School-Based HPV Vaccine Delivery Côte d'Ivoire

May 2026



PHOTO BY BINTI MALU (PEXELS)

haskè conseil

Table of contents

Glossary of terms 3

Making school health a lasting investment in our children's future 4

Executive summary 5

Background & rationale — why schools and why PNSSU-SAJ first 7

PNSSU-SAJ: history and structural evolution 9

PNSSU-SAJ delivery platforms & program design — how the PNSSU-SAJ anchors service delivery 17

Governance and coordination 20

Community engagement & PNSSU-SAJ as the demand engine 22

Data, monitoring & PNSSU-SAJ-driven microplanning 25

What worked — how PNSSU-SAJ strengths translated into rapid HPV scale-up 29

What did not work — where PNSSU-SAJ constraints limited performance and why 31

Lessons for other LMICs — operational principles and practical sequencing 32

Appendix 34

About Haskè Group 35

Glossary of terms

Term	Definition
APE	Parent-Teacher Association (Association des Parents d'Élèves)
AIBEF	Ivorian Association for Family Well-Being (Association Ivoirienne pour le Bien-Être Familial)
ASC	Community Health Worker (Agent de Santé Communautaire)
CCIA	Inter-Agency Coordination Committee (Comité de Coordination Inter-Agence)
IARC	International Agency for Research on Cancer (Centre International de Recherche sur le Cancer)
CMU	Universal Health Coverage (Couverture Maladie Universelle)
COGES	School Management Committee (Comité de Gestion des Établissements Scolaires)
CSSU	School and University Health Center (Centre de Santé Scolaire et Universitaire)
CSUS/SSU	Urban Health Center Specializing in School and University Health (Centre de Santé Urbain Spécialisé en Santé Scolaire et Universitaire)
DHIS2	District Health Information Software 2 (Système d'Information Sanitaire de District 2)
DMOSS	Directorate of Mutual Insurance and Social Welfare in Schools (Direction de la Mutualité et des Œuvres Sociales en Milieu Scolaire)
DREN	Regional Directorate of National Education (Direction Régionale de l'Éducation Nationale)
DRS	Regional Health Directorate (Direction Régionale de la Santé)
DSS	School Health Department (Direction de la Santé Scolaire)
EAS	School-Age Children (Enfants d'Âge Scolaire)
FDL	Local Development Fund (Fonds de Développement Local)
FTI	Individual Technical Sheet (Fiche Technique Individuelle)
GAVI	Gavi, the Vaccine Alliance (Alliance du Vaccin Gavi)
HM	Menstrual Hygiene (Hygiène Menstruelle)
HPV	Human Papillomavirus (Virus du Papillome Humain)
STI	Sexually Transmitted Infections (Infections Sexuellement Transmissibles)
MENA	Ministry of National Education and Literacy (ministère de l'Éducation Nationale et de l'Alphabétisation)
mHealth	Mobile Health (Santé Mobile)
MSHP	Ministry of Health, Public Hygiene, and Universal Health Coverage (Ministère de la Santé, de l'Hygiène Publique et de la Couverture Maladie Universelle)
WHO	World Health Organization (Organisation Mondiale de la Santé)
EPI	Expanded Program on Immunization (Programme Élargi de Vaccination)
PHM	Menstrual Hygiene Management (Gestion de l'Hygiène Menstruelle)
PMS	Minimum Service Package (Paquet Minimum de Services)
PNDS	National Health Development Plan (Plan National de Développement Sanitaire)
PNSSU	National School and University Health Program (Programme National de Santé Scolaire et Universitaire)
PNSSU-SAJ	National School and University Health Program – Adolescent and Youth Health (Programme National de Santé Scolaire et Universitaire – Santé des Adolescents et des Jeunes)
PTF	Technical and Financial Partners (Partenaires Techniques et Financiers)
SAJ	Adolescent and Youth Health (Santé des Adolescents et des Jeunes)
GIS	Geographic Information Systems (Systèmes d'Information Géographique)
SSP	Primary Health Care (Soins de Santé Primaires)
SSSU	School and University Health Services (Services de Santé Scolaire et Universitaire)
VMS	Systematic Medical Visit (Visite Médicale Systématique)
WASH	Water, Sanitation, and Hygiene (Eau, Assainissement et Hygiène)

Making school health a lasting investment in our children's future

Imagine a nine-year-old girl sitting in a classroom today. She has a future she is only beginning to imagine. Whether she gets the chance to live it should not depend on where she lives, whether she attends school, or whether a health programme happens to reach her. As the leading cause of cancer death among women in many countries of sub-Saharan Africa, cervical cancer takes the lives of around 76,000 African women every year. That is too many of us. Behind every woman lost are people who loved her, depended on her, and hoped she would recover. Yet this is a cancer we know how to prevent. Ours is the story of a gap between what we know and what we are able to deliver.

Adolescence is the moment to close that gap. Vaccinating girls against human papillomavirus (HPV) before they are exposed to the virus is highly effective. Schools are where most girls can be reached, and school health programmes bring together health workers, teachers, families and communities around the well-being of girls. School health programmes must also reach girls who are out of school, so that no girl is left behind.

The four reports in this series, produced by Haskè Conseil, examine what it takes to achieve sustainable results. A cross-country analysis of seven countries and three country studies on Tanzania, Côte d'Ivoire and Indonesia explore why similar interventions produce different results. Their central message is clear: lasting protection depends less on the intensity of campaigns than on strong institutions, with shared responsibility between health and education, predictable funding, recognised frontline staff and the trust of families and communities.

We therefore call on governments to make school health a lasting national responsibility, backed by law and by public funding that covers the everyday costs of delivery. We ask ministries of health and education to plan together, development partners to invest in national capacity beyond funding cycles, and civil society and community leaders to build the trust on which every programme depends.

We thank the Gates Foundation for its collaboration throughout the research process, and Tanzania Health Promotion Support (THPS) and Athari Advisors for supporting the research in Tanzania and Côte d'Ivoire. We also thank the government institutions, UN agencies, implementing partners and civil society organisations consulted across the three country studies.

Thirty years from now, that girl should be living the life she imagined, surrounded by the people she loves. The decisions we make today will help determine whether she gets that chance. No African woman should die of a cancer we already know how to prevent.



Dr. Ndidi Okonkwo Nwuneli
Executive Chair
Sahel Consulting Group



Prof Julie Makani MD, PhD, FRCP, FTAAS
Professor of Medicine, Science Advisor
Muhimbili University of Health and Allied Sciences (MUHAS), Tanzania High Commission in the UK



Dr Redempta Mbatia MD, MSc EPI, DTM&H
Principal Investigator
Tanzania Health Promotion Support (THPS)



Madji Sock
Managing Director
Haskè Group

Executive summary

The school health system in Côte d'Ivoire is based on a formal institutional framework: the National School and University Health Program – Adolescent and Youth Health (PNSSU-SAJ). The Ivorian system stands out in West Africa for its structured multisectoral approach, based on joint responsibility between the Ministry of Health, Public Hygiene, and Universal Health Coverage (MSHP-CMU) and the Ministry of National Education and Literacy (MENA). This dual oversight is explicitly recognized in the main national strategic frameworks, notably the National Health Development Plan 2021–2025 (PNDS)[1] and the Education/Training Sector Plan 2016–2025 (PSEF)[2].

This institutional set-up allows schools to be positioned as operational public health platforms, beyond their educational function. School and University Health Centers (CSSU) constitute a dedicated territorial network, complemented by various regulatory mechanisms. Among these, the joint MSHP–MENA circular plays a central role: it transforms national health priorities into enforceable educational guidelines, facilitating systematic access for health teams to schools. This framework reduces the cost of intersectoral coordination and creates an environment conducive to the integration of new health interventions, such as vaccination against human papillomavirus (HPV).

The strategic decision to link HPV vaccination to the PNSSU-SAJ is based on documented epidemiological and demographic considerations. In Côte d'Ivoire, analyses by the World Health Organization (WHO) show low use of health services by adolescents[3], who constitute a population with little access to routine care after early childhood. Conversely, the education system offers a high targeting capacity. According to official statistics from the MENA, the gross enrollment rate in primary school is 105.93%[4], while that of lower secondary school is 89.3%[5] for the 2024–2025 school year, making it possible to reach a large proportion of girls aged 9 to 14, the priority target group for HPV vaccination. The PNSSU-SAJ acts as a mechanism for reducing inequalities in access to preventive care by reaching a population that largely escapes conventional health facilities.

Cervical cancer is one of the most common and deadly cancers among Ivorian women, according to the International Agency for Research on Cancer (IARC/WHO). The integration of the HPV vaccine into the Expanded Program on Immunization (EPI) in 2019, with priority deployment in schools, made it possible to mobilize large numbers of beneficiaries. As a result, Côte d'Ivoire has achieved a coverage rate of approximately 73%[6] for HPV vaccination among girls aged 9 to 14, demonstrating the capacity of the school and community health system to deploy a large-scale preventive intervention.

Below are some findings from the 2025 Acceleration Campaign (MAC)[7]:

- **Integrated Delivery:** The coverage reflects a multi-platform approach. While school-based delivery remains dominant, community outreach successfully captured 23.9% of the vaccinated girls (out-of-school).
- **Disaggregated Data:** For the first time, there is clear disaggregation between in-school (76.1%) and out-of-school (23.9%) populations.

1 The National Health Development Plan (PNDS) 2021-2025 is a multi-year strategic framework aimed at transforming health systems.
2 The PSEF (Sectoral Education and Training Plan) 2016-2025 is a national strategic document that defines the objectives, actions, and resources for improving education and training over a decade, aligned with national development, aiming for quality, equity, and relevance to labor market needs.
3 Haskè Conseil interview with the MSHP, 2025
4 National Statistics Agency, Key Figures for Côte d'Ivoire, 2025
5 National Statistics Agency, Key Figures for Côte d'Ivoire, 2025
6 Vaccination data, WHO, 2025
7 Sharing experiences from the multi-age HPV vaccination campaign in Côte d'Ivoire (2025)

- **Age-Specific Success:** The campaign achieved high coverage across all brackets, including the 15-18 age group (81.1%), which is typically the hardest to reach through traditional school health channels.
- **Denominator Challenges:** The 126.2% coverage rate for 9-year-olds suggests that administrative targets underestimated the actual population, highlighting the ongoing 'denominator dilemma' in peri-urban areas.

This performance can be explained by the adaptation of existing components of the PNSSU-SAJ. Health referral teachers mobilized upstream ensure the preparation of cohorts, verification of eligibility criteria, and management of process flows, allowing medical teams to focus on the vaccination process. This organization optimizes the use of medical time[8], in accordance with WHO best practices for school programs. In line with WHO recommendations, the use of a single-dose vaccination schedule is internationally recognized as a lever for simplifying logistics and improving the efficiency of school-based vaccination programs. In Côte d'Ivoire, although no specific quantitative assessment has yet been published, the gradual alignment of HPV vaccination strategies with this schedule opens significant opportunities for streamlining operations and optimizing the use of resources.

Finally, the Ivorian model benefits from the active involvement of community stakeholders. The regulatory frameworks of the School Management Committees (COGES) and Parents' Associations (APE) recognize their role in improving the school environment, including in terms of hygiene and health. This local ownership reinforces the sustainability of interventions and supports demand for services, particularly through school health clubs, which have been identified as effective vehicles for peer-to-peer awareness-raising.

Overall, the Ivorian experience shows that the PNSSU-SAJ is a strategic institutional asset, capable of absorbing and deploying complex health interventions on a large scale. HPV vaccination illustrates the potential of this platform to sustainably improve equitable access to adolescent health services. The gradual strengthening of domestic financing mechanisms and decentralized operational capacities represent key opportunities to consolidate gains and position school health as a structural pillar of universal health coverage in Côte d'Ivoire.

8 Haskè Conseil interview with Adolescent Health Specialist, 2025

Background & rationale — why schools and why PNSSU-SAJ first

Reaching students in a structured, pre-existing environment such as schools, reduces the unit cost per child reached[9]. Cost-effectiveness analyses conducted by the World Health Organization (WHO) and the World Bank have shown that the PNSSU-SAJ approach reduces costs by 30-40%[10] compared to community door-to-door campaigns. Schools bring together the target population, minimizing logistics and transportation costs for health workers[11].

The predictability of the school calendar, with approximately nine months of continuous student attendance, serves as a major logistical anchor for the broader health system. It allows for the synchronized planning of complex interventions, such as cold chain management for vaccines, by aligning them with periods of optimal reach while avoiding peak traffic in general hospitals. Beyond logistics, this model leverages a pool of trained 'health referral teachers' who act as permanent frontline sentinels. Their daily presence enables passive screening for conditions such as vision impairment or anemia, which significantly lightens the clinical workload of health professionals. Ultimately, this integration transforms the school into a high-yield 'public health platform' rather than just a learning site; it ensures that health interventions are not disruptive events, but routine services that improve both health coverage and academic retention by catching issues before they require costly, late-stage medical intervention.

Born out of initial concerns in the 1990s, particularly about communicable diseases, the PNSSU-SAJ was formalized and reorganized in the early 2000s to become a structured interministerial framework. This formalization made it possible to firmly establish the joint commitment of the Ministry of Health and Public Hygiene (MSHP) and the Ministry of National Education and Literacy (MENA), while respecting the institutional positioning of the PNSSU-SAJ as a program under the MSHP, placed under the authority of the General Directorate of Health. The framework for intersectoral collaboration, structured through consultation mechanisms such as the Inter-Agency Coordination Committee for Vaccination (CCIA), as well as through formal and regular exchanges between the two ministries, has facilitated the alignment of public health priorities and school calendars. This functional coordination makes the PNSSU-SAJ a strategic platform for convergence between health and education policies, capable of supporting the coordinated implementation of large-scale health interventions in schools, including HPV vaccination.

Table 1: Comparison of school-based and non-school-based strategies[12]

Cost item	Delivery in schools	Independent/out-of-school delivery	Difference
Unit cost per child (excluding vaccines/medicines)	USD 0.25–1.9 (month ≈ USD 0.50)	USD 3–12 (month ≈ USD 6–8)	50 to 80% cheaper in school
Total recurring cost (example neighborhoods)	Abidjan : < $200,000; North: < $150,000	Requires additional staff/ transportation; > $300,000	Budgets kept low thanks to schools
Staff and supervision	Existing teachers; minimal training	ASC teams (25,000 agents, $3.5 million in allowances)	Major savings on labor
Transportation and logistics	Less travel; centralized cold chain	Frequent travel; temporary setups	Reduction in fuel/vehicles
Planning and data	Student lists via schools/ ministry	Door-to-door prospecting/tracing	Less administration and follow-up
National scale (annual estimate)	$10 to $25 million (school integration)	Higher (USD 900,000 deficit observed)	Lower range via school integration

9 The unit cost per child reached is a key indicator in health economics, defined as the total cost of the program divided by the number of children who have successfully benefited from a specific intervention or service (such as treatment for malnutrition or early learning) during a given period.

10 ThinkWell. 2024. The Immunization Delivery Cost Catalogue: The status of evidence on immunization delivery costs in low- and middle-income countries, Geneva.

11 TableChange in age-standardized cervical cancer incidence over time, percentage of countries reaching elimination for different thresholds, and year of elimination, by World Bank income level and region.

12 In Côte d'Ivoire, the financial cost of delivering COVID-19 vaccines was estimated to be US$0.67 during March-May 2022, Immunization economic, 2023; Haskè Conseil interview with MNHP, 2025; Haskè Conseil interview with Epidemiological Surveillance, Statistics, Monitoring, and Evaluation, 2025; GLOBOCAN, 2024.

Potential reduction in cervical cancer incidence over 100 years:

>50%

Annual cost of a quality-adjusted life:

$390-450

HPV VACCINATION: A BREAKTHROUGH INTERVENTION ANCHORED IN THE PNSSU-SAJ

The choice of the PNSSU-SAJ as the preferred channel for HPV vaccination is the most recent demonstration of the strategic importance of the PNSSU-SAJ. This approach was chosen for three main reasons:

1. **Reaching the "zero-dose" adolescent target:** 9-year-old girls, the primary target for the HPV vaccine, have already completed their series of childhood vaccinations and no longer visit health centers. PNSSU-SAJ is therefore the most reliable and systematic gateway for the immunization of this cohort.

2. **Overcoming the consent barrier and managing communication:** Given the sensitivities surrounding a vaccine designed to prevent a sexually transmitted cancer, schools provide a formal and credible environment that facilitates communication with parents and allows the consent process to be managed. The PNSSU-SAJ has capitalized on the institutional trust of schools to allay initial fears and combat misinformation.

3. **Reduced opportunity cost and integration:** The PNSSU-SAJ operates as a permanent national program, not a campaign-based structure. Integrating HPV vaccination into existing school immunization day activities was a strategy to minimize marginal coordination costs. By using the same logistics, cold chain, and personnel as existing deworming or screening campaigns, the marginal cost of adding a major intervention such as HPV was significantly reduced. These screening activities include visual acuity screening, hearing screening, identification of postural abnormalities such as scoliosis, clinical screening for signs of anemia (with supplementation when required), assessment of nutritional status, and voluntary STI/HIV screening provided through SAJ services. Screenings are conducted during VMS sessions or through targeted campaigns, allowing HPV vaccination to be integrated efficiently within an already structured service delivery platform.

Table 2: Implementation frequency varies by intervention

Intervention	Frequency
Systematic Medical Visit (VMS)	At entry to CP1 and 6ème (once per cycle)
Mass deworming	Annual (sometimes biannual in high-prevalence districts)
HPV vaccination	Annual cohort-based (9-year-old girls)
SAJ services	Continuous (routine services)
Health education	Ongoing throughout school year

PNSSU-SAJ: history and structural evolution

ORIGINS AND EVOLUTION

The PNSSU-SAJ has undergone a long and incremental institutionalization process, which is essential to understanding its current organization, capacities, and weaknesses. The PNSSU-SAJ is a model of multisectoral integration in West Africa, having succeeded in transforming isolated community-based activities into an integrated public health structure. The creation of the PNSSU-SAJ is a case study illustrating how a country can create and sustain a successful school health program through a process of layering, as opposed to creating it from scratch.

CERVICAL CANCER BURDEN IN CÔTE D'IVOIRE

10,241	34.3%	6,525	62,5%	42,7%
New cases	Percentage of all female cancers	Deaths from HPV	Age-standardized incidents per 100,000 women	Age-standardized mortality per 100,000 women

The number of CSSUs has grown slowly but steadily, from a few dozen in the 1990s to more than 250 today (according to PNSSU-SAJ data). However, field surveys reveal that while the number of units has increased, their functionality and equipment remain very heterogeneous, particularly in rural areas. In many rural settings, CSSUs operate with limited dedicated space, sometimes sharing classrooms or administrative offices, which affects confidentiality and quality of care. Basic equipment such as weighing scales, height boards, visual acuity charts, examination couches, or hemoglobin testing tools may be unavailable or non-functional. Stock-outs of essential supplies (iron supplements, deworming tablets, first-aid materials) are also reported. In addition, some units lack regular electricity, adequate water and sanitation facilities, or proper storage conditions for medical supplies. Human resource capacity varies significantly, with some CSSUs staffed by trained nurses or midwives, while others rely on part-time or insufficiently trained personnel, limiting the range and regularity of services provided.[13]

THE INCREMENTAL PROCESS OF CREATION (LAYERING)

The creation of the PNSSU-SAJ follows an incremental model, referred to as a layering process. The evolution of the Ivorian school and university health system has been gradual, based on two major structural phases that reflect the institutional maturation of the sector.

Phase 1 – Recognition and initial structuring (before 2001).

Before 2001, school and university health existed in the form of specialized services, without yet constituting an autonomous national program. These services, initially focused on medical inspection and prevention, were gradually structured, notably with the transformation of school health services into Specialized Urban Health Centers for School and University Health (CSUS/SSU) starting in 1997.

During this period, activities fell under the purview of the Community Health Directorate under

13 Dr Odoh Loba Marie-Cathérine Yvonne, Head of Care and Quality of Care Department, PNSSU-SAJ

the MSHP, through a sub-directorate in charge of hygiene and prevention, including school and university health. However, interventions remained heterogeneous, concentrated mainly in urban areas, and dependent on local operational capacities. Nevertheless, this phase laid the technical and administrative groundwork necessary for the recognition of school health as a specific area of intervention within the health system.

Phase 2 – Institutionalization and program expansion (since 2001)

A major turning point came in 2001 with the adoption of Decree No. 400/MEMSP/CAB of December 20, 2001, establishing the National School and University Health Program (PNSSU). This decision marked the formal institutionalization of school and university health as a national program under the supervision of the MSHP. It resulted in a clarification of the governance framework, the allocation of dedicated human resources, and the gradual structuring of a package of preventive and curative services adapted to the educational environment.

The program continued to evolve with the integration of the Adolescent and Youth Health (SAJ) component, formalized by Decree No. 888/MSHP/CAB of December 16, 2016, giving rise to the PNSSU-SAJ. This extension reflects the growing awareness of issues related to sexual and reproductive health, the prevention of risky behaviors, and the promotion of health among adolescents and young people. This institutional trajectory, spanning more than two decades, illustrates a process of gradual consolidation based on adaptation to emerging epidemiological priorities, human capacity building, and the anchoring of the program in public health policies.

KEY FUNCTIONS OF THE PNSSU-SAJ

The PNSSU-SAJ manages a minimum service package (PMS), developed in line with WHO standards and recommendations for school health programs.

Medical and administrative monitoring

The fundamental administrative function of the PNSSU-SAJ is the systematic medical examination (VMS). The school health program is implemented nationwide and involves all schools within the education system. Although it is an administrative routine, the VMS is an essential tool for mass screening. It is theoretically mandatory at two key moments in a student's schooling:

- **Upon entry into CP (preparatory class):** to ensure that the child can follow the curriculum and to identify early disabilities or growth deficits.

- **Upon entering sixth grade (middle school):** to target adolescents amid physical and psychological transition and to identify the emerging needs of this age group. However, the success of the VMS depends on the effective presence of qualified personnel and means of transportation to ensure follow-up on referred cases.

School screening and physical health

The program focuses on specific school screenings that directly impact learning ability:

- Refractive (vision) and hearing disorders: early screening for vision and hearing problems is essential. Poor vision, for example, can be an unrecognized cause of academic failure.
- Postural problems: early detection of scoliosis or other postural disorders which, if left untreated, can have chronic consequences.
- Nutritional deficiencies: screening for anemia and signs of malnutrition.

Hygiene, nutrition, and mental health

Beyond treatment, the program aims to promote awareness. Promoting menstrual hygiene (PHM) has become a strategic focus, often supported by partners such as UNICEF. This aspect is crucial for keeping girls in school, as the lack of adequate infrastructure and menstrual hygiene management is a major factor in female absenteeism. Finally, mental health, although less structured, is beginning to be addressed through awareness-raising modules and the referral of cases to specialized services.

Process for absorbing new interventions

Côte d'Ivoire has developed a standardized process for introducing new public-health interventions in schools, with an average timeline of 18–36 months from initial concept to national rollout. The process moves through five linked stages: (1) political and regulatory validation by an interministerial committee comprising the MSHP (clinical validity) and MENA (educational feasibility), to ensure interventions do not compromise instructional time; (2) financial approval and resource mobilization, including external cycles such as Gavi where applicable; (3) a pilot phase of 6–12 months in selected districts testing operational feasibility, school acceptability, cold-chain performance, and data reporting, followed by structured evaluation; (4) administrative authorization through a joint ministerial circular co-signed by the two ministers, without which DREN-level education directors cannot authorize medical teams to access schools — this step turns a public-health priority into an enforceable obligation for school principals; and (5) technical anchoring and microplanning 3–6 months before rollout, where health districts and education inspectorates cross-reference data to identify target schools, estimate inputs, and define mobile-team itineraries.

The step-by-step integration process

- Identify target schools,
- Estimate required inputs (vaccines, consumables, human resources),
- Define itineraries for mobile outreach teams.

The PNSSU-SAJ applies a cascade training model to build capacity at national, regional, and district levels. Mixed teams are formed:

- **Teachers are trained in classroom preparation**, sensitization, consent management, and form compilation.
- **Health workers focus on clinical and technical components** (vaccination, screening, data recording).

This division of labor prevents teaching staff from becoming overburdened and preserves instructional continuity. Rollout then proceeds progressively across districts, according to the validated national plan.

HPV AS A CASE ILLUSTRATION: PLATFORM INTEGRATION

The introduction of the HPV vaccine in Côte d'Ivoire is the most compelling example of the PNSSU-SAJ's ability to serve as a "layering-ready" platform for complex health interventions. The case illustrates the strength of MSHP-MENA coordination for mobilization but also reveals the program's structural fragility in the absence of sustainable operational funding.

Figure 1: Diagram of the evolution of the PNSSU-SAJ[14]

Before 1960
Rudimentary school medical services

- Focused on curative and hygienic care
- Interventions limited to health monitoring and prevention of infectious diseases
- No structured national school health policy
- Limited geographical coverage, mainly urban
- Weak coordination between education and health systems

1960-1997
Post-independence and gradual structuring

- Gradual integration of school medical services into the national health system
- Priority given to basic care and medical monitoring of students
- Gradual development of preventive and health promotion activities
- Occasional role of schools in raising health awareness
- Institutional framework still largely informal

1997-2001
Structural reforms and preparation of the PNSSU

- Transformation of school medical services into CSUS/SSU
- Clarification of school and university health missions
- Strengthening of preventive and promotional services in schools
- Better integration into health districts
- Institutional preparation for the creation of a structured national program

2001–2015
Institutionalization and expansion of the PNSSU

- Official creation of the PNSSU (2001)
- National harmonization of preventive, curative, and promotional services
- Expansion: 47 services > 160 services
- Gradual standardization of tools and practices
- Use of schools as a platform to support national vaccination campaigns

2015–Present
PNSSU-SAJ and integration of adolescents

- Creation of the PNSSU-SAJ (2017) for adolescent and youth health
- Priorities: reproductive health, HIV/STIs, mental health
- Community participation (parents) for acceptability
- Integration into national policies and PNDS for sustainability and expansion of services
- Ad hoc support for other national campaigns according to health priorities

The HPV introduction unfolded in four phases. From 2014–2017, with Gavi funding secured, the PNSSU-SAJ was confirmed as the main delivery vehicle alongside the EPI. Pilots in Abidjan-Treichville/Marcory and Grand-Bassam (2018–2019) validated the mixed-team model (health workers for injection, teachers for mobilization) and surfaced concerns about the consent process and dropout between doses. National expansion in 2020–2021 was enabled by the joint MSHP–MENA circular, but a chronic operational funding shortfall meant the PNSSU-SAJ could not consistently follow up girls for the second dose. From 2022 onward, attrition data from the program supported alignment with the WHO single-dose recommendation in 2023, and HPV is now part of the PNSSU-SAJ routine package, with microplanning targeting “zero-dose” areas.

This phase began with the need to secure funding from GAVI, the Vaccine Alliance. It was during this phase that the major strategic decision was made that schools, through the PNSSU-SAJ, would be the main vehicle for the intervention. Schools were the only institutions capable of guaranteeing organized and predictable access to the target cohort (9-year-old girls) in a short period of time.

14 Source : This overview of the evolution of the school health system in Côte d’Ivoire is based on a cross-analysis of national regulatory texts (ministerial decrees of 2001 and 2016), PNSSU-SAJ framework documents, and the implementation report at the end of December 2023; PSGouv, 2023, institutional reports from the MSHP and MENA, and WHO/UNICEF analytical frameworks on school health programs.
Ministry of Health and Public Hygiene (MSHP), Côte d’Ivoire, 2001,
institutionalization of school health, creation of a structured national program, clarification of missions and administrative anchoring, Framework documents and technical notes of the National School and University Health Program – Adolescent and Youth Health, Reports on the right to health in schools, National Human Rights Commission (CNDH), Côte d’Ivoire; Reports on school vaccination campaigns (tetanus/Td, EPI catch-up, HPV); Global Standards for Health Promoting Schools, World Health Organization (WHO), 2018; Guidance on School Health and Adolescent Health Programs, UNICEF, 2010–2020; Haskè Conseil stakeholder interviews, 2025.
.

The PNSSU-SAJ was designated as the gateway and transmission belt, working in conjunction with the Expanded Program on Immunization (EPI).

To validate the strategy in the field, a pilot phase was launched in selected districts (Abidjan-Treichville/Marcory and Grand-Bassam). The objective was to test cold chain logistics in the school context, but also to assess the social acceptability of a related to sexuality and the management of parental consent. The PNSSU-SAJ quickly validated the model of mixed teams (health workers for injection, teachers for mobilization). The pilot proved that mass mobilization was possible but also raised concerns about the cumbersome consent process and the risk of dropout between doses.

Scaling up and challenges of completeness (2020-2021)

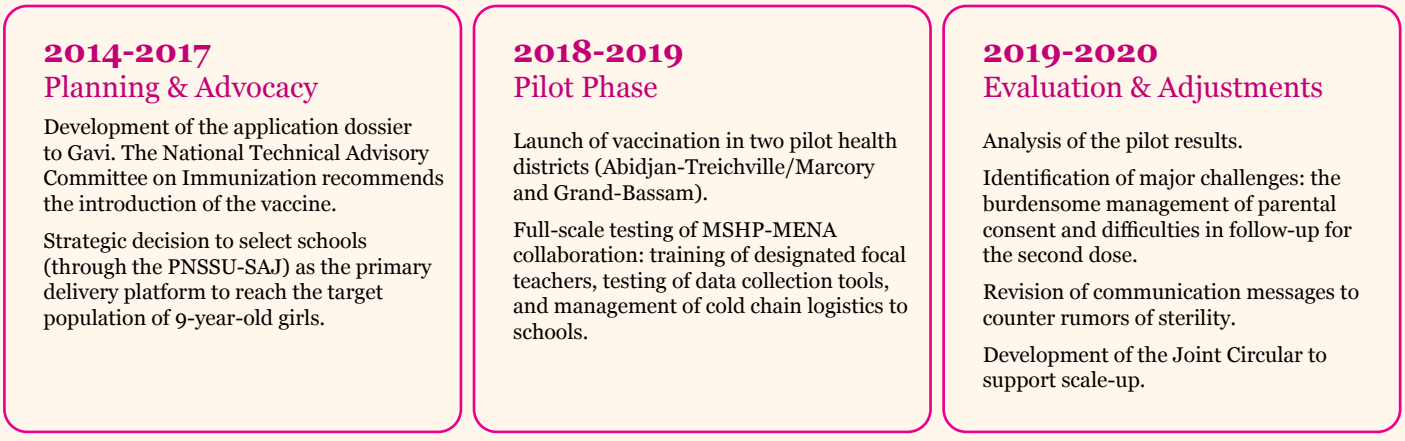
The national expansion phase relied on the PNSSU-SAJ's most powerful tool: the joint MSHP-MENA circular. This document enabled the rapid opening of all establishments, demonstrating the effectiveness of the legal framework. The rollout of the first dose reached 26%, a result which, although timid, confirms the system's capacity for mobilization. However, the program suffered from a chronic operational funding shortfall (the "immobilized staff paradox"): school nurses are salaried and theoretically available, but they do not have the means to travel from their home base to rural and remote schools.

External funds dedicated to the campaign covered the logistics of the first wave, but the PNSSU-SAJ, deprived of sufficient operating budgets for routine activities, was unable to follow up with students for the second dose six months later. The technical intervention was successful, but program sustainability failed due to structural and financial weaknesses.

Strategic adaptation and integration into routine practice (2022-2024)

Faced with operational difficulties in following up on the second dose, the PNSSU-SAJ used its own attrition data to support the WHO recommendation to switch to a single-dose regimen in 2023. This adaptation circumvented the chronic logistical problem by reducing the intervention to a single annual visit. Today, HPV is integrated into PNSSU-SAJ's routine activity package. Teams use microplanning to target schools that have not yet received any intervention ("zero-dose" areas). The integration of HPV has thus confirmed two points:

Figure 2: Progress in the introduction of HPV vaccination in Côte d'Ivoire



2020-2021
National Scale-up

Nationwide rollout of the vaccine.

Mobilization of mixed teams (health workers and teachers) to administer two doses spaced six months apart.

Observation of a high drop-out rate between Dose 1 and Dose 2, particularly in rural areas.

2023
Strategic Optimization

Official adoption of the TOMS recommendation for a single-dose schedule.

This decision aims to simplify PNSSU-SAJ logistics (only one annual visit required) and to significantly increase vaccination coverage.

2025
Large-scale Vaccination Campaign

Launch of a large-scale revitalization campaign targeting girls aged 9 to 14 years (multi-cohort) in schools.

Integration of the HPV vaccine into the minimum package of routine PNSSU-SAJ activities, using microplanning to reach "zero-dose" schools.

FINANCING AND INCENTIVES

The financing of the PNSSU-SAJ illustrates the complexity of the structure chosen by Côte d'Ivoire. The program is based on a mixed and fragmented financing model, where the effectiveness of interventions depends on the coordination of multiple budgetary sources.

FUNDING SOURCES: BUDGET FRAGMENTATION

The program is supported by three main categories of funding:

State budget:

- **MSHP (PNSSU-SAJ/PEV):** The state covers the entire budget line for the salaries of PNSSU-SAJ staff and assigned nurses. The PEV also allocates funds for the purchase of routine vaccines, including national funding for HPV.

- **MENA:** Funds are allocated to infrastructure (construction, renovation) and educational materials (health education), but these lines are often the most vulnerable to budget cuts.

- **Local contributions:** Parents' associations (APEs) play an often underestimated but crucial role. APE statutes may allow up to 5% of their funds to be allocated to PNSSU-SAJ activities, such as for the purchase of first aid kits or basic supplies.

- **Technical and financial partners (TFPs):** TFP support is essential for high-cost interventions or equity programs: GAVI funds the HPV vaccine, UNICEF supports the WASH (water, sanitation, and hygiene) program and menstrual hygiene, while WHO provides technical standards and logistical support for certain campaigns.

FINANCING AS A DETERMINANT OF FUNCTIONALITY

The institutional organization has chosen to separate budgets: staff are funded by one budget line (MSHP) and vaccines and operations by others (EPI/TFP). This approach is meant to facilitate the sustainability of jobs (salaries are a stable government expense), but it creates an operational paradox:

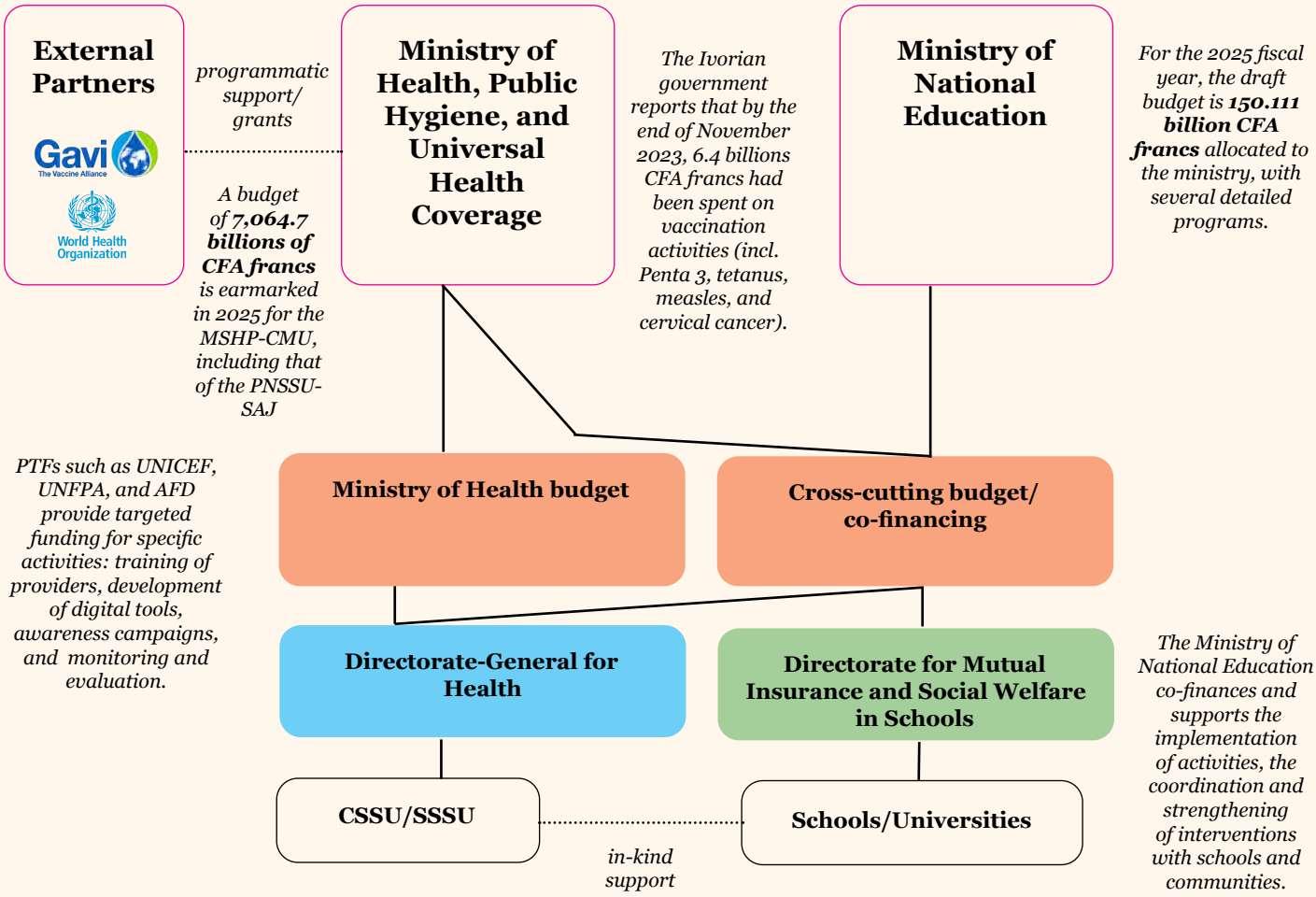
- Salary stability vs. operational fragility: Staff salaries are fully covered by the state. However, operational costs (fuel for mobile teams, field per diems, consumables, and CSSU maintenance) are only covered up to approximately 25% by MSHP/MENA budgets.

- Regional disparities: Field surveys reveal that the best-equipped and most functional CSSUs are in regions that have succeeded in developing robust local development funds (FDLs) dedicated to health. Elsewhere, low coverage of operational costs means that CSSUs exist on paper but are largely non-functional. The fragility of the PNSSU-SAJ therefore lies not in its personnel, but in its operational logistics.

HPV FINANCING: AN ILLUSTRATIVE CASE

The study of the deployment of the HPV vaccine in Côte d'Ivoire is a clear example of the operational design and financial weaknesses of the PNSSU-SAJ. It illustrates a targeted and fragmented co-financing model which, while effective for the rapid launch of costly interventions, remains unsustainable without a national budget transition.

Figure 3: Anatomy of HPV vaccine co-financing



HPV co-financing involves four major players (state EPI budget for vaccines, Gavi for campaign logistics, district operating budgets, and TFP support for training and digital tools — see Table 3). The risk of unsustainability is concentrated in the logistics budget line: the government finances staff salaries and approximately a quarter of operating costs, while Gavi campaign funding currently covers the remaining logistics deficit. If campaign funding is interrupted, state-employed staff remain present but immobilized. Sustaining HPV through PNSSU-SAJ therefore requires a gradual transition in which the Ivorian government takes over the logistics and operational budget line.

Table 3: Sources, channels and uses of the PNSSU-SAJ budget for HPV vaccination

Source of funding	**Institutional channel**	**Main uses in the PNSSU-SAJ / HPV vaccination**	**Order of magnitude/ characteristics**
State budget – Health (EPI)	MSHP (central) > EPI > Regional health directorates > Health districts	Purchase of HPV vaccines; national and regional cold chain management; forecasting, storage, and distribution	Highest cost item; centralized funding; relatively stable and protected from local disparities
Gavi support (Vaccine Alliance)	Gavi > MSHP / EPI	HPV vaccines; cold chain equipment; technical assistance; monitoring of introduction	Major but conditional funding; results-oriented; time-bound with transition requirements
Health district operating budget	MSHP > Health districts	Per diem for health personnel; fuel and transportation for school activities; local logistics	Recurring budgets but highly variable depending on population, accessibility, and local priorities
State budget – Education	MENA > DREN > Schools	Teacher mobilization; school-health coordination; organization of school-based activities	Mainly indirect costs (time, coordination); low allocation specifically dedicated to health
Technical and financial partners (UNICEF, WHO, World Bank, etc.)	TFP > MSHP / PNSSU-SAJ / PEV	Training (teachers and health workers); social communication; digital tools; system strengthening	Targeted funding, often for a limited period; focused on start-up and scaling up



PHOTO BY LIMONOV DIGITAL (PEXELS)

School-based HPV vaccine delivery

PNSSU-SAJ delivery platforms & program design — how the PNSSU-SAJ anchors service delivery

The design of the PNSSU-SAJ is based on a logic of service stratification and population segmentation, addressing the portfolio of interventions, their sequencing, and the targeting of age groups.

DELIVERY PLATFORMS: THE THREE LEVELS OF PNSSU-SAJ ANCHORING

PNSSU-SAJ has successfully created an anchoring model using three complementary delivery platforms, each with a specific function in the provision of care.

THE MASS PLATFORM: SCHOOLS (PRIMARY AND SECONDARY)

Primary and secondary schools serve as platforms for mass delivery. Their role is to ensure accessibility and coverage for interventions that need to reach the largest number of children at minimal cost. This is where large-scale interventions take place, with the support of teachers and supervised by teams from the Directorate of Mutual Aid and Social Works in Schools (DMOSS) of the MENA and the PNSSU-SAJ. The school calendar facilitates the predictability that is essential for planning campaigns.

Key interventions: deworming campaigns (simple and easy to distribute in classrooms), school immunization days (for HPV and TD boosters), and group health education (EPS).
Rationale: Collective promotion and prevention interventions.

THE CLINICAL PLATFORM: CSSUS/SSSUS

The Ivorian school health model is based on an integrated service offering, in which local clinical care and specialized services for adolescents and young people are delivered within the same structures under the PNSSU-SAJ. This organization ensures a continuum of care, from routine health needs to more sensitive and specialized interventions, without multiplying the points of interest for beneficiaries. School and University Health Centers (CSSU), also known as School Health Service Units (SSSU), form the operational basis of this integrated platform. Located near schools and universities, these facilities provide a minimum package of services (PMS) on a continuous basis, whether they are in school or not. They provide basic care, manage simple emergencies, carry out systematic screening (vision, hearing, postural disorders), and follow up on students identified during medical visits.

Within these same structures, the Service for Adolescents and Young People (SAJ) complement the general clinical offering with specialized interventions tailored to the specific needs of this age group. SAJ services cover sexual and reproductive health, counseling and screening for HIV and other sexually transmitted infections, prevention of early pregnancy, immunization, and psychosocial support. The integration of the SAJ into the CSSU/SSSU ensures the confidentiality of care while relying on a team that is already embedded in the school and community fabric. This co-location of services is a strategic advantage of the Ivorian model. It reduces disruptions in care pathways, facilitates internal referral between clinical and specialized services, and builds trust among users, particularly adolescents, who have access to a comprehensive range of services in a recognized and secure institutional environment. It also allows for more efficient use of human resources, as the same teams can be involved in both routine school health activities and targeted SAJ services.

In this configuration, CSSUs/SSSUs are not just points of care delivery, but true integrated public

health platforms for children, adolescents, and young people. This integrated positioning explains their ability to absorb complex interventions, such as HPV vaccination, while maintaining regular prevention, screening, and individual care activities. While SAJ services are theoretically universal for the 10–24 age group, the student population remains the primary user base, accounting for approximately 80% of consultations for 20% of OOS adolescents. The physical co-location of SSSUs within school environments creates a 'convenience bias' for students, while out-of-school youth often require targeted community outreach and peer-led referral systems to bridge the access gap."

THE EQUITY PLATFORM: OUT-OF-SCHOOL COMMUNITY ANCHORS (CLACS)

To overcome the physical of school-embedded clinics, the PNSSU-SAJ incorporates Centers for Reading and Cultural Animation (CLAC)[15] alongside decentralized Urban Health Centers (CSU) to capture vulnerable and out-of-school (OOS) youth. These socio-cultural and community spaces function as non-academic anchors specifically designed to operationalize the program's equity mandate. By moving sensitization and peer-led counseling outside formal school walls, this platform bypasses institutional barriers and creates a trusted socio-educational environment. It serves as a strategic bridge, catching adolescents who have dropped out of the formal educational system and connecting them directly back into the clinical continuum of the broader health network.

Key interventions: community-based behavior change communication (BCC), youth-led peer counseling, distribution of preventive consumables, awareness campaigns for out-of-school girls, and active referral mapping to local SSSU/CSU clinics. Rationale: Equity-driven targeted outreach and community-level service expansion for marginalized youth populations.

SEQUENCING OF INTERVENTIONS AND CURRENT PORTFOLIO

The first PNSSU interventions (1990s-2000s) logically began with the simplest and most cost-effective actions, as they required few clinical resources and had an immediate impact on absenteeism:

- **Basic hygiene and physical education:** Implementation of sanitation and health promotion rules by teachers.
- **Fight against parasitic diseases:** Mass deworming (Albendazole/Mebendazole) targeting intestinal helminthiasis and schistosomiasis. This intervention has a very low cost per child (USD 11.07[16]) and is easily administered by teachers, generating a significant gain in school concentration.

THE CURRENT PACKAGE OF INTERVENTIONS

Today, the PNSSU-SAJ is implementing a PMS covering the following five priority areas:

1. **Screening and primary care:** Systematic medical visits, emergency care, and referral of complex cases.
2. **Nutritional health:** Anemia control program including iron/folic acid supplementation, often integrated with deworming campaigns.
3. **Combating communicable diseases:** Malaria management, surveillance of diseases with epidemic potential, and deworming campaigns.
4. **Mental and psychosocial health:** Counseling and support, particularly through youth-

15 Sinématiali : Un souffle nouveau pour la santé des jeunes et adolescents du Poro et du Tchologo, Côte d'Ivoire 2025
16 Costs of Fully Vaccinating a Child Countries Eligible for Gavi Vaccine Prices

friendly services (YFS) for issues related to stress, violence, or adolescent transition.

5. **Cohort immunization:** HPV vaccination and catch-up routine vaccinations. The introduction of HPV is the most recent and costly intervention, requiring strong support from GAVI.

SEGMENTATION OF TARGET GROUPS AND INTERVENTION LOGIC

The PNSSU-SAJ does not target the entire school population with the same set of interventions. It uses an age group segmentation strategy to maximize the impact of resources:

Table 4: Segmentation of target groups

Target age group	**Type of structure targeted**	**Intervention logic**	**Main interventions**	**Frequency**
School-age children (SAC)	Primary schools (grades 1–5)	Prevention of absenteeism and maximization of cognitive development	Mass deworming, iron/ vitamin supplementation, visual/auditory screening	Deworming: 1–2 times per year (campaign-based); Supplementation: periodic (per national guidelines); Screenings: during annual VMS or targeted campaigns
Adolescents (9–14 years old)	Middle school / early high school	Prevention of sexual risks (HPV) and deficiencies related to puberty	HPV vaccination, menstrual hygiene management (MHM), VMS (6th grade)	HPV vaccination: routine schedule (single-dose or per national protocol); VMS: once in 6th grade; MHM: ongoing awareness sessions during school year
Young adults (15–24 years old)	High schools / universities (SAJ)	Sexual and reproductive health (SRH), managing risky choices, psychosocial support	Confidential counseling, STI/HIV screening, family planning, mental health support	Continuous service delivery through SAJ; Screening and outreach sessions organized periodically (quarterly or per school calendar)

This segmentation has a purpose:

- **Priority in primary school:** The PNSSU-SAJ begins in primary school (AES) with deworming and supplementation, as this is where the impact on physical and cognitive development is most crucial and where children are most likely to be present.
- **Pivotal intervention in secondary school:** Entry into middle school (6th grade) is a critical transition point. It is at this level that high-impact interventions such as the HPV vaccine are most effective (before the onset of sexual activity) and that reproductive health services (via SAJs) become relevant for older age groups.

This approach allows limited resources to be invested in a targeted manner, aligning the intervention with the physiological needs and health risks specific to each stage of the student's life.

Governance and coordination

The success, or at least the resilience, of the PNSSU-SAJ relies on its bipartite governance architecture and its ability to orchestrate complex intersectoral coordination between ministries with distinct cultures and budgets.

BIPARTITE GOVERNANCE MODEL (MSHP–MENA)

The institutional organization chosen by Côte d'Ivoire is a dual oversight system involving the MSHP and the MENA. The MENA provides institutional access and mass logistics (students, school infrastructure, calendar). Without the MENA, the MSHP would have to create a parallel system to mobilize the target population, which would be prohibitive in terms of cost and efficiency. MENA's involvement gives the health intervention (particularly for sensitive topics such as HPV or sexual health) administrative legitimacy in all school (public and private) environments, facilitating consent and student mobilization.

The role of the legal framework

The framework for coordination between the health and education sectors is based primarily on decrees issued by the Ministry of Health, which give the PNSSU-SAJ its mandate to intervene in schools. In operational practice, this coordination is based on flexible but proven mechanisms, founded on intersectoral consultation and administrative communication.

Regarding vaccination interventions, particularly vaccination against human papillomavirus (HPV), planning and decision-making are carried out within the framework of the Inter-Agency Coordination Committee (CCIA). This body brings together all the relevant stakeholders (Ministry of Women, Family, and Children, Ministry of Youth Promotion and Youth Employment, Ministry of Employment and Social Protection (via CNAM/CMU), School Management Committees (COGES), traditional and religious leaders, parents' associations, technical and financial partners (UNICEF, WHO, UNFPA, Gavi, World Bank), and international and local NGOs such as Save the Children and Ivorian Association for Family Well-Being (AIBEF)), including the ministries responsible for health and education, and enables consensus-based validation of strategic guidelines, timetables, and implementation modalities for campaigns.

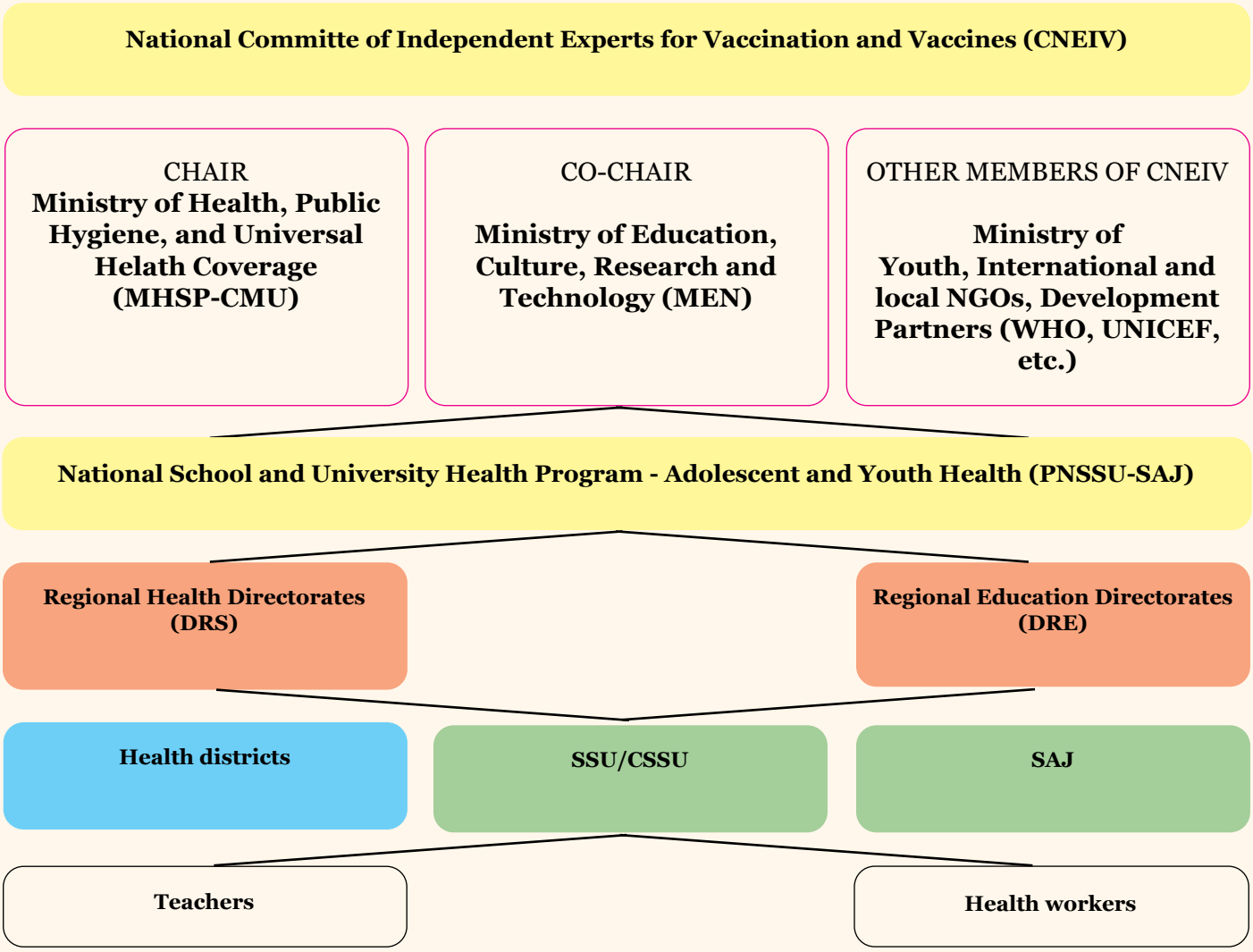
Once decisions have been made, the MSHP formalizes activities through official correspondence addressed to the MENA, which triggers the mobilization of the education system. The MENA then disseminates these instructions to its regional directorates and education inspectorates, ensuring access to schools and the involvement of teaching staff.

For other school health activities (prevention, screening, deworming, health education), the mechanisms are similar but more decentralized: operational letters can be issued directly by the PNSSU-SAJ or by the health districts to focal points and education officials at the local level. This approach promotes rapid implementation, adapted to local realities, while maintaining national consistency. Overall, this coordination mechanism, although based on simple administrative tools, is a key driver of the PNSSU-SAJ's effectiveness. It allows to simultaneously mobilize health and education stakeholders, secure access to schools, and deploy large-scale public health interventions without resorting to parallel structures.

ROLE OF TECHNICAL AND FINANCIAL PARTNERS (TFPS) IN GOVERNANCE

Coordination is complicated (and facilitated) by the intervention of TFPs, which act as de facto coordinators for their respective programs.

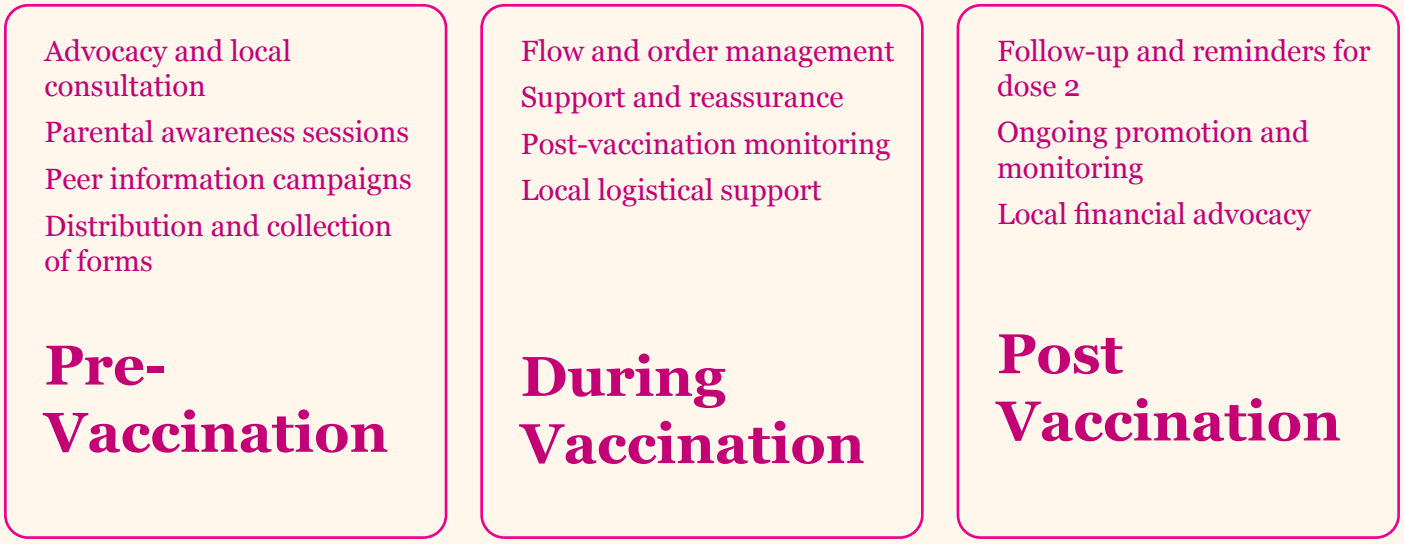
Figure 4: Institutional anatomy of HPV vaccination in schools



Community engagement & PNSSU-SAJ as the demand engine

The effectiveness and sustainability of the PNSSU-SAJ also depends on its ability to mobilize and engage communities, parents, and students themselves. The program plays an active role in creating demand for health services, an essential function for the sustainability of interventions, particularly those such as HPV vaccination.

Figure 5: Community-led activities for HPV vaccination[17]



The PNSSU-SAJ uses schools as **a gateway to the community**, relying on three key groups of actors for mediation and implementation.

Teachers: community health workers

Teachers are the PNSSU-SAJ's most valuable and sustainable human resource. Their daily presence in classrooms gives them a crucial role that goes beyond simple teaching:

Campaign mobilization: Teachers are logistical facilitators during mass campaigns. For mass deworming, for example, they are trained by MSHP staff to distribute deworming medication directly in the classroom. This delegation allows for a high coverage rate of 82.7%[18] and reduces the cost and logistical complexity of campaigns.

Passive screening and referral: Teachers act as passive screening agents. Teachers are often the first to notice signs of visual impairment, anemia (chronic fatigue, lack of concentration), or parasitic infection, ensuring that students are quickly referred to the CSSU or district health center.

HPV CASE STUDY

While teachers are effective "logistical facilitators" for oral medications like deworming tablets, the model for the HPV vaccine in Côte d'Ivoire is more complex because it involves an injectable biological product.

17 PAPSE 2023 Annual Report, Côte d'Ivoire, 2023.
18 I don't have this footnote.

The Shift from "Distribution" to "Facilitation"

Unlike deworming, teachers cannot administer the HPV vaccine. Instead, the collaboration shifts to a "hybrid" model:

Teachers' Role: They manage the "social mobilization" and logistics. They organize the girls, verify consent forms from parents, and maintain the classroom order. They are the "custodians" of the denominator (the class list).

Health Workers' Role: Qualified nurses or mobile teams from the PNSSU-SAJ perform the actual injection, ensure the "cold chain" (keeping vaccines at 2°C to 8°C ,and monitor for immediate adverse effects (AEFI).

Table 5: Comparative Model: Deworming vs. HPV

Feature	**Mass Deworming**	**HPV Vaccination**
Administrator	Teachers (Directly)	Health Workers (Teachers facilitate)
Complexity	Low (Oral tablet)	High (Intramuscular injection)
Logistics	Room temperature storage	Cold chain required (Cooler boxes/Ice packs)

Impact on Coverage and Cost

The HPV program in Côte d'Ivoire has aimed for a target of 90% coverage, but it faces unique hurdles compared to deworming:

1. **Vaccine Hesitancy:** Teachers play a vital role in debunking myths about infertility related to the HPV vaccine. Their "endorsement" is often the difference between a parent signing the consent form or refusing it.

2. **Logistical Cost:** Because health workers must travel to each school with specialized equipment (needles, safety boxes, cold storage), the cost per child is significantly higher than the deworming model.

Parent-teacher associations (PTAs): co-financing and consent

The involvement of APEs is vital, particularly for local funding and the management of sensitive interventions.

Local financial support: Interviews reveal that APEs can allocate up to 5% of their own funds[19] to PNSSU-SAJ activities, often covering gaps in the state's operating budget (purchase of first aid kits, maintenance of infirmaries). This contribution, although modest at the national level, is crucial for the local functionality of CSSUs. However, reliance on community financing may create territorial disparities, as urban schools generally mobilize more resources than rural ones. For donors, this suggests that while local ownership strengthens sustainability, targeted public or external funding remains necessary to prevent equity gaps.

Consent barrier (HPV case): The role of APEs was decisive in the launch of the HPV vaccination program. The school, as a trusted institution, served as a setting for communication

19 Dr. ODO, Deputy Coordinating Director, PNSSU-SAJ, 2025.

and awareness-raising sessions with parents, facilitating the obtaining of the informed parental consent necessary to vaccinate adolescent girls. While recent studies in Abidjan show a parental refusal rate of 22.1%; driven mainly by fear, misinformation, and cultural beliefs; the mediation of the APEs helped to dispel the rumors that accompanied the introduction of this new vaccine, significantly improving acceptance through school-based outreach.

The role of YHCs and health clubs: self-generated demand

The YHS (youth health services) component and the existence of health clubs within schools enable self-generated demand for services. These clubs, often run by peer educators, raise awareness among their classmates on taboo subjects (menstrual hygiene, STIs, mental health). This approach seeks to reduce embarrassment and encourage voluntary use of specialized services (SAJ), ensuring that demand for services comes from the grassroots level and not solely from administrative directives.[20]



PHOTO BY BINTI MALU (PEXELS)

School-based HPV vaccine delivery

Data, monitoring & PNSSU-SAJ-driven microplanning

The effectiveness of the PNSSU-SAJ depends on its ability to collect, analyze, and use data for **microplanning** in the field. This section explores monitoring and evaluation systems, the integration of digital tools **(DHIS2, mHealth)** to overcome data quality challenges, and the importance of local planning to achieve equitable coverage.

DATA COLLECTION SYSTEMS AND CHALLENGES: FROM PAPER TO DIGITAL

Monitoring PNSSU-SAJ activities relies on a difficult transition from historical paper-based media to modern digital platforms, reflecting the complexity of bipartite governance.

1. THE INDIVIDUAL TECHNICAL SHEET (FTI) AND THE BURDEN OF PAPER

The main source of primary data remains the **FTI**, supplemented during routine medical examinations (VMS) upon entry into primary school and in 6th grade, and during consultations at the school and university health center (CSSU). These records document health status, screenings, and interventions received. However, field analyses show a significant gap[21] between the raw data collected on paper and their aggregation at the central level. This "bottleneck" is due to the weakness of the reporting system in rural areas, where paper reports must be physically transported, leading to data loss and delays of several months.

2. INTEGRATION OF DHIS2 (DISTRICT HEALTH INFORMATION SOFTWARE 2)

DHIS2 is the national health data management platform in Côte d'Ivoire. Although the PNSSU-SAJ is attached to the MSHP, the integration of its specific data into DHIS2 remains a major challenge.

The school health module: there is a dedicated module in DHIS2, but it is often underused compared to the HIV or malaria modules. Routine data from CSSUs are not systematically entered at the same level of granularity as those from primary health center. For health centers, HPV vaccination data are collected on scorecards that are aggregated in a monthly activity report and then sent to the district for entry into DHIS 2.

Lack of interoperability: The main technical challenge is the lack of interoperability between DHIS2 (health) and the Ministry of Education (MENA) databases. Without this connection, it is impossible to calculate accurate coverage rates, as the denominator (number of enrolled students) in DHIS2 is not automatically updated with actual education data.

MICROPLANNING AND MHEALTH TOOLS FOR EQUITY

PNSSU-SAJ has a recognized institutional platform capable of delivering large-scale school health interventions. Strengthening the monitoring and evaluation system, particularly through microplanning and digital tools (mHealth), is now **a major opportunity to consolidate this performance**, improve territorial equity, and support strategic decision-making.

1. High potential for leveraging routine data

Currently, data from School and University Health Centers (CSSU) are mainly collected in the

21 Haskè Conseil interview with the PNSSU-SAJ, 2025.

form of paper reports and manual aggregates.

The gradual integration of these data into the national health information system (SIS) would represent a major qualitative leap, enabling:

- More detailed analysis of the actual use of routine services;
- Better measurement of the impact of the PNSSU-SAJ beyond one-off campaigns;
- Enhanced evidence-based support for budgetary dialogue with national decision-makers.

By increasing the availability of regular, granular, and actionable data, the program could significantly strengthen its advocacy for more stable operational funding, helping to reduce its dependence on ad hoc funding from technical and financial partners.

2. From centralized planning to equity-oriented geospatial microplanning

Microplanning, supported by geographic information systems (GIS), enables district teams to accurately identify schools and populations with insufficient coverage.

- **Mapping of schools and CSSUs:** Geolocation highlights areas that are far from health facilities, requiring mobile or advanced strategies.
- **Equitable targeting:** In the Ivorian context, these tools are particularly relevant for directing interventions to rural, border, or low-infrastructure areas, where health needs are often the greatest.

3. mHealth: an accelerator for performance and individual monitoring

Mobile health tools are a key lever for improving the quality of monitoring school interventions:

- **Electronic registers:** The use of solutions such as Open Data Kit(ODK)or DHIS2 Tracker allows data to be entered directly in schools, even offline, reducing delays and errors in reporting.
- **Individualized monitoring:** These tools make it easier to identify students who have been lost to follow-up, generate catch-up lists, and send targeted reminders, improving service continuity.
- **Optimization of inputs:** Digital microplanning allows for precise adjustment of vaccine and other input requirements per facility, limiting stockouts and waste.

USE OF DATA AND LEVERAGE FOR IMPROVEMENT

The PNSSU-SAJ draws its strength from its ability to transform raw data into levers for action via dynamic dashboards.

DHIS2 dashboards for decision-making

The use of DHIS2 dashboards allows real-time visualization of district performance.

- **Visualization of impact:** Data analysis makes it possible to correlate, for example, areas with high deworming coverage with a reduction in reported cases of anemia.
- **Economic advocacy:** However, the difficulty of linking this health data (DHIS2) to school performance data (MENA) remains a challenge in proving the direct economic impact (academic success).

Lever for operational funding

The quality and transparency of data from DHIS2 and mHealth tools are the main advocacy tool for TFPs (GAVI, UNICEF). By demonstrating high, verifiable, and equitable coverage, the program justifies continued investment. Conversely, the lack of reliable routine data on CSSU performance is an obstacle to state funding. Without digital proof of regular activity, it is difficult to convince the Ministry of Budget to continue operating funds, perpetuating the paradox of immobilized staff.

For the PNSSU-SAJ to reach its full potential, it is imperative to invest not only in vaccines, but also in digital architecture (mHealth tablets, DHIS2 tracker training, health-education interoperability), transforming data collection from an administrative chore into a strategic management tool.

CASE STUDY: THE HPV VACCINE, THE LITMUS TEST FOR THE DIGITALIZATION OF THE PNSSU-SAJ

The introduction of HPV vaccination served as a decisive test bed for the PNSSU-SAJ's digital capabilities, exposing both the potential of modern tools and the persistent challenges of the data collection infrastructure.

The scale of HPV vaccination (targeting entire cohorts of girls aged 9 to 14) placed unprecedented logistical pressure on the **individual technical sheet (ITS)** and paper-based reporting system.

The effectiveness of the rollout was enabled by the adoption of mHealth tools, often forced by the requirements of the tools themselves. The mHealth tool was essential for tracking girls who were due to receive their second dose. The system could generate lists of missing students by school, allowing health teams and referral teachers to focus their catch-up efforts, which was impossible with the paper-based system.

Despite the success of the campaign's digitization, the HPV experience confirmed the structural limitations of the national information system.

- **MENA/MSHP disconnect:** Despite the MSHP's DHIS2 having a robust API, automated data exchange with MENA is hindered by a lack of technical interoperability and a unique common identifier. Misaligned definitions of the "9-year-old girl" denominator (school enrollment vs. biological age) force staff to perform manual adjustments. Geographic coding discrepancies between health areas and school zones further complicate the synchronization. Bridging these digital silos requires a unified data exchange platform and standardized semantic mapping. Resolving this "denominator dilemma"[22] is essential for accurate, real-time tracking of vaccination coverage.

- **Campaign vs. routine cycle:** Digitization was excellent in "campaign mode" (thanks to GAVI funds for mHealth equipment and training) but slowed significantly once external funding ended. Routine monitoring data from school health centers (CSSU) (consultations, minor care) remained disconnected from DHIS2, often still operating on paper. This lack of reliable digital data on routine services is a major obstacle to advocacy with the government to secure a sustainable operating budget.

22 In the context of public health and data management, the "denominator dilemma" refers to the difficulty of accurately defining and counting the total target population (the denominator) needed to calculate a percentage or coverage rate

The rollout of the HPV vaccine has demonstrated that the future of the PNSSU-SAJ lies in mobile digitization and data integration into DHIS2. However, it has also highlighted that the transition to an effective and equitable monitoring system requires not only tools, but also government investment in routine logistics and resolving the lack of interoperability between the health and education sectors.



PHOTO BY DWAYNE JOE (UNSPLASH)

What worked — how PNSSU-SAJ strengths translated into rapid HPV scale-up

Despite its structural challenges (notably the operational funding gap), the PNSSU-SAJ has proven success factors that offer essential lessons for other countries considering the creation or strengthening of a school health program.

Bipartite (MSHP–MENA) governance and the joint circular: The early establishment of formal collaboration between the Ministry of Health (MSHP) and the Ministry of National Education (MENA) gave the PNSSU-SAJ both institutional legitimacy and practical access to schools. The joint MSHP–MENA circular operates as a kind of administrative "safe conduct" — without it, regional education directors (DRENs) cannot authorize medical teams to enter schools. This single document converts a public-health priority into an enforceable obligation for school principals and enables rapid, simultaneous mobilization of health and education resources during campaigns. State funding of PNSSU-SAJ staff salaries through the MSHP budget line further protects the program from rapid dissolution during budget crises by guaranteeing a baseline human presence.

Schools as a cost-efficient mass platform: School-based delivery has proven logistically and economically more efficient than community door-to-door outreach for mass interventions. Comparative analyses referenced in the report suggest unit-cost reductions on the order of 30–40% versus door-to-door approaches, driven by population concentration that minimizes transport, fuel, and per-diem costs. The school calendar's nine months of continuous attendance also offers logistical predictability for cold-chain-sensitive interventions like HPV — fixed intervention dates and a wide window of opportunity to reach the 9–14 cohort that would otherwise drop out of routine vaccination.

Programmatic layering — building from simple to complex: The PNSSU-SAJ portfolio expanded incrementally, beginning with low-complexity interventions like mass deworming and supplementation that demonstrated effectiveness quickly and at low cost (e.g., around USD 11.07 per child for deworming). Successful delegation of deworming distribution to teachers reached high coverage and built the operational base on which more complex programs could later be layered. HPV integration confirmed the maturity of this approach: it reached the "zero-dose" 9–14 cohort that traditional EPI struggled to capture, while a co-financing model combining Gavi (vaccine and campaign logistics) with PNSSU-SAJ and EPI expertise (cold chain) avoided creating a parallel vertical structure. The transition to the WHO single-dose schedule further simplified follow-up.

Demand leverage through schools and parent–teacher associations (APEs): The credibility of the school as a trusted institution, combined with APEs acting as intermediaries between the program and parents, helped defuse initial fears about HPV and convert vaccination from an external health mandate into an educational partnership. Teacher engagement and short, focused communication training shifted parental perception, and APE mediation appears to have helped reduce parental refusals during the introduction phase — even in contexts where misinformation circulated heavily on social media.

Teacher engagement: Training teachers in basic communication about vaccines transformed perceptions of the program, shifting it from an external health mandate to an educational partnership for health.

In short, what worked was the PNSSU-SAJ's ability to create a stable and legitimate institutional platform (MSHP-MENA) on which highly cost-effective interventions (deworming) could be layered, paving the way for the successful integration of complex and costly programs such as HPV, all supported by strong community buy-in through schools.

What did not work — where PNSSU-SAJ constraints limited performance and why

Several persistent constraints limited the uniformity of PNSSU-SAJ performance and exposed the program to specific vulnerabilities.

Funding paradox: stable salaries, fragile operations: The institutional choice to separate budgets — MSHP funding staff salaries while operations and vaccines come from EPI and partner channels — protects job security but creates an operational paradox. Operational costs (fuel, field per diems, consumables, CSSU maintenance) are reportedly covered only at around 25% by MSHP/MENA budgets[23], leaving state-employed staff present but immobilized when external campaign funding ends. This was visible during the HPV scale-up: Gavi funding covered the first wave's logistics, but the PNSSU-SAJ could not consistently follow up girls for the second dose six months later.

Inequality and uneven functionality of school health centers (CSSUs): Although the CSSU network has grown to more than 250 facilities, a significant proportion are non-functional or under-equipped. Infrastructure audits show widespread gaps in essential equipment and first-line drugs, with the general service-readiness index in Côte d'Ivoire estimated at around 57%[24]. WASH infrastructure in schools is a particular weak point — absent or malfunctioning latrines, lack of drinking water, and inadequate menstrual hygiene management create conditions that undercut the gains of deworming and broader school-health interventions, particularly in rural settings.

Broken referral chain after screenings: Routine medical examinations (VMS) reliably surface conditions like vision and hearing impairment, anemia, and postural problems — but the referral chain to specialized services (ophthalmology, nutrition) is often broken. The two main reasons are a lack of resources for transporting students to specialist services and a lack of funds to cover specialized care (glasses, treatments) that is not financed by the PNSSU-SAJ itself. Identification without follow-through limits the impact of an otherwise well-functioning screening function.

Operational coordination deficit at decentralized level: Despite a strong national legal framework, effectiveness depends on the quality of joint coordination at regional (DRS–DREN) and district levels, where mixed health–education teams are mobilized. This is where most operational frictions arise: coordination is uneven across regions, and weak local arrangements cascade into missed visits, planning gaps, and inconsistent supervision. National policy alignment alone has not translated reliably into local execution.

Difficulty reaching out-of-school adolescents: Extending HPV vaccination to out-of-school adolescents theoretically relies on CSSUs as community contact points outside campaigns. The uneven functionality of CSSUs limits this role, leaving the PNSSU-SAJ heavily dependent on schools as the main delivery channel and producing access gaps between in-school and out-of-school cohorts — particularly relevant given that out-of-school rates rise sharply at lower secondary (around 44%) and upper secondary (around 63%) levels for girls.

Table 6: Out-of-School Rates by Level (Girls)

Education Level	Estimated OOS Rate (%)
Primary (Ages 6–11)	6%
Lower Secondary	44%
Upper Secondary	63%

23 Analysis of the Health Budget in Côte d'Ivoire (2021–2024) published by the global health coverage platform P4H and the Ministry of Health, 2025

24 Health systems assessment for côte d'ivoire accelerating reforms toward universal health coverage,2020

Lessons for other LMICs — operational principles and practical sequencing

The PNSSU-SAJ experience offers lessons for other low- and middle-income countries (LMICs) consider creating, strengthening, or expanding their own school health programs. These lessons relate to the timing of investment, sequencing, and the financing model.

Institutionalize bipartite (health–education) governance from the outset: Establish a formalized legal framework — joint decrees or circulars co-signed by the ministries of health and education — to clarify responsibilities and authorize health teams' access to schools. Where possible, medical and nursing staff assigned to schools should remain under the Ministry of Health budget line: this preserves job security and keeps clinical standards intact. Transferring such staff to education budgets risks them being seen as non-essential during budget cuts and disconnected from clinical protocols.

Sequence interventions: simple and high-impact first, then complex: School health programs are not built overnight. Begin with low-cost, high-impact interventions that quickly demonstrate operational effectiveness — basic hygiene and WASH, mass deworming (using teachers as distribution agents), iron and vitamin supplementation. Costly and complex programs like HPV vaccination should be layered in only after the basic logistics platform and community trust are in place. Côte d'Ivoire's HPV introduction succeeded in part because it relied on mobilization channels established by earlier deworming campaigns.

Resolve the logistics paradox by funding operations domestically: The greatest source of fragility in the Ivorian model is dependence on external campaign funding for routine operational logistics. Governments should secure a sustainable, dedicated budget line for field logistics — fuel, per diems, consumables — that complements salary funding: if the state pays staff, it must also provide them with the means to travel. Technical and financial partners (Gavi, World Bank, UNICEF, etc.) should be used for high-cost inputs (vaccines, technology) and pilot innovation rather than for recurrent logistics, with explicit transition strategies to integrate routine logistics into the national budget before campaign funding tapers.

Strengthen decentralized financing alongside national budgets: Encourage and formalize local financing mechanisms such as Parent–Teacher Association (APE) contributions and Local Development Funds (FDLs), which often fill gaps in central budgets — purchase of first-aid kits, maintenance of infirmaries, transport for referrals. Because reliance on community financing risks deepening urban–rural disparities, these mechanisms should be paired with targeted public or external funding directed to the most under-resourced districts.

Invest in a functional digital backbone — and in education–health interoperability: Digital tools such as DHIS2 and mHealth platforms (ODK, DHIS2 Tracker) can transform monitoring, microplanning, and follow-up for complex interventions like HPV — but only if connectivity, devices, and training are sustained beyond campaign cycles, and only if education and health data systems can talk to each other. Resolving the "denominator dilemma" (mismatched definitions and identifiers between health and education) is essential for accurate coverage tracking. LMICs should plan for shared identifiers, common data definitions, and routine (not just campaign-mode) digital reporting from the start.

Plan for out-of-school populations from the start: School-based delivery is efficient and equitable for in-school cohorts but cannot, on its own, reach all adolescents. Programs should plan from the outset for complementary outreach to out-of-school populations — through community

health centers, mobile teams, and peer-led referral systems — and budget explicitly for the higher per-child cost this implies. Without this, gains made in school can mask widening equity gaps for the most marginalized.

Table 7: Summary of good practices, challenges, and lessons learned

Theme	**Factors facilitating performance (Côte d'Ivoire)**	**Constraints and risks observed**	**Transferable lessons for low- and middle-income countries (LMICs)**
Institutional platform	The PNSSU-SAJ is an existing national platform linking health and education, with CSSUs located near schools.	Uneven coverage of CSSUs; varying capacities across regions; limited structural resources.	Build on an existing school platform and institutionalize it before introducing new vaccines.
Governance & coordination	MSHP–MENA collaboration operational at the central and regional levels; involvement of the EPI for HPV vaccination.	Coordination often dependent on individuals; lack of formalized instruments (joint circulars, local MOUs) in some areas.	Formalize roles and responsibilities through clear intersectoral agreements before scaling up.
Data & micro-planning	Use of DHIS2 for health monitoring; school lists available through schools.	No structured link between education and health databases; micro-planning largely manual.	Link school registers to vaccination systems and institutionalize local validation of lists.
Human resources	Experienced EPI health personnel and CSSU agents; teachers mobilized for awareness-raising.	High workload; lack of specific incentives; staff turnover affecting continuity.	Provide protected time, modest incentives, and ongoing support for key actors.
Social & cultural alignment	Involvement of APEs, COGES, and community leaders; generally high acceptability of the HPV vaccine.	Awareness-raising is sometimes delayed; risk of rumors or unexpected local resistance.	Engage community and parental authorities early to prevent misinformation.
Service design & legitimacy	Vaccination integrated into school and health activities (VMS, EPS), reinforcing institutional legitimacy.	When vaccination is perceived as a one-off activity, parental confidence is more fragile.	Present vaccination as an integral part of a visible school health package.
Logistics & equity	Delivery in schools enabling rapid coverage of schoolgirls; EPI supports the cold chain.	Difficulty reaching girls not in school; high logistical costs in isolated rural areas.	Supplement the school strategy with targeted outreach activities with dedicated budgets.
Funding & partners	Vaccines and cold chain financed mainly at the central level (government + Gavi); partners supporting training and communication.	Dependence on external funding for certain key functions; possible delays in disbursement.	Use partner funds for structural investments, with a clear transition strategy.

Appendix

LIST OF CONSULTED ORGANIZATIONS

- Ministry of Health, Public Hygiene and Universal Health Coverage (MSHP-CMU)
- National School and University Health Program – Adolescent and Youth Health (PNSSU-SAJ)
- Directorate of School Medicine and School Health (DMOSS)
- National Maternal and Child Health Program (PNSME)
- Cocody Departmental Health Directorate (DDS Cocody)
- School and University Health Services – Adolescent and Youth Health (SSSU/SSU-SAJ)
- SSSU-SAJ 2 Cocody
- SSU-SAJ Boundiali
- United Nations Children's Fund (UNICEF)
- World Health Organization (WHO)
- Joint United Nations Programme on HIV/AIDS (UNAIDS)
- United Nations Population Fund, via the Project Coordination Unit for Women and Children (UNFPA – UCP-FE)
- Global Alliance for Vaccines and Immunization (Gavi, the Vaccine Alliance)
- Clinton Health Access Initiative (CHAI)
- Non-Governmental Organization MESSI (NGO MESSI)
- Ivorian Network of Youth Against AIDS (RIJES)
- National Federation of School Organizations of Côte d'Ivoire (FENOSCI)
- Association / Community Actor (AMP)
- Medical Service / Structure (SMOSS)
- Independent actors / public health experts
- Public health experts (national consultants)

About Haskè Group

Through its three entities, Haskè Conseil, Haskè Ventures, and Ignite.E, Haskè Group supports a diverse range of actors (including governments, the private sector, technical and financial partners, NGOs, foundations, and universities) in the formulation and implementation of high-impact strategic solutions.

Haskè Group positions itself as a catalyst for innovative strategies, combining technical expertise, systemic vision, and a sense of action. The group is involved in public policy consulting, private sector development, entrepreneurship, and the creation of sustainable ecosystems, while supporting the localization of strategies and the co-creation of solutions with stakeholders.

Haskè Group draws on deep knowledge of local realities, a strong multi-stakeholder network, and a community-embedded approach to deliver solutions rooted in lived realities. This field presence enables Haskè Group to bridge strategic vision and operational impact.

Contact: info@haskeconseil.com