Kibengo et al. Retrovirology 2012, 9(Suppl 2):P213
http://www.retrovirology.com/content/9/S2/P213

RETROVIROLOGY

POSTER PRESENTATION Open Access

Performance of self-reported adherence to oral pre-exposure prophylaxis (PrEP) among HIV heterosexual serodiscordant couples in rural Uganda

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From AIDS Vaccine 2012
Boston, MA, USA. 9-12 September 2012

Background

Adherence is one of the main determinants of PrEP efficacy. Most PrEP studies applied subjective adherence measures, which often produce overestimates and problematic efficacy data interpretation; creating a need for more objective measures. This study examines self-reported adherence to oral PrEP compared to Medical Events Monitoring System (MEMS).

Methods

Seventy-two HIV-uninfected partners (50% women) in Uganda were randomized to daily or intermittent (Monday, Friday and within 2 hours after sex, not exceeding 1 dose/day) oral emtricitabine/tenofovir or placebo in a 2:1:2:1 ratio for four months. Adherence was assessed monthly by MEMS and self-reported taken or missed doses by timeline follow-back calendar. MEMS data was adjusted for extra openings without pill removal and removal of multiple pills. Non-fixed days within intermittent regimen were classified as adherent/non-adherent based on self-reported sex by SMS. Adherence rates by taken/missed doses were compared to raw MEMS data using Spearman correlation.

Results

Treatment and placebo groups were combined since adherence rates were similar. Daily raw MEMS adherence rate was significantly higher than fixed Intermittent rate (p=0.04) and post-coital dosing rate (p<0.0001). Raw MEMS data for daily and fixed intermittent dosing, poorly correlated with self-reported taken doses (r=0.14, p=0.42 and r=0.01, p=0.94, respectively) and missed doses (r=0.30, p=0.08 and r=0.07, p=0.69, respectively). Self-reported daily adherence had high sensitivity but only fair positive predictive value (PPV) and very poor specificity. Self-reported adherence to intermittent fixed dosing had fair sensitivity, PPV and negative predictive value (NPV), but poor specificity. Self-reported adherence to post-coital dosing had very good sensitivity and NPV but poor specificity.

Conclusion

Median adherence for daily and intermittent fixed PrEP was high by objective and subjective measures, but poorly correlated. Adherence to post-coital dosing was poor and likely overestimated by self-report (possibly reflecting technical challenges of SMS). Self-reported adherence measures were highly sensitive but poorly specific.

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Published: 13 September 2012

doi:10.1186/1742-4690-9-S2-P213
Cite this article as: Kibengo *et al.*: Performance of self-reported adherence to oral pre-exposure prophylaxis (PrEP) among HIV heterosexual serodiscordant couples in rural Uganda. *Retrovirology* 2012 **9**(Suppl 2):P213.

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