Effect of changes in script renewal period on HIV viral non-suppression among insured South Africans

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BACKGROUND

During the COVID-19 pandemic, South Africa implemented strict lockdown measures and temporarily changed the validity of repeat prescriptions for chronic medication including antiretroviral therapy (ART) from 6 to 12 months. We evaluated the effect of these changes on HIV viral non-suppression in the private health sector in South Africa.

METHODS

We analysed routine laboratory and pharmacy claims data between 2019 and 2022 from Aid for AIDS (AfA), a large private-sector South African HIV management program. Adults living with HIV >15 years who had received ART for ≥3 months were included.

We conducted an interrupted time-series analysis comparing rates of viral non-suppression (viral load (VL) ≥50 copies/mL) during the following periods:

- 1 January 2019 – 23 April 2020 when conventional 6-monthly script renewal was in place;
- 24 April 2020 – 25 September 2021 during COVID-19 restrictions when 12-monthly script renewal was implemented;
- 26 September 2021 – 30 November 2022, when restrictions eased and 6-monthly script renewal was re-instated.

Monthly suppression rates were modelled using binomial generalized linear regression models.

We measured the slope change in suppression rates between adjacent time periods by including an interaction term between time and a binary indicator for the COVID-19 period in the model.

Inverse probability weighting was used to account for changes in VL testing during the period.

During COVID-19 there was a slight improvement in viral suppression, but after lockdown measures were eased and 6-monthly script renewal re-instated, viral non-suppression began to increase.

RESULTS

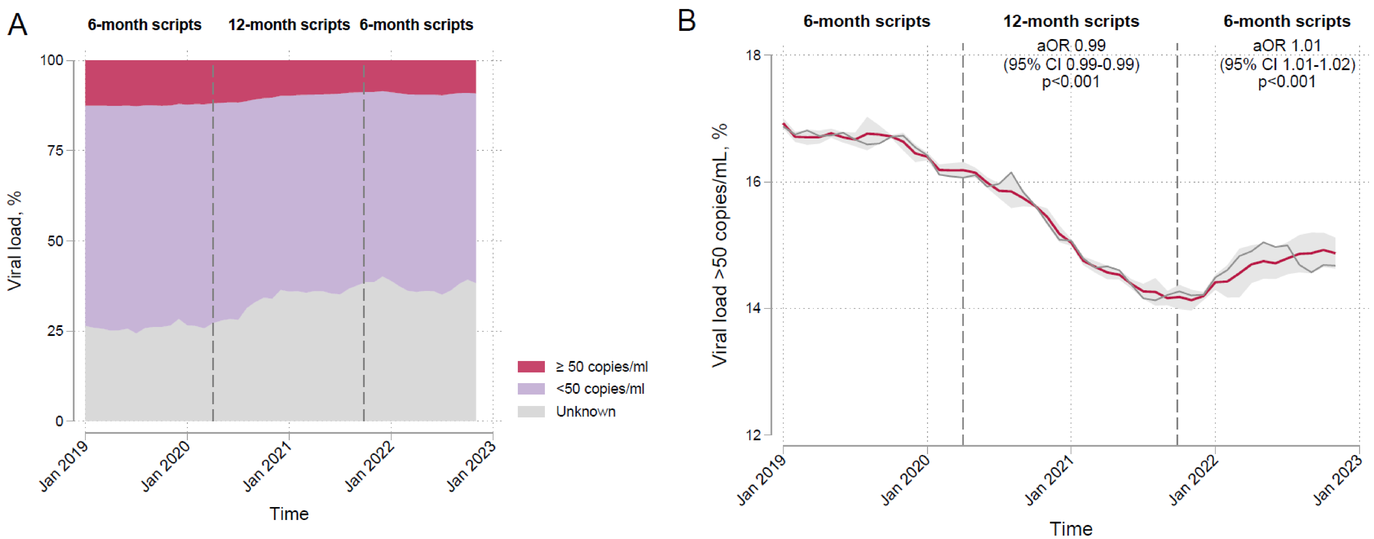
- Table 1 describes the study population characteristics during the study period.
- The proportion with unknown VL increased during the study. (Figure A)
- The median time between current and previous VL measure increased during the study period, from 189 days (IQR 174-224) in January 2019 to 209 days (IQR 181-320) in November 2022.
- Figure 2 shows the change in viral non-suppression during the study period:
  - Compared to the period prior to with 6-monthly script renewal, the odds of viral non-suppression decreased by 1% per month when 12-monthly script renewal was implemented [adjusted odds ratio (aOR) 0.99, 95% confidence interval (CI) 0.99-0.99, p<0.001].
  - When 6-monthly script renewal was re-introduced the odds of viral non-suppression increased by 1% per month [aOR 1.01 (95%CI 1.01-1.02, p<0.001).
- Similar trends were observed for men and for women, although men had higher rates of viral non-suppression

Table: Participant characteristics at start, guidelines change, and end of study

	Jan 2019 N=73,884		May 2020 N=76,321		Oct 2021 N=72,463		Nov 2022 N=72,026	
Sex								
Male	30,438	(41.2)	31,390	(41.1)	29,254	(40.4)	29,726	(41.3)
Female	43,446	(58.8)	44,931	(58.9)	43,209	(59.6)	42,300	(58.7)
Age, years								
15-29	3,692	(5.0)	3,350	(4.4)	2,428	(3.4)	1,895	(2.6)
30-44	37,629	(50.9)	37,241	(48.8)	33,685	(46.5)	31,393	(43.6)
45+	32,563	(44.1)	35,730	(46.8)	36,350	(50.2)	38,738	(53.8)
Mean (SD)	43.6	(9.4)	44.4	(9.5)	45.2	(9.4)	46.0	(9.3)
Regimen								
NNRTI+2NRTI	63,447	(85.9)	63,683	(83.4)	57,438	(79.3)	53,288	(74.0)
II+2NRTI	185	(0.3)	2,299	(3.0)	5,680	(7.8)	10,222	(14.2)
PI+2NRTI	10,252	(13.9)	10,339	(13.5)	9,345	(12.9)	8,516	(11.8)

SD: standard deviation, NNRTI: non-nucleoside reverse transcriptase inhibitor, NRTI: nucleoside reverse transcriptase inhibitor, II: integrase inhibitor, PI: protease inhibitor

Figure: Recorded viral load (panel A) and observed and predicted proportions with viral non-suppression (panel B) before, during and after 12-monthly script renewal was implemented.



CONCLUSIONS

Measures implemented during COVID-19 to ensure continued access to chronic medication in South Africa provided a unique opportunity for evidence to guide efficient ART delivery models that involved 12-month repeat scripts and less frequent visits to healthcare providers. Our analysis suggests that high suppression rates can be maintained under this model.

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