



Understanding “the Last 90” in Guyana’s HIV Treatment Cascade

A Facility-Based Assessment of the Viral Loads of Key Populations

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Cover

Beach scene, Georgetown, Guyana. Photo: Zahra Reynolds, MEASURE Evaluation

CONTENTS

Acknowledgments	5
Abbreviations	8
Introduction	9
Methods	11
Study Setting.....	11
Sampling.....	11
Data Collection	12
Analysis	12
Results	13
Data Review	13
Data Collection Results	15
<i>Key Population Results</i>	15
Results, by Recency of Testing.....	22
Discussion.....	31
Conclusion.....	33
References.....	34
Appendix 1. Survey Instrument.....	35

FIGURE

Figure 1. Best and worst case scenarios for VL suppression in Guyana based on routine data.....	14
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TABLES

Table 1. Facilities chosen for this study.....	11
Table 2. Data completeness	13
Table 3. Calculations used to estimate the bounds for missing data.....	14
Table 4. Fieldwork summary, unweighted counts	15
Table 5. Demographic characteristics, weighted percentages	16
Table 6. Sexual behavior among those who have had sex, weighted percentages	17
Table 7. Transactional sex among those who have had sex, weighted percentages	18
Table 8. Services received at the last visit, weighted percentages	19
Table 9. Last visit, continued, weighted percentages.....	20
Table 10. ARVs, weighted percentages	21
Table 11. Other risk behaviors, weighted percentages.....	22
Table 12. Fieldwork summary, unweighted counts	22
Table 13. Demographic characteristics, weighted percentages	23
Table 14. Sexual behavior among those who had had sex, weighted percentages.....	24
Table 15. Transactional sex among those who have had sex, weighted percentages	25
Table 16. Services received at the last visit, weighted percentages	26
Table 17. Last visit, continued, weighted percentages.....	27
Table 18. ARVs, weighted percentages	28
Table 19. Other risk behaviors, weighted percentages.....	29

ABBREVIATIONS

ART	antiretroviral therapy
ARV	antiretroviral
CDC	United States Centers for Disease Control and Prevention
FSW	female sex worker
KP	key population
MOPH	Ministry of Public Health
MSM	men who have sex with men
NAPS	National AIDS Programme Secretariat
USAID	United States Agency for International Development
VL	viral load

INTRODUCTION

According to the National Guidelines for Management of HIV-Infected and HIV-Exposed Adults and Children (Ministry of Public Health [MOPH], 2015), viral load testing began in Guyana in 2009. It is indicated for adults at six months after initiation of antiretroviral therapy (ART) and every six to 12 months thereafter for clients who are virally suppressed. This supports what the midterm evaluation of Guyana's *HIVision 2020* reports is the ultimate goal of the HIV treatment cascade (the steps a client takes from testing through viral suppression): “viral load suppression” (MOPH, 2017). One strategy outlined in the document is to “increase the proportion of people with HIV (on HAART [highly active antiretroviral therapy]) who have viral load suppression to 90% by 2020.” That strategy is in line with other global goals to ensure that 90 percent of people enrolled in care have a viral load that is below standard limits or even undetectable. Implementing the strategy in Guyana is particularly important in the era of treatment as prevention, to ensure that the virus is undetectable in clients and therefore untransmittable.

The most recent HIV treatment cascade analysis for Guyana, from 2016, reports that 68 percent of people on ART are virally suppressed (MOPH, 2017). These cascade data come from routine reports from health facilities. Although the information is valuable, it is incomplete, because that same cascade reports that 83 percent of clients on ART have a current viral load test.

MEASURE Evaluation—a project funded by the United States Agency for International Development (USAID) and the United States President's Emergency Plan for AIDS Relief (PEPFAR)—realized that filling this gap would be essential to a full understanding of the HIV cascade in Guyana. If the sample of clients who were missing VL measures could be assumed to represent all clients missing VL measures, then we could leverage estimates of viral suppression from a sample of clients who were missing VL data to obtain a more accurate, representative estimate of viral suppression among a larger population in the care and treatment program. Answering these questions would contribute to USAID's goal of controlling the HIV/AIDS epidemic and the global 90-90-90 targets that PEPFAR has adopted.

Prior studies in Guyana have shown that the country's key populations (KPs)—female sex workers (FSWs), men who have sex with men (MSM), and transgender women—face greater barriers to accessing services than the general population does. *HIVision 2020* called for the country to pay special attention to KPs (MOPH, 2013). Not only are they engaged in higher-risk activities (National AIDS Programme Secretariat [NAPS] & MEASURE Evaluation, 2014), but also they face greater stigma than other HIV-positive clients. To better understand KPs' engagement in HIV services and how they compare to non-KP clients, we chose to focus on KPs for this study. NAPS wanted to understand how KPs are progressing along the HIV cascade to viral load suppression.

Our purpose in assessing viral loads among KPs was to estimate the level of HIV viral suppression among KP members who were enrolled in care. We designed the study to (1) quantify the missing viral load data for KPs, and (2) sample people who were missing viral load data to estimate viral suppression for those populations. The Society Against Sexual Orientation Discrimination facilitated the two stages of the study with technical oversight by MEASURE Evaluation in close collaboration with NAPS. The study took place in early 2019 at five health facilities in Georgetown, Guyana.

National Indicators for Viral Load Testing

Cts4: Percentage of people on ART tested for viral load (VL) who have an undetectable viral load in reporting period

Cts5: Percentage of people on ART tested for viral load (VL) with VL level below \leq 1,000 copies after 12 months of therapy

Monitoring and Evaluation Plan for the National HIV Programme 2015-2020 (MOPH, 2015)

The results of the study will help inform MOPH programs both for HIV-positive clients who are KP members and those who are not. It will illuminate gaps in data and show how viral load estimation can be improved at the health facility and national levels.

METHODS

This study followed the basic protocol for understanding “the last 90” as outlined in *Applying New Methods to Estimate Viral Suppression: The “Last 90”* (Zadrozny, Weir, Edwards, & Herce, 2018). The study followed a two-stage design. The first stage identified the study population and collected HIV visit data through routine programmatic data. The second stage deployed a small and rapid biobehavioral survey of a consecutive sample of the study population with missing VL data for a discrete period at HIV treatment facilities. The estimates of viral suppression from the study population that had extensive missing data were combined with estimates of viral suppression in the sample to calculate an improved estimate of viral suppression.

The **first stage** identified key population members as the study population, due to their increased barriers to service compared to the general population. In Guyana, KP status is not noted for HIV clients in public facilities but is assessed and documented at facilities supported by the United States Centers for Disease Control and Prevention (CDC). It was determined that KP status would need to be assessed through behavioral questions in the survey questionnaire rather than relying on facility documentation.

The **second stage** recruited active HIV clients and asked them to participate in a short survey of biobehavioral questions. Data collection occurred over eight weeks. During that time, all clients with missing viral loads who came to one of five facilities for treatment were asked to participate. Participants without current viral load estimates were asked to provide a sample for testing. Once targets had been reached for clients without viral loads, a smaller sample of clients with current viral load estimates was also asked to participate and complete a survey without providing a serum sample.

Study Setting

The study took place in Region 4 of Guyana, where most KP members reside and/or seek treatment if they are HIV-positive. We engaged the health ministry’s Key Population Technical Working Group to identify facilities that are seen as KP-friendly or where most KPs seek treatment. Table 1 lists the five facilities identified.

Table 1. Facilities chosen for this study

Facility	Type	Number of active clients in March 2019
Campbellville Health Centre	Public	301
Davis Memorial Hospital	Private	689
Dorothy Bailey Health Centre	Public	324
St. Joseph Mercy Hospital	Private	940
National Care & Treatment Centre	Public	1,494

Sampling

For the study, we sought a sample of 1,000 participants—the number representing approximately 20 percent of the adult population with HIV in Guyana. The study design required a random consecutive sample of clients in care at the five identified health facilities. Guyana does not have a central care and treatment database, so the sample frame was created by identifying all active HIV clients at each facility. The private, CDC-supported sites have a database of active clients. This list had to be supplemented with a chart review to add such required information as VL data. The National Care & Treatment Centre also has

an electronic database of clients, but it was incomplete and had to be supplemented with a chart review to fill in missing information. The other two public health facilities relied solely on paper registers to track their clients, so a full chart review was needed to collect the necessary information for the sample frame.

Targets for the number of clients interviewed at each site were set proportionally to the size of the site. Approximately 80 percent of the target was for participants missing viral load estimates, and 20 percent for those with current viral load estimates. To reach these targets, a consecutive sample of clients for a discrete period (eight weeks) was selected when clients arrived for their regularly scheduled appointments. This assumes that clients who visited the health facility during that discrete period are similar to clients who went to the clinic at other times.

The eligibility requirements were that participants be 18 years old or older, speak English, have been enrolled in HIV care for at least one year, arrive at the facility for routine clinic visits during the data collection period, and agree to participate in the study.

Data Collection

Data collectors were selected from a pool of applicants who were employees of the health facilities included in the study. The goals of using facility staff were to integrate the data collection process within routine processes and to ensure confidentiality of client data. Data collectors participated in data collection training that covered human subjects research ethics, survey methods, and tablet use for data collection. The training was conducted on January 23 and 24, 2019. The study was implemented by the Society Against Sexual Orientation Discrimination.

Data collection occurred from February 3 through April 18, 2019, with some health facilities reaching their targets sooner than others. Data were collected on Samsung tablets and uploaded to a server daily. Data quality was reviewed continuously throughout data collection and any issues were immediately addressed.

Analysis

Data were cleaned by MEASURE Evaluation and analyzed using Stata 15 (StataCorp). The primary groups of comparison were clients with current VL estimates compared to those without VL estimates. Analysis also includes comparison of the different KP groups to non-KP clients. The viral load calculator was applied to determine the correction factor to be applied to routine data. The correction factor can be defined as:

$$r = \frac{P(\text{suppression}|\text{sample})}{P(\text{suppression}|\text{routine data})} = \frac{s}{w}$$

where r = the ratio of viral suppression for patients who were missing versus not missing VL data, w = the proportion of clients on ART who have a suppressed VL (among those with a measurement), and s = the proportion suppressed among the sampled clients on ART.

The National Public Health Reference Laboratory defines viral suppression as <400 copies per milliliter.

RESULTS

Data Review

During the first stage of the assessment, the study team reviewed client charts and databases to identify active HIV clients, collect basic demographic information, and to note viral load testing and results. Table 2 shows that the five facilities included in the study varied in the number of active HIV clients: Campbellville Health Centre was the smallest and the National Care & Treatment Centre was the largest. The study team calculated the proportion of clients eligible for the study (based on age and treatment length requirements) who had a VL measure in the past six months. National treatment guidelines suggest that VL be measured every six to 12 months. Using the six-month cutoff, the proportion of clients missing VL ranged from 42 percent at St. Joseph Mercy Hospital to 83 percent at Dorothy Bailey Health Centre. Using the 12-month cutoff, the proportion of missing VLs had a smaller range: from 9 percent missing at St. Joseph Mercy Hospital to 38 percent at the National Care & Treatment Centre.

An analysis of facility-based routine data showed that the proportion of clients with suppressed viral load among those with current VL tests in the past six months ranged from 70 percent to 88 percent (Table 2).

Table 2. Data completeness

	Campbellville Health Centre	Davis Memorial Hospital	Dorothy Bailey Health Centre	St. Joseph Mercy Hospital	National Care & Treatment Centre	Total
Number of active clients on treatment	301	689	324	940	1,494	3,748
Eligible to participate based on age, length of time on treatment	263	648	317	896	1,493	3,617
Number of clients without VL measures from the past 6 months based on registers	180	467	262	372	1,075	2,356
Proportion of active clients missing VL measures from the past 6 months	68%	72%	83%	42%	72%	65%
Proportion of clients with suppressed VL and a current viral load test in the past 6 months	78%	88%	76%	70%	85%	79%
Number of clients without VL measures from the past 12 months, based on registers*	53	159	57	85	565	919
Proportion of active clients missing VL measures from the past 12 months	20%	24%	18%	9%	38%	25%
Proportion of clients with suppressed VL and a current viral load test in the past 12 months	78%	93%	86%	91%	91%	90%

*This is a subset of those without VL measures in the past 6 months.

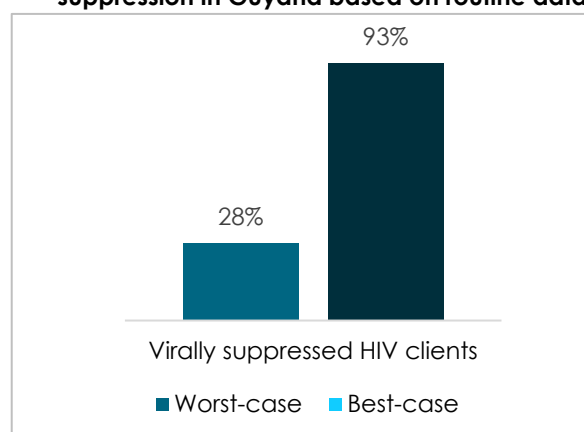
The study team estimated the bounds for missing data using the calculations shown in Table 3.

Table 3. Calculations used to estimate the bounds for missing data

Observed
<p>79% suppressed for all those with current VL data from the past six months</p> <p>x 35% of clients with data (i.e., not missing VL results in the past six months)</p> <hr/> <p>28% with VL data AND suppressed</p>
Worst-case scenario
<p>0% suppressed for all those missing VL data in the past six months</p> <p>x 65% of clients with missing VL data</p> <hr/> <p>0% without a VL AND (assumed) suppressed</p> <p>28% + 0% = 28% suppressed assuming all missing VL results are not suppressed</p>
Best-case scenario
<p>100% suppressed for all those missing VL data</p> <p>x 65% of clients with missing VL data</p> <hr/> <p>65% without a VL AND (assumed) suppressed</p> <p>28% + 65% = 93% suppressed assuming all missing VL results are suppressed</p>

Figure 1 shows the results of these calculations and the wide variance in assumptions for viral suppression in Guyana in the absence of complete data. The worst-case scenario assumes that all HIV clients who are missing current VL data are not virally suppressed, leading to an overall viral suppression of 28 percent. The best-case scenario assumes that everyone with missing VL data is virally suppressed, leading to an overall viral suppression of 93 percent.

Figure 1. Best and worst case scenarios for VL suppression in Guyana based on routine data



Data Collection Results

This section presents the results of the primary data collection at five health facilities in Region 4. The same data are presented by key population group, and by recency of testing so different types of groups can be easily compared.

Key Population Results

Table 4 shows the unweighted counts of key population and non-key population participants by health center. The National Care & Treatment Centre had the largest proportion of KP clients, followed by Davis Memorial Hospital. Not all KP groups are represented at every facility. Only six FSWs were identified through the survey, and results for this group should not be seen as generalizable. Similarly, only 17 transgender women were identified.

Table 4. Fieldwork summary, unweighted counts

	FSW	MSM	Transgender women	General population	Total
Health Facility					
Campbellville Health Centre	1	6	3	95	105
Davis Memorial Hospital	0	29	2	144	175
Dorothy Bailey Health Centre	2	6	2	128	138
National Care & Treatment Centre	3	55	7	445	510
St. Joseph Mercy Hospital	0	10	3	141	154
Total	6	106	17	953	1082

Table 5 presents demographic characteristics of study respondents. Fifty-five percent of respondents identified as female, 43 percent as male, 1 percent as transgender, and less than 1 percent as “other.” Three-quarters of respondents were over 35 years old, but the FSW and MSM groups skewed younger. Close to 90 percent were literate, but just over half had completed secondary school at the time of the study. Transgender respondents reported lower rates of literacy and educational attainment. One-third of respondents were unemployed, with higher rates of unemployment among FSWs and transgender women. Nearly four out of five respondents lived in Region 4, but all regions were represented in the sample.

Table 5. Demographic characteristics, weighted percentages

	FSW n=6	MSM n=106	Transgender women n=17	General population n=953	Total n=1,082
Gender					
Male	0.0	96.9	0.0	37.3	43.2
Female	100.0	0.0	18.8	62.7	55.4
Transgender	0.0	0.0	81.2	0.0	1.1
Other	0.0	3.1	0.0	0.0	0.3
Age group					
15–29	0.0	0.5	0.0	1.8	1.6
20–24	27.5	10.2	3.2	2.8	3.7
25–29	11.9	16.8	14.6	7.1	8.3
30–34	0.0	12.4	8.6	8.5	8.9
35+	60.6	60.1	73.6	79.8	77.5
Knows how to read and write					
Yes	72.5	90.6	68.3	88.7	88.6
No	27.5	9.4	31.7	11.3	11.4
Completed secondary school					
Yes	60.6	63.7	36.0	51.0	52.2
No	39.4	36.3	64.0	49.0	47.8
Currently a student					
Yes	6.0	10.7	1.4	2.1	3.1
No	94.0	89.3	98.6	97.9	96.9
Employment status					
Not employed, but looking	5.5	14.2	29.1	9.3	10.1
Not employed, and not looking	39.4	10.9	0.0	22.5	21.0
Self-employed	0.0	9.1	8.4	12.5	12.0
Employed part time	27.5	5.0	7.0	8.0	7.7
Employed full time	27.5	60.9	55.5	47.7	49.2
Refused to answer	0.0	0.0	0.0	0.0	0.0
Region of residence					
1	0.0	2.2	0.0	0.6	0.7
2	0.0	0.0	0.0	0.4	0.4
3	33.5	9.1	11.4	12.0	11.8
4	66.5	81.7	88.6	78.4	78.8
5	0.0	2.9	0.0	2.2	0.2
6	0.0	3.1	0.0	1.8	1.9
7	0.0	0.0	0.0	0.9	0.8
8	0.0	0.0	0.0	0.4	0.4
9	0.0	0.0	0.0	0.3	0.2
10	0.0	1.0	0.0	3.1	2.8
Country of birth					
Guyana	100.0	98.2	100.0	99.8	99.6
Venezuela	0.0	0.9	0.0	0.0	0.1
Other	0.0	0.9	0.0	0.2	0.3

Age at first sex skewed younger for KPs (see Table 6) with the largest proportion of all respondents reporting age at first sex to be 18. Among MSM, 85.5 percent reported ever having sex with a woman. Overall, respondents had an average of 1.2 male partners and 1.8 female partners in the past four weeks. Condom use was greater with the last female partner compared to the last male partner (86 percent vs. 75 percent). Approximately 70 percent of respondents knew the HIV status of both their male and female partners. Condom use at last anal sex was highest among transgender women (89 percent) and lowest among FSWs (54.6 percent).

Table 6. Sexual behavior among those who have had sex, weighted percentages

	FSW n=6	MSM n=106	Transgender women n=17	General population n=950	Total n=1,079
Age at first sex					
0–14	39.0	28.2	53.1	14.2	16.3
15	6.0	15.6	6.2	9.3	10.0
16	0.0	12.4	1.4	18.7	17.7
17	27.5	18.9	10.3	15.7	16.1
18	27.5	6.5	7.0	20.6	18.9
19–20	0.0	12.7	0.0	13.7	13.3
21–22	0.0	1.9	17.6	4.4	4.3
23+	0.0	3.9	4.4	3.3	3.4
Ever had sex with a man	100.0	100.0	100.0	62.3	67.0
Ever had sex with a woman	6.0	85.5	32.7	39.2	44.1
Average number of female partners in the past 4 weeks	2.0	1.4	1.0	1.8	1.8
Average number of male partners in the past 4 weeks	2.0	1.7	3.6	1.1	1.2
Condom used with last female partner	100.0	64.8	100.0	88.7	85.8
Condom used with last male partner	58.9	82.9	96.0	73.2	75.2
Knew status of last female partner					
Yes, positive	0.0	28.2	0.0	37.2	35.6
Yes, negative	100.0	46.4	0.0	35.2	36.3
No	0.0	25.5	100.0	27.7	28.1
Knew status of last male partner					
Yes, positive	0.0	31.2	3.5	32.9	31.3
Yes, negative	100.0	15.3	0.0	42.6	37.9
No	0.0	53.6	96.5	24.5	30.8
Had oral sex in the last 12 months	94.0	51.5	78.5	11.9	17.4
Had anal sex in the last 12 months	60.6	57.9	91.5	4.7	11.9
Had vaginal sex in the last 12 months	100.0	38.8	17.6	69.7	65.7
Condom used at last vaginal sex	72.5	76.9	100.0	81.7	81.4
Condom used at last anal sex	54.6	77.6	88.8	69.8	75.6

Ever participating in transactional sex was common among KP members (see Table 7). As many as 82 percent of transgender women and 33 percent of MSM who had engaged in transactional sex had done so in the past six months. Receiving goods or services for sex was more common, with 74 percent of all respondents reporting. One-third of those who reported receiving goods or services for sex had done so in the past six months. Among respondents who reported engaging in sex work, one in 10 reported having their first transaction in the past three months. Fifty-five percent used a condom at last transactional sex. One in 10 of all respondents also reported paying for sex. Of those, 16 percent did so in the past six months.

Table 7. Transactional sex among those who have had sex, weighted percentages

	FSW n=6	MSM n=106	Transgender women n=17	General population n=953	Total n=1,082
Ever received money or gold for sex	100.0	23.9	62.0	5.4	8.5
	n=6	n=25	n=11	n=48	n=90
Last received money or gold for sex, among those who ever received					
In the past six months	100.0	32.9	81.6	6.9	25.8
More than six months before	0.0	67.1	18.4	92.7	74.0
No response	0.0	0.0	0.0	0.4	0.2
Ever received goods or services for sex	88.1	85.0	87.7	64.7	74.1
Last received goods or services for sex, among those who ever received					
In the past six months	100.0	37.8	87.1	10.7	33.2
More than six months before	0.0	62.2	12.9	89.3	66.8
First time received money for sex					
In the past week	27.5	0.0	22.6	0.0	3.3
1–4 weeks before	0.0	0.0	28.4	4.9	5.5
5–12 weeks before	27.5	1.7	7.1	0.0	2.3
3–6 months before	0.0	1.7	0.0	7.3	4.6
6–12 months before	0.0	10.7	0.0	2.4	4.6
More than six months before	45.0	86.0	41.8	85.4	79.7
Age at first sex work					
<18 years	55.0	8.8	19.9	1.2	2.4
18	11.5	0.4	7.0	0.6	0.7
19	0.0	3.0	1.4	0.9	1.1
20	0.0	3.1	8.4	0.3	0.7
21–30	6.0	5.7	20.9	1.8	2.5
31+	27.5	79.1	42.4	95.2	92.5
Last time received money for sex					
In the past week	0.0	12.6	66.9	0.0	10.3
1–4 weeks before	27.5	0.0	5.2	4.9	4.4
5–12 weeks before	0.0	10.6	9.4	0.0	4.2
3–6 months before	11.9	1.7	7.1	7.7	6.0

6–12 months before	5.5	7.2	0.0	7.1	6.4
More than six months before	55.0	68.0	11.3	80.2	68.8
Used a condom at last paid sex	72.5	72.2	88.7	38.5	55.0
Ever paid for sex	6.0	22.1	13.2	9.3	10.7
Last paid for sex, among those who ever paid					
In the past six months	0.0	23.9	77.7	12.1	15.8
More than six months before	100.0	76.1	22.3	85.6	82.5
No response	0.0	0.0	0.0	2.3	1.8

Respondents were asked about their most recent visit to a health facility for HIV services (see Table 8). Eighty-five percent had visited in the past three months, and nearly all respondents had visited within six months. Nearly all received antiretrovirals (ARVs) at their last visit, and one-third of KPs also received condoms.

Table 8. Services received at the last visit, weighted percentages

	FSW n=6	MSM n=106	Transgender women n=17	General population n=953	Total n=1,082
The last health facility visit for HIV was...					
Within the past 3 months	100.0	79.3	80.9	85.7	85.0
3–6 months before	0.0	20.2	19.2	13.8	14.5
6–12 months before	0.0	0.5	0.0	0.3	0.3
More than 12 months before	0.0	0.0	0.0	0.1	0.1
Refused to answer	0.0	0.0	0.0	0.1	0.1
Services and commodities received at the last visit					
Lubricants	6.0	18.3	24.7	6.2	7.8
Condoms	33.5	33.3	31.7	19.5	21.2
Brochure with information	0.0	21.1	22.0	10.5	11.8
ARVs	94.0	96.2	98.5	97.6	97.5

Survey respondents were asked if they had any difficulty accessing health services, and a remarkably small number (less than 1 percent) reported any difficulty (see Table 9). Almost all respondents said they saw both a nurse and a doctor at their last visit, and just over half said they also saw a lab technician. Only one-third of respondents said they also saw a counselor. Wait times varied, but slightly less than half of respondents waited less than one hour and 43 percent reported waiting between one and two hours. Ninety-five percent reported that all services were free.

Table 9. Last visit, continued, weighted percentages

	FSW n=6	MSM n=106	Transgender women n=17	General population n=953	Total n=1,082
Had any difficulty in accessing health services	6.0	0.0	0.0	0.7	0.7
Personnel who attended to client at last visit					
Doctor	100.0	88.7	91.2	90.2	90.0
Nurse	100.0	94.9	100.0	99.6	99.1
Counselor	11.9	40.5	42.8	32.9	33.8
Lab technician	17.5	54.3	41.5	51.2	51.3
Other person	17.5	35.5	16.4	33.0	33.0
Average length of wait before being attended to					
No wait	0.0	0.9	0.0	0.0	0.1
15 minutes or less	6.0	20.4	19.2	13.4	14.2
16–30 minutes	27.5	26.3	20.1	23.1	23.4
31–59 minutes	0.0	7.1	19.0	7.1	7.2
1–2 hours	39.0	37.0	30.3	44.0	43.0
3+ hours	0.0	4.2	0.0	4.0	4.0
Don't know	27.5	4.0	11.4	7.6	7.3
Refused to answer	0.0	0.2	0.0	0.9	0.8
Average amount paid at last visit					
0 GYD	100.0	94.2	78.0	95.3	95.0
<1,000 GYD	0.0	0.4	22.0	1.4	1.6
1,000–4,999 GYD	0.0	2.2	0.0	0.5	0.6
5,000–9,999 GYD	0.0	3.2	0.0	2.1	2.2
>10,000 GYD	0.0	0.0	0.0	0.2	0.2
Don't know	0.0	0.0	0.0	0.2	0.2
Refused to answer	0.0	0.0	0.0	0.4	0.3

Nearly all respondents were given ARVs at their last visit (see Table 10) and nearly all reported that they were currently taking their ARVs. The largest proportion of respondents had taken ARVs for five or more years, although this was lower in KP groups. Almost all respondents said they consistently took their ARVs, but 15 percent had stopped at some point, and more than half said they stopped more than six months before. Reasons respondents reported for not taking their ARVs included forgetting, running out of medication, not feeling well on medication, and traveling out of Region 4, as well as those listed in Table 10.

Table 10. ARVs, weighted percentages

	FSW n=6	MSM n=106	Transgender women n=17	General population n=953	Total n=1,082
Given ARVs at last visit	100.0	100.0	98.5	99.3	99.4
Currently taking ARVs	94.0	99.5	100.0	99.2	99.2
Length of time taking ARVs					
<1 year	0.0	4.6	4.8	3.7	3.8
1–2 years	58.5	25.3	21.4	17.6	18.6
3–4 years	6.3	18.9	16.1	13.8	14.3
5+ years	35.2	51.3	57.7	65.0	63.3
Frequency taking ARVs					
Everyday	100.0	99.7	100.0	99.3	99.4
More than 5 times per week	0.0	0.2	0.0	0.5	0.4
Between 1 and 4 times per week	0.0	0.0	0.0	0.2	0.2
Less than 1 time per week	0.0	0.2	0.0	0.0	0.0
Has ever stopped taking ARVs	12.2	17.4	33.7	14.9	15.4
The last time stopped taking ARVs, among those who ever stopped					
In the last week	0.0	4.9	52.3	5.2	6.6
1–2 weeks before	51.8	12.4	13.1	7.5	8.4
2–4 weeks before	0.0	0.0	4.2	3.2	2.8
1–3 months before	0.0	24.3	20.8	16.0	17.1
More than 3 months before	48.2	58.4	9.6	67.7	64.8
Never	0.0	0.0	0.0	0.5	0.4
Reason for not taking ARVs					
Distance to the health center	0.0	14.7	9.6	8.7	9.4
Hours of the health center	0.0	0.0	9.6	0.0	0.3
Time required to get ARVs	0.0	0.0	9.6	2.0	2.0
Availability of transport	0.0	7.2	9.6	3.5	4.1
Cost of transport	0.0	2.3	9.6	8.3	7.6
Did not feel well	0.0	30.7	4.2	20.7	21.4
Other reason	100.0	64.3	86.2	70.6	70.3

Fifty-four percent of respondents reported consuming alcohol in the past six months, with higher rates among MSM and transgender women compared to the non-KP population (see Table 11). Seventy-eight percent of respondents had never used marijuana, but KPs more often reported using marijuana. Very few respondents had ever used cocaine or injection drugs.

Table 11. Other risk behaviors, weighted percentages

	FSW n=6	MSM n=106	Transgender women n=17	General population n=953	Total n=1,082
Consumed alcohol					
Yes, in the past 6 months	45.0	84.7	81.0	50.1	54.3
Yes, more than 6 months before	0.0	5.5	0.0	25.0	22.5
No, never	55.0	9.8	19.0	24.8	23.2
Refused to answer	0.0	0.0	0.0	0.1	0.0
Used marijuana					
Yes, in the past 6 months	27.5	22.5	25.7	10.9	12.4
Yes, more than 6 months before	6.0	16.1	3.2	8.6	9.3
No, never	66.5	61.4	71.0	80.3	78.1
Refused to answer	0.0	0.0	0.0	0.2	0.2
Used cocaine					
Yes, in the past 6 months	0.0	0.9	1.4	0.4	0.5
Yes, more than 6 months before	0.0	4.7	0.0	1.5	1.8
No, never	100.0	94.5	98.6	98.0	97.6
Refused to answer	0.0	0.0	0.0	0.1	0.1
Injected nonprescription drugs					
No, never	100.0	100.0	100.0	99.9	99.9
Refused to answer	0.0	0.0	0.0	0.1	0.1

Results, by Recency of Testing

This section presents results by when the respondent last received a VL test. One hundred and ninety two respondents had been tested in the past six months, 574 in the past 12 months, and 323 more than a year before (see Table 12).

Table 12. Fieldwork summary, unweighted counts

Health facility	Tested in the past 6 months	Tested 7–12 months before	Tested more than 1 year before	Total
Campbellville Health Centre	5	6	1	12
Davis Memorial Hospital	9	15	17	41
Dorothy Bailey Health Centre	20	49	29	98
National Care & Treatment Centre	19	70	27	116
St. Joseph Mercy Hospital	139	434	249	822
Total	192	574	323	1,082

Of the genders represented in the sample, men most often reported being behind in their VL testing compared to women (see Table 13), with 51 percent of men receiving a VL test more than a year before. More than three-quarters of respondents among all groups were 35 years old or older. Those who were tested with more regularity had higher rates of literacy compared to the other groups and were employed at higher rates. Similar percentages of HIV clients from each group lived in the various regions of Guyana.

Table 13. Demographic characteristics, weighted percentages

	Tested in the past 6 months n=192	Tested 7–12 months before n=574	Tested more than 1 year before n=323	Total n=1,082
Gender				
Male	35.0	44.8	50.8	43.2
Female	64.0	52.9	48.5	55.4
Transgender	0.3	2.0	0.7	1.1
Other	0.7	0.3	0.0	0.3
Age group				
15–29	3.6	0.9	0.4	1.6
20–24	2.5	3.1	6.3	3.7
25–29	9.9	7.1	8.0	8.3
30–34	7.8	11.0	7.1	8.9
35+	76.3	77.9	78.3	77.5
Knows how to read and write				
Yes	95.2	83.7	87.9	88.6
No	4.8	16.3	12.1	11.4
Completed secondary school				
Yes	54.0	49.1	54.6	52.2
No	46.0	51.0	45.4	47.8
Currently a student				
Yes	3.9	2.3	3.3	3.1
No	96.1	97.8	96.7	96.9
Employment status				
Not employed, but looking	8.9	9.9	11.9	10.1
Not employed, and not looking	19.8	21.0	22.3	21.0
Self-employed	13.0	11.4	11.9	12.0
Employed part time	7.5	8.6	6.6	7.7
Employed full time	50.8	49.1	47.3	49.2
Refused to answer	0.0	0.2	0.0	0.0
Region of residence				
1	1.4	0.2	0.7	0.7
2	0.7	0.2	0.2	0.4
3	10.5	13.8	10.3	11.8
4	78.8	77.6	80.6	78.8
5	3.3	1.5	2.0	2.2
6	1.4	2.7	1.3	1.9
7	0.7	0.8	1.0	0.8
8	0.7	0.2	0.4	0.4
9	0.7	0.0	0.0	0.2
10	1.8	3.2	3.6	2.8
Country of birth				
Guyana	100.0	99.3	99.6	99.6
Venezuela	0.0	0.3	0.0	0.1
Other	0.0	0.4	0.4	0.3

The age at first sex among the three groups was similar (see Table 14). Those who received a VL test more than a year before had higher rates of sexual partnerships: 1.4 female partners and 6 male partners, on average, in the past four weeks. Rates of condom use with partners were also similar, with slightly higher rates of condom use with the last male partner. The three groups also had similar rates of knowing a partner's HIV status. Those testing more than a year before reported slightly higher rates of having oral and anal sex in the past 12 months. They also reported lower rates of condom use at last anal sex.

Table 14. Sexual behavior among those who had had sex, weighted percentages

	Tested in the past 6 months n=192	Tested 7–12 months before n=572	Tested more than 1 year before n=314	Total n=1,078
Age at first sex				
0–14	13.3	18.5	16.9	16.3
15	10.2	10.7	8.5	10.0
16	21.3	16.8	14.8	17.7
17	18.5	13.6	16.8	16.1
18	21.7	17.8	17.0	18.9
19–20	8.5	14.2	18.0	13.3
21–22	4.4	4.1	4.4	4.3
23+	2.1	4.3	3.6	3.4
Ever had sex with a man	73.8	63.3	64.2	67.0
Ever had sex with a woman	35.9	47.2	49.5	44.1
Average number of female partners in the past 4 weeks	0.6	0.8	1.4	0.9
Average number of male partners in the past 4 weeks	0.6	0.6	6.0	2.0
Condom used with last female partner	83.2	89.8	80.5	85.8
Condom used with last male partner	70.0	77.6	79.9	75.2
Knew status of last female partner				
Yes, positive	35.4	32.0	42.7	35.6
Yes, negative	35.5	40.3	29.5	36.3
No	29.1	27.7	27.8	28.1
Knew status of last male partner				
Yes, positive	31.2	27.7	37.4	31.3
Yes, negative	34.9	40.0	39.4	37.9
No	34.0	32.3	23.3	30.8
Had oral sex in the past 12 months	15.6	15.6	22.2	17.4
Had anal sex in the past 12 months	10.7	11.6	13.7	11.9
Had vaginal sex in the past 12 months	65.9	68.2	61.7	65.7
Condom used at last vaginal sex	78.1	84.4	81.0	81.4
Condom used at last anal sex	83.6	78.6	64.0	75.6

Nine percent of respondents tested in the past 7–12 months reported ever receiving money or gold for sex, followed closely by the other groups (see Table 15). This group was also the most likely to have conducted transactional sex in the past six months or to have received goods or services for sex in the same period. For those engaged in sex work, nearly all started sex work after the age of 30 (92.5%). Respondents who had received a VL test in the past six months most often reported paying for sex in the past six months (21.3%).

Table 15. Transactional sex among those who have had sex, weighted percentages

	Tested in the past 6 months n=192	Tested 7–12 months before n=572	Tested more than 1 year before n=314	Total n=1,078
Ever received money or gold for sex	7.8	9.1	8.6	8.5
	n=16	n=47	n=27	n=90
Last received money or gold for sex, among those who ever received				
In the past six months	22.6	34.8	14.6	25.8
More than six months before	77.4	64.7	85.4	74.0
No response	0.0	0.5	0.0	0.2
Ever received goods or services for sex	71.2	77.9	71.1	74.1
Last received goods or services for sex, among those who ever received				
In the past six months	30.7	44.7	15.5	33.2
More than six months before	69.3	55.3	84.5	66.8
First time received money for sex				
In the past week	0.0	2.5	8.3	3.3
1–4 weeks before	0.0	12.7	0.0	5.5
5–12 weeks before	0.0	4.1	1.9	2.3
3–6 months before	9.1	4.3	0.0	4.6
6–12 months before	0.0	7.6	5.0	4.6
More than six months before	90.9	68.8	84.9	79.7
Age a first sex work				
<18 years	3.0	1.9	2.7	2.4
18	1.0	0.9	0.1	0.7
19	1.6	0.4	1.6	1.1
20	0.0	1.1	1.1	0.7
21–30	0.1	4.1	2.9	2.5
31+	94.3	91.6	91.6	92.5
Last time received money for sex				
In the past week	12.7	11.9	5.0	10.3
1–4 weeks before	0.0	8.9	1.9	4.4
5–12 weeks before	0.0	8.5	1.9	4.2
3–6 months before	9.9	5.8	1.7	6.0
6–12 months before	0.0	12.2	4.1	6.4
More than six months before	77.4	52.7	85.4	68.8
Used a condom at last paid sex	42.4	61.9	58.2	55.0

Ever paid for sex	6.0	14.3	11.1	10.7
Last paid for sex, among those who ever paid				
In the last six months	21.3	13.5	16.5	15.8
More than six months before	78.7	83.2	83.5	82.5
No response	0.0	3.2	0.0	1.8

Despite not receiving a VL test in the past year, nine out of 10 respondents said they had visited a health facility in the past three months. This group also received ARVs at a slightly lower rate (96.5%) than the other two groups with more recent tests (98.8% and 97%). (See Table 16.)

Table 16. Services received at the last visit, weighted percentages

	Tested in the past 6 months n=192	Tested 7–12 months before n=574	Tested more than 1 year before n=323	Total n=1,082
The last health facility visit for HIV was...				
Within the past 3 months	86.7	80.8	89.1	84.9
3–6 months before	13.1	18.4	10.3	14.5
6–12 months before	0.0	0.5	0.4	0.3
More than 12 months before	0.2	0.0	0.2	0.1
Refused to answer	0.0	0.4	0.0	0.2
Services and commodities received at the last visit				
Lubricants	6.6	8.1	8.8	7.8
Condoms	17.2	23.9	22.0	21.2
Brochure with information	7.7	12.6	15.5	11.8
ARVs	98.8	97.0	96.5	97.5

Very few respondents reported any difficulty in accessing health services (see Table 17). Most clients interacted with the same types of personnel during their visits. The reported wait times at last visit were mostly similar across the three groups.

Table 17. Last visit, continued, weighted percentages

	Tested in the past 6 months n=192	Tested 7–12 months before n=574	Tested more than 1 year before n=323	Total n=1,082
Had any difficulty in accessing health services	0.8	0.3	1.0	0.7
Personnel who attended to client at last visit				
Doctor	90.7	91.2	87.5	90.0
Nurse	97.6	99.6	100.0	99.1
Counselor	30.6	32.7	39.5	33.8
Lab technician	58.1	43.8	54.3	51.3
Other person	38.4	31.0	29.5	33.0
Average length of wait before being attended to				
No wait	0.3	0.0	0.0	0.1
15 minutes or less	12.9	13.3	17.1	14.2
16–30 minutes	28.6	22.1	19.1	23.4
31–59 minutes	7.3	7.4	6.8	7.2
1–2 hours	42.6	45.6	39.5	43.0
3+ hours	2.5	3.0	7.3	4.0
Don't know	5.6	7.6	8.9	7.3
Refused to answer	0.2	1.0	1.2	0.8
Average amount paid at last visit				
0 GYD	97.5	94.3	92.7	95.0
<1,000 GYD	0.0	2.6	2.0	1.6
1,000–4,999 GYD	0.0	0.7	1.3	0.6
5,000–9,999 GYD	2.5	1.6	2.6	2.2
>10,000 GYD	0.0	0.2	0.4	0.2
Don't know	0.0	0.4	0.0	0.2
Refused to answer	0.0	0.2	0.9	0.3

Despite variances in time since a VL test was taken, there is near-universal ARV distribution to these groups and nearly all respondents reported currently taking their ARVs (99.2%, see Table 18). All groups had been on treatment for similar amounts of time and reported high rates of consistency in taking their ARVs. Respondents who had a VL test in the past six months reported the highest rates of ever stopping their ARVs (17.6%), but more than two-thirds of those who stopped did so more than three months before. The most common reasons cited for not taking ARVs among all groups were not feeling well and distance from the facility.

Table 18. ARVs, weighted percentages

	Tested in the past 6 months n=192	Tested 7–12 months before n=574	Tested more than 1 year before n=323	Total n=1,082
Given ARVs at last visit	99.6	99.2	99.3	99.4
Currently taking ARVs	99.6	98.9	99.2	99.2
Length of time taking ARVs				
<1 year	3.7	0.1	9.8	3.8
1–2 years	16.9	21.1	16.8	18.6
3–4 years	17.0	13.9	11.7	14.3
5+ years	62.5	64.9	61.8	63.3
Frequency taking ARVs				
Everyday	100.0	99.1	99.1	99.4
More than 5 times per week	0.0	0.7	0.6	0.4
Between 1 and 4 times per week	0.0	0.2	0.4	0.2
Less than 1 time per week	0.0	0.1	0.0	0.0
Has ever stopped taking ARVs	17.6	13.3	15.8	15.4
The last time stopped taking ARVs, among those who ever stopped				
In the past week	4.4	12.0	2.7	6.6
1–2 weeks before	8.1	11.4	4.9	8.4
2–4 weeks before	0.3	6.7	1.4	2.8
1–3 months before	22.9	15.7	10.9	17.1
More than 3 months before	64.3	54.3	78.7	64.8
Never	0.0	0.0	1.4	0.4
Reason for not taking ARVs				
Distance to the health center	8.8	5.8	14.9	9.4
Hours of the health center	0.0	0.0	1.0	0.3
Time required to get ARVs	0.4	2.0	4.3	2.0
Availability of transport	0.0	2.9	11.4	4.1
Cost of transport	8.1	3.7	11.9	7.6
Did not feel well	24.9	19.6	18.9	21.4
Other reason	66.0	80.9	62.9	70.3

Table 19 shows the levels of substance use risk-taking among the three groups. There were no notable differences in substance use among the groups.

Table 19. Other risk behaviors, weighted percentages

	Tested in the past 6 months n=192	Tested 7–12 months before n=574	Tested more than 1 year before n=323	Total n=1,082
Consumed alcohol				
Yes, in the past 6 months	54.0	58.6	48.0	54.3
Yes, more than 6 months before	27.2	18.0	23.3	22.5
No, never	18.8	23.1	28.7	23.2
Refused to answer	0.0	0.2	0.0	0.0
Used marijuana				
Yes, in the past 6 months	10.7	13.4	13.0	12.4
Yes, more than 6 months before	10.3	9.2	8.3	9.3
No, never	79.0	77.2	78.4	78.1
Refused to answer	0.0	0.2	0.4	0.2
Used cocaine				
Yes, in the past 6 months	0.0	0.9	0.4	0.5
Yes, more than 6 months before	2.1	2.1	1.1	1.8
No, never	97.9	96.8	98.5	97.6
Refused to answer	0.0	0.2	0.0	0.1
Injected nonprescription drugs				
No, never	100.0	99.8	100.0	99.9
Refused to answer	0.0	0.2	0.0	0.1

Viral Load Correction Factor

Viral load measures were collected for respondents without a current viral load test. The proportion of this sample for which a viral load measure was collected, reported by the National Public Health Reference Lab, and found to be suppressed was 91.5 percent (weighted). This was compared to the proportion of HIV clients found to have a suppressed viral load in the routine data at the five facilities included in the study (86.6 percent; see Table 20). Using the viral load correction factor equation, future missing viral load data should be adjusted upward by a factor of 1.06.

Table 20. Viral suppression in routine data

	Campbellville Health Centre	Davis Memorial Hospital	Dorothy Bailey Health Centre	St. Joseph Mercy Hospital	National Care & Treatment Centre	Total
Number of eligible, active clients at facility	263	648	317	896	1493	3617
Number of eligible, active clients with a current VL measure	83	184	55	522	397	1241
Number with a current VL measure who are suppressed	65	161	42	468	339	1075
Proportion with a suppressed VL among eligible, active clients	78.3%	87.5%	76.4%	89.7%	85.4%	86.6%

When looking specifically at KP clients, the level of viral suppression is just slightly lower. Among key populations identified in the study, 89.9 percent (weighted) were virally suppressed. It is not possible to calculate a correction factor from the routine data, because key populations are not identified in routine data. In the future, should key population status be recorded in routine data, a correction factor can be calculated by dividing the sample level of suppression by the routine data level of suppression for KPs (this would be “r”).

In the future, the proportion of patients from the program or clinic with a suppressed VL can be calculated using routine data where many VL data are missing using the following equation:

$$y = w(rm - m + 1)$$

where “r” is the VL correction factor to estimate the proportion of all retained patients with a suppressed VL, “w” is the proportion of patients on art who have a suppressed VL (among those with a measurement), and “m” is the proportion of those on art with missing VLs.

DISCUSSION

During the first phase of the study, the review of existing routine data revealed variations in VL test completeness compared to what was reported in the *HIVision 2020* midterm review. Using a six-month cutoff, only 35 percent of clients had a current VL measure in their files. Using a 12-month cutoff, 75 percent had a current VL load measure. There were variations in completeness across sites, which could reflect the availability of laboratory technicians at those sites, because not all sites had laboratory hours that matched up with clinic hours. It could also be a reflection of data quality at the site level. Three out of the five sites had computer databases for client tracking, but physicians still relied on client charts as the primary source documents. At the other two sites, the facility relied on paper registers to track visits and the client charts to track test results. Additionally, the National Public Health Reference Lab used personal IDs based on a combination of initials, sex, and date of birth to report results. Facilities used a facility-specific ID for their clients, which is a serial number. The two data sets cannot be compared easily.

Program managers make assumptions about people's characteristics based on missing data. They could assume that the people with missing data are virally suppressed at the same rate as those with data, but that might not be correct. In the worst-case scenario, none of the people with missing VL data is suppressed, leading to a VL suppression rate of 28 percent among clients at the five sites studied. In the best-case scenario, all clients without a current VL measure are virally suppressed. This would lead to a 93-percent suppression rate among HIV clients at the five sites. This exercise shows that missing data can leave a gap in the HIV cascade where program managers must rely on their best assumptions.

Only two of the study sites noted KP status in their files, but the other sites said they could identify KP clients through their routine interactions with them. KP members did not need to self-identify during the interview process; rather, the study relied on behavioral questions to categorize people as FSWs, MSM, or transgender women. From the behavioral questions, the study population contained six FSWs, 106 MSM, and 17 transgender women. The study also included 953 non-KP participants, allowing for comparison between the groups.

There are many differences between the KP and non-KP populations and between the different KP groups. Most of these differences highlight the elevated level of risk that KPs face, whether it be health risk, social risk, or economic risk. For example, KPs in HIV treatment tended to be younger than non-KP clients and more likely to be unemployed. Apart from FSWs, 33 percent of MSM and 82 percent of transgender women had engaged in transactional sex in the past six months. KPs report consuming alcohol and using illegal substances at greater rates than non-KP respondents.

In general, some HIV clients on treatment still engage in risky behavior. For example, 19 percent of all clients did not use a condom at last vaginal sex and 24 percent did not use a condom at last anal sex. This highlights the need for pre-exposure prophylaxis among serodiscordant couples. Among those who engaged in transactional sex, only 55 percent had used a condom at the last paid sex. As many as 15 percent of those on treatment reported that they stopped taking their ARVs at some point. The reasons for stopping included forgetting, running out of medication, not feeling well, and depression, among others. This puts clients at risk for negative outcomes.

Despite some risk, all respondents were engaged in care (an eligibility criterion). Eighty-five percent said they had visited a health facility for HIV in the past three months and nearly all within the past six months. Respondents also reported that they had almost no difficulty in accessing health services. This was a sample of people at facilities, so perhaps this result is not surprising. Wait times, despite being one to two hours for 43 percent of respondents, does not seem to be a major barrier to accessing services. Price is also not a barrier, because HIV services are free in Guyana, although some respondents mentioned paying nominal amounts. The primary service that respondents received during their visits was ARVs, but one in five also received condoms during their last visit.

Some differences between people who get their VL tested regularly and those who do not were expected. The analysis did not show differences between clients with VL tests in the past six months, clients with VL tests within the past year, and clients with VL tests more than a year before. There are nominal differences, but none that would account for their testing behavior. This may suggest that differences in VL testing frequency could be related to the facility, providers, and ease of access to VL testing.

The study's findings have some limitations. Although the sample represents more than 20 percent of all HIV clients in Guyana, only six FSWs and 17 transgender women were identified in it. This is a very small sample and cannot be considered representative of all HIV-positive FSWs and transgender women. It should also be noted that the men classified as MSM in this study do not necessarily self-identify and many have sexual relationships with women, as well. Another limitation is that the study was facility-based, so it does not account for people who are not routine clients or are lost to follow-up. Last, this study represents only the highest-volume and KP-friendly sites in Georgetown. HIV-positive Guyanese outside of Region 4 or visiting smaller HIV treatment centers may face greater barriers to VL testing.

Conducting this study highlighted the need for more consistent processes for recording and maintaining lists of HIV clients in the absence of a national treatment database. Using a single client ID both at the facility level and by laboratories would facilitate easier comparison of data and reporting of the cascade. The study's findings show that facilities should review their VL testing processes and routinely monitor their client data, to ensure that they are providing their clients with up-to-date VL measures to inform their treatment.

CONCLUSION

The HIV information system in Guyana has incomplete information on VL testing and results—a key indicator in the HIV cascade. Making assumptions about the viral suppression of HIV clients when data are missing can paint a picture of viral suppression that is either too optimistic or pessimistic. The results of this study show that health facilities are not meeting VL testing targets and therefore are not able to provide optimal HIV services for their clients. The data collected allow program managers to fill those gaps at the programmatic level and to estimate the viral suppression in Guyana with more accuracy.

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APPENDIX 1. SURVEY INSTRUMENT

Questionnaire for the Viral Load Estimation Study, Guyana		
Part 1: Interviewer Completes Before the Interviewer		
A1. Health Facility <input type="checkbox"/> <input type="checkbox"/>	01 02 03 04 05 06 07 08 09 10	
A2. Date	Day <input type="checkbox"/> <input type="checkbox"/> Month <input type="checkbox"/> <input type="checkbox"/> Year <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
A3. Interviewer code	<input type="checkbox"/> <input type="checkbox"/>	
A4. File number from the health center	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
<p>READ: My name is < > and I work with < > on a study implemented by the National AIDS Programme Secretariat to better understand the HIV care and treatment program. I would like to describe the study and ask for your participation.</p>		
<p>REVIEW THE CONSENT FORM WITH THE PATIENT</p> <p>ASK: Do you have any questions? IF YES, ANSWER THEIR QUESTIONS BEFORE CONTINUING.</p>		
A5	DID YOU REVIEW THE CONSENT FORM WITH THE PARTICIPANT?	Yes 1 No 2 → If no, review the consent form now and respond to any questions
A6	Have you participated in a special study measuring your viral load in the past 2 months?	Yes 1 No 2 → If no, skip to A10
A7	Do you agree to participate in the study?	Yes 1 No 2 → If no, skip to A10

A8	Will you grant the study staff access to your patient file?	Yes 1 No 2 → If no, skip to A10
A9	Will you provide a vial of blood to test for viral load?	Yes 1 No 2
A10	Why don't you want to participate in the study? THANK THE PARTICIPANT, TERMINATE THE INTERVIEW,	Don't have time 1 Feel ill 2 Other reason 3 If the reason is "other", indicate the reason here:
A11	THINKING OF THE PERSON THAT REFUSED TO PARTICIPATE/ALREADY PARTICIPATED: WHAT SEX/GENDER DO YOU THINK THEY WERE?	Male 1 Female 2 Transgender woman (born as a man, but identifies as a woman) 3 Transgender men (born as a woman, but identifies as a man) 4
A12	THINKING OF THE PERSON THAT REFUSED TO PARTICIPATE/ALREADY PARTICIPATED: HOW OLD DO YOU THINK THEY WERE?	< 25 years 1 25-39 years 2 40-60 years 3 More than 60 years 4
Part II: START THE INTERVIEW WITH THE PARTICIPANT		
DEMOGRAPHIC QUESTIONS		
A13	How old are you?	Age in years: _____
A14	What sex were you assigned at birth?	Male 1 Female 2 Refused to answer 9
A15	Do you currently identify yourself as male or female?	Male 1 Female 2 Trans (transgender) 3 Other 4 If other, specify: _____ Refused to answer 9
A16	Do you know how to read and write?	Yes 1 No 2 Refused to answer 9

A17	What was the highest level of education you completed?													
A18	Are you currently a student?	<p style="text-align: right;">Yes 1 No 2 Refused to answer 9</p>												
A19	Are you currently working?	<p style="text-align: right;">No, but looking for work 1 No, and not looking for work 2 Yes, I work for myself 3 Yes, part time/half time 4 Yes, full time 5 Refused to answer 9</p>												
A20	What type of work do you do?													
QUESTIONS ON MOBILITY														
READ: Now we are interested in knowing about where you live and how frequently you move.														
A21	In which region do you currently live?	Region: <input type="checkbox"/> <input type="checkbox"/>												
A22	In which country were you born?	<p style="text-align: right;">Guyana 1 Brazil 2 Venezuela 3 Other 4 If other, specify: _____</p>												
QUESTIONS ON SEXUAL ACTIVITY														
READ: Now we would like to ask you some questions on your sexual activity. In this section when we say "sex", we mean oral, vaginal or anal.														
A23	How old were you when you had sex for the first time? IF THE PARTICIPANT NEVER HAD SEX, WRITE 99, AND SKIP TO QUESTION A39.	Age: <input type="checkbox"/> <input type="checkbox"/>												
A24	Have you ever had sex with...	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">Yes</th> <th style="width: 10%; text-align: center;">No</th> <th style="width: 20%; text-align: center;">No response</th> </tr> </thead> <tbody> <tr> <td>...a man?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>...a woman?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>		Yes	No	No response	...a man?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	...a woman?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Yes	No	No response											
...a man?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
...a woman?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
A25	In total, with how many women have you had sex with in the last 4 weeks? IF THEY DID NOT HAVE SEX WITH A WOMAN, WRITE '999' AND SKIP TO A27	Number of women: _____												

A26	Was a condom used the last time you had sex with a woman?	Yes 1 No 2 Refused to answer 9
A27	Think about the last time you had sex with a woman. Do you know the HIV status of that person? If so, was she HIV positive or negative?	Yes – positive 1 Yes – negative 2 No, don't know 3 Refused to answer 9
A28	In total, with how many men have you had sex with in the last 4 weeks? IF THEY DID NOT HAVE SEX WITH A MAN, WRITE '999' AND SKIP TO A30	Number of men: _____
A29	Was a condom used the last time you had sex with a man?	Yes 1 No 2 Refused to answer 9
A30	Think about the last time you had sex with a man. Do you know the HIV status of that person? If so, was he HIV positive or negative?	Yes – positive 1 Yes – negative 2 No, don't know 3 Refused to answer 9
A31	Sometimes people exchange money or gold for sex. Have you ever RECEIVED money or gold for sex? IF THEY DID NOT RECEIVE MONEY FOR SEX, SKIP TO A32.	Yes 1 No 2 Refused to answer 9
A32	When was the last time you received money or gold for sex?	In the last six months 1 More than six months ago 2 Refused to answer 9
A33	In some cases, people exchange sex for gifts or favors like jewelry, clothes, drinks, trips, or economic help such as money for rent, utilities or school fees. Have you ever received gifts or favors in exchange for sex? IF THEY DID NOT RECEIVE GIFTS OR FAVORS FOR SEX, SKIP TO A34.	Yes 1 No 2 Refused to answer 9
A34	When was the last time you received gifts or favors for sex?	In the last six months 1 More than six months ago 2 Refused to answer 9
A35	Have you ever PAID for sex? IF THEY DID NOT PAY FOR SEX, SKIP TO A36.	No 0 In the last six months 1

		More than six months ago 2 Refused to answer 9
A36	When was the last time you paid for sex?	In the last six months 1 More than six months ago 2 Refused to answer 9
A37	What types of sex have you had in the last 12 months?	Yes No Refuse to answer Oral <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Anal <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Vaginal <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
A38	Did you use a condom the last time you had vaginal sex? SELECT 'NOT APPLICABLE' IF THEY DID NOT HAVE VAGINAL SEX	Yes 1 No 2 Not applicable 7 Don't know 8 Refused to answer 9
A39	Did you use a condom the last time you had anal sex? SELECT 'NOT APPLICABLE' IF THEY DID NOT HAVE ANAL SEX	Yes 1 No 2 Not applicable 7 Don't know 8 Refused to answer 9
QUESTIONS ABOUT ACCESSING HEALTH SERVICES READ: Now I will ask you some questions about accessing health services.		
A40	When was the last time you visited a health center or hospital to receive attention or treatment for HIV (before your visit today)?	Within the last 3 months 1 More than three 3 months ago, but less than 6 2 More than 6 months ago, but less than 12 months 3 More than 12 months ago 4 Never 5 Refused to answer 9
A41	The last time you visited a health center or hospital did you receive...	Yes No Refuse to answer Lubricant <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Condoms <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Information pamphlets <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Antiretroviral medicine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

A42	Did you have any difficulty in accessing those health services?	Yes 1 No 2 Refused to answer 9																																	
A43	Now I would like to ask about the difficulties that prevented you from accessing health services. What were the barriers that prevented you from receiving services?	<table border="1"> <thead> <tr> <th></th> <th>Barrier</th> <th>Not a barrier</th> </tr> </thead> <tbody> <tr> <td>A. Distance to the health center</td> <td>1</td> <td>2</td> </tr> <tr> <td>B. Hours that the center is open</td> <td>1</td> <td>2</td> </tr> <tr> <td>C. The time required to receive services</td> <td>1</td> <td>2</td> </tr> <tr> <td>D. Cost of services</td> <td>1</td> <td>2</td> </tr> <tr> <td>E. No adequate transportation</td> <td>1</td> <td>2</td> </tr> <tr> <td>F. Cost of transportation to the center</td> <td>1</td> <td>2</td> </tr> <tr> <td>G. Concern that the providers will not treat me fairly</td> <td>1</td> <td>2</td> </tr> <tr> <td>H. Concern that the providers will not be confidential</td> <td>1</td> <td>2</td> </tr> <tr> <td>I. Concern that staff apart from the providers will not treat me fairly</td> <td>1</td> <td>2</td> </tr> <tr> <td>J. Concern that staff apart from the providers will not be confidential</td> <td>1</td> <td>2</td> </tr> </tbody> </table>		Barrier	Not a barrier	A. Distance to the health center	1	2	B. Hours that the center is open	1	2	C. The time required to receive services	1	2	D. Cost of services	1	2	E. No adequate transportation	1	2	F. Cost of transportation to the center	1	2	G. Concern that the providers will not treat me fairly	1	2	H. Concern that the providers will not be confidential	1	2	I. Concern that staff apart from the providers will not treat me fairly	1	2	J. Concern that staff apart from the providers will not be confidential	1	2
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A44	The last time you visited a health facility or hospital, what personnel attended to you?	<table border="1"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> <th>DK</th> <th>Refused to answer</th> </tr> </thead> <tbody> <tr> <td>Doctor</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Nurse</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Counselor</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Lab technician</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Other person</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>		Yes	No	DK	Refused to answer	Doctor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Nurse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Counselor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lab technician	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
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A45	During the last visit, how long were you at the health center or hospital before you were attended to?	Hours: _____ Minutes: _____																																	
A46	The last time you visited the health center or hospital, how much did you pay?	_____ GYD Don't know 8 Refused to answer 9																																	
A47	Were you given antiretroviral drugs (ARVs) to treat your HIV positive condition?	Yes 1 No 2 Not applicable 7 Don't know 8																																	
A48	At present, are you taking antiretroviral drugs (ARVs) to treat your HIV positive condition? IF NO, NOT APPLICABLE OR DON'T KNOW, SKIP TO A51.	Yes 1 No 2 Not applicable 7 Don't know 8																																	

A49	Since when have you been taking antiretroviral drugs (ARVs)?	<u>Months</u> 1 7 2 8 3 9 4 10 5 11 6 12	<u>Years</u> Before 2013 2014 2015 2016 2017 2018																																					
A50	How often do you take your antiretroviral drugs (ARVs)?	Everyday 1 More than 5 days a week 2 Between 1 and 4 days a week 3 Less than once a month 4 Never 5 Don't know 8 Refused to answer 9																																						
A51	Do you ever forget to take your drugs or don't take them for other reasons?	Yes 1 No 2 Refused to answer 9																																						
A52	When was the last time that you DID NOT take your drugs, whether you forgot to and didn't take them for other reasons?	In the last week 1 1 to 2 weeks ago 2 2 to 4 weeks ago 3 1 to 3 months ago 4 More than 3 months ago 5 Never 6 Don't know 8 Refused to answer 9																																						
A53	The last time you DID NOT take your drugs, what was the reason?	<table border="0"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> <th>Refused to answer</th> </tr> </thead> <tbody> <tr> <td>A. Distance to the health center</td> <td>1</td> <td>2</td> <td>9</td> </tr> <tr> <td>B. Hours that the health center was open</td> <td>1</td> <td>2</td> <td>9</td> </tr> <tr> <td>C. Time required to obtain medication</td> <td>1</td> <td>2</td> <td>9</td> </tr> <tr> <td>D. Cost of services</td> <td>1</td> <td>2</td> <td>9</td> </tr> <tr> <td>E. Availability of transportation to the center</td> <td>1</td> <td>2</td> <td>9</td> </tr> <tr> <td>F. Cost of transportation to the center</td> <td>1</td> <td>2</td> <td>9</td> </tr> <tr> <td>G. Did not feel well</td> <td>1</td> <td>2</td> <td>9</td> </tr> <tr> <td>H. Other reason: _____</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Yes	No	Refused to answer	A. Distance to the health center	1	2	9	B. Hours that the health center was open	1	2	9	C. Time required to obtain medication	1	2	9	D. Cost of services	1	2	9	E. Availability of transportation to the center	1	2	9	F. Cost of transportation to the center	1	2	9	G. Did not feel well	1	2	9	H. Other reason: _____			
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H. Other reason: _____																																								

QUESTIONS ABOUT SOCIAL AND ECONOMIC VULNERABILITY

READ: Not we want to ask you some questions about experiences in your life.

A54	Have you consumed these drugs or other substances? <div style="text-align: right; padding-right: 20px;"> Alcohol Marijuana Cocaine </div>	Yes, in the last 6 months <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Yes, more than 6 months ago <input type="checkbox"/> <input type="checkbox"/>	No, never <input type="checkbox"/> <input type="checkbox"/>	Refused to answer <input type="checkbox"/> <input type="checkbox"/>
A55	Have you injected drugs without a prescription? IF THEY HAVEN'T INJECTED DRUGS IN THE PAST 6 MONTHS, SKIP TO A56	Yes, in the last 6 months <input type="checkbox"/>	Yes, more than 6 months ago <input type="checkbox"/>	No, never <input type="checkbox"/>	Refused to answer <input type="checkbox"/>
A56	In the last 6 months, have you shared a needle with someone else who injected drugs?	Yes 1 No 2 Refused to answer 9			

QUESTIONS FOR PARTICIPANTS WHO ACCEPTED MONEY FOR SEX IN THE PAST 6 MONTHS

Only ask if they answered YES to Question A30.

A57	I would like to know more about the exchange of money for sex. When was the FIRST time that you accepted money or gold for sex?	<div style="text-align: right; padding-right: 20px;"> In the last week 1 More than a week ago, but during the last 4 weeks 2 More than 4 weeks ago, but during the last 3 months 3 More than 3 months ago, but during the last 6 months 4 More than 6 months ago, but during the last 12 months 5 More than 12 months ago 6 </div>
A58	How old were you the FIRST time you received money or gold for sex?	Age: _____
A59	When was the LAST time you received money or gold for sex?	<div style="text-align: right; padding-right: 20px;"> In the last week 1 More than a week ago, but during the last 4 weeks 2 More than 4 weeks ago, but during the last 3 months 3 More than 3 months ago, but during the last 6 months 4 More than 6 months ago, but during the last 12 months 5 More than 12 months ago 6 </div>
A60	Did you use a condom the last time you were paid for sex?	Yes 1 No 2 Don't know 8 Refused to answer 9

INFORMATION FROM PATIENT FILE					
A61	<p>Result of last viral load test</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 30px; height: 30px;"></td> <td style="width: 30px; height: 30px;"></td> <td style="width: 30px; height: 30px;"></td> <td style="width: 30px; height: 30px;"></td> </tr> </table> <p style="text-align: center;">Copies/mm³</p> <p style="text-align: right;">No viral load in the file <input type="checkbox"/></p>				
A62	<p>Date of the previous viral load result</p> <p>Day <input type="checkbox"/><input type="checkbox"/> Month <input type="checkbox"/><input type="checkbox"/> Year <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p>				
A63	<p>IF THE LAST VIRAL LOAD WAS WITHIN THE LAST 6 MONTHS:</p> <p>Your file indicates that your previous blood draw for viral load testing was within the past 6 months. This is within the recommended time for a viral load test. Therefore, it is not necessary that we do another viral load test today.</p> <p>Would you still like us to do a blood draw for a viral load test today?</p> <p style="text-align: right;">Yes 1 No 2 Not applicable 7</p>				
END OF SURVEY. THANK THE RESPONDENT FOR THEIR COOPERATION.					
	<p>Reviewed by supervisor:</p> <p style="text-align: right;">Date:</p>				

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