

Improving HIV viral load coverage using differentiated service delivery models in Jakarta, Indonesia

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The introduction of differentiated VL testing models — for both public and private service delivery — as well as strategies to improve efficiencies from community to health facility hold significant promise for addressing these formidable obstacles and ensuring more timely, effective, and accessible care for PLHIV.

In Indonesia, where more than half a million people were living with HIV at the end of 2022¹ and almost 180,000 of them were receiving antiretroviral therapy (ART),² an estimated 91% of those on treatment achieved viral load suppression (VLS) by April 2024.

That estimate may reflect encouraging progress toward the UNAIDS' goal of 95% VLS by 2030. However, the true level of viral suppression was uncertain because viral load testing coverage (VLC)—the percentage of people on treatment who received VL testing during the past year—was only 37%.

HIV viral load (VL) testing among clients on ART is the most reliable predictor of individual treatment efficacy and serves as a gauge of overall progress in controlling the HIV epidemic. But the public laboratories that HIV treatment facilities in Indonesia rely on for VL testing face many systemic challenges, and people living with HIV (PLHIV) may miss the chance to have their blood samples collected for VL testing. They may also wait weeks to receive their VL test results, delaying initiation of clinical interventions needed to ensure treatment efficacy.

To address the challenges to obtaining timely VL test results in Indonesia, the PEPFAR- and USAID-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project launched a comprehensive effort to improve coverage in 5 districts in Jakarta from October 2019 through September 2023.

Targeted strategies

Identified gaps in the VL testing process included commodity shortfalls, shortages of trained laboratory staff and equipment, limited mechanisms for transporting specimens, and a lack of policies to enable easier access to VL testing. In response, EpiC Indonesia began implementing a series of targeted strategies at the community, health facility, and laboratory levels to improve VLC in 5 districts of Jakarta (Table 1). Prior to moving forward with each strategy, EpiC advocated with the Ministry of Health (MOH) for policy change to allow simplified access to VL sample collection.

Table 1. EpiC strategies for accelerating viral load testing in Indonesia, October 2019 – September 2023

LEVEL	STRATEGY
COMMUNITY	<ul style="list-style-type: none">Extended evening and weekend hours at targeted facilities and through mobile testing to improve convenience and access, especially for those with daytime work or school schedules
HEALTH FACILITY	<ul style="list-style-type: none">Strengthened VL testing systems in hospitals by:<ul style="list-style-type: none">Hiring additional staff and providing financial support for current staff to work extended hours at high-volume hospitalsEstablishing VL testing “fast lanes”Offering one-stop VL testing servicesStrengthening internal client flow processes and interdepartmental coordinationTrained laboratory analysts on VL specimen packing and labeling specificationsEnhanced specimen transport through Jak Transporter, a VL specimen transport system developed for Jakarta
LABORATORY	<ul style="list-style-type: none">Contracted and leveraged a private sector laboratory network capacity

¹ 2019-2024 Indonesia HIV AIDS Estimations and Projections, 2020

² System for Integrated Health Analytics data, December 2022

Community-level strategies

Extended mobile VL sample collection and weekend hours

For many clients, traveling to and attending appointments at health facilities during regular hours on weekdays was challenging and often led to missed VL testing appointments. Clients in prison settings had no way of accessing VL testing services. To improve access to VL testing for all eligible PLHIV, EpiC Indonesia piloted mobile VL sample collection with eight health facilities beginning in November 2022. Weekend hours were initiated in August 2023 to further improve convenience and access. Health facilities gradually adopted extended hours on weekday evenings instead of weekends, while mobile clinics, which also brought services to prisons, continued to offer weekend hours. From November 2022 to September 2023, 262 clients, including 80 clients in prison, had VL samples collected through mobile services.

After finding that the extended weekday hours at health facilities generally met client needs, the facilities switched to providing mobile testing only for those who need additional support. Community-based organization staff routinely review clinical data to identify clients who need access to VL testing. When they identify at least 20 clients in a community, they work with a nearby health facility to schedule a time for community-based sample collection.

Facility-level strategies

Enhanced VL specimen transport mechanisms

In October 2019, EpiC Indonesia created the Jak Transporter system to address the gaps in specimen transport in Jakarta. EpiC supports dedicated transporters, who are recognized by subnational authorities with a formal assignment letter and a District Health Office (DHO) representative badge, to transport VL testing specimens from facilities to laboratories using a cold-chain box and rapidly return results to public facilities. The Jak Transporter system has proved adaptable and effective, covering the entire city. Increasing the number of drivers per district reduced the driving time and distance for each driver, allowing for more frequent sample pickups from health facilities and increasing the number of samples tested per week.

The system also provides greater flexibility and efficiency based on the availability of the reagents needed for sample collection at a health facility. For example, when reagents are limited, Jak Transporter drivers pick up specimens once a week. This adjustment allows health facilities to collect enough samples so the referral labs receive at least the minimum number required to run the test without waiting for other samples to arrive. In contrast, when health facilities have sufficient stock of reagents, drivers pick up specimens twice a week, which has improved the turnaround time for delivery of results.

In addition, EpiC Indonesia and the DHO trained the transport specimen drivers to check whether samples are packaged correctly to reduce the incidence of sample errors or leaks. The drivers then report back to the health facilities on the number of samples rejected due to poor packaging. Through this process, the once frequently reported rejection of samples has become a rare occurrence.

Strengthened VL testing systems in hospitals

Several strategies were employed at the site level to improve VLC in 109 facilities across Jakarta. Starting in October 2021, all hospitals implemented targeted workforce strategies to enhance their processes for client flow and interdepartmental coordination. In March 2023, the MOH and EpiC convened 108 laboratory analysts from those facilities to reach consensus on VL specimen packing specifications to reduce spillage and damage and on specimen labeling criteria for expedited laboratory processing. All analysts were then trained on these procedures.

Sites that were underperforming compared to others were assessed to inform the design of tailored interventions. EpiC provided differentiated support to design and coordinate interventions to strengthen VL testing systems in each setting, including the following examples:

- Fatmawati Hospital reduced wait times and improved viral load coverage by initiating VL testing “fast lanes” and arranging for a laboratory personnel dedicated to VL testing. VLC at the hospital was 37% before the intervention started in April 2022. By September 2022, VLC had increased to 68%. This intervention is sustained by shifting some general lab support personnel to support HIV VL testing specifically.

Before the intervention, VL testing coverage among ART clients in Jakarta ranged from 10% to 15% quarterly. Since the implementation of Jak Transporter, it has increased to more than 70%.



Engineers review the delivered equipment including a pressure swing adsorption plan and an oxygen cylinder filling station (manifold) at Tay Ninh Provincial General Hospital in Vietnam.

Photo credit: Ade Sonyville

Leveraging private laboratory facilities yielded significant improvements in testing turnaround times, reducing the wait to three to five days in Kimia Farma outlets compared to seven to 30 days in public referral laboratories.

- At RSK Dharmais and RSUD Tarakan hospitals, phlebotomists were placed at the hospitals' care, support, and treatment (CST) sites so clients could get their blood drawn while waiting for their drug refills. In just one quarter of implementation, **this strategy cut the waiting time per client from hours to less than an hour for VL specimen collection and increased VLC by more than 80%**. The hospitals have adapted this initiative by placing their phlebotomy rooms next to their CST rooms; now all effort is covered by the hospital budgets. The initiative was presented to the Minister of Health, who suggested expanding this strategy to other target hospitals.
- Tarakan District Hospital was short on providers to collect VL specimens from clients. To reduce the burden on staff and help reduce wait times for clients, EpiC Indonesia supported adding phlebotomists and compensating existing staff to work additional hours to support VL testing. From December 2022 to June 2023, VLC rose from 65.9% to 76.4%. This intervention is also sustained with task shifting.

Laboratory-level strategies

Partnered with private sector laboratories

In December 2022, USAID allocated strategic Headquarters Operational Plan (HOP) resources to the EpiC project to accelerate VLC and turnaround times for receiving VL test results through collaboration with private sector laboratories. The MOH, three provincial AIDS offices, and 41 health care facilities in Jakarta, Banten, and West Java participated.

EpiC Indonesia and the USAID mission established a partnership with Kimia Farma, a private pharmaceutical company with an extensive national network of accredited laboratories. Kimia Farma also operates 70 outlets across Indonesia, providing decentralized VL specimen collection and easier access for clients who live far from health facilities. During most of the implementation period, direct patient walk-ins served as the primary mode of VL testing.

This partnership aimed to bridge gaps in VL testing, especially among PLHIV who were working or residing outside their registered facilities' catchment areas. From June through September 2023, Kimia Farma facilitated VL testing for 772 PLHIV across 18 provinces and 37 districts, accounting for 20% of the total VL tests conducted by the participating facilities. Leveraging private laboratory facilities yielded significant improvements in testing turnaround times, reducing the wait to three to five days in Kimia Farma outlets compared to seven to 30 days in public referral laboratories.

A costing exercise conducted by EpiC estimated that the cost of analyzing a VL sample was substantially lower in the private sector laboratory compared to the government's Central Laboratory (US\$31 vs. US\$96, respectively). The Central Laboratory faces challenges including higher labor costs and testing equipment that requires expensive reagents. A comparison of the private sector laboratory and a public clinic also found lower cost estimates for sample collection, transportation to a laboratory, and transmission of results to clients by the private lab, largely due the higher volume of samples processed. In this context, private sector sites can be a useful complement to public sector sites and can serve as a relief valve if public sector sites experience supply chain problems, broken equipment, disease outbreaks, or other shocks that pull resources away from VL testing services.

Outcomes

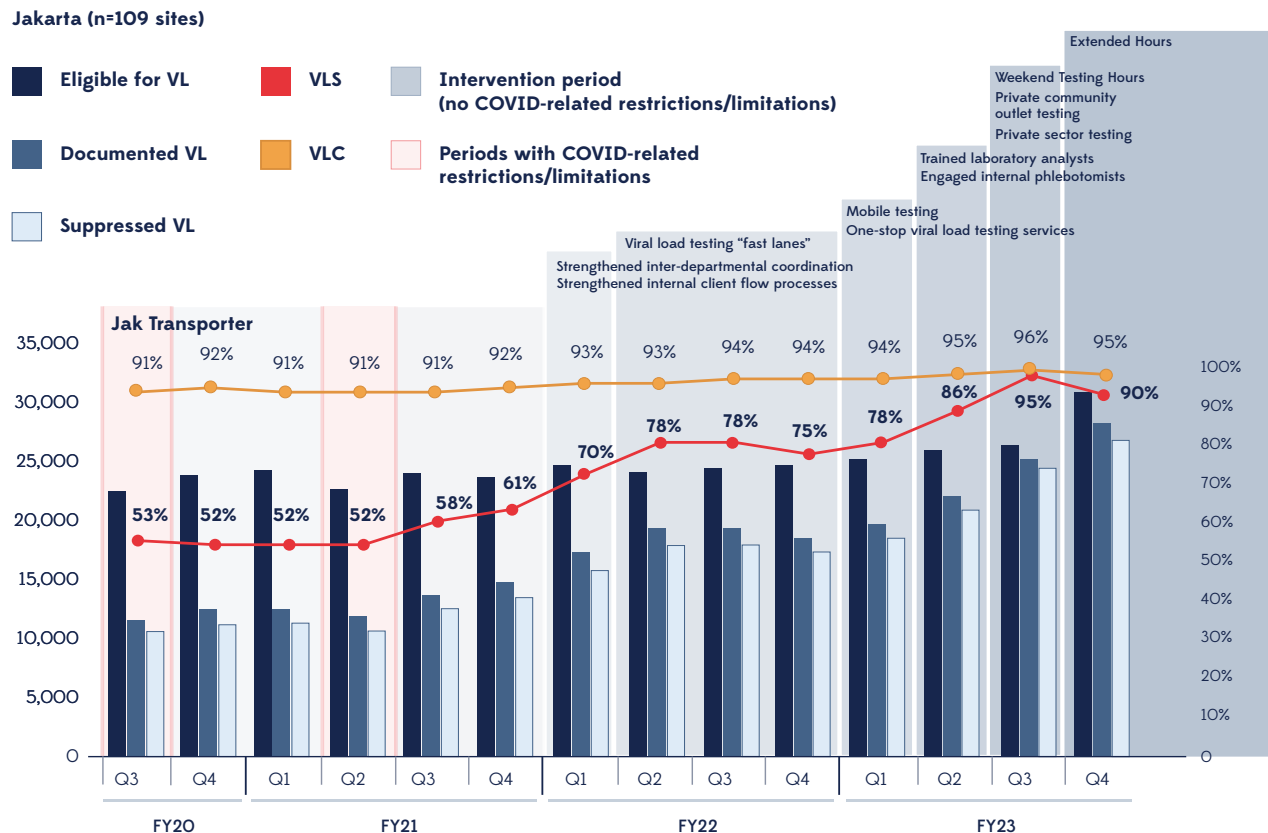
Through this multi-strategy effort to improve VLC at the community, health facility, and laboratory levels, EpiC Indonesia succeeded in making significant improvements at 109 sites across all districts in Jakarta (Figure 1). **In Jakarta, VLC rose from 53% to 90% in three years.** As of September 2023, 68 of the 137 sites supported by EpiC were offering VL testing to at least 80% of eligible PLHIV—a milestone that had been achieved in only 28 sites by December 2022.

Over 18 months of various interventions at the health facility level, VLC increased from 61% to 86%, an average of 4% per quarter. The results (Figure 1) suggest the addition of laboratory- and community level interventions led to further increases in VLC. With the initiation of private sector VL testing and private community outlet testing, VLC increased from 86% at the end of March 2023 to 95% by the end of June 2023—a 9% increase in three months. The partnership with Kimia Farma added another layer of intervention, which also may have boosted VLC. Although

robust documentation of eligibility in July through September 2024 increased the number of people to be reached with VL testing, coverage remained around 90% as access to mobile testing expanded.

The introduction of differentiated VL testing models facilitated more timely, effective, and accessible care for PLHIV. Although low coverage of VL testing remains an enduring challenge nationally, concerted implementation of multiple strategic interventions holds significant promise for continued improvement.

Figure 1. Timeline of interventions and VL coverage trend over time



Next steps

EpiC Indonesia will continue collaborating with the MOH, provincial and district health officers, hospital management, community partners, and USAID to sustain and scale up the interventions that have improved VLC in Jakarta. The project will provide technical assistance to the MOH and other key partners and will support the Global Fund to ensure a high-quality supply chain of reagents and consumables for testing. The project's goal is to help the MOH achieve its national goals for HIV treatment and prevention and ensure that at least 83% of people on ART have a suppressed viral load (the third target of the UNAIDS 95-95-95 goals) by December 2026.

At the request of the MOH, EpiC will support the national program to develop a VL Acceleration Technical Guideline—including the strategies detailed here—roll out a national VL technical team that will provide support including training and monitoring, and convene monthly coordination and program improvement meetings.

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