

Multi-Month Scripting and Retention on HIV Antiretroviral Therapy in Haiti

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BACKGROUND

Haiti's Ministry of Health recently endorsed a national initiative to lengthen prescribing intervals for HIV antiretroviral therapy (ART), known as multi-month scripting (MMS). With MMS, virally suppressed patients on ART for >6 months are moved from monthly prescribing intervals to intervals of 2-6 months. This decreases patient travel and clinic waiting time and reduces congestion in ART clinics. Our study described operationalization and results of the MMS approach in Haiti.

OBJECTIVES

1. Describe uptake of MMS in Haiti since 2014;
2. Describe the degree to which MMS prescription intervals were appropriately used according to whether patients were stable on ART;
3. Identify the level of retention on ART with MMS versus without MMS in unadjusted and adjusted analyses.

METHODS

Study Design: This retrospective cohort study used pharmacy dispensing data from the iSanté electronic medical record system, which includes data from approximately 70% of all ART patients in Haiti. ART sites were excluded if they were within prisons or if they had a meaningful lag in timeliness of data entry. The data source covered 42,896 patients at 85 sites during January 2014 – September 2017.

Table 1. Outcomes and covariables

| Variable | Description |
|---------------------------|---|
| Uptake of MMS | ART prescription intervals of greater than 35 days. Prescription intervals of >180 days, representing 0.4% of observations, were dropped from the analysis. |
| Retention on ART | Having a visit within 30 days of the expected next ART pickup. |
| Stable on ART | 1) On ART for at least 6 months with at least 2 prior dispenses; 2) none of previous 3 ART pickups occurring more than 14 days after expected pick-up date; 3) no evidence of a new opportunistic infection in past 3 months following ART start; and 4) no evidence of a detectable viral load (>1000 copies/mL) in past 6 months following ART start. |
| Patient-level predictors | Age, sex, marital status, ART regimen type body mass index; presence/use of: new opportunistic infection, detectable viral load, isoniazid for TB prophylaxis, drugs to treat TB, Cotrimoxazole, ART adherence counseling session, treatment buddy named; time from HIV testing to ART initiation; time on ART. |
| Facility-level predictors | Health facility type, ownership, geographic department, network affiliation, and travel distance to the nearest town of 50,000 people. |

DATA ANALYSIS

Part 1: MMS uptake: We describe the overall frequency of MMS among 634,681 ART prescriptions during January 2014 - September 2017.

Part 2: Appropriateness of MMS: We classified ART dispenses into four categories, based on the “stability” of patients on ART: 1) appropriate use of MMS; 2) appropriate non-use of MMS; 2) missed opportunities (MMS could have been provided but was not); and 4) inappropriate use of MMS.

Part 3: Association between MMS and Retention on ART: We limited this analysis to a single observation for 28,417 patients with ART dispenses during November – December 2016. For all bivariate and adjusted models, we used generalized estimating equations (GEE) models with a log link, a Poisson family, exchangeable correlation structure, and robust variance to address correlation of data by health facility.

RESULTS

Part 1: Dispenses of less than 35 days decreased steadily from a high of 65.4% in February 2014 to a low of 29.4% in July 2017. Dispenses of more than 70 days increased from a low of 3.7% in February 2014 to a high of 42.6% in July 2017 (Figure 1).

Part 2: Following formal adoption of the MMS approach, appropriate intervals increased, while “missed opportunities” dropped dramatically to 13.9%, and inappropriate MMS intervals increased markedly to 33.1% (Figure 2).

Figure 1. ART dispenses by month and prescription interval length

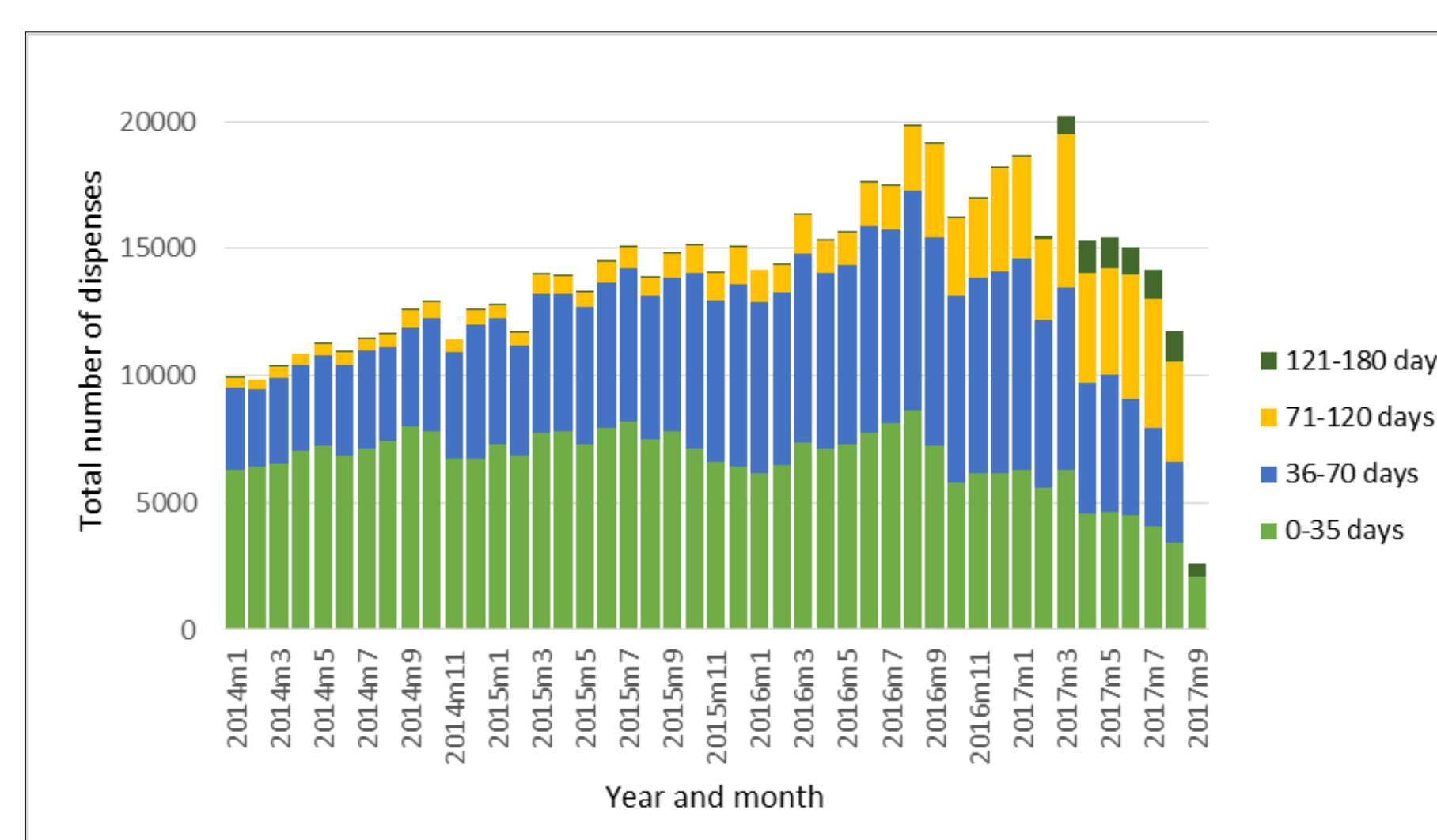
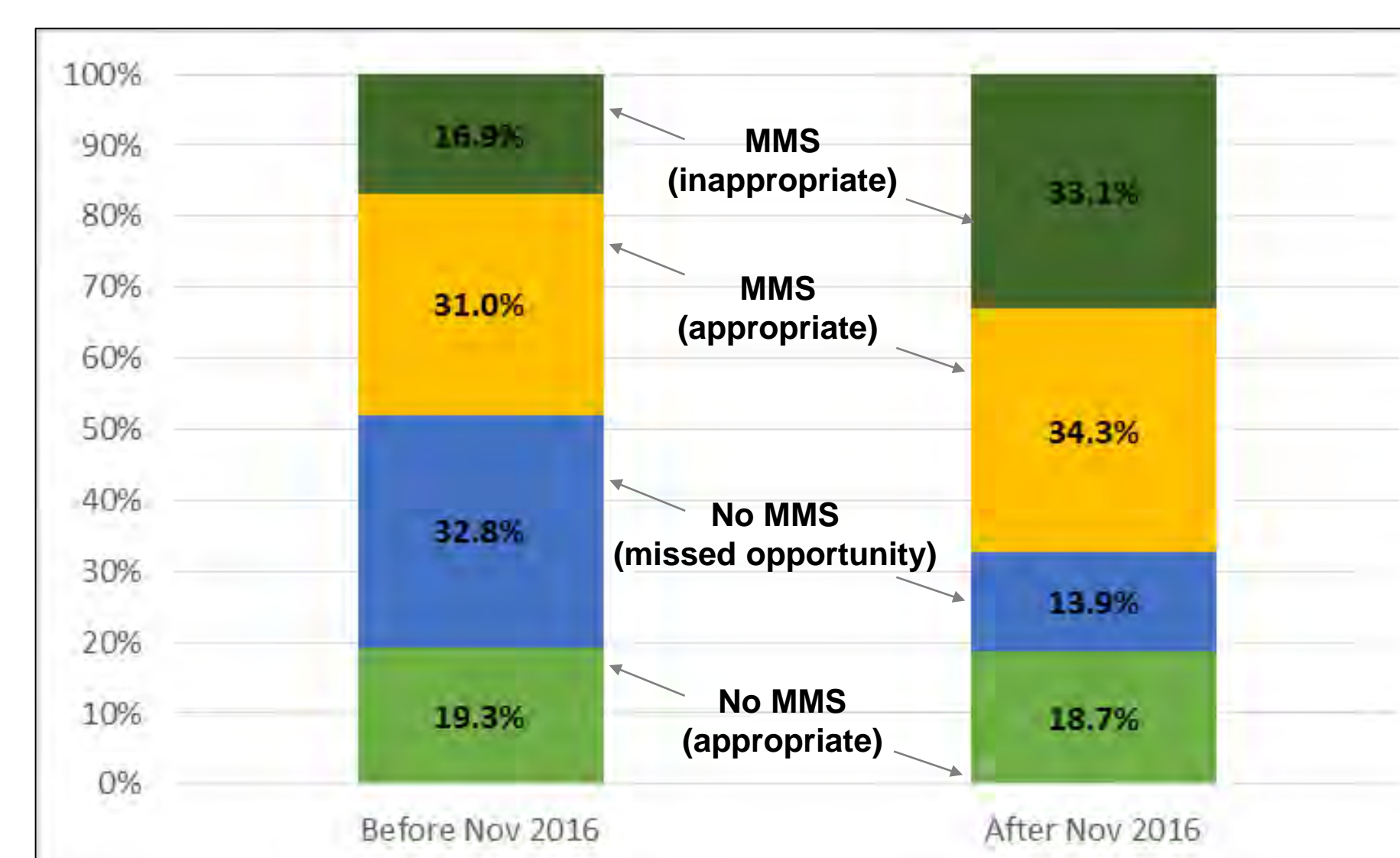


Figure 2. Appropriateness of MMS use before and after formal adoption of MMS guidelines, given “stability” of patients



RESULTS

Part 3: 77.4% of 28,417 patients had an MMS prescription interval while 22.6% had a monthly ART interval. A larger proportion of patients with an MMS interval were retained on ART compared to those with a monthly ART interval (82.2% vs. 67.8%; p<0.0001). In the adjusted analysis of retention on ART, having an MMS prescription interval was associated with a 18% increased likelihood of being retained on ART (95% CI: 14%-23%; p<0.0001).

Table 2. Association between MMS and retention on ART (adjusted model)

| | IRR | 95% CI (lower) | 95% CI (upper) | p-value |
|--|------|----------------|----------------|---------|
| MMS dispense | 1.18 | 1.14 | 1.23 | <0.0001 |
| Current pick up at least 14 days late | 0.82 | 0.79 | 0.85 | <0.0001 |
| Years on ART | 1.01 | 1.01 | 1.01 | <0.0001 |
| Any ART counseling at baseline | 1.02 | 1.01 | 1.04 | 0.01 |
| Age at ART initiation (reference = 35-54 years) | | | | |
| <15 | 1.06 | 1.02 | 1.10 | <0.01 |
| 15-24 | 0.96 | 0.94 | 0.98 | <0.01 |
| 25-34 | 0.98 | 0.97 | 1.00 | 0.02 |
| 55-89 | 1.00 | 0.99 | 1.02 | 0.65 |
| missing | 0.91 | 0.73 | 1.14 | 0.43 |
| Body mass index in past 3 months (reference = underweight <18.5) | | | | |
| normal (18.5-24.9) | 1.02 | 1.00 | 1.04 | <0.05 |
| overweight (25-29.9) | 1.03 | 1.00 | 1.06 | 0.02 |
| obese (>=30) | 1.05 | 1.02 | 1.08 | <0.01 |
| missing | 0.97 | 0.94 | 1.01 | 0.12 |
| Most recent regimen (reference = TDF+3TC+EFV) | | | | |
| Other standard first-line | 0.99 | 0.95 | 1.03 | 0.50 |
| Standard regimen with PI drug | 0.96 | 0.94 | 0.99 | <0.01 |
| Non-standard (no PI drug) | 1.01 | 0.99 | 1.02 | 0.36 |
| Non-standard (with PI drug) | 0.94 | 0.89 | 0.99 | 0.03 |
| Detectable viral load in past 6 months after starting ART (reference = no) | | | | |
| Yes | 0.96 | 0.93 | 0.99 | 0.02 |
| No viral load test done | 0.82 | 0.79 | 0.85 | <0.0001 |
| Use of INH in past 3 months | 0.97 | 0.95 | 1.00 | <0.05 |

IRR=Adjusted incidence rate ratio; CI=confidence interval; TDF=tenofovir; 3TC=lamivudine; EFV=efavirenz; PI=protease inhibitor; INH=isoniazid. Model adjusted for patient-level and facility-level predictors shown in Table 1. Statistically significant factors not shown in Table 2 include: health facility type (p<0.01); geographic Department (p=0.02); and network affiliation (p=0.03).

CONCLUSIONS

Haiti has decisively implemented the MMS approach across a majority of ART sites. The association between MMS intervals and improved retention on ART is promising, although these favorable results may reflect the preferential selection of stable patients for MMS, rather than a direct causal effect. Further analysis of criteria for appropriate use of MMS and the causal effect of the MMS approach is needed.

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