

Reaching the elimination goals: Insights into Programmatic Realities

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HPV Prevention
and Control Board

www.hpvboard.org

DISCLAIMER

“If you want me to give you a two-hour presentation,
I am ready today.

If you want only a five-minute speech,
it will take me two weeks to prepare.”

Mark Twain



HPV vaccination coverage

- More girls and boys were vaccinated in 2024 compared to earlier years, thanks to introductions in high-population countries and the adoption of single-dose (1D) and multi-age cohort strategies (MACs).
- Introductions in China and India may further change the global HPV vaccination coverage picture.
- However, 30 countries have not yet introduced HPV vaccination.
- Global HPV vaccination coverage in girls is 31%, and the mean performance of HPV vaccination coverage in programmes is 63%
- Very few countries achieve final coverages higher than 90% -> **increase performance worldwide!**



HPV vaccination coverage

- The WHO 2022 single dose alternative recommendation made it possible to vaccinate ~18.5M extra girls.
- This translates to ~300k cervical cancers averted over their lifetimes.
- As the study did not account for cold-chain and logistics savings (half the visits, half the storage), these estimates can be seen as the lower band, the actual numbers are likely to be higher.
- GAVI does not fund vaccination of boys, so the impact of 1D on boys is smaller.
- The gain for girls is mostly due to increased completion (no loss from D1 to D2).
- Countries that start with 1D + MAC do best -> this is the way forward.
- Coverage rates do not provide the full picture; a better indicator may be needed.



Coverage Measurement & Methodologies

- Since 2019 annual Estimates of National HPV Immunisation Coverage.
- Mainly from administrative data but also a few surveys.
- By sex, dose and age cohorts (age-groups vary: [pre-] adolescents, women 15-19 yrs).
- Estimates are made using country-specific data, programme contextual information is considered, grade of confidence is used.
- Estimates are affected by the quality of underlying data, no quantitative estimation of uncertainty, most recent year estimates are informed by fewer data.
- Work to measure HPV vaccination coverage in Liberia, Rwanda and Senegal showed that survey tools should be translated into (all) local languages.
- Interviewing both caregivers and adolescents improved HPV vaccine recall.



Coverage Measurement & Methodologies

- Validation through serosurvey show the high agreement between adolescents and caregivers.
- Rwanda achieved high coverage, but large gaps remain among out-of-school girls.
- Liberia and Senegal showed major gaps in awareness, coverage, and equity requiring targeted outreach.
- Electronic Immunisation Registries (EIRs) in Latin America and the Caribbean aggregate vaccination data from multiple health care providers for design and maintenance of effective immunisation strategies.
- PAHO works together with countries to share knowledge and experiences and offers standardised frameworks, analytical tools, and capacity building.



Coverage Measurement & Methodologies

- The most used surveys are: Demographic and Health Survey (DHS); UNICEF Multiple Indicator Cluster Survey (MICS); Vaccination Coverage Surveys/EPI Cluster Surveys (WHO); Global School-based Student Health Survey (GSHR).
- As surveys are not done yearly, most countries work with outdated data
- Defining the main questions is key to look for the best tool to answer them, acknowledging that it may not be feasible.
- Vaccination status ascertainment is difficult.
- Going digital may be the best way to get good data, but many countries are far from having contexts that are ready for EIRs.
- The short-term solution: more in-country data triangulation and root-cause analyses to understand large differences.



Coverage Measurement & Methodologies

- Nigeria, in phase 1, launched HPV vaccination in 16 states, through MACs of girls 9-14, using school-based campaigns.
- Data were recorded in paper-based tally sheets and school registers, transferred to District Health Information Software 2 (DHIS2) and Electronic Management of Immunisation Data (EMID).
- In phase 2, vaccination was expanded to the 21 remaining states. Enhanced e-microplanning was done with GIS and pre-campaign enumeration.
- Phase 3 was the permanent shift to integration of HPV vaccine into the Routine Immunisation schedule, for 9-year-olds, based on continuous year-round vaccination
- High workloads during school-based vaccination sessions frequently lead to missed documentation, incomplete tally sheets, and a failure to update facility registers.



Coverage Measurement & Methodologies

- It is difficult to follow absenteeism and girls vaccinated outside of school settings.
- Paper-based tally sheets lead to human error and creates time lags when digitising to share with higher administrative levels.
- Administrative coverage must be interpreted carefully, especially where target population estimates are weak.
- On the positive side: concordance between vaccination status report by adolescents and caregivers was good. Serosurveys will be done to confirm.
- Real-time and integrated reporting systems significantly improve visibility and accountability.
- The use of LQSA/DQSA strengthens HPV programs through: denominator correction; out-of-school equity; transition monitoring, and rapid, low-cost pivot capability.



Coverage Measurement & Methodologies

- Nigeria's experience demonstrates that improving data systems is foundational to improving vaccination coverage. Strong coverage measurement requires accurate populations, high-quality recording, reliable reporting, and continuous verification.
- Nigeria's HPV experience provides an opportunity to rethink how immunisation programmes define, validate, and use coverage data.
- CHRONOS is an IARC/WHO International Coordination Centre to assess local population-based HPV vaccination impact in low-and middle-income countries, creating local evidence to inform context-specific cervical cancer control policies and to ensure the comparability of programmes over time, across countries and populations.
- Monitoring the impact of HPV vaccination through 2 HPV prevalence surveys, before vaccination (baseline survey) and after vaccination (repeat survey approximatively 5 years later)



Coverage Measurement & Methodologies

- CHRONOS initiative provides standardised tools, methodology and training, to transfer knowledge and build capacity for countries to monitor the impact of their HPV vaccination programme
- A CHRONOS prevalence study gathers essential data on HPV genotype-specific prevalence, but also on HPV vaccination status allowing for estimations of HPV vaccination coverage.
- HPV vaccination impact results from CHRONOS have been published for Rwanda and Bhutan.
- Integration of data from CHRONOS with the METHIS modelling platform has been used to project the impact of HPV vaccination on the cervical cancer burden, as well as evaluate potential changes to the ongoing prevention programme in country.
- One such example is combining vaccination with screening to achieve faster elimination of cervical cancer.



Coverage Measurement & Methodologies

- In this study, HPV infection is measured in first void urine (FVU).
- This sample can also be used to detect antibodies, both after natural infection and after vaccination. Simultaneous detection of antibodies against multiple (vaccine) virus types can differentiate between natural infection and vaccination.
- These antibodies are functionally intact as shown in neutralisation assays.
- This may be an objective marker for vaccination status in situations where status is unknown or unreliable. Alternative for serosurveys.
- Scotland has a unique person-level identifier, which is consistently used across national healthcare data sets, and enables longitudinal follow-up, through accurate record matching.
- This allows to look at inequalities in vaccination and screening and take appropriate action.



Coverage Measurement & Methodologies

- The least deprived in vaccinated cohorts will reach the WHO elimination threshold 20-25 years earlier than the most-deprived.
- Similarly, in screening, participation is shaped by social, geographic and behavioural factors.
- Improving uptake requires culturally informed and locally tailored multi-layered interventions.



Gap between policy and practice in HPV-based screening

- From 2020 to 2025, the use of policy recommendations for HPV based screening has increased significantly. However, does this translate into practice?
- Countries request support mainly for procurement of treatment devices and for building treatment capacity.
- WHO has developed an evidence-informed guidance for the implementation of HPV-based cervical cancer screening programmes to help plan and evaluate the effect of using a strategy on implementation outcomes, serving as a systematic collection of “lessons learnt”.
- Current WHO recommended screening guidelines proposes different screening strategies (14 algorithms) under varying resource conditions.
- HPV positive women should be able to complete the screening cycle: ability to inform, call and recall women, triage and treatment services, referral pathways and systems for clinical management, an information system to support the screening process, including regular monitoring and reporting.



Gap between policy and practice in HPV-based screening

- Different algorithms are used in the PAHO region.
- Important to know how you will measure effectiveness.
- PAHO has prepared an online tool to aid countries in selecting the algorithm fit based on their capabilities.
- Proper planning beforehand reduces the chance of failure.
- Tanzania and Malawi have conducted projects based on HPV testing, self-sampling and treatment (Point of care testing), which is well-accepted.
- However, very high HPV positive rates are observed, leading to high referral and complicating follow-up.
- Self-sampling, rapid diagnostics, task shifting, and integration with existing services (e.g., HIV care) are essential to improve coverage, follow-up, and overall programme success in low-resource settings.



Gap between policy and practice in HPV-based screening

- Self-sampling (access) and extended genotyping (triage) are possible solutions to focus on HPV positives.
- Rapid HPV testing, single-day strategies, strong tracing to increase FU.
- Integration with HIV services to ensure completion of care.
- Pragmatic high-quality solutions (once/twice lifetime), acknowledging an infeasible programmatic approach or follow-up of HPV positives in countries with limited capacity for colposcopy / biopsy.
- Gaps in the implementation of HPV screening are not limited to resource-limited regions.
- Belgium has a complex political system, needing 7 years for a decision, and another 2 years for implementation.



Gap between policy and practice in HPV-based screening

- Updated national guidelines recommendations were drafted for HPV-based primary screening.
- In close collaboration with all stakeholders, decisions were taken on triage, clinical guidelines, registration, gaps between guidelines and practice, and accreditation.
- Eventually, HPV-based screening was introduced in January 2025.
- The EPICC programme is a regional initiative targeting cervical cancer elimination across Indo-Pacific countries. It is a sustainable, comprehensive effort, based on selfsampling.
- Countries are categorized into four tiers based on readiness, ranging from policy planning to meeting WHO cervical cancer targets.
- It is a great example of how countries, great and small, help each other, with technical support, but also in tendering to assure that small countries don't pay the highest price.



Validation of tests for HPV based screening

- Two clinical validation protocols:

- Meijer
- Valgent

WHO target product profile is not a protocol but useful in decision-making.

- Currently 20 DNA tests and 1 mRNA test validated
- 3 tiers for validation:
 - Analytical
 - Virological
 - Clinical
- When one fails, no need to go to the next. (Clinical can be optional.)
- Separate validation protocols for tests for use in self-sampling and point-of-care tests.



Validation of tests for HPV based screening

- Bridging protocols for minor changes in a validated combination.
- In screening, specificity is more important -> different validation criteria needed? The setting is also important (e.g., WLWH).
- Optimise the balance between sensitivity and specificity using the cut-off, potentially having different type-specific cut-offs.



Loss to follow-up (L2FU) after (HPV-)positive screen

- L2FU is not specific to HPV based testing, happened in the past as well.
- The concept of triage after positive test is often unclear, making the need for FU less clear.
- Main drivers for L2FU
 - Delay between test and FU
 - Rejection to come back (lack of good information, distance/access, cost of treatment/FU)
 - Lack of information system: no data on who to FU
- In Belgium, L2FU also occurs, so WHO 90% target of treatment is not reached.
- The woman can be alerted, the GP can be approached, but not the gynaecologist, who does >80% of the screening.



Loss to follow-up (L2FU) after (HPV-)positive screen

- Access to healthcare (including screening and FU) is a function of time and distance, which translates in cost. Even if treatment is free, attendance can be costly. In these situations, see and treat is the best solution.
- In LMIC, in screening, women are not the problem, they want to be screened. The healthcare system is the problem, as there is no budget and no emphasis on screening, including reporting of key performance indicators. In HIC, the healthcare system is fine, but a significant proportion of the women refuse to participate.
- Screening based on opportunistic funding is not sustainable. Screening must be part of primary healthcare.



Scaling thermal ablation (TA)

- In the screening cascade, treatment is often overlooked.
- Historical data have shown that TA works well, with low recurrence rates even after multiple years.
- HPV failure versus histological failure -> the persistent presence of HPV does not mean the lesion will come back -> histology is better.
- But histology is not easy to set up in LMIC.
- Good thermal ablation can only be performed after training, with guidance from an experienced trainer.
- After treatment, follow-up is still needed, hence, a tracking system is necessary. FU by HPV detection on a self-collected sample will lead to >20% HPV positive women, who would need further research.



Scaling thermal ablation (TA)

- HPV infected cells will also be present beyond the squamous cells – a narrow endocervical probe is necessary for successful treatment.
- Transformation zone (Tz) 1 – TA possible; Tz2 – only by experienced people with appropriate equipment; Tz3 – TA no longer possible.
- What to do with women for whom TA is no longer an option. Treating these women appropriately will have the biggest impact on survival rates.



Lessons learned

- When setting up a vaccination programme, allocate money for data collection before the start.
- Coverage data do not show the information underneath; who is missing, how can they be engaged.
- With pilot studies, think about sustainability from the start.
- Cancer registries are essential to show impact; to show that no vaccine type-related cervical cancer occurs after vaccination.
- More attention should be paid to epidemiology concepts for public health in the curriculum, also for nurses.
- In Africa, trust in healthcare workers is not the problem, access to healthcare is.
- Messaging is crucial; co-creation can work to find a language that will be understood.



Lessons learned

- There is regional variation in the prevalence of HPV types, e.g., HPV 35 in Africa. Higher-valent vaccines may be a solution to this problem. Regionally adapted vaccines could lead to plummeting vaccine confidence.
- Theoretically, if all high-risk HPV types are covered by a vaccine, screening will no longer be needed at some point.
- Higher-valent vaccines are good, higher vaccine uptake is much better; there is still a world to win on that side.
- The HPV test is not a diagnostic test; it is a risk-stratification test.
- The biggest problem is not the test, it is the local health system.



Lessons learned

- Do not focus solely on screening; follow-up and treatment are essential – leave no HPV positive woman behind
- Different approaches for screening and follow-up are needed for different populations, tailored to the situation.



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Feedback welcome!

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