



Centralized laboratory model for HPV DNA-based screening for cervical cancers in the Philippines

Insights and Implications

May 2025



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Objective of the guiding document

The objective of this document is to provide actionable guidance on establishing a centralized, high-throughput HPV DNA testing model for cervical cancer screening in urban public health settings in the Philippines. Drawing on the proof-of-concept implementation led by Jhpiego with support from Roche Diagnostics and in partnership with the Department of Health (DOH), regional and local health offices, and civil society organizations, this document offers a contextualized framework to support policymakers and program managers in integrating HPV DNA testing into routine service delivery in urban contexts.

A Jhpiego clinical skills trainer demonstrates visual assessment for treatment to CLAMS-trained clinicians, July 2024



A Hi-precision technician demonstrates functionality of Roche COBAS 4800 machine

Executive Summary

Across many low- and middle-income countries, cervical cancer continues to pose a major threat to women's health, not because it cannot be prevented—but because access to reliable, scalable screening and timely treatment remains limited. In the Philippines, despite policy commitment and long-standing efforts, most women still go unscreened. Traditional screening methods such as VIA have helped initiate the conversation, but they fall short in sensitivity and scalability, especially in large, densely populated urban settings.

With emerging global guidance shifting toward HPV DNA testing as the preferred screening method, we saw an opportunity to reimagine how secondary prevention services could be delivered. Our team designed and implemented the Centralized Laboratory Model for HPV Screening—or CLAMS—as a demonstration to explore whether a hub-and-spoke approach could work within the Philippine health system, particularly in the urban landscape of Metro Manila. At the heart of the model was a centralized laboratory linked with multiple public primary health care facilities and community screening points, supported by a strong digital platform and on-demand courier services.

What we witnessed over the course of implementation was not just feasibility—it was the power of thoughtful systems design. Design to leverage the strength of prior and continuing DOH and partner health systems efforts in cervical cancer elimination, civil society engagement, the efficiency of centralized testing, and the flexibility of self-sampling to offer women easier access to care. The model adapted in real time: treatment services were brought closer to where women live; transport systems were strengthened; and local governments gradually took more ownership. While there were challenges, there were also critical learnings—how decentralizing treatment improves follow-through, how sample logistics can be streamlined with modest digital tools, and how systems need to be built around the realities of women's lives.

CLAMS was not designed to provide all the answers, but it offered a glimpse of what is possible when health systems commit to equity, responsiveness, and innovation. As the country considers pathways to scale HPV testing nationwide, the model underscores the value of integrating services, simplifying access, and designing programs that align with how women seek care.

The CLAMS demonstration confirms the viability of centralized HPV testing when embedded in a coordinated care model in an urban setting.



Background

Cervical cancer poses a significant public health burden in the Philippines. It ranks as the second most frequent cancer among women in the country and the second most common cancer among women aged 15 to 44 years. In 2023, it was estimated that 8,549 new cases were diagnosed, and 4,380 deaths occurred due to this disease. These figures translate to an age-standardized incidence rate of 15.5 per 100,000 women and an age-standardized mortality rate of 8 per 100,000 women. Without effective interventions, projections indicate that over 162,000 women in the Philippines could die from cervical cancer between 2020 and 2070. The high burden underscores the urgent need for effective screening strategies for early detection and prevention.

Despite the high burden of cervical cancer in the Philippines, screening coverage remains critically low, with less than 1% of eligible women undergoing recommended procedures like VIA, Pap smear, or HPV DNA testing. This limited uptake, influenced by socioeconomic barriers, lack of awareness, and attitudinal factors, results in predominantly late-stage diagnoses and poor survival outcomes. National guidelines advocate for VIA or cytology/HPV testing depending on resource availability; however, implementation challenges persist, necessitating innovative strategies to improve accessibility and screening rates.

Almost all cases of cervical precancer and cancer are caused by an HPV infection. The highest-risk genotypes, 16 and 18, are responsible for approximately 70% of all cervical cancer cases globally. Although most HPV infections clear naturally, and many precancerous lesions resolve spontaneously, chronic HPV infection can progress to invasive cervical cancer if left undetected and untreated. Cervical cancer screening and treatment of precancerous lesions identifies asymptomatic women at risk of developing cervical cancer and provides early treatment at the precancer stage. This secondary prevention strategy has dramatically decreased the incidence and mortality of cervical cancer in settings with long-standing effective screening programs, such as Australia, the USA and many European countries.



In 2021, WHO proposed major changes in cervical screening and treatment, recommending HPV DNA detection as the primary screening test rather than VIA or cytology in screening and treatment approaches among both the general population of women and women living with HIV2. A 2021 review of the evidence by IARC found that “although several methods currently used in screening are effective in reducing the incidence of and the mortality associated with cervical cancer, HPV testing alone is the most effective given its balance of benefits and harms.” HPV-based screening in a screen-and-treat or screen-triage-and-treat approach, with a screening interval of every 5 to 10 years, is currently recommended among the general population of women aged 30 to 49 years.

The World Health Organization (WHO) has also called on countries to meet the 90–70–90 targets to eliminate cervical cancer as a public health problem:

- 90% of girls fully vaccinated with the HPV vaccine by age 15
- 70% of women screened with a high-performance test by age 35, and again by age 45
- 90% of women with cervical disease receive appropriate treatment

The Philippines has demonstrated strong policy commitment to this goal. As early as 2005, the Department of Health (DOH) issued Administrative Order to establish an organized cervical screening program across all levels of the health system. In 2019, the passage of Republic Act No. 11215, or the National Integrated Cancer Control Act (NICCA), reinforced a comprehensive approach to cancer prevention and survivorship by promoting access to care and strengthening health systems. The DOH introduced HPV screening and thermal ablation treatment which included the introduction of new policies, guidelines, workforce mobilization, and community engagement through the SUCCESS project and the Unitaidd investment.

Despite these strong policy foundations, cervical cancer screening and treatment services have not yet reached scale. Challenges include low screening coverage, competing health priorities at the local level, limited availability of trained providers and diagnostic infrastructure, and weak data systems that hinder continuity of care. SUCCESS and the DOH have demonstrated the feasibility and acceptability of HPV DNA testing, self-sampling, and thermal ablation across tertiary to primary care level, and have laid the groundwork for broader integration. The urban health landscape in the Philippines presents a complex mix of opportunities and challenges for implementing population-based screening programs. While urban areas benefit from greater concentration of healthcare facilities, better infrastructure, and higher health literacy, they are also marked by stark health inequities, overcrowding, and a fragmented mix of public and private service providers. Migrant populations, informal settlers, and marginalized communities in urban slums often fall through the cracks of routine health systems, limiting the reach of preventive services like cervical cancer screening. However, urban settings also offer unique opportunities for scale—such as stronger digital connectivity, higher availability of trained health workers, and potential for integrated service delivery through city health systems and workplace-based programs. Leveraging these strengths while addressing access and equity gaps is critical to the success of population-based HPV DNA screening in urban Philippines.

Building on the foundations and to address unique landscape of urban settings in Philippines, the Department of Health in collaboration with Jhpiego introduced a new demonstration initiative - Centralized Laboratory Model for Cervical Cancer Screening (CLAMS) to operationalize HPV DNA testing using a centralized laboratory network. CLAMS was designed to be implemented in urban areas of the Philippines, where logistical, infrastructure, and system-level readiness allowed for centralized sample processing and streamlined service delivery. The project focused on promoting self-sampling, improving follow-up mechanisms, and strengthening continuum of care by anchoring screening in primary health care settings and linking it with centralized diagnostics.

This paper outlines the development, implementation, insights and implications from the CLAMS model. It aims to offer a scalable, context-adaptable pathway for enhancing cervical cancer screening coverage through centralized testing, with lessons that may inform broader national efforts and regional replication.



A health worker records a patient's information during a workplace screening

Choosing the platform

- Diverse testing platform characteristics require contextual alignment: HPV DNA testing platforms vary significantly in terms of infrastructure requirements, throughput capacity, portability, ease of use, and the level of technical expertise required. Therefore, the selection of an appropriate platform must be grounded in the realities of the service delivery setting. In urban areas, where higher patient volumes and better infrastructure exist, centralized platforms with high-throughput capacity are often a more practical and efficient choice.
- Urban settings offer robust infrastructure and system readiness: Cities and peri-urban areas typically have more developed physical infrastructure, including reliable transportation networks, laboratory facilities, and stable electricity and internet connectivity. These enablers make it easier to establish and maintain centralized testing hubs, streamline sample transport, and integrate digital data systems for real-time tracking and monitoring of results.
- Favorable population dynamics and health-seeking behavior: Urban populations are generally perceived to demonstrate greater awareness of health issues and are more receptive to preventive care, including cervical cancer screening. Additionally, sociocultural barriers that may hinder participation in screening programs are generally lower in urban contexts, making it easier to engage women and sustain program momentum.

- Established laboratory capacity supports high-volume testing: Many urban centers in the Philippines already have laboratories with the necessary space, equipment, and trained personnel to process large numbers of samples. Leveraging these existing assets allows programs to minimize startup costs and rapidly scale testing operations, thereby improving efficiency and turnaround times.
- Economies of scale improve cost-effectiveness: Centralized platforms can process large volumes of samples at once, making the cost per test lower in high-throughput settings. This model is especially advantageous when large populations can be reached within a defined catchment area, as is often the case in densely populated urban regions.
- Limitations of single-visit approaches make centralized testing more viable: In settings where implementing a single-visit “screen-and-treat” model is challenging—due to infrastructure, workforce, or logistical constraints—a centralized approach allows for decoupled testing and treatment. While this increases the need for follow-up, it also allows for better-quality testing and data management, provided referral systems are in place.
- Need for a mixed-model approach across varied geographies: While centralized testing is ideal for urban and peri-urban contexts, it may not be appropriate for rural or hard-to-reach areas. In such settings, point-of-care (POC) or near-POC testing platforms may offer better access and convenience. A hybrid model that combines centralized and decentralized approaches can better address the diverse needs of different populations across the country.

The Centralized Laboratory Model for Screening (CLAMS) was conceptualized in this context.



Community screening conducted by Women Workers Health Empowerment Network (WHEN), January 14, 2024

About CLAMS

The Centralized Laboratory Model for HPV DNA Screening (CLAMS) was conceived in response to the growing need for scalable, equitable, and high-performance cervical cancer screening strategies in highly urbanized settings in the Philippines. Designed and implemented by Jhpiego with support from Roche Diagnostics, the CLAMS project served as a demonstration model to demonstrate proof of concept for centralized HPV DNA testing - integrated with self-collection options and same-day treatment of pre-cancerous lesions using thermal ablation

CLAMS aimed to contribute to the national goal of eliminating cervical cancer as a public health burden by showcasing how centralized, laboratory-based HPV DNA testing can catalyze the transition from low-sensitivity visual inspection methods to more accurate and client-centered screening approaches. The project emphasized expanding reach, improving equity, and generating demand for cervical cancer prevention services among women in urban environments - where both health infrastructure and population density offer opportunities for efficient service delivery.

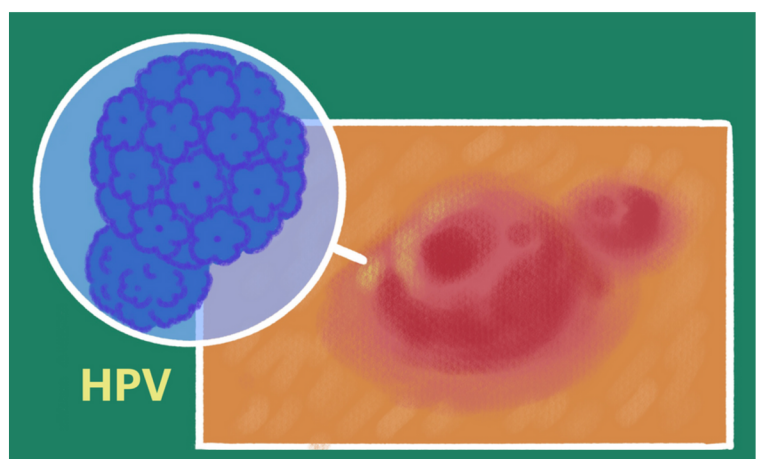


Clinician and trainer Dr. Khristine Dhubie Jadjuli of the Quezon City Health Department performs ablative therapy at Batasan Hills Lying-in Center, March 2024.

Leveraging Jhpiego's global and local technical expertise in cervical cancer prevention and its longstanding collaboration with the Department of Health (DoH), the project applied principles of locally-led development, human-centered design, and adaptive management. By fostering strong partnerships with local government health offices, CLAMS prioritized sustainability, local ownership, and system integration from the outset.

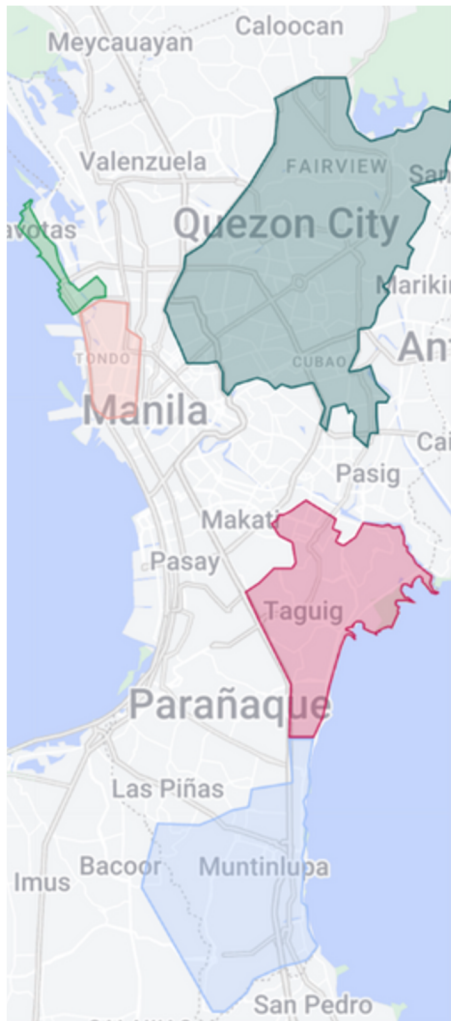
By strengthening linkages across the screening, laboratory processing, and treatment continuum, CLAMS generated critical insights for national and regional programs seeking to scale HPV DNA-based screening. The project demonstrated not only the operational feasibility of a centralized model in urban settings, but also its potential to accelerate the Philippines' journey toward high-impact, equitable, and sustainable cervical cancer prevention.

The CLAMS Phase 1 Project was implemented for a period of 18 months (2023-2024) in five highly urbanized cities of Metro Manila region in the Philippines, namely: City of Manila, Quezon City, Navotas City, Taguig and Muntinlupa City in direct collaboration with their respective local government units and health offices.



Criteria for selecting CLAMS project sites:

Project sites for the CLAMS initiative were strategically chosen to optimize the implementation of a centralized HPV DNA testing model using a Hub-and-Spoke approach. Selection was based on the following key criteria:



- Demonstrated local leadership and programmatic readiness: Sites with proactive health leadership committed to women's health and cervical cancer prevention, and a clear intent to institutionalize organized screening at the primary care level, were prioritized.
- Functional infrastructure for sample transport: Locations with dependable road networks and logistics systems capable of supporting timely specimen transport to a central laboratory hub through courier services were essential to ensure operational efficiency.
- High population density and testing volume potential: Urban areas with concentrated populations were selected for their ability to generate sustained screening demand - crucial for fully utilizing high-throughput HPV DNA testing platforms at the central lab.
- Existing cervical cancer services and treatment capacity: Geographies with active screening programs, trained healthcare providers, and facilities equipped to deliver ablative treatment for screen-positive women ensured immediate linkage to care.
- Operational feasibility based on prior health initiatives: Areas with a history of engagement in cancer or reproductive health projects were preferred, as existing relationships and systems could be leveraged to accelerate implementation.
- Readiness to model a hub-and-spoke primary care network: Selected sites demonstrated willingness to establish or strengthen a primary care-led provider network where multiple peripheral (spoke) facilities could be linked to a centralized laboratory (hub) for streamlined sample collection, testing, and follow-up.

Across the five CLAMS project sites, local governments had already initiated cervical cancer screening programs using visual inspection with acetic acid (VIA) and treatment of precancerous lesions with cryotherapy. These foundational efforts provided a springboard for transitioning to more advanced, evidence-based approaches. Notably, cities like Quezon City, Muntinlupa, and Navotas had begun HPV DNA testing via SUCCESS in selected barangays using near point-of-care platforms in place through the national DOH TB program, indicating both the demand and readiness for integrating high-performance screening technologies within local health systems.

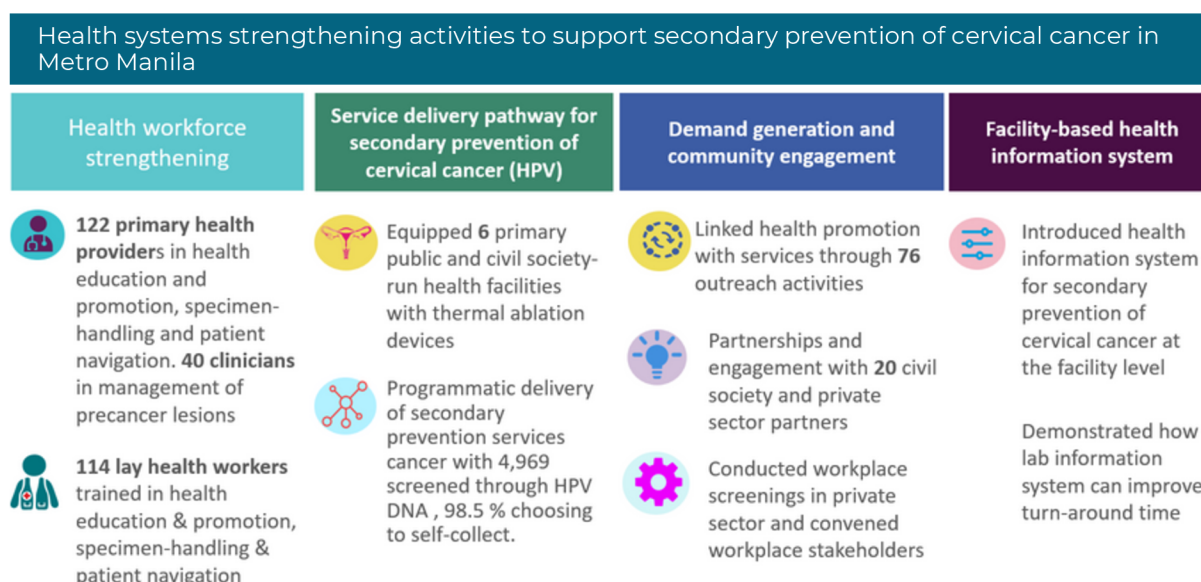


Figure 1: High-level CLAMS health systems activities conducted March 2023 to August 2024

Phases of Operationalization

The operationalization of the CLAMS model/intervention in urban areas of Metro Manila was carried out in a phased manner to ensure systematic integration of high-throughput HPV DNA testing within the existing primary health care infrastructure. Each phase addressed specific components necessary for successful implementation, spanning awareness generation, service delivery, system strengthening, and stakeholder engagement.

1. Preparatory Phase

This phase focused on laying the groundwork and ensuring the readiness of systems and partners for HPV DNA testing through the CLAMS high throughput model.

- Landscaping exercise: A rapid assessment was undertaken to map the existing cervical cancer screening ecosystem, identify service delivery gaps, and evaluate laboratory infrastructure, referral pathways, and opportunities for integration.
- Stakeholder engagement: Jhpiego engaged with national and sub-national stakeholders, including the Department of Health (DOH), local government units (LGUs), and public health institutions, to align on roles, responsibilities, and the resource-sharing model for CLAMS.
- Logistics and supply chain planning: Required equipment, HPV collection kits, treatment devices, and transport mechanisms were procured. Jhpiego's laboratory and supply chain management specialist distributed HPV DNA collection kits to project sites based on an initial allocation list, with replenishment based on site-level requests. The initial distribution was initiated only after service delivery training was completed in each project area. When kits were exhausted, sites reverted to visual inspection as the standard of care.
- Development of SOPs and training modules: Existing DOH program guidelines and learning resources developed under SUCCESS project were adapted for the centralized model for each step of the process- sample collection, storage, transport, processing, and reporting of results. Such customized training modules were adapted and deployed for various cadres, including community health workers, nurses, and lab technicians.

- Trainings: Primary healthcare providers were trained on cervical cancer basics and new technologies for secondary prevention (HPV self-sampling test), key messages to encourage positive health-seeking behavior, handling and transporting HPV samples and navigating patients for screening and treatment.
 - A two-day blended learning program was conducted to strengthen the capacity of 133 primary health care providers in community health education, specimen handling and transport, and patient navigation. The training module included foundational knowledge on cervical cancer and emerging technologies for secondary prevention, such as HPV self-sampling, along with key communication strategies to promote positive health-seeking behaviors. It also equipped participants with practical skills for handling and transporting HPV samples and supporting women through the screening and treatment continuum. Additionally, a tailored version of this training was delivered to 114 non-medical health workers and lay health volunteers to expand community-level access to accurate cervical cancer prevention information, particularly in underserved areas beyond the reach of the formal health system.
 - A five-day clinical skills training on HPV testing, VIA, and thermal ablation was conducted to enable primary health care clinicians to deliver timely, onsite treatment services at the community level. The training equipped 40 primary care providers with the competencies needed to reduce missed opportunities for treatment that often occur when women are referred to higher-level facilities. With additional support from SUCCESS and the Clinton Health Access Initiative (CHAI), six health facilities were equipped with thermal ablation devices, facilitating the decentralization of treatment for precancerous cervical lesions and improving access and adherence to care for women closer to where they live.
 - District-level and health facility orientations were conducted in three of the seven project hubs to strengthen the integration of cervical cancer prevention messaging and HPV DNA self-sample testing into routine primary care services. By engaging all levels of health facility staff, the initiative aimed to reduce missed opportunities for screening and promote consistent, facility-led access to cervical cancer prevention services.
 - To ensure quality and reinforce learning, the project implemented a continuous quality improvement approach, including post-training evaluations, regular mentoring and supervision visits, monthly check-in meetings, and midterm pause-and-reflect workshops to assess progress and adapt strategies as needed.

2. Implementation phase through Hub-and-spoke model

To effectively demonstrate the feasibility of centralized, high-throughput HPV DNA testing in an urban setting, the CLAMS project implemented a hub-and-spoke model linking 97 screening sites (spokes) across five project cities to a central laboratory hub. This model streamlined specimen testing and referral flow, optimized resource use, and supported consistent data management and follow-up.

The central laboratory hub

At the core of the model was the central laboratory, which functioned as the main processing and data coordination center of samples tested. Responsibilities at the hub included:

- Receiving and cataloging samples from various spoke sites
- Conducting HPV DNA testing using a high-throughput platform
- Encoding and managing test results in a centralized system
- Sending results back to the respective project hubs for client follow-up and linkage to care

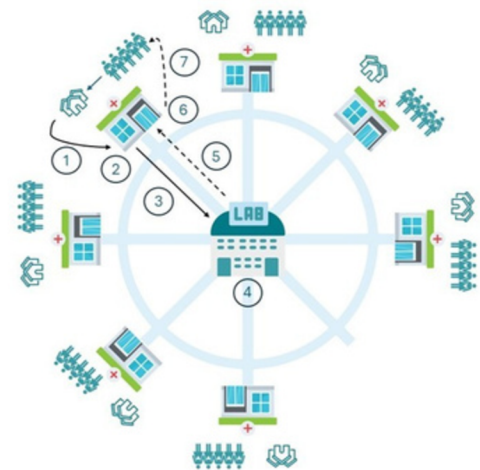


Figure 2: Illustration of centralized laboratory model

This centralized approach ensured consistency in sample processing, improved turnaround time, and maximized efficiency through economies of scale.

Spoke sites: screening and sample collection points

The spoke sites - comprising health centers, outreach venues, and workplace screening locations - acted as nodal points for service delivery. These sites carried out:

- Facility-based screenings at primary healthcare centers
- Community outreach activities in barangays and low-access areas
- Workplace-based screenings targeting employed women

Spoke sites offered both provider-collected and self-collected HPV sampling, tailored to women's preferences and service delivery settings. Community-based organizations, such as the Likhaan Center for Women's Health, played a vital role in mobilizing women and facilitating sample collection during outreach activities.

Courier logistics and sample transport

To ensure timely and secure transport of samples from spoke sites to the central lab, the project leveraged an on-demand courier service:

- Courier pick-ups were booked via a mobile app with preloaded project credits.
- Once a site pooled 20 or more samples, it triggered a pick-up request to the central lab (operated by Hi-Precision Diagnostics).
- If community outreach yielded fewer than 20 samples, they were first routed through the project hub, then combined at the hub for eventual pick-up.
-

This flexible system helped maintain sample integrity and ensured optimal batching for laboratory processing.

Integrated and opportunistic screening approaches

In addition to planned outreach and facility-based services, primary healthcare providers were encouraged to offer opportunistic screening - integrating HPV sample collection during routine visits or first points of contact with women. This approach expanded access and increased the likelihood of early detection by embedding cervical cancer prevention into everyday health service delivery.

Engagement of Civil Society Organization:

To enhance community engagement and reach underserved women in the City of Manila, the CLAMS project partnered with the civil society organization Likhaan Center for Women's Health (Likhaan) and Women Workers for Health Empowerment (WHEN). Leveraging its strong grassroots presence and trust among low-income communities, Likhaan and WHEN played a critical role in mobilizing women, supporting informed choice, and facilitating access to cervical cancer prevention services.

Role of CHWs

Community Health Workers (CHWs), who were non-medical health workers or lay health volunteers attached to community organizations, were engaged in:

- Awareness raising to build demand for screening.
- Supporting patient navigation for women with positive results who needed further evaluation or higher-level treatment.



Press Launch of Stronger Together than Cancer held at Bantayog ng mga Bayani, March 3, 2024

CHWs underwent a modified version of training so that they could increase community access to cervical cancer prevention messages and information in areas not reached by the formal health sector. Targeted IEC campaigns and community mobilization activities were conducted in urban neighborhoods and workplaces to raise awareness about cervical cancer prevention and the availability of HPV DNA testing through CLAMS intervention.

Digital Information System (DIS):

To address some challenges with existing data systems, CLAMS used the digital laboratory information system (DIS) built into the high-throughput system. Focal points at each CLAMS site were given online accounts to access results for patients screened at their facility. These focal points had to log in every few days to check for available results. DIS automatically shared the results with focal points, who were then responsible for communicating the results to the spokes. Spokes then contacted the patients.

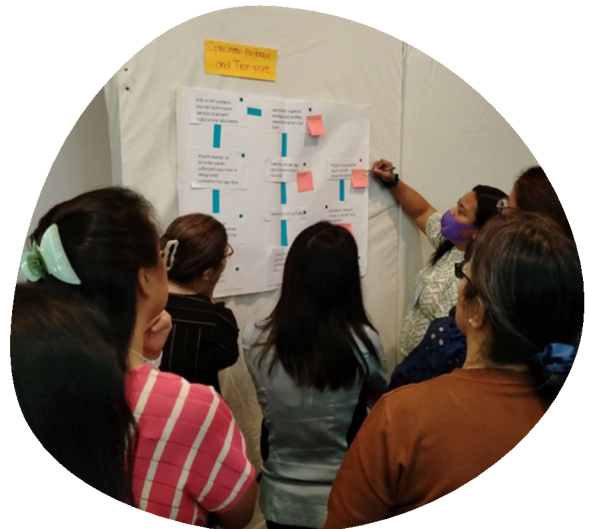
Communication of results to clients: The CLAMS project adopted a client-centered approach to result notification, balancing the need for timely communication with sensitivity to the psychological impact of a positive HPV result.

- **Negative results:** Clients who tested negative were typically informed via text message. This allowed for prompt communication while minimizing the burden on both clients and providers.
- **Positive results:** In line with ethical and psychological considerations, positive results were not disclosed over the phone. Instead, clients were contacted and advised to return to the health facility for further evaluation. During this follow-up visit, Visual Assessment for Treatment (VAT) was conducted—unless the client appeared distressed, in which case counseling was prioritized before any clinical intervention.

- Photo Credit- SUCCESS in Philippines
- Protocol adaptation following midterm review: Initially, the project protocol prohibited disclosure of positive results over the phone. However, based on insights from the midterm review, this policy was revised to provide more flexibility. Providers were empowered to use their judgment to determine whether it was appropriate to offer phone-based counseling, or if it was more suitable to simply encourage the client to return for in-person follow-up, based on individual circumstances.

Management through collaborations and partnerships:

To increase access to decentralized treatment of pre-cancerous lesions through the screen-and-treat approach, CLAMS also facilitated provision of thermal ablation devices to primary care facilities. Providers at these sites were trained to treat women who screened positive and had eligible lesions. Effective management of positive cases was achieved through strong collaborations with tertiary care hospitals. These partnerships ensured timely referrals, diagnostic confirmations, and treatment of cases.



A Jhpiego staff member discusses specimen referral and transport during a workshop session

3. Advocacy and scale-up phase

As the CLAMS project progressed the focus shifted toward capturing learnings and advocating for sustainability and scale up in complement to other projects like SUCCESS. Field-level insights, operational challenges, and best practices were systematically documented to inform future replication efforts. Key learnings were disseminated through local, national, and regional platforms, fostering cross-learning and generating momentum among stakeholders for wider adoption. Building on this foundation, a proposed Phase II of the CLAMS initiative aims to deepen these learnings and further support the integration of centralized HPV DNA screening models into routine public health systems.

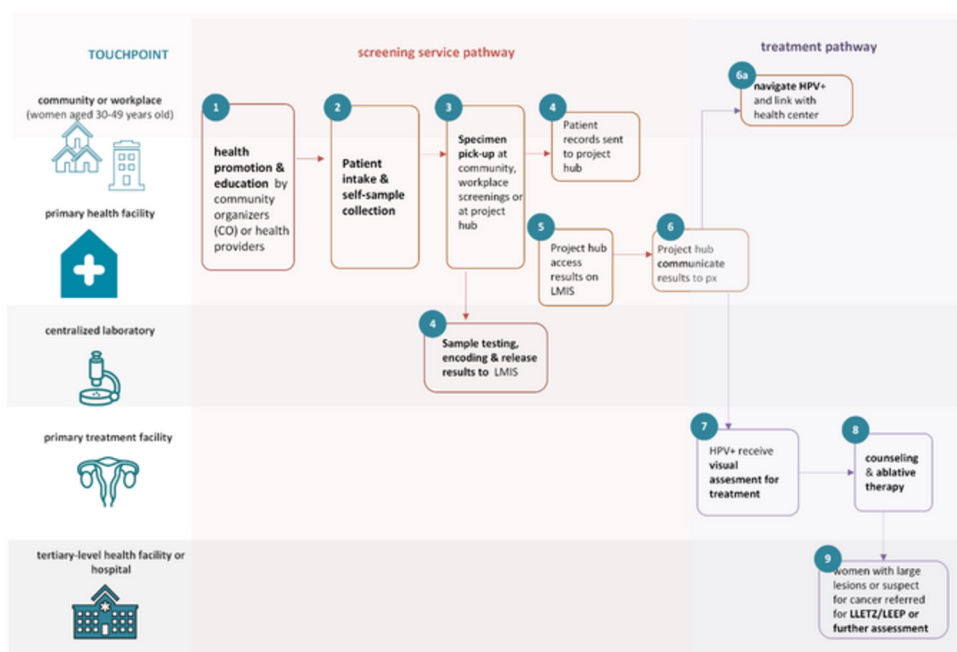


Figure 3: Illustrated continuum of care and service delivery pathway under CLAMS 1 Project

Key Insights

The CLAMS project demonstrated the practical value and operational feasibility of a centralized laboratory model for HPV DNA-based cervical cancer screening in highly urbanized areas. Over the course of implementation, the project generated several key insights:

High utilization of donated tests demonstrates demand and feasibility of mixed sampling approaches: The full utilization of nearly all donated HPV DNA test kits across project sites highlights strong community and provider uptake, suggesting that a combination of self-sampling and provider-collection strategies can be practically implemented in urban primary health care settings. Facility teams and community-based organizations successfully generated demand, facilitated collection, and ensured sample transport to the central lab, even in the absence of near point-of-care infrastructure. This suggests that integrating HPV DNA testing into routine urban health services is operationally viable, especially when supported by demand generation, provider training, and local coordination.

Demand can be rapidly catalyzed by policy support, but supply readiness must match:

In September 2023, the DOH Metro Manila regional office issued a memo encouraging intensified cervical cancer screening. This immediately spurred action at the CLAMS sites, resulting in an unprecedented surge in screening volume. The central lab processed 1,775 samples that month - more than 80 per day - validating the model's ability to scale. However, the unexpected volume led to stockouts of HPV test kits at two sites, forcing them to halt screening. This highlighted the need for aligned logistics and inventory planning when public health messaging is expected to drive demand.

Centralized lab model did not impede result delivery timeliness or follow-up: Contrary to concerns that physical distance to the lab would delay result turnaround, the median TAT from receipt at the lab to result availability remained 1 day in 6 of the 11 implementation months—even when over 1,000 samples were processed. This rapid processing allowed timely communication of results and may have contributed to maintaining the 54% return rate for VAT—comparable to previous national projects like SUCCESS. The ability to maintain TAT even at high throughput reinforces the suitability of centralized HPV DNA testing, provided that digital systems and transport logistics are in place.

Central laboratory maintained high efficiency, but was vulnerable to supply chain disruptions:

Despite being a new setup, the central laboratory consistently returned results with a median turnaround time (TAT) of 1 day for more than half of the implementation period. This held true even during high-volume months like September. However, delays surfaced when upstream logistics faltered: in October 2023, the median TAT increased to 3 days, likely due to a backlog from the September surge. By February 2024, the TAT spiked to 26 days—this time due to expired reagents and delays in procurement. These disruptions underlined the importance of forecasting, buffer stock management, and contingency planning for reagents.

Sample transport remains a critical enabler in hub and spoke models: Although the central laboratory efficiently managed sample processing and result delivery through the Digital Information System (DIS), challenges were observed in transporting specimens from peripheral spoke sites to project hubs in Quezon City and Navotas. This led to the project's mid-course adaptation of deploying mobile phones with preloaded courier service credits to these sites. While the hub-to-lab leg ran smoothly through laboratory's logistics system, this adaptation highlights that spoke-to-hub transport is a potential bottleneck in urban areas lacking internal courier capacity. These lessons underline the need for deliberate planning and budget allocation for first-mile transport in future scale-up.

Screen-and-treat model demonstrated strong treatment linkage when follow-up was achieved: Between June 2023 and July 2024, the CLAMS project screened 4,969 women across five Metro Manila cities. The HPV positivity rate was 7% (n=368), aligning with national estimates and confirming the accuracy and relevance of the central lab model. Of those who screened positive, 54% (n=197) returned for Visual Assessment for Treatment (VAT) - a modest but significant return rate, given known challenges in patient follow-up in urban settings. Importantly, 83% (n=164) of women assessed through VAT were eligible for thermal ablation, and all of them were successfully treated. This is a critical proof point: once women reached the point of clinical evaluation, the CLAMS network was fully capable of delivering timely, guideline-based care. These findings demonstrate the operational feasibility of a screen-and-treat approach when supported by strong referral mechanisms, trained providers, and treatment-ready facilities. However, the 46% gap in VAT follow-up points to the need for strengthened patient navigation, follow-up counseling, and community-based support systems in future scale-up efforts.

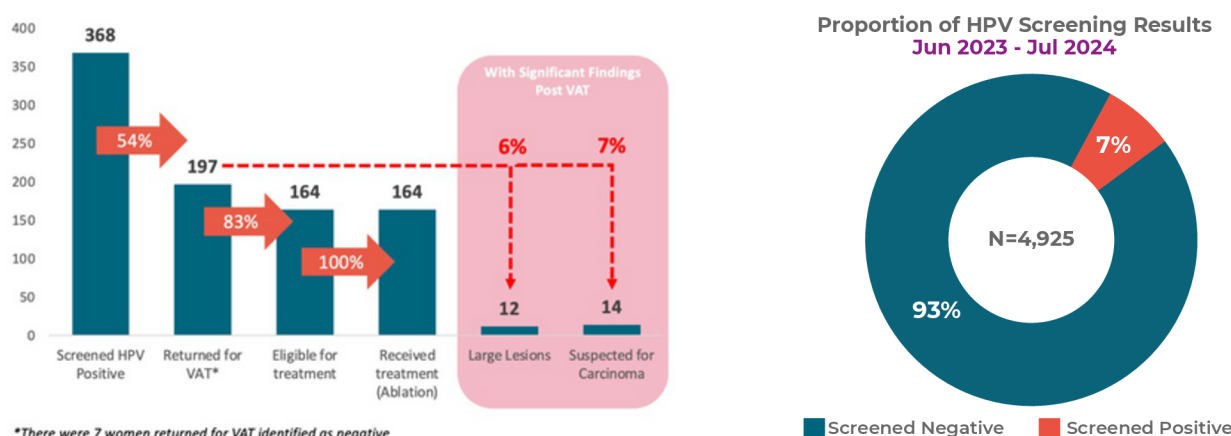


Figure 4: Screening-to-treatment cascade, CLAMS 1 Project, June to July 2025

Decentralized treatment access was key to successful follow-through in positive cases: Early in implementation, reliance on a few earlier project linked treatment hubs caused bottlenecks and delays. For instance, women screened in Taguig had to travel to Paranaque for VAT, leading to attrition and care delays. In response, Taguig was upgraded to a treatment site in late 2023, supported by training and additional thermal ablation units through SUCCESS, with the additional units coming from Clinton Health Access Initiative and the Unitaidd investment. This decentralized treatment access resulted in 100% of treatment-eligible women (n=164) receiving timely care, and points to the critical importance of co-locating treatment near screening—especially in dense, traffic-congested urban areas like Metro Manila.

Flexibility in design was essential to ensure continuity of services: The project began with a fixed site strategy, but early implementation in one city stalled due to leadership transitions and repeated difficulty in identifying reliable focal points. After multiple coordination attempts, the site was dropped and replaced to avoid compromising project timelines. This emphasized the importance of pre-assessing local governance stability and political will when selecting implementation sites.

Referral bottlenecks justified mid-course expansion of treatment capacity: Taguig was initially linked to Paranaque for treatment services. However, this created bottlenecks, with women facing long travel distances and delays for VAT. The issue became acute when screening volumes rose and treatment slots at Paranaque became saturated. In response, Taguig was upgraded to a treatment site in November 2024, supported by CHAI's donation of thermal ablation devices to shared SUCCESS sites. This change improved continuity of care and highlighted how early assumptions about referral readiness may need to be re-evaluated during scale-up.

“Pooling” model for transport faced real-world friction from health staff and logistics constraints: Initially, spokes were expected to send specimens to the hubs, which would then coordinate pickup with the central lab. In practice, many spoke sites - particularly in Navotas and Quezon City - lacked vehicles, fuel, or staff capacity to ensure timely transport. Feedback from implementation review meetings led to a shift: mobile phones preloaded with courier credits were provided to sites to directly request pickups, decentralizing this logistical function and improving reliability. This experience emphasized that transport assumptions must account for ground realities and site-specific constraints.

Treatment services need to follow the expansion of screening reach: As more women were screened, CLAMS hubs evolved to active treatment facilities. Clinical skills training on VAT and thermal ablation was added to equip new sites with the ability to provide same-day or rapid follow-up treatment. This reinforced the importance of integrating treatment scale-up into screening expansion plans from the outset.

Demonstration effect drove local policy action: The practical feasibility and visibility of CLAMS contributed to expanded modality change and together with other projects helped to reinforce the transition from VIA HPV testing as the preferred modality. Quezon City, a focal point for cervical cancer elimination initiatives dramatically increased its cervical cancer secondary prevention budget—from PHP 75,000 in 2024 to PHP 24 million in 2025. This illustrated the role of multiple well-implemented demonstration models in generating political buy-in, informing local decision-making, and influencing health budgeting.

Proximity to services is more determinant than urban density alone: Even within Metro Manila an expansive urban area with a high population density—physical distance of as little as 10 km between screening and treatment sites proved to be a barrier to timely follow-up. Women's ability to complete the care cascade was enhanced when services were offered in close proximity. This emphasizes that in designing future programs, urban centralization must be balanced with accessible decentralization for treatment, particularly for same-day screen-and-treat models. Such a balance is crucial for equity, especially among informal workers and urban poor women who may face mobility, financial, or time constraints.

Ownership and integration into local health systems vary widely and are crucial for scale-up:

Despite CLAMS selecting sites with demonstrated political will and existing screening programs, local government ownership was inconsistent. Some cities like Quezon City have acted decisively following CLAMS and SUCCESS —tripling their budget for cervical cancer screening from Php 75,000 in 2024 to Php 24 million in 2025 and shifting from VIA to HPV screening. However, in other sites, engagement waned over time, particularly where leadership transitions or competing priorities emerged. These variations suggest that long-term sustainability will depend on strong policy mandates from the Department of Health (DOH), reinforced by capacity building and incentives at the LGU level.

Demonstration validated feasibility but underscored the need for further research:

While CLAMS proved that a central laboratory model for HPV DNA testing can be effectively operationalized in highly urbanized LMIC settings, it was not structured to generate rigorous data on cost-effectiveness, client or provider acceptability, or comparative efficiency. These remain critical gaps. Further modeling research - building on insights from the Jujuy demonstration in Argentina and cost-modelling studies from the UK - is needed to determine how centralized models perform at scale in LMIC contexts. Such evidence is essential for guiding national policy, DOH investments, and donor prioritization.



Workplace screening conducted by Taguig City Health Office, February 2024



SOAR (Strengths, Opportunities, Aspirations, Results)

S

Strength

- The model leverages high-performance HPV DNA testing aligned with WHO recommendations, improving screening through highly sensitive modality and early detection
- The initiative was co-developed with the DOH, local government health offices, and community-based organizations, fostering ownership and sustainability
- Urban settings with better infrastructure, lab readiness, and lesser sociocultural barriers provided a conducive environment for centralized, high-throughput testing
- The project successfully embedded centralized testing into existing systems with adaptive responses like strengthened sample transport, decentralized treatment, and mentoring
- Successfully implemented a hub-and-spoke model linking decentralized service delivery to centralized HPV testing.

Opportunities

- The model can inform national strategies for introducing HPV DNA testing in other areas across the Philippines
- Improved sample handling and reporting efficiency by leveraging private laboratories and courier services
- There is strong alignment with the WHO 90-70-90 targets and growing government interest in eliminating cervical cancer
- Centralized models supported by referral hubs and spokes can increase program efficiency and reduce loss to follow-up
- Partnerships with community health workers and NGOs to increase awareness and promote self-sampling

O

A

Aspirations

- Expand reach to underserved women while maintaining quality, particularly through complementary decentralized treatment and navigation support
- Institutionalize HPV testing as a core part of national cervical cancer prevention strategies
- Position the Philippines as a leader in innovative HPV screening implementation in Southeast Asia
- Foster health system responsiveness and community empowerment through education, self-collection, and client-centered service delivery.

Results

- Equipped primary care systems across five cities to deliver HPV screening, counseling, and treatment through a quality-assured model.
- Adapted operational systems mid-course, including transport mechanisms and decentralization of treatment, to improve service delivery.
- Catalyzed policy momentum, including a major increase in Quezon City's secondary prevention budget from Php 75,000 in 2024 to Php 24 million in 2025.
- Validated the feasibility and acceptability of a cervical cancer prevention model using centralized testing and decentralized services in an urban LMIC setting.

R

Recommendations

Theme	Recommendations
Programming	• Empower women to choose between self-sampling or provider assistance within facilities and outreach camps, enhancing access. • Standardize protocols for counselling women on test results; whether positive or negative and clearly guide them through follow-up or treatment, including thermal ablation • Create strong referral and follow-up mechanisms, possibly through digital tracking tools or dedicated navigators, to reduce dropouts and ensure all screen-positive women complete the care cascade. • Strategic engagement with civil society organizations is crucial for mobilizing women, generating demand, and supporting follow-up. Program design must prioritize an integrated care cascade, linking screening to timely result communication, evaluation, and treatment within a defined referral network.
Laboratory processes	• Laboratory information systems must be optimized for timely result entry and digital transmission to facilitate continuity of care. • Sample batching and scheduling should be aligned with throughput capacity to ensure efficiency and cost-effectiveness without delaying results. • Scale up laboratory infrastructure to meet increasing demand for HPV testing, including sample processing, data integration, and staff training. • Establish systems for monitoring commodity availability, provider performance, and adherence to clinical protocols to improve quality of cervical cancer screening and management.
Service delivery	• Decentralizing VAT and treatment services to locations closer to screening points is essential to reduce barriers to access and follow-up loss. • Embedding cervical cancer screening into routine primary care visits can help normalize the service and improve uptake over time. • Thermal ablation should be prioritized in facilities where providers can be trained and ablative treatment services can be made available reducing delays in care access. • Tertiary hospitals and referral sites should be formally linked, equipped and prepared to manage women requiring more advanced treatment for high-grade lesions.
Policy level	• The hub-and-spoke model demonstrated under CLAMS should be formally integrated into national cervical cancer screening policies and implementation frameworks. • Local government units must be encouraged and supported to allocate dedicated funds for screening kits, transport, and treatment services to sustain and expand the model. • Advocate for inclusion of HPV screening data in national health information systems and dashboards for real-time monitoring, reporting, and evidence-informed decision-making. • Learnings from demonstration projects like CLAMS should be referred to inform policy updates and national scale-up strategies.

Limitations

1. Limited data on acceptability and equity: The demonstration was not designed to systematically assess client's or service providers perceptions, acceptability of self-sampling, or whether vulnerable populations were adequately reached.
2. Inadequate costing and efficiency data: The project did not generate detailed cost or cost-effectiveness data needed to support investment decisions, including operational costs of transport, lab operations, and treatment.
3. Unclear long-term sustainability: While some local bodies increased investment post-project, sustainability of the model - particularly reliance on a private lab and subsidized kits - remains uncertain without DOH policy integration and budgetary support.
4. Partial tracking of the patient care cascade: Although VAT and treatment completion were recorded, data on why some women did not return for results or care is incomplete, limiting insight into barriers at the individual level.
5. Limited generalizability beyond urban settings: CLAMS was piloted in five cities in Metro Manila; findings may not be directly transferrable to other urban / rural or geographically remote areas where infrastructure, transport, and provider capacity differ significantly.

Conclusion

The CLAMS demonstration underscores the feasibility and acceptability of integrating HPV DNA testing into primary healthcare services in the Philippines. This approach demonstrated that HPV self-sampling can be a promising strategy to expand screening utilization, particularly in urban and peri-urban contexts.

By establishing a structured pathway that includes HPV DNA testing, VIA for treatment, and timely access to thermal ablation treatment, the model showcased how organized screening programs can be operationalized within the public health system. Importantly, CLAMS successfully institutionalized high-throughput testing platforms and decentralized thermal ablation services, offering an adaptable framework for urban implementation.

However, the requirement for women to return for test results and further triage introduces a challenge to treatment adherence, especially when compared to the screen-and-treat model commonly used in LMICs. This highlights the critical need for effective counselling, navigation support, and innovative follow-up strategies to reduce loss to follow-up and ensure continuity across the care cascade.



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Centralized laboratory model for HPV DNA-based screening for cervical cancers in the Philippines

