 3.33	0.877
<i>Education (in years)</i>	1.22	0.98, 1.52	0.078	1.02	0.82, 1.27	0.858
<i>Number of partners</i>	1.67	1.04, 2.63	0.033	1.01	0.93, 1.09	0.825
<i>Likelihood of getting HIV in lifetime</i>	1.52	0.68, 3.45	0.306	1.64	0.94, 2.86	0.081
<i>Overall liking of the product</i>	1.67	0.83, 3.45	0.148	1.59	1.14, 3.03	0.012
<i>Ease of swallowing the tablet</i>	2.22	1.08, 4.76	0.031	1.61	1.05, 3.03	0.032
<i>Reason preventing from taking the tablet – I forgot</i>	0.92	0.21, 4.00	0.910	0.37	0.12, 1.09	0.072
<i>Reason preventing from taking the tablet – I did not like the product</i>	0.43	0.19, 0.96	0.040	1.25	0.65, 2.44	0.504
<i>Likelihood of taking the tablet knowing it provides protection against HIV</i>	1.49	0.82, 2.70	0.193	1.43	0.94, 2.08	0.088

* The high-adherers (maintaining high adherence throughout the 8-week study period) represented 72% of participants; the decreasing-adherers (adherence decreased consistently over time) represented 20% of participants; the low-adherers (having low adherence throughout the 8-week study period).

** OR: Odds ratio

Table 3.

Potential predictors of participant characteristics based on trajectory of adherence to daily rectal regimen in MTN-017 – polytomous logistic regression

Regimen: Daily Rectal						
	High-adherers vs. Low-adherers[*]			High-adherers vs. Decreasing-adherers[*]		
Potential predictors	OR ^{**}	95% CI	p-value	OR ^{**}	95% CI	p-value
<i>Age</i>	1.16	1.05, 1.28	0.002	1.04	1.01, 1.09	0.042
<i>Number of Partners</i>	1.39	0.98, 1.96	0.065	0.99	0.93, 1.05	0.803
<i>Overall liking of the product</i>	1.82	0.98, 3.23	0.056	1.75	1.18, 2.50	0.005
<i>Ease of applying the gel</i>	1.67	0.79, 3.57	0.175	1.61	1.00, 2.63	0.050
<i>Ease of applying the gel the last few times</i>	2.27	1.01, 5.00	0.048	2.04	1.20, 3.45	0.009
<i>Overall liking of the gel applicator</i>	1.69	0.93, 3.03	0.090	1.72	1.16, 2.44	0.006
<i>Reason preventing from using the gel – don't have privacy needed to use the product</i>	0.20	0.04, 1.12	0.067	0.37	0.10, 1.33	0.127
<i>Reason preventing from using the gel – don't like the gel</i>	0.10	0.02, 0.59	0.011	0.40	0.11, 1.52	0.178
<i>Reason preventing from using the gel – there was change in regular routine</i>	5.26	1.23, 100	0.031	0.95	0.40, 2.27	0.908
<i>Likelihood of using the gel knowing it provides protection against HIV</i>	1.28	0.75, 2.22	0.361	1.47	1.05, 2.08	0.023

^{*} The high-adherers (maintaining high adherence throughout the 8-week study period) represented 72% of participants; the decreasing-adherers (adherence decreased consistently over time) represented 20% of participants; the low-adherers (having low adherence throughout the 8-week study period).

^{**} OR: Odds ratio