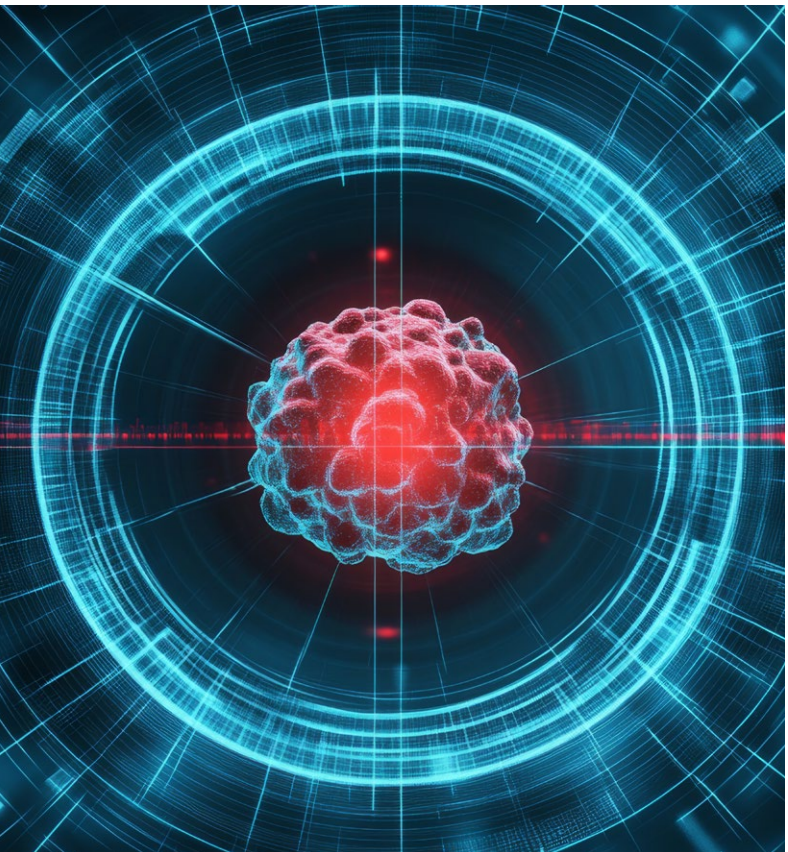
ELEVATE

Ear**L**y d**E**tection of cer**V**ical c**A**ncer in hard-to-reach populations of women through portable and point-of-care HPV **TE**sting



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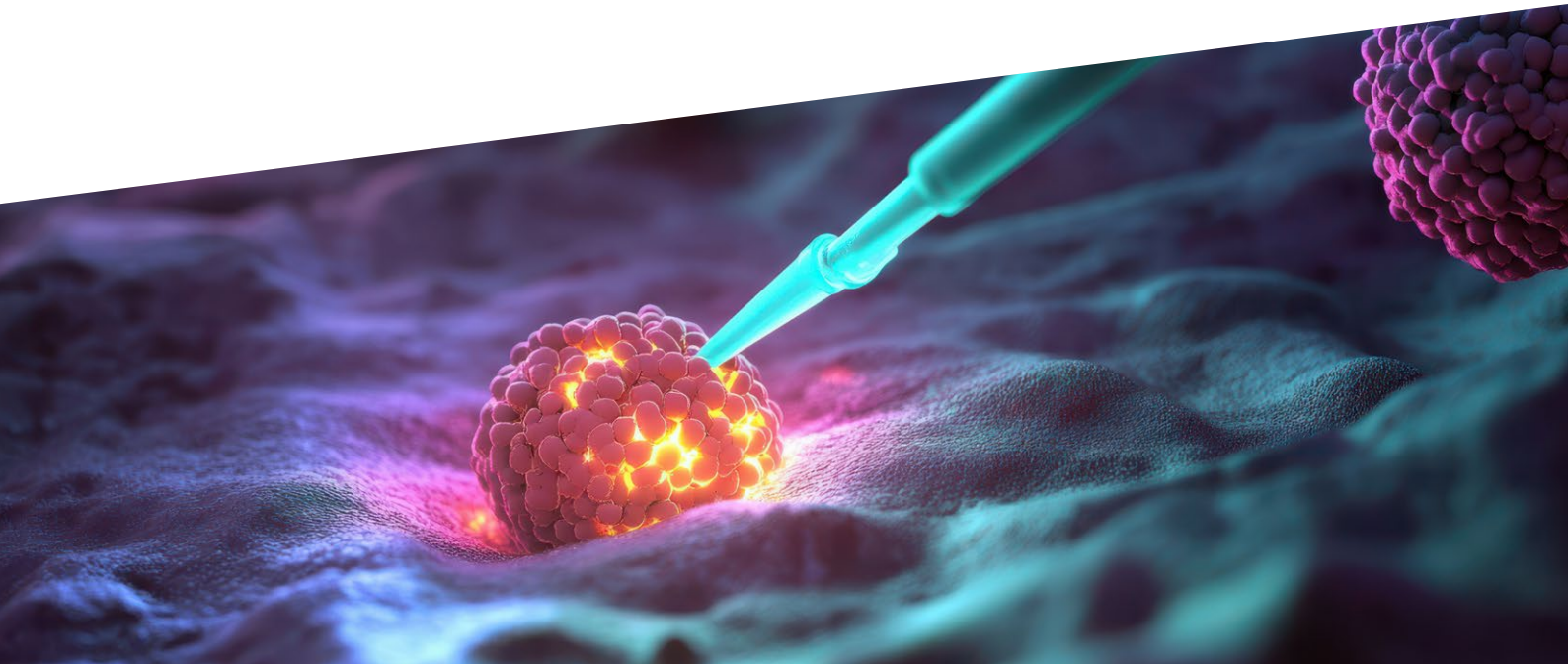
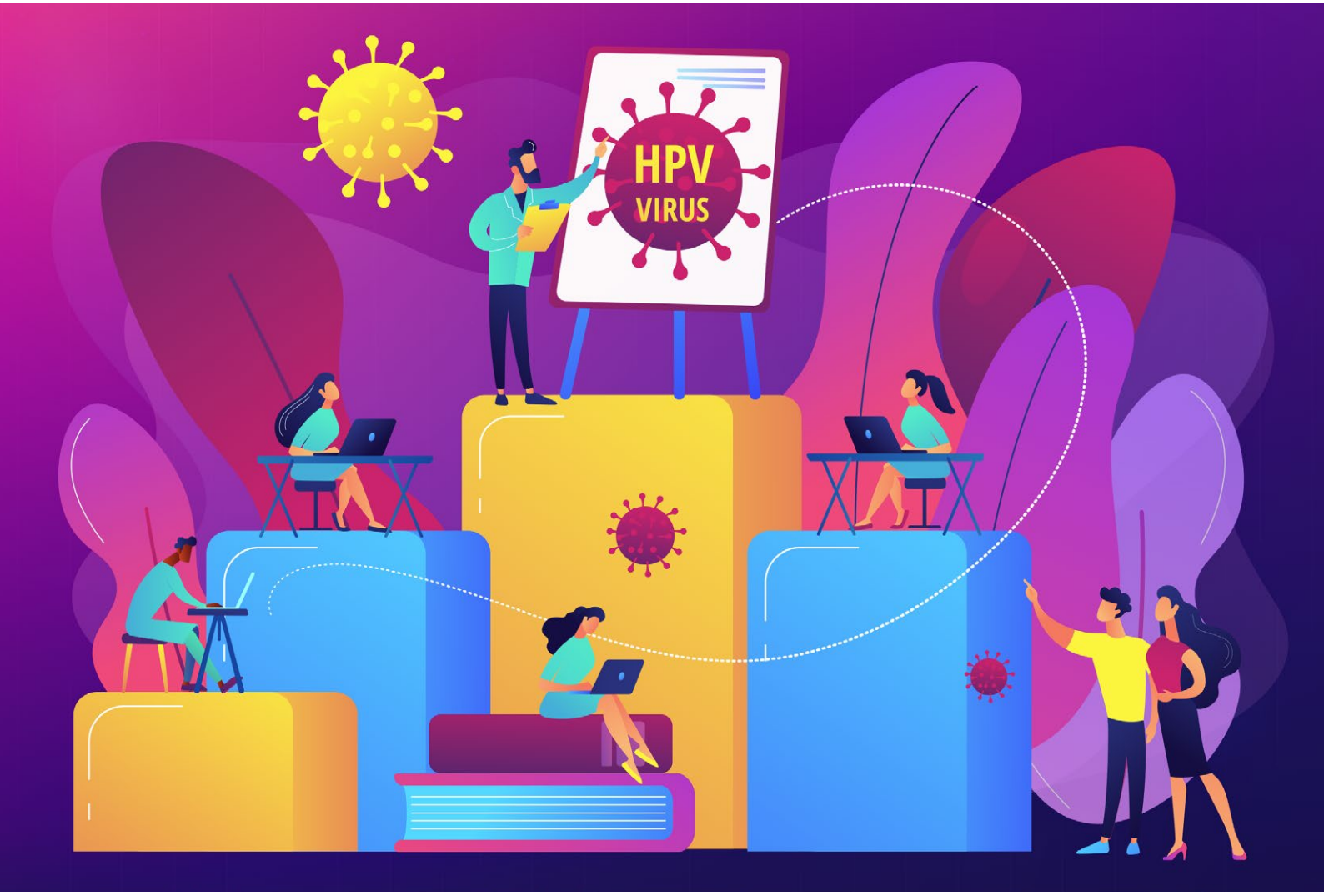


The mission to make HPV testing truly universal

In communities worldwide, cervical cancer remains a silent threat, particularly for women who struggle to access routine screening. Whether due to geographic isolation, poor health literacy, or limited healthcare infrastructure, millions of women remain undiagnosed until it is too late. Human papillomavirus (HPV), the primary cause of cervical cancer, often goes undetected in these populations, increasing the risk of preventable deaths. The challenge is clear: existing screening programs do not reach everyone, and current diagnostic methods are not always feasible in resource-limited settings.

ELEVATE—EarLy dEtection of cerVical cAncer in hard-to-reach populations through portable and point-of-care HPV TEsting—aimed to change this. Funded by Horizon Europe, ELEVATE is a multi-disciplinary collaboration bringing together experts in molecular diagnostics, public health, and biomedical engineering. The project's goal was to develop a portable, rapid, and reliable HPV test that can be deployed in settings where traditional screening is inaccessible. By combining advances in genomics, proteomics, and device engineering, ELEVATE designed a user-friendly, cost-effective solution tailored to real-world needs.



Collaboration was at the heart of ELEVATE. The project united a diverse group of academic institutions, research centers and healthcare providers, and industry leaders across Europe:

- Ghent University, Belgium (coordinator)
  - International Centre for Reproductive Health (ICRH)
  - Centre for Microsystems Technology (CMST)
  - Electrochemistry and Surface Analysis (ESA)
- Universitat Rovira i Virgili, Spain
- Universidad de Cuenca, Ecuador
- Barretos Cancer hospital, Brazil
- NOVA National School of Public Health, Portugal
- National Institute of Public Health & Health Research Consortium (Cisidat), Mexico
- Labman, UK
- Fraunhofer Institute for Microengineering & Microsystems (IMM), Germany
- TeConnectivity-Microliquid, Spain

These partners brought expertise in public health, diagnostic development, epidemiology, health economics, and healthcare implementation, ensuring the project's outcomes were scientifically robust and practically scalable.

This brochure provides an overview of ELEVATE's mission, focusing on three core areas:

- **Public health impact**—understanding the needs of hard-to-reach populations and the barriers to screening.
- **Test development**—applying the latest advances in **genomics and proteomics** to create an effective diagnostic tool.
- **Device innovation**—developing a **portable, user-friendly** testing platform for point-of-care use.

By the end, we hope to illustrate not only ELEVATE's scientific and technical progress but also its potential to transform HPV detection and prevent cervical cancer deaths where it matters most.

Bringing life-saving screening to those left behind

Maria, a 34-year-old mother of two from a remote village in Ecuador, had never undergone cervical cancer screening. Like many women in her community, she faced barriers that made accessing healthcare nearly impossible—long travel distances, financial constraints, and fears about the screening process. When she learned about an HPV self-sampling test through ELEVATE's outreach program, she finally saw a way to **take control of her health.**

Maria is one of the women who have benefited from ELEVATE's efforts to **identify, understand, and address the barriers** preventing hard-to-reach populations from accessing life-saving cervical cancer screening. **Cervical cancer is preventable,** yet it remains one of the leading causes of cancer-related deaths in women worldwide. For women in vulnerable communities, the **challenge is not just medical—it is social, economic, and systemic.**

Why some women are still being missed

ELEVATE focuses on populations that face the most significant barriers to cervical cancer screening, including:

- Women with low health literacy, often from lower socioeconomic backgrounds.
- Migrant women with limited healthcare access.
- Older women who are often overlooked in public health initiatives.
- Women in remote or rural areas with limited easy access to medical facilities.
- Indigenous communities where cultural and language barriers complicate healthcare access.

Literature from Belgium, Ecuador, Portugal, and Brazil highlighted significant disparities in screening rates. In Ecuador, for example, up to 30% of women had never undergone screening despite cervical cancer being the second most common cancer among women in the country. Despite having organized screening programs in Portugal and Belgium, participation is lower among migrant women.

"I never knew this test existed. No one ever told me that I should be screened."

Participant, Portugal

"I was told that if I feel fine, there is no need for a test. But now I understand that it can save my life."

Participant, Ecuador

The hidden obstacles keeping women from getting tested

Through **focus group discussions (FGDs) and interviews with women and healthcare providers,** ELEVATE identified four key barriers preventing women from undergoing cervical cancer screening:

1. **Health illiteracy:** Low health literacy is a **major barrier** for many women, compounded by **low education levels and socioeconomic challenges.** Limited understanding of health information makes it difficult for them to prioritize their well-being. Many must choose between seeking healthcare and meeting daily responsibilities, leading to **low participation in screening programs.** Additionally, language barriers and a lack of knowledge about the health system further hinder their ability to access and navigate essential services.
2. **Cultural and psychological barriers:** **Fear** of test results and cancer, **misconceptions** about cervical cancer and screening practices, and **distrust** in medical institutions **hinder participation.** In some communities, **cultural preconceptions** make women hesitant to undergo testing. In rural Ecuador, for example, women feared being judged for discussing reproductive health. Many participants also cited **shame or embarrassment** about the gynecological exam as a significant deterrent. **Cultural beliefs** further reinforce hesitation, especially in tightly knit communities where reproductive health is rarely discussed.

"I was afraid of what they might find. If it's cancer, I don't know what I'd do."

Participant, Belgium

3. **Healthcare system limitations:** In Ecuador and Brazil, **long waiting times** at public hospitals discouraged women from seeking screening. Screening programs are inconsistent in some regions or require referrals that are difficult for marginalised women to obtain, resulting in lower participation.

4. **Geographical distance:** Women in **rural Ecuador and Brazil** faced significant logistical challenges in reaching healthcare facilities. Many had to travel long distances, and poor road infrastructure made access even more difficult.

The FGDs also discussed the option of **self-sampling** and whether this would be a good strategy to overcome barriers and increase screening uptake. Most participants, healthcare providers, and women considered it a **helpful strategy to increase uptake.**

A key barrier identified in FGDs was **concern about self-efficacy,** particularly among older women or individuals with limited education. These women expressed **worries about their ability to perform the test correctly** and preferred having support from a healthcare worker.

ELEVATE's response to these challenges is multi-faceted, combining **education, self-sampling innovations, and strategic partnerships** to increase screening uptake.

Knowledge is power: How education is changing lives

A core component of ELEVATE's strategy is **community-based education** tailored to the specific needs of each country's target population.

- In **Belgium,** interventions targeted women from **low socioeconomic backgrounds,** offering tailored educational sessions in partnership with local organizations.
- In **Portugal,** interventions focused on low-income women, including migrants. They used **community-based researchers, and multilingual materials** to improve awareness and trust in screening programs.

- **Outreach played a central role in Ecuador,** traveling to **rural areas** to provide face-to-face education. Bringing these sessions closer to their homes ensured that more women could attend and benefit from the information shared.

A significant finding from the study was that **personalised, face-to-face education** dramatically increased women's interest in and willingness to be screened. It improved their understanding of screening, the potential health outcomes and the subsequent screening or treatment steps.

In Belgium and Portugal, community-based organizations that already work with hard-to-reach women were crucial in helping to reach this target group. In Ecuador, women felt comfortable during educational sessions, asking many questions about the benefits of HPV screening. **Trust,** established through outreach campaigns in these underserved communities, played a **crucial role** in their decision to get tested, ultimately increasing their willingness to participate.

"It was the first time someone explained the importance of cervical cancer screening in a way I understood."

Participant, Ecuador, on self-sampling

A simple test, a world of difference

The introduction of **HPV self-sampling** has been transformative. Many women, like Maria, were previously reluctant to undergo screening due to embarrassment or the fear of a medical procedure. **With HPV self-sampling kits, they can take the test privately and conveniently in a non-clinical setting.**

The acceptability study provided key insights into how **self-sampling offered after attending educational interventions** influenced women's willingness to participate in screening in Ecuador and Portugal. In both countries, 90% of participants accepted self-sampling when offered through ELEVATE's intervention.

Attitudes toward self-sampling were overwhelmingly positive after women completed the test:

- Around 95% of women in both Ecuador and Portugal found the self-sampling process easy, believed they had performed it correctly, and said they would trust the test result.
- In Ecuador, over 95% of participants perceived self-sampling as less embarrassing than a clinician-administered test, while 75% shared this view in Portugal. An additional 15% of Portuguese participants felt it was neither more nor less

Feasibility	• To organize community-based **educational sessions** and offer HPV DNA testing through on-the-spot **self-sampling**
Uptake	• To measure the **acceptance** of self-sampling among hard-to-reach women
Users' experiences	• To assess **attitudes** related to self-sampling

Acceptability study: Community-based intervention including educational sessions and cervical self-sampling.

embarrassing than a provider-collected sample.

- Fewer than 10% of women in both countries reported experiencing any pain during self-sampling.
- Since the sampling was conducted in community-based centers rather than medical facilities, over 95% of women who accepted self-sampling reported that the location was comfortably private.

"I was hesitant at first, but after learning about it, I realised how simple and safe it was."

Participant, Ecuador

Regarding fears about performing a self-test correctly, the study incorporated **illustrated flyers and instructional videos,** which helped improve confidence in performing the test independently.

This strong endorsement of self-sampling **underscores its potential as a scalable and acceptable** alternative to traditional cervical cancer screening, particularly in reaching women who might otherwise forgo testing.

The power of cost-effectiveness

ELEVATE's research confirms that increasing participation in cervical cancer screening, through self-sampling can be an **effective public health strategy.** Implementing educational sessions, whether or not combined with HPV self-sampling, alongside a national screening program, improves screening uptake and averts deaths.

To assess cost-effectiveness, a **Markov model** simulated cervical cancer progression in 100,000 women until death. The model tracked different health stages—from HPV infection to pre-cancer, cancer, and death. **A decision-tree framework** helped estimate screening and treatment uptake using real-world data from ELEVATE's interventions and country-specific figures from the literature. The study also collected cost data for pap smear screening and the new interventions using a **micro-costing approach** in each country.

The analysis measured the impact of:

1. **Educational sessions alongside the existing pap smear program in Belgium.**
2. **Adding self-sampling and education to national pap smear programs in Ecuador and Portugal.**

While all interventions helped lower cervical cancer deaths, the analysis found that the **impact greatly improved, especially in Belgium and Portugal,** when reaching communities where screening rates were much lower than the national average. In Ecuador, where screening coverage is generally lower, the self-sampling intervention proved more cost-effective, **showing a greater impact on public health at a lower cost.**

These findings highlight why **targeted outreach is essential.** Directing resources towards communities with lower screening rates offers the best return on investment—saving lives while keeping programs sustainable.

"Before the session, I didn't think I needed the test. Now, I see it as something I must do."

Participant, Portugal

Economic benefits of scaling up self-sampling

The study found that **scaling up self-sampling**

alongside education could lead to the highest return on investment. In Ecuador, national expansion of the program could reduce cervical cancer treatment costs and result in **long-term healthcare savings.**

The model demonstrated that **investing in preventive screening is more cost-effective than treating advanced cervical cancer cases.**

"This study provides the financial justification that decision-makers need. HPV self-sampling isn't just a convenient alternative—it's a cost-saving measure that can help prevent cervical cancer deaths at scale."

Health Economist, ELEVATE

ELEVATE's findings demonstrate measurable economic benefits and a **strong case for national screening programs** to integrate HPV self-sampling in outreach strategies towards underscreened women. This approach ensures **greater participation among hard-to-reach women,** lowers the economic burden of late-stage cervical cancer treatment, and **supports long-term public health sustainability.**

Valuable lessons learned

Collaboration between researchers, healthcare providers, and local organizations has been crucial to ELEVATE's success. **These transnational partnerships** ensured that interventions were **culturally relevant and logistically feasible.**

Through its partnerships, ELEVATE has learned valuable lessons about fostering collaboration across different healthcare systems and cultural landscapes. One key insight is the importance of **trust-building and knowledge-sharing** among local partners. Involving healthcare professionals from each region during educational sessions has led to greater acceptance and smoother implementation of new screening methods.

Another lesson is the necessity of **flexibility in outreach strategies.** What works in Belgium may not work in Ecuador, and vice versa. Tailoring communication strategies, leveraging local health networks, and empowering **community-based researchers** have proven effective approaches.

"This test is not just about detecting a virus—it's about giving us a chance to prevent something much worse."

Participant, Belgium

Looking ahead, ELEVATE aims to strengthen its partnerships by **expanding knowledge exchange** between researchers and policymakers, ensuring the sustainability of its screening solutions beyond the project timeline.

Involving local healthcare professionals early led to **greater acceptance** of new screening methods. **Tailoring outreach strategies** to each country's unique needs, using **community-based organizations and giving personalized explanations,** significantly improved uptake.

Reimagining HPV testing: A solution for every woman

Screening for HPV is essential, but the ELEVATE team learned that existing tests do not always meet the needs of hard-to-reach populations. **Not all positive results indicate a high risk,** and genetic variability in HPV means that commercially available tests may not be equally effective for all women.

What if a test could do more? What if it could distinguish between transient infections and those that pose a real danger? What if it could be optimized for diverse populations and those left behind—for more women like Maria? These questions shaped ELEVATE's next phase—developing a test **designed for every woman, everywhere.**

A smarter test for a harder-to-reach problem

When Marta, a 42-year-old woman from rural Brazil, received a negative HPV test result at her local clinic, she felt reassured. Yet, six months later, she was diagnosed with advanced cervical cancer. What had gone wrong?

Her story is not unique. Sometimes, high-risk HPV infections may **remain undetected,** possibly due to genetic variations in HPV DNA, particularly of HPV types and variants that are not very common or well studied. At the same time, many HPV infections clear naturally without causing harm, meaning some women receive **false-positive results**—testing positive for an infection that disappears on its own. This can cause unnecessary anxiety and medical interventions.

ELEVATE is addressing these challenges by developing a new HPV test that sensitively **targets 14 high-risk HPV types.** However, because not all infections lead

to cancer, **ELEVATE also explores the incorporation of proteomic biomarkers**—specific proteins that indicate whether an HPV infection is progressing towards a cancerous state. This dual-layer approach could ensure that **high-risk women like Marta are identified earlier,** while reducing unnecessary follow-ups for women whose infections are likely to clear naturally.

"We know that traditional tests fail some women. The goal of ELEVATE is to develop an HPV test that works for every woman, everywhere."

Lead researcher, ELEVATE

Why a new approach was needed: Addressing limitations in standard HPV tests

Current HPV tests work by detecting viral DNA—the genetic blueprint of the virus.

To ensure **greater accuracy and specificity,** the researchers developed **custom primers** tailored to amplify high-risk HPV sequences while minimizing cross-reactivity. These primers were designed through an in-depth computational analysis of HPV genomes, ensuring they specifically target conserved regions of multiple high-risk HPV types.

By selecting the most stable and widely present genetic sequences among high-risk HPV types, these primers enhance test sensitivity and specificity, reducing the likelihood of false-negative results. Further details on primer optimization and integration into the diagnostic system will be explored in the next chapter.

By **carefully developing the primers to detect 14 HPV types separately,** ELEVATE ensures that:

- Women with high-risk infections **do not receive false-negative results.**
- The test works across **diverse populations,** accounting for **genetic variations** in HPV strains.
- Policymakers and funders can be confident that the test is **designed for real-world effectiveness.**

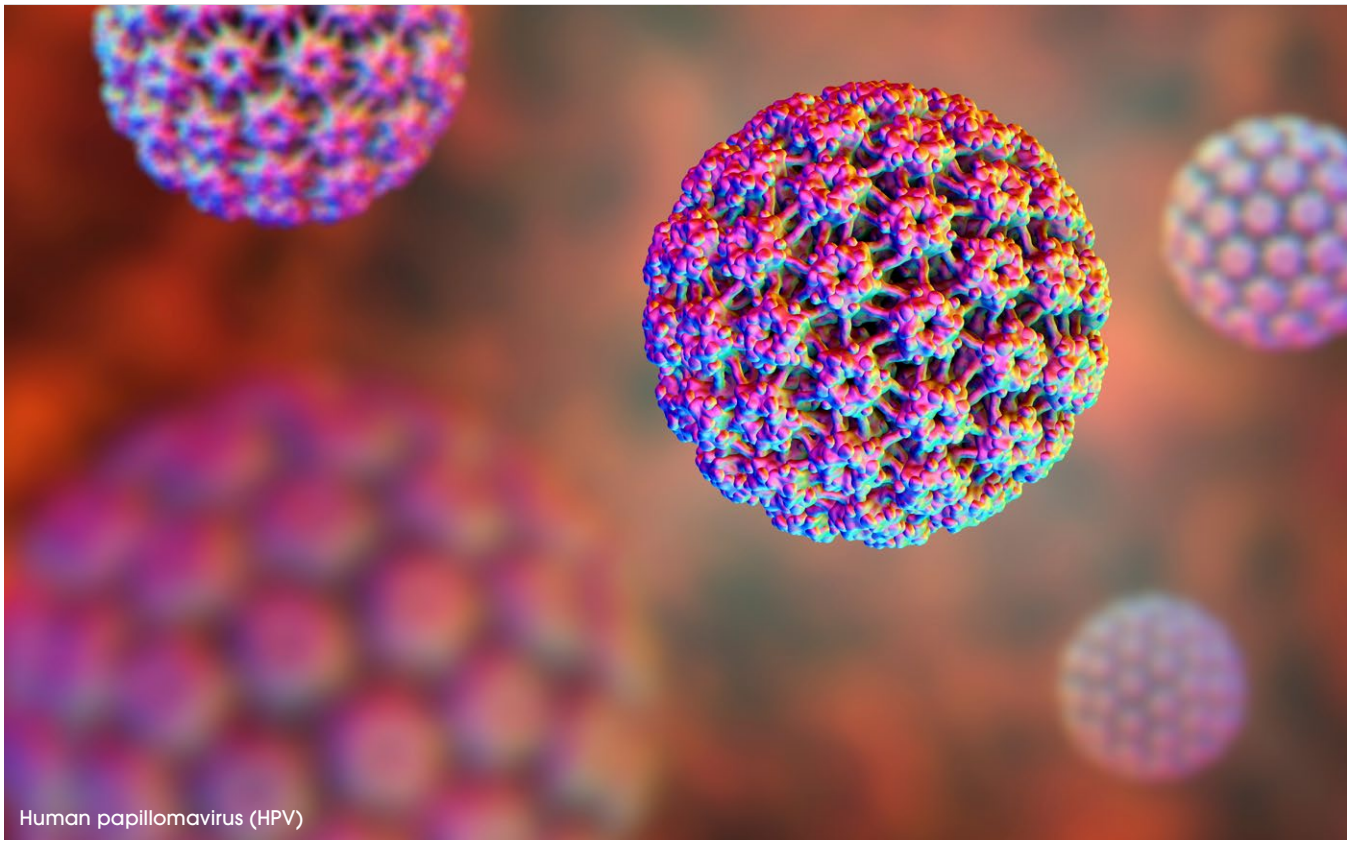
"Instead of just detecting HPV presence, our test identifies whether the virus is actively driving cancer risk. This is a game-changer for screening programs."

Genomics specialist, ELEVATE

Decoding HPV with genomics: A more accurate and inclusive test

The ELEVATE researchers wanted to understand why several HPV DNA tests available on the market lead to discordant results. To do so, they used **Next-Generation Sequencing (NGS).**

This cutting-edge technique allows scientists to read the genetic code of a virus in great detail.



Human papillomavirus (HPV)

Unlike older methods, NGS can **detect subtle genetic differences** across different HPV strains, making it invaluable for designing a test that works for all women.

Key takeaways from ELEVATE's study:

- **Almost a thousand cervical samples** from Belgium, Brazil, Ecuador, and Portugal were analyzed.
- **All 14 high-risk HPV types were present in the study population,** with HPV 16, 31, and 18 being the most common.
- **NGS detected HPV in 58% of cases,** outperforming the widely used Cobas (47%) and Anyplex (50%) tests.
- **HPV genetic variations affected how well different tests worked**—meaning some standard tests gave false negatives for certain strains.

This reinforced the need for targeting conserved HPV DNA regions that work across ethnic and geographic populations.

Empowering women to screen for their cervical cancer risk: Combining an education program with user-friendly, low-cost HPV self-sampling and results.

Proteomics: Exploring improved risk assessment in cervical cancer screening

While detecting **HPV DNA** tells us whether a woman has the virus, it does not tell us **whether the infection is likely to become cancerous**. Some women clear the virus naturally, while others develop **pre-cancerous lesions** that may progress to cervical cancer. To bridge this gap, ELEVATE explored the use of **proteomic biomarkers**—proteins that signal whether HPV infection is leading to cancerous changes.

However, after an extensive sample analysis from Belgium, Brazil, Portugal, and Ecuador, the researchers found no clear correlation between the considered biomarkers, p16 and Ki-67, and the lesion grade. In fact in most cases, these proteins were undetectable. As a result, ELEVATE shifted its focus entirely to optimizing the genomic detection, targeting high-risk HPV types linked to cancer progression.

Making the test accessible and scalable for hard-to-reach women

A test is only effective if women, especially those who are hard to reach, can easily access it. ELEVATE's design ensures that:

- **It is compatible with self-sampling,** allowing women to collect their own samples at home.
- **Results are processed quickly,** reducing wait times and anxiety.
- **Training local healthcare workers** ensures that the test is available and effectively implemented in communities with limited medical infrastructure.
- **Mobile screening units** could further improve access, especially in geographically remote areas where women might otherwise never be tested.
- **Public health campaigns tailored to each community** help educate women on the importance of self-sampling, ensuring uptake and follow-through.

The success of ELEVATE's test design paves the way for the next critical step—**integrating this technology into a portable, easy-to-use device.** For women like Marta, this means a future where they are not misdiagnosed or missed by outdated screening methods. With the development of a compact, field-ready tool that provides **instant, life-saving results,** healthcare providers can **reach women in even the most remote areas** before it's too late.

"For many women, especially in rural areas, access to a test is just as important as accuracy. The next step is making sure this technology is as portable as it is powerful."

ELEVATE project lead

From science to impact: Towards a fully integrated device

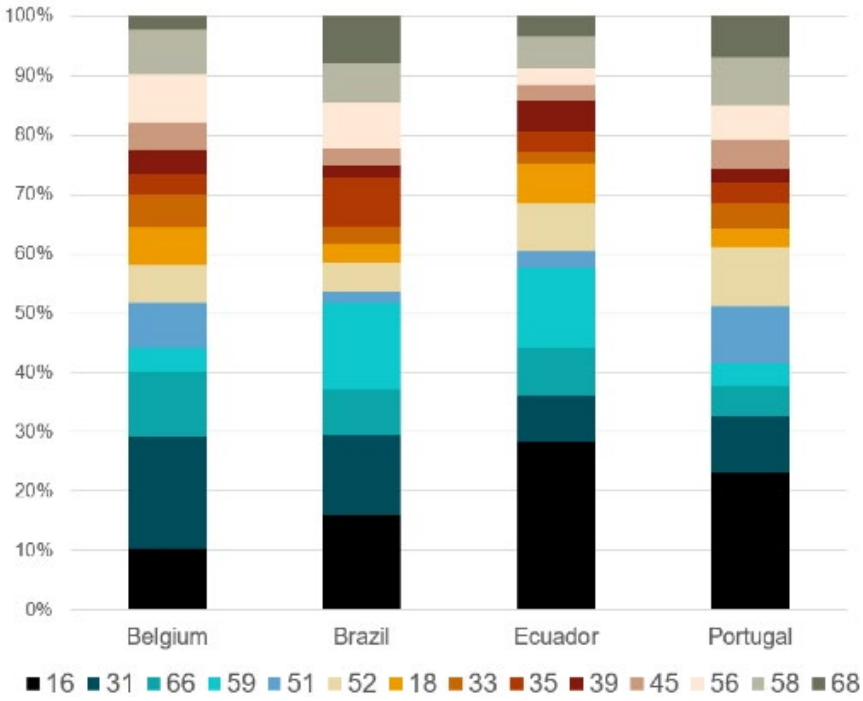
For decades, HPV screening has relied on laboratory-based tests that detect viral DNA. While effective in many cases, these tests often fail to identify persistent infections likely to progress to cervical cancer. Chapter 2 outlined how ELEVATE's enhanced test, which **targets 14 high-risk HPV types,** overcomes these limitations. However, to truly transform screening accessibility, the project needed more than a test—it needed an **integrated portable diagnostic device.**

For women like Carla, a 38-year-old from rural Peru, this innovation could mean the difference between **early intervention and a life-threatening diagnosis.** After receiving a negative result using a standard Papanicolaou smear test, Carla was later diagnosed with pre-cancerous lesions. Fortunately, she received treatment in time, but her case underscores a **critical need:** rapid, reliable, and widely accessible HPV diagnostics.

The journey from test design to a **fully integrated device** was far from straightforward. ELEVATE researchers encountered significant challenges—from **sensor instability** to **cartridge manufacturing hurdles**—that required **iterative problem-solving.** This chapter outlines how these challenges were tackled, resulting in a device poised for **real-world impact.**

Developing the sensor

The ELEVATE sensor is built on a screen-printed electrode array, enabling precise electrochemical DNA detection.



Addressing limitations in standard HPV tests: The graph shows different high-risk HPV types detected in HPV positive samples as identified by Next-Generation Sequencing. By focusing on reliable target genes, ELEVATE's HPV self-sampling screening tool accounts for geographical variations.

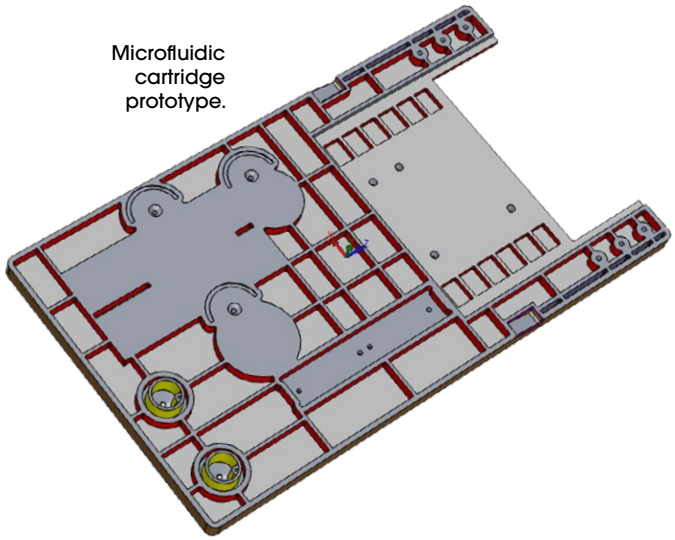
Screening tool prototype.

To effectively target high-risk HPV strains, the team developed **primers** specifically for the device. These were designed to:

- Detect **all 14 high-risk HPV types** with high specificity.
- **Prevent cross-reactivity** with non-pathogenic strains.
- **Optimize compatibility** with electrochemical detection.

Through **laboratory testing and validation,** the researchers refined the primers to ensure **sensitivity and reliability** before integrating them onto the sensor.

Engineering the cartridge: A microfluidic breakthrough



Microfluidic cartridge prototype.

"A portable test is only as effective as the reliability of its cartridge. Transitioning from prototype to scalable manufacturing required re-engineering the fluidic pathways to eliminate leaks and improve reagent stability."

ELEVATE project engineer

What role does the cartridge play in the diagnostic process?

The cartridge is the core of the ELEVATE device, acting as a **miniaturized laboratory** that enables **automated sample preparation, processing, and analysis** in a single unit. Unlike conventional laboratory tests, which require skilled technicians and expensive equipment, this cartridge allows healthcare workers in remote areas to **perform HPV screening on-site.**

How does the cartridge improve test accuracy and efficiency?

- **Material selection:** Made from **Cyclic Olefin Copolymer (COC),** which is durable and transparent.
- **Self-contained reagent storage:** Reagent storage 'blisters' and freeze-dried pellets hold the necessary chemicals for DNA amplification analysis. Blister packs hold the necessary chemicals for **DNA amplification and protein analysis.**
- **Waste management:** Absorbent **blotting pads** prevent contamination and ensure biosafety by containing all waste liquids within the disposable cartridge.

These features make the test **scalable, and easy to use** in diverse healthcare settings.

What obstacles arose during cartridge development, and how were they overcome?

"We had to rethink how fluids moved through the cartridge—early designs faced challenges with inconsistent flow. By adjusting the channel geometries and surface treatments, we significantly improved performance."

Senior microfluidics researcher

- **Cartridge manufacturing at scale:** Critical design refinements were necessary before switching to injection molding—ensuring that specific requirements for size, thickness, and flatness were achieved. Modifications also minimized sink marks and burrs in critical areas (e.g., channels and ports). To improve flatness and reduce material usage, the design was modified with voids in non-functional areas. Issues like sink marks, side roughness, and gaps in the SPE slot were addressed with adjustments to the mold (e.g., increasing rib thickness and altering void designs). The injected parts showed significant improvements regarding sink marks, roughness and number of bubbles.
- **Leakage and sealing issues:** By enhancing the planarity and quality of the injected parts, leakage issues in the cartridge were also improved.
- **Blotting pad positioning:** It was observed that precise positioning of the blotting pad was crucial for correct absorption of the waste.
- **Blister alignment:** Poor blister alignment resulted in issues when the blisters were pierced with the screening tool, causing inadequate liquid flow through the microfluidic channel.
- **Blister protectors for packaging:** It was important to maintain the integrity of proteomic components during packaging.
  - Solution: A vacuum-packed approach was used to prevent blister collapse or breakage. A custom plastic part was designed and manufactured using injection molding—improving both the protection and efficiency of the packaging process.
- **Fluidic inconsistencies:** Some early tests showed irregular flow patterns within the microfluidic channels, affecting test accuracy.
  - Solution: Redesigned **channel geometries and applied active surface treatments fluid detection** by using image processing technologies to improve flow and reagent mixing.

Building the tool: Making diagnostics portable

"A test that requires complex lab equipment won't help in remote settings. We designed the ELEVATE test and tool to function with minimal training, ensuring that frontline healthcare workers could use it effectively."

Public health implementation specialist

Playa del Oro, Ecuador

What makes the device user-friendly and effective in the field?
The success of the ELEVATE device depends on its **usability** in diverse environments. To ensure accessibility, the tool is designed with:

- **Portable, plug-and-play design:** Allows **on-site testing** without requiring a laboratory.
- **Automated sample processing:** Punctures reagent blisters, moves fluids through channels, and initiates detection autonomously.
- **User-friendly interface:** Provides **simple, clear results,** minimizing training needs for healthcare workers and ensuring widespread adoption.

How were technical limitations addressed?

"The tool's durability was tested extensively—simulating a year's field use in a compressed timeline. We needed to be sure it would withstand varied environmental conditions."
ELEVATE device validation lead

- **Ensuring reliable signal processing:** The first device prototypes showed electrical interference due to varying environmental conditions such as temperature and external power supply, causing data inconsistencies.
  - Solution: Revised the electronics and optimized electrical connections within the tool.
- **Software integration:** Early test results were difficult to interpret consistently due to lack of data analysis options.
  - Solution: Improved **data processing algorithms** to carry out rapid data analysis and enhance result clarity.

From lab to impact: A real-world solution

What difference will the ELEVATE device make for women and healthcare systems?

"For women like Carla, timely diagnosis is crucial. Integrating the ELEVATE test into community health programs could bridge the gap for those most at risk."
ELEVATE outreach lead

- **For women like Carla:**
  - **A single, portable test** provides **rapid, reliable results,** reducing the need for multiple clinic visits.
  - Ensures **early detection,** dramatically lowering the risk of advanced cervical cancer.
- **For healthcare systems:**
  - A **cost-effective solution** that can be deployed widely, even in areas with limited healthcare infrastructure.
  - Reduces the burden on healthcare facilities while expanding **screening access.**

What are the next steps in the ELEVATE journey?
The development of the ELEVATE device was not without setbacks, but each challenge led to a **more robust and scientifically sound solution.** The next steps involve **optimization, validation, regulatory approvals and expanded field trials,** ensuring the device reaches the women who need it most.

For **Maria, Marta, and Carla,** and millions of others like them, ELEVATE represents a **new era in cervical cancer prevention**—one where no woman is left behind.

A breakthrough within reach

Maria never had access to routine screenings. Marta knew the risks but had no acceptable testing options. Carla received her diagnosis too late. These women—and millions like them—are why ELEVATE exists. Their stories are at the heart of this mission: **to ensure that no woman is left behind in the fight against cervical cancer.**

Through a **collaborative, multi-disciplinary effort,** ELEVATE has made crucial strides in developing a **portable, rapid and accessible HPV test** tailored to hard-to-reach populations. The project has brought together **scientists, clinicians, engineers and public health experts,** proving that when expertise is pooled, and innovation is driven by purpose, science becomes a force for real-world change. More than just a research initiative, ELEVATE is a **blueprint for impactful, patient-centered science**—a model of how targeted innovation can address global health challenges.

Yet, the mission is far from over. The final stretch will be decisive—validating, refining, and deploying this breakthrough. With continued investment, collaboration and policy alignment, the ELEVATE test can move from laboratories and pilot studies to **clinics, mobile health units and community programs** where needed most. The momentum is here. The opportunity is now.

Together, we can make **early and accessible HPV detection a global reality**—and bring the fight against cervical cancer to those who need it most.

ELEVATE

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