Reaching the Third 95:
Viral Load Suppression among Key Population Individuals Living with HIV


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The public health and personal benefits of the UNAIDS 95-95-95 targets ultimately hinge on achieving the third 95, community-wide viral suppression. A fundamental component of reaching this target is expanding access to viral load (VL) testing. Measurement of "plasma" VL provides important information to providers and clients on the effectiveness of antiretroviral therapy (ART) and whether HIV viral suppression has been achieved. It also provides information to countries regarding progress and gaps in treatment delivery and support for people living with HIV (PLHIV). Since 2013, VL monitoring has been recommended by the World Health Organization (WHO) as the preferred method for monitoring people on ART. Based on WHO guidelines, routine VL testing should be conducted at 6 and 12 months after ART initiation and every 12 months thereafter. While plasma specimens are preferred, dried blood spot (DBS) specimens can be used in settings where logistical, infrastructural, or operational barriers prevent routine VL monitoring using plasma. Efforts are needed to ensure VL testing services are brought closer to PLHIV, including through point-of-care (POC) VL testing and specimen collection at community-based sites; samples that are efficiently transported to labs; and VL test results that are documented and used for clinical monitoring or decision-making. Expanding access to VL testing is particularly important for key populations (KPs) — including female sex workers (FSWs), men who have sex with men (MSM), transgender people, and people who inject drugs (PWID) — since experiences of stigma, discrimination, and criminalization pose additional barriers to VL testing uptake for these groups. This technical brief outlines key considerations for improving access to and uptake of VL testing, as well as use of VL results, within KP-focused HIV programs.

KEY TERMS AND DEFINITIONS

VIRAL LOAD: A measure of the amount of HIV in the body. Having a high VL means HIV can be passed on more easily. In other words, the higher the VL, the greater the chance of transmission.

VIRAL SUPPRESSION: When ART is taken long enough to reduce the ability of the virus to make copies of itself in someone's body (VL<1000 copies/ml according to the WHO).

UNDETECTABLE VIRAL LOAD: When VL in someone's body is so low that standard blood tests cannot detect it. Most people will achieve an undetectable VL within 6 months of starting and adhering to ART.

UNTRANSMITTABLE: HIV cannot be transmitted through sexual transmission when the VL is below 200 copies/ml.

UNDETECTABLE = UNTRANSMITTABLE (U=U): The U=U campaign is used to increase awareness that when a PLHIV achieves viral suppression then he/she cannot transmit the virus to his/her sexual partners.

VIROLOGICAL FAILURE : Is experienced when VL is above 1000 copies/ml based on two consecutive VL measurements within 3–6 months. A PLHIV who has virological failure will receive adherence support following the first VL test.

IMMUNOLOGICAL FAILURE: CD4 count falls to the baseline (or below) or persistent CD4 levels below 100 cells/mm.

BLIP: A temporary, detectable increase in VL, usually between 50-500 copies/ml, that occurs after VL has been suppressed to an undetectable level. Isolated blips are not a sign of virologic failure. After the blip, VLs usually return quickly to an undetectable level without any change in therapy.

CD4 COUNT: The number of CD4 T-cells per cubic millimeter of blood and are an indication of the strength of a person's immune system. The higher the VL, the faster CD4 cells reduce. The higher the CD4 count, the stronger the individual's immune system.

STABLE ART PATIENT: A PLHIV on ART for at least 1 year, with no current illnesses, good understanding of lifelong adherence, and evidence of treatment success (two consecutive VL measurements below 1,000 copies/ml).

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ADVANTAGES OF VIRAL LOAD MONITORING

- The use of VL (virologic monitoring) is a more sensitive, timely, and reliable method of identifying treatment failure compared to clinical monitoring or use of CD4 count (immunologic monitoring) (Figure 1).
- VL monitoring allows patients with treatment failure to be switched more quickly to other regimens to reduce the development of drug resistance and to improve clinical outcomes.
- VL test results give clients a measure of understanding, control, and motivation to adhere to treatment and understand their HIV infection beyond what CD4 or their clinical status is able to provide.
- In settings where routine VL monitoring is available, frequent or regular CD4 cell count monitoring (beyond baseline) is not necessary, especially among individuals who are stable on ART and virally suppressed.
- VL monitoring reduces the burden on both patients and health care workers as the need for frequent clinic visits can be reduced to once every 6 months for those who are virally suppressed.

THERE IS SIGNIFICANT EVIDENCE TO SUPPORT THE BENEFITS OF VL TESTING.

Viral load testing:

- **Identifies virologic failure more quickly, thus preventing development of drug resistance.** In a multicenter study in southern Africa, genotypes were performed on 183 samples of individuals with virological failure. Eighty percent had at least one resistance mutation, with 40% having cross-resistance to the nucleoside reverse transcriptase inhibitors.[3]
- **Identifies virologic failure more quickly, thus improving health outcomes.** The mortality rate among patients with virologic failure who are switched to a second-line regimen is significantly lower than those not switched or when the switch is delayed. In Uganda, mortality rates of patients not switched to second-line ART was 11.9%, compared to 1.2% among those who switched. Patients switched after 12 months of virologic failure were more likely to experience CD4 decline and/or VL increases.[4]
- **Prevents unnecessary switching to second line treatment.** A study from Kenya evaluated 149 patients who were suspected to have immunologic failure and underwent CD4 testing as well as VL testing. If CD4 monitoring alone was used, around 50% would have switched ART despite having an undetectable viral load.[3]
- **Point-of-care (POC) VL testing can improve retention and suppression.** Providing patients with same-day results of a point-of-care test, rather than waiting weeks for laboratory results, resulted in a 14% improvement in virologic suppression and retention in care in a public clinic in South Africa.[5]
- Having access to VL testing results helps programs differentiate services and prioritize individual support where treatment and prevention efforts can have the greatest impacts.
- When viral suppression is achieved and maintained, not only is the life of the individual improved, the risk of further sexual transmission of HIV is eliminated (see LINKAGES U=U technical brief for more information).
- Data on VL in geographic areas, health facilities, hot spots, and among different age groups and subgroups may provide information on the need for targeted program support and increased funding.[1]

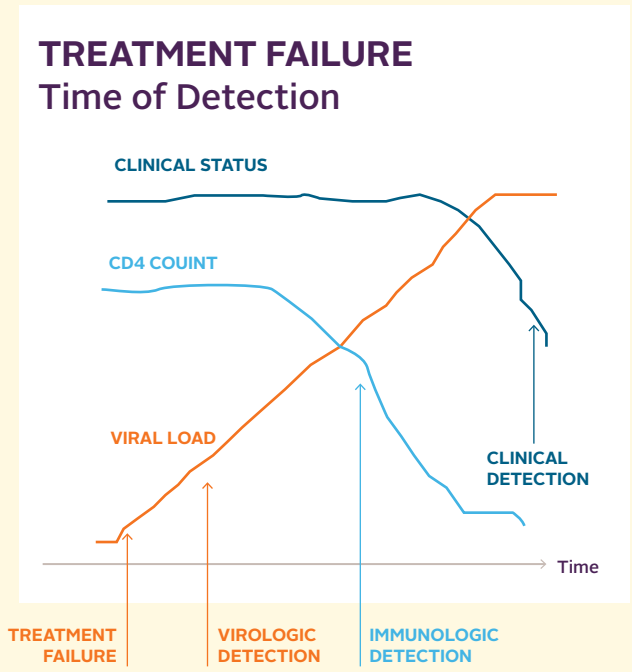

Figure 1: Viral Load, CD4 and Clinical Criteria for Treatment Failure[2]

- **Can be an HIV surveillance tool.** Data from MSM and PWID in India suggest that the prevalence of detectable VL is shown to be a reflection of HIV incidence. Additionally, VL information may provide an understanding of transmission "hot spots" and epidemic trends.[6] Individuals with unsuppressed VL should be prioritized for index testing.
- **Can indicate areas of program intervention.** Data from a study of the HIV cascade among MSM, FSWs, transgender women, and PWID in Indonesia showed higher education levels being significantly associated with viral suppression, and older participants were more likely to achieve suppression than younger participants.[7] Data from a study with FSWs in Cambodia showed that HIV-positive FSWs involved in a community HIV prevention and testing program, SMARTgirl, were associated with eightfold higher odds of viral suppression.[8]

PROGRAM CONSIDERATIONS FOR IMPROVING ACCESS TO VIRAL LOAD TESTING

- The first priority for all PLHIV is that they have access to ART and, where possible, are initiated within the same day of diagnosis unless there are reasons to delay ART initiation.
- The most critical step in the VL continuum, after ensuring access to VL testing (Figure 2), is for the provider to review the test results and to share them with the patient. This can be done in the health facility, over the phone, in the community or through a peer navigator (PN). The provider should explain the results to the PLHIV so they understand the importance of their VL and are provided with adherence support that corresponds with their needs.
- Providers should be trained on the WHO VL strategy (Figure 3) and supported to quickly act upon VL test results.
- POC VL testing should be offered when available. POC VL testing addresses logistical challenges and dramatically reduces turnaround time, enabling faster clinical decisions and improving treatment and retention outcomes.[10]

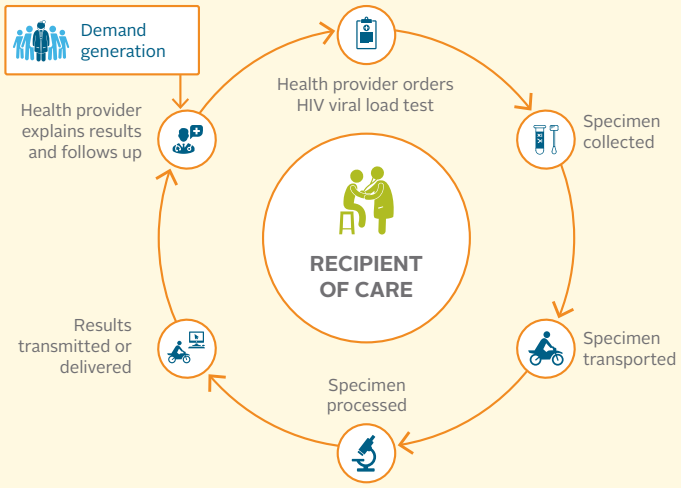

Figure 2: Viral Load Continuum[9]

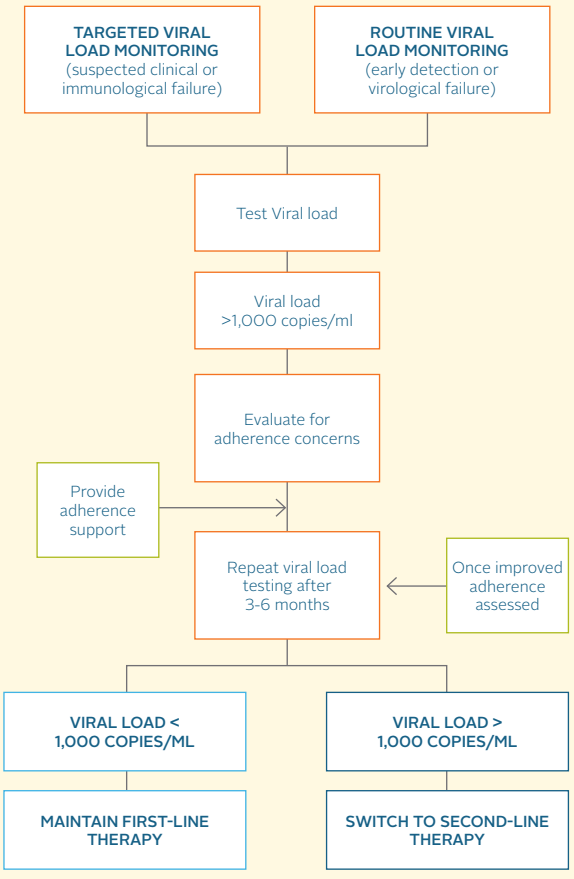

Figure 3: Viral Load Strategy[11]

- Since VL measurements can often be run on the same machines that run tuberculosis (TB) samples, then improved collaboration between the HIV and TB programs can ensure that machines are utilized more efficiently, and systems can avoid procurement of more instruments than needed.
- It is important to ensure there is a system in place, and person responsible, for the timely maintenance of the VL machines.
- When funding and availability are limited, a phased-in VL monitoring approach can be used targeting sero-discordant couples and high-risk groups.

CONSIDERATIONS IN THE USE OF DRIED BLOOD SPOTS

- DBS can be used in resource-limited settings where there may be challenges with plasma specimen collection, storage, and transport. DBS are easy to collect and stored as no phlebotomist or refrigeration is required. While a plasma specimen needs to be centrifuged/prepared within 6 hours of blood draw, a DBS specimen can be kept up to two weeks under stable conditions.
- The sensitivity and specificity of DBS measures are only able to detect VL at <1000 copies/ml, which do not allow for undetectable VL measurements but can be used to determine treatment failure. Although only plasma VL measurements are able to provide results to the <200 copies/ml level, available data demonstrate that sexual transmission is very unlikely with a viral load <1700 copies/ml.[12]
- Decisions on where to place VL testing must take into account patient volume, transportation systems, and trained personnel. DBS can be recommended in areas where the use of plasma is a barrier to better access to VL testing.

INCORPORATING VIRAL LOAD TESTING INTO KEY POPULATION HIV PROGRAMS

POLICY

- Advocate for alignment of country VL guidelines with WHO guidelines if necessary, addressing KP-specific needs.
- Work with an in-country technical working group (TWG) to plan, review, and make recommendations to the Ministry of Health (MoH) for implementation of VL monitoring and development of operational models and standard operating procedures for VL testing.
- Where applicable, advocate for and support the use of a Laboratory Management Information System hosted by the MoH to access KP VL testing results from relevant laboratories and facilities to facilitate information exchange.
- Advocate for the use of unique identifier codes (UICs) that link KP individuals living with HIV from community to clinic and vice versa for improved monitoring.

SYSTEMS

- Support the development of POC models for VL sample collection and transportation to testing facilities.
- Support the development of systems for ensuring quick, safe, and confidential transmission of results from the laboratories to the clinics and to the client, such as short message system (SMS) communications and online results dashboards.
- Design systems for identifying clients who require VL testing (e.g., stickers on clinical folders).

DEMAND CREATION

- Train KP providers, peer educators (PEs), peer navigators (PNs), outreach workers (OWs), clinicians, and KPs on the importance of VL monitoring and use of results and develop their capacity to promote VL testing uptake and treatment adherence using motivational communication skills.
- Integrate U=U into all aspects of programming, including by training PEs, PNs, OWs, and clinicians to promote U=U through community and online outreach.
- Invest in HIV treatment literacy, including U=U campaigns and community mobilization for KPs to access routine VL testing and understand the results.

SUPPORT TO CLIENTS

- Prioritize providing KP clients with non-suppressed VL with enhanced adherence and/or treatment initiation support.
- Prioritize KP clients with non-suppressed VL for index testing as it is likely that partners and network members of individuals who are not virally suppressed will face elevated infection risks and greater treatment or prevention (including PrEP) needs.
- Increase access to and use of VL testing by having a high-capacity, KP-friendly CBO assume location and maintenance of VL equipment.
- When possible, identify and address structural barriers (e.g., transportation costs) that limit access to VL testing among KPs.
- Train PNs to counsel KPLHIV on the importance of VL testing, support attendance for regular VL testing appointments, and communicate and interpret VL results to KPLHIV.

MONITORING AND EVALUATION

- Continuous quality improvement and external quality assurance programs to monitor quality and data safety of VL testing are essential for quality programming.
- Indicators that should be tracked for VL testing include (Figure 4):
  - The number of PLHIV currently on treatment as the denominator.
  - The number of individuals eligible for a VL: Eligibility is usually at the 6- and 12-month time points after ART initiation, but will vary by country, and yearly after that for stable individuals.
  - Indicators following eligibility are: number of individuals who had a VL test done, number of individuals who received their results, and proportion of individuals who were virally suppressed.
  - A separate cascade should be developed for those who are unsuppressed, tracking those who received adherence support, a second VL test, and suppression rates (Figure 5).

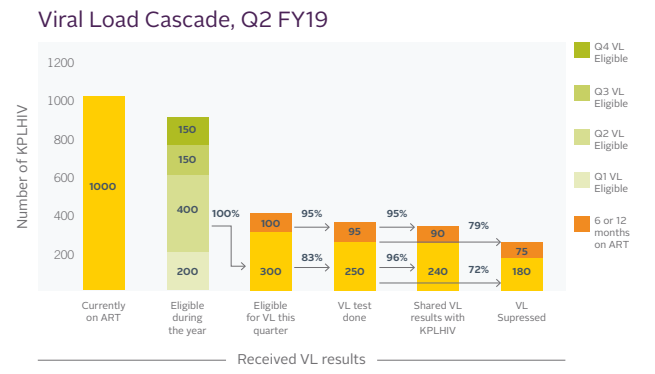

Figure 4: Sample VL Cascade

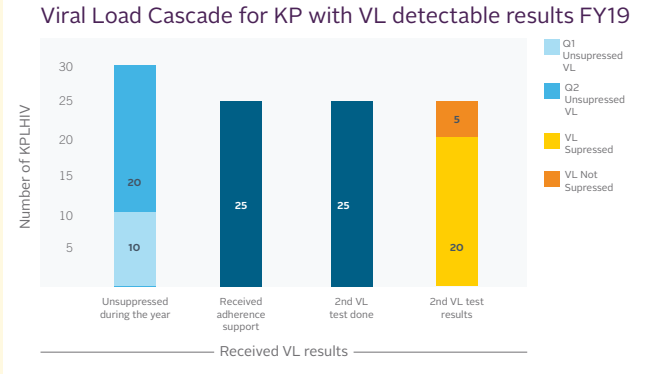

Figure 5: Sample VL Cascade Unsuppressed Clients

USEFUL RESOURCES

US Center for Disease Control, HIV Risk Reduction Tool
https://wwwn.cdc.gov/hivrisk/increased_risk/viral_load/index.html

US Center for Disease Control
https://www.cdc.gov/hiv/policies/law/states/reporting.html

https://wwwn.cdc.gov/hivrisk/what_is/stages_hiv_infection.html

WHO, WHO guidelines on the use of CD4, Viral Load and EID tests for initiation and monitoring of ART
https://www.who.int/hiv/amds/102_WHO_Guidelines_on_CD4_and_VL_for_ART_Doherty.pdf

WHO, Viral suppression for HIV treatment success and prevention of sexual transmission of HIV
https://www.who.int/hiv/mediacentre/news/viral-supression-hiv-transmission/en/

Lancet, The future role of CD4 cell count on monitoring antiretroviral therapy. WHO
https://www.who.int/hiv/pub/journal_articles/future-of-cd4-cell-count/en/

WHO, What's new in treatment monitoring: Viral load and CD4 testing, July 2017
https://apps.who.int/iris/bitstream/handle/10665/255891/WHO-HIV-2017.22-eng.f;jsessionid=16C877E2E9497584FE6E27CBF3EFBA55?sequence=1

WHO. Viral Load testing
https://www.who.int/diagnostics_laboratory/faq/viral_load/en/

JIAS Supplement Reaching the Third 90: Taking Routine Viral Load Monitoring to Scale
https://www.iasociety.org/Web/WebContent/File/JIA2_20-S7_complete_file.pdf

ICAP Viral Load Toolkit which includes a curriculum, key messages and job aids
https://icap.columbia.edu/tools_resources/viral-load-toolkit-english/

END NOTES

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