School-Based HPV Vaccine Delivery Indonesia

May 2026



PHOTO BY NURIL AHSAN (UNSPLASH)

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 schools and UKS 7

UKS: history and structural evolution 11

ORIGINS AND EVOLUTION 11

CORE FUNDING CHANNELS AND BUDGET LINES 16

FINANCING AS A DETERMINANT OF FUNCTIONALITY 18

HPV AS A CASE ILLUSTRATION 18

Delivery platforms & program design: how UKS anchors service delivery 20

NATIONAL AND PROVINCIAL OVERSIGHT: STEERING POLICY AND STANDARDS 20

DISTRICT-LEVEL COORDINATION: TRANSLATING POLICY INTO PRACTICE 20

HEALTH SERVICE INTERFACE: THE *PUSKESMAS* TEAMS 20

SCHOOL-LEVEL ACTORS: THE ROLE OF GURU UKS 21

EMBEDDING HEALTH ROUTINES IN THE SCHOOL YEAR 21

TWO OPERATIONAL INNOVATIONS REDUCING BARRIERS TO UPTAKE 22

Governance and coordination 25

Community engagement & UKS as the demand engine 25

What worked – how UKS strengths translated into rapid, equitable HPV scale-up 29

What did not work – where UKS constraints limited performance and why 30

Lessons for other LMICs – operational principles and practical sequencing 31

Appendix 1: List of interviewed stakeholders 34

About Haskè Group 35

Glossary of terms

Term	Definition
AEFI	Adverse Event Following Immunization
APBD	Anggaran Pendapatan dan Belanja Daerah (Local Government Budget)
ASIK	Aplikasi Sehat Indonesiaku (Immunization Registry)
BIAS	Bulan Imunisasi Anak Sekolah (School Children's Immunization Month)
BOK	Bantuan Operasional Kesehatan (Health Operational Assistance)
BOS	Bantuan Operasional Sekolah (School Operational Assistance)
DAPODIK	Data Pokok Pendidikan (Education Information System)
FunDoo	Digital chatbot for adolescent engagement
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Development Agency)
guru UKS	Teacher responsible for school health activities
HPV	Human Papillomavirus
MOUs	Memoranda of Understanding
NGO	Non-Governmental Organization
NIP	National Immunization Program
NUSAGARD	Domestic HPV vaccine brand
pesantren	Islamic Boarding School
posyandu	Village Health Post
puskesmas	Community Health Center
SATUSEHAT	National Health Data Integration Platform
SKB 4-Menteri	Joint Decree of Four Ministries (Health, Education, Religious Affairs, Home Affairs)
SMILE	Cold-chain Digitalization Program
SRHR	Sexual and Reproductive Health and Rights
Tim Pembina UKS	Intersectoral body coordinating and overseeing the School Health Program (UKS).
U-Report	UNICEF-supported polling platform for youth engagement
UKS	Usaha Kesehatan Sekolah (School Health Program)
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

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

Indonesia's experience shows that a large, diverse upper-middle-income country can achieve rapid HPV vaccine scale-up with broad reach among school-going girls when it builds on an existing, trusted delivery system rather than creating a new one. The country's school-health program – *Usaha Kesehatan Sekolah* (UKS) – has long functioned as a national platform for promoting hygiene, WASH, nutrition, screening, and routine immunization through schools. Integrating the HPV vaccine into UKS operations, and into the annual *Bulan Imunisasi Anak Sekolah* (BIAS) campaign, demonstrated how pre-existing structures, routines, and trust networks can be adapted for new interventions.

Rather than designing new logistics or outreach systems, Indonesia adapted UKS's core operational components – teacher orientation, micro-planning, vaccine cold-chain positioning, absentee follow-up, and community dialogue – to incorporate HPV vaccination. Between pilot phases (2016–2022) and national implementation (2023–2024), national administrative data report first-dose HPV coverage of roughly 90–95% in targeted cohorts – among the higher rates documented for early-introducer Lower- and Middle-Income Countries (LMICs), although direct cross-country comparisons are limited.

Several program design choices were decisive. The SKB 4-Menteri (Joint Decree of four ministries) formalized cross-sector collaboration among Health, Education, Religious Affairs, and Home Affairs, giving schools a clear legal basis to deliver vaccines and reducing ambiguity in cost-sharing and accountability. Cultural alignment was proactively managed through early engagement with Islamic authorities, halal certification, and outreach to *pesantren*[1] networks, which significantly reduced resistance in conservative areas. A simplified opt-out consent model minimized administrative barriers and improved uptake. Technological integration – linking DAPODIK (education rosters) to ASIK (immunization registry) and SATUSEHAT (logistics platform) – enabled more timely monitoring, including real-time visibility where connectivity permits, micro-planning, and stock visibility. Domestic production of the NUSAGARD HPV vaccine further strengthened supply security and reduced dependence on external procurement.

Layering HPV vaccination onto an established school-health architecture – with defined actors, predictable calendars, and trusted teacher intermediaries – reduced the operational lift of introduction. District-level circulars and memoranda of understanding (MOUs) helped operationalize the SKB framework and clarify coordination between schools and local health offices.

Sustaining these gains will require addressing persistent gaps. UKS capacity remains uneven across provinces: some districts maintain well-trained focal staff, functioning WASH infrastructure, and routine data systems, while others face shortages in teacher support, cold-chain capacity, and operational funds. Out-of-school adolescents – estimated at 2–3 million girls – remain a critical equity challenge, as reaching them requires resource-intensive, community-based approaches. Financial sustainability is also a concern: donor bridge funding will need to transition to predictable domestic budget lines.

Sustaining gains will require strengthening UKS's human systems – through measures such as modest stipends, protected time for focal teachers, and practical mentorship – which evidence suggests are more effective than one-off trainings. Embedding complementary adolescent health modules, such as Sexual and Reproductive Health and Rights (SRHR) and mental health, would also deepen community engagement and frame vaccination within a broader health narrative.

1 Traditional Islamic boarding schools in Indonesia.

Indonesia's approach also highlights transferable lessons for other LMICs:

1. **Leverage existing school-health systems instead of creating parallel campaigns;** the predictability of school calendars and teacher networks lowers transaction costs and improves sustainability.
2. **Sequence investments – test logistics, consent, and engagement models** before formalizing scale-up through ministerial instruments and MOUs.
3. **Prioritize data interoperability by linking education and health registries** to enhance targeting, reduce waste, and strengthen accountability.
4. **Address cultural factors early** by securing faith-leader endorsements and embedding dialogue in micro-planning.
5. **Plan for equity from the outset**, with dedicated budgets and partnerships to reach out-of-school adolescents.
6. **Invest in system durability**, focusing on digital resilience, cold-chain infrastructure, and institutionalized agreements that enable long-term government ownership.

Key risks remain. Uneven participation by private and religious schools, coupled with localized opt-out movements, can create clusters of unvaccinated adolescents. These vulnerabilities can be mitigated through formal agreements, tailored communication materials, and visible local endorsements. Logistical risks in remote and archipelagic areas – cold-chain failures, transport interruptions, and fuel shortages – remain structural challenges that require continued investment and contingency planning. Finally, social and fiscal risks are intertwined: misinformation can erode confidence quickly, while unpredictable funding or donor withdrawal can reverse early gains.

Ultimately, Indonesia's experience confirms that UKS is not just a delivery channel but a national asset. Indonesia's experience suggests that strengthening UKS's institutional foundations – teacher capacity, WASH infrastructure, routine micro-planning, data linkages, and district financing – is likely to both help protect HPV vaccination gains and reduce the cost of introducing future adolescent health programs.

Background & rationale schools and UKS

Schools represent an effective and equitable platform for delivering adolescent health interventions in Indonesia. With near-universal enrollment and regular attendance, schools provide a structured, predictable environment in which large numbers of children can be reached efficiently.[2,3] They offer an existing network of trusted educators and community relationships that facilitate mobilization, consent, and follow-up – challenges that often limit the success of purely community-based campaigns. UKS functions as the country's institutional backbone for school health delivery.[4]

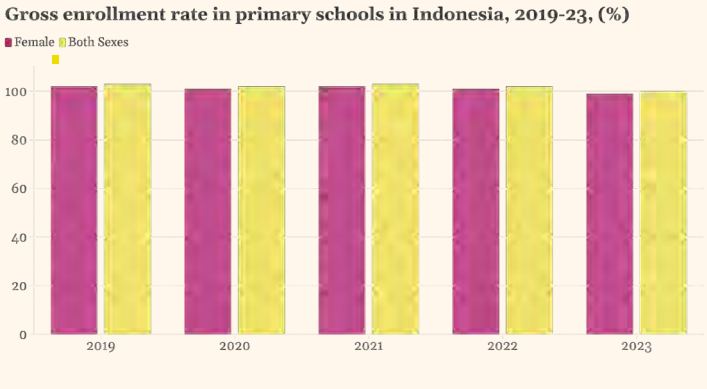
In Indonesia, the school health program (*Usaha Kesehatan Sekolah* or UKS) facilitates health interventions, including the HPV vaccine, for specific age groups and grade levels:

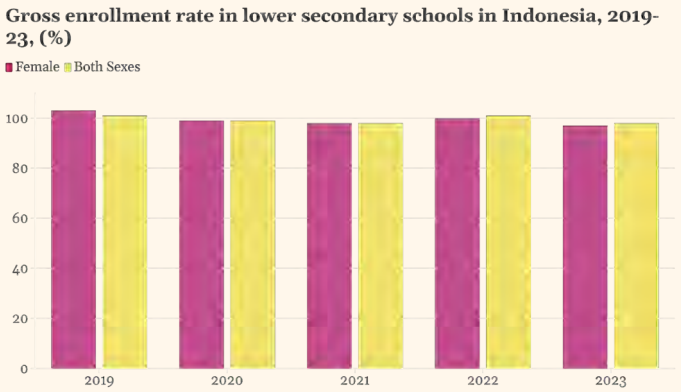
Primary School (*Sekolah Dasar* - SD): This level typically covers Grades 1 through 6, serving children who are roughly 7 to 12 years old. The HPV vaccine is specifically targeted at girls in Grades 5 and 6 (approximately 11–12 years old) as part of the annual School Children's Immunization Month (BIAS).

Lower Secondary School (*Sekolah Menengah Pertama* - SMP): This level covers Grades 7 through 9, serving adolescents roughly 13 to 15 years old. While the broader target cohort for the HPV program includes girls aged 9–14, the primary delivery through the BIAS campaign is anchored in the final years of primary school to ensure high coverage before girls potentially transition out of the school system.

The program also identifies a significant equity challenge in reaching the estimated 2–3 million out-of-school girls who fall within these age ranges but are not captured by the school-based delivery platform.

Figure 1: School enrollment rates in Indonesia[5,6]





- *The high enrollment rate of girls in primary schools makes BIAS an ideal platform to administer the HPV vaccine*
- *Around **70-80% of schools take part in school health initiatives**, including the UKS program and BIAS vaccination campaigns*
- *State schools are largely integrated into these programs through the Puskesmas, while some private schools are more reluctant to join*

"HPV vaccine was well integrated into the already strong school health program"

(WHO, Unicef, & GAVI, 2018, p.2)

2 World Bank. (2023). Completion rate, primary, female (% of relevant age group) – Indonesia.
3 Kementerian Pendidikan dan Kebudayaan. (2023). UKS | Usaha Kesehatan Sekolah.
4 UNICEF Indonesia. (2020). School Health and Hygiene Promotion in Indonesia.
5 The Gross Enrollment Rate (GER) measures total enrollment at a given education level, regardless of age, as a percentage of the official school-age population. It can exceed 100% when students outside the official age range, such as repeaters or early/late entrants, are included in the enrollment count.
6 Sources: National Cervical Cancer Elimination Plan for Indonesia 2023-2030, 2023; Kementerian Kesehatan Republik Indonesia, Annual report, immunization, 2022; WHO, Global Cancer Observatory, Dashboard, 2025; World Bank Group, Databank, schooling rate, 2025; UNESCO, UIS Dashboard, 2025; World Health Organization, United Nations Children's Fund, and GAVI, Post-introduction Evaluation (PIE) of the HPV Vaccine Program in Indonesia. WHO, 2018: Haskè Conseil, Interviews with Indonesia stakeholders, 2025; Haskè Conseil Analysis, 2025

UKS transforms schools from passive sites of service delivery into active nodes of health system functioning. Each participating school designates guru UKS (teachers responsible for health promotion and reporting), supported by *puskesmas* (community health centers) and local education offices. This arrangement institutionalizes coordination across sectors: teachers mobilize and track students; *puskesmas* staff conduct immunizations and collect data; and district education offices ensure reporting consistency through DAPODIK, Indonesia's national education data system.[7,8] Because these workflows are routine and nationally standardized, they more easily accommodate new interventions with reduced marginal costs. By the time HPV vaccination was introduced in 2016, UKS had decades of experience delivering deworming, iron supplementation, and nutrition screening campaigns through predictable annual cycles.

The HPV vaccination rollout illustrates why UKS is more than a delivery mechanism – it is a platform for health system strengthening. **Integrating vaccination into existing UKS routines enabled Indonesia to achieve broad, reliable coverage under the original two-dose schedule, through the *Bulan Imunisasi Anak Sekolah* (BIAS) campaign.**[9,10] Teachers trained under UKS served as mobilizers and consent intermediaries, bridging the gap between parents, students, and health staff.

Because school enrollment among girls aged 9–12 remains above 98%, this approach helps alleviate the logistical and equity gaps that community-based delivery models often face. The ability to plan doses around the academic calendar ensured timely administration and follow-up, minimizing dropout between doses.[11,12] **Indonesia has since decided to transition to a single-dose HPV schedule**, a shift expected to reduce delivery complexity and costs while preserving the school-based delivery model through UKS.

CERVICAL CANCER IN INDONESIA (2021)

36,633	17.2%	21,000	19.1%	23.3
New cases in 2021	HPV % of all female cancer cases	Deaths due to cervical cancer in 2021	% of all female cancer deaths due to HPV	Age-standardized incidence (per 100,000 women)

Cervical cancer remains a major public health challenge in Indonesia, with an estimated 36,633 new cases and more than 21,000 deaths in 2021 (ICO/IARC HPV Information Centre)[13]. Effective prevention depends on vaccinating girls before sexual debut, and UKS provides a structured route to do so within a familiar school environment under the supervision of trusted teachers, which can help address consent and access barriers.

7 Lisu, E. S., Takaeb, A. E. L., & Ndun, H. J. N. (2022). Study on Implementation of School Health Program (UKS).
8 Yap, J., Satria, F. B., Lubis, I. N. D., et al. (2025). Challenges in Expanding Access to the HPV Vaccine Among Schooling Girls: A Mixed Methods Study from Indonesia.
9 Ibid.
10 WHO. (2023). National Launch of Human Papillomavirus (HPV) Immunization Expansion.
11 World Bank Education Indicators. (2023). Indonesia school enrollment statistics.
12 WHO. (2023). National Launch of Human Papillomavirus (HPV) Immunization Expansion.
13 ICO/IARC HPV Information Centre. (2023). Indonesia Human Papillomavirus and Related Cancers Fact Sheet.

Integrating HPV vaccination into the established UKS school-health infrastructure enabled Indonesia to reduce delivery costs significantly by leveraging pre-existing assets rather than building new systems from scratch. Rather than deploying large outreach teams, scheduling house-to-house visits, or organizing special community events, the vaccination program tapped into staffed school facilities, trained guru UKS and routine school timetables. A costing study of HPV vaccination in the cities of Surabaya, Makassar and Manado found that recurrent financial costs dominated overall program costs – but these were far lower than would be expected in standalone campaigns, owing in part to utilization of school infrastructure and teacher-led mobilization.[14] Because the UKS approach minimizes marginal logistics, transport and community-outreach labor, the unit cost per dose falls and the program becomes better positioned within budget constraints.[15]

Beyond cost savings, integrating through UKS enhances operational efficiency: schools provide predictable reach (given near-universal enrollment), reliable access points, and built-in follow-up mechanisms, so the incremental cost of adding HPV vaccination is lower than for parallel campaigns.

Modeled estimates referenced by program partners place the annual budget for a full two-dose cohort in the approximate range of US$22–49 million, with the lower bound reflecting Gavi/UNICEF-negotiated vaccine prices and the upper bound based on government contract prices.[16] Modeling and program analyses suggest that transitioning to a single-dose schedule could reduce delivery cost per fully vaccinated child, although the overall budgetary impact will depend on negotiated vaccine prices.[17] Sustaining HPV delivery through UKS also helps preserve cross-sector coordination, cold-chain maintenance, and registry interoperability that benefit other school health interventions, positioning UKS as a reinforcing institutional platform for school-based health programming.

HPV vaccination is just one demonstration of how UKS strengthens system functionality across multiple domains. Campaign implementation refreshes teacher engagement, reinforces coordination between schools and local health offices, and sustains maintenance of cold-chain equipment such as refrigerators and vaccine carriers.[18] Moreover, the program keeps data systems functional and interoperable by separating – and then linking – education and health functions. DAPODIK, the Ministry of Education's national education management information system, serves as the authoritative source for school enrollment data, capturing student identities, age, grade, school attendance, and transfers; it provides the denominators used for cohort targeting and micro-planning.

ASIK, the Ministry of Health's electronic immunization registry, captures vaccination events

14 Setiawan, D., Annisa, A. N., Lianawati, L., Hutubessy, R. C., & Yeung, K. H. (2023). The cost analysis of human papillomavirus vaccination program in Indonesia. Value in Health Regional Issues, 35, 102–108.
15 Ibid.
16 Modeling and program analyses suggest that transitioning to a single-dose schedule could reduce delivery cost per fully vaccinated child, although the overall budgetary impact will depend on negotiated vaccine prices.
17 Slavkovsky, R., Mvundura, M., Debellut, F., & Naddumba, T. (2024). Evaluating potential program cost savings with a single-dose HPV vaccination schedule: a modeling study. JNCI Monographs, 2024(67), 371–378.
18 Johns Hopkins Bloomberg School of Public Health – IVAC. (2024). HPV Vaccine Introduction in Indonesia: Findings from Key Informant Interviews.

and status at the individual level, including dose date, antigen, batch number, and adverse event reporting. In practice, school rosters from DAPODIK are used by districts and puskesmas teams to pre-load target lists for School Children's Immunization Month (BIAS). Vaccination data are entered into ASIK by *puskesmas* vaccination teams at the point of service (either digitally or via offline forms that synchronize later), while guru UKS support last-mile validation by verifying class lists, flagging absentees or transfers, and supporting follow-up for missed doses. This division of labor ensures that education systems remain responsible for accurate denominators, while health systems retain clinical ownership of immunization records.

Table 1: Comparison of UKS versus outreach delivery

Cost item	**School-based (UKS) delivery**	**Stand-alone / outreach**	**Difference**
Unit delivery cost per dose (excl. vaccine)	US$0.36-2.30 (avg. =US$1.33)	US$0.73-6.56 (avg. =US$2.37-3.85)	Approx. 44-65% lower with UKS
Total recurrent cost city demo	Surabaya: US$265K Makassar: US$167K Manado: US$271K	Would require higher personnel and transport costs	School delivery kept budgets in low hundreds of thousands
Personnel & supervision	Uses existing teachers and school routines; minimal per-diems	Requires full outreach teams, supervisors, per-diems	Major cost savings on labor
Transport & logistics	Fewer trips, centralized cold-chain at schools	Frequent trips, temporary cold. chain setup	Reduced fuel and vehicle use
Micro-planning & data	Uses DAPODIK+ ASIK for student rosters	Door-to-door enumeration and tracing	Lower admin and follow-up costs
National program scale (annual)	US$22-49M (incl. UKS support)	Likely higher due to outreach overhead	Lower range due to school integration

These operational gains extend beyond HPV vaccination. Investments in infrastructure, digital reporting, and teacher capacity directly benefit other school-health programs such as deworming, nutrition screening, menstrual hygiene promotion, and adolescent mental health initiatives. In this sense, UKS functions as both a delivery engine and an integrator of adolescent health services. By embedding vaccination within a trusted, pre-existing institutional network, Indonesia's HPV program did more than deliver a new vaccine — it strengthened the foundation for all future school-based health interventions. The result is a system that is more cost-efficient, resilient, and capable of sustaining health gains over time.

UKS: history and structural evolution

ORIGINS AND EVOLUTION

UKS traces its roots to mid-20th century public-health practice and was progressively formalized from 1957 onward. What began as intermittent health visits to schools gradually became an institutional program co-owned by the ministries of health and education. Over time UKS absorbed a broader package of preventive services and took on an operational role as the natural convener for school-based campaigns. That historical continuity is important: UKS is not a project but a national routine with institutional memory, local coordinators and an expectation – at least in many districts – that schools will host periodic health interventions.[19,20]

Figure 3: The UKS journey

1970s

- 1970: Four-Minister Decree creates the UKS framework
- Focus on hygiene, sanitation, and basic health education
- Trias UKS model formalized (Health Education, Services, Environment)
- First "guru UKS" training and early school health routines established
- Deworming and dental campaigns begin by the late 1980s

1980s-2000s

- UKS scaled to nearly all public and religious schools
- Routine deworming and iron supplementation
- added to UKS package
- District-level coordination
- committees established.
- "Doctor Kecil" (student health ambassador) initiative launched
- Annual health checks integrated into school calendar

2000-2016

- Integration with national education data (DAPODIK)
- Nutrition and BMI monitoring programs piloted
- Early HPV demonstration projects in Makassar and Manado (2015)
- BIAS campaign institutionalized for annual immunization drives.
- Measles-Rubella (MR) vaccine introduced in 2017 through UKS

2016-2022

- HPV added to BIAS using UKS teacher and data networks
- Strengthened school-*Puskesmas* coordination
- Improved cold chain and logistics via SMILE and ASIK systems
- Coverage expanded nationwide by 2022
- Teachers trained for mobilization, consent, and reporting

2023-Present

- Nationwide HPV rollout fully digitized and integrated
- Addition of mental health, nutrition, and reproductive health modules
- Full linkage between DAPODIK and ASIK for real-time reporting
- School dashboards and monitoring tools rolled out to districts
- Four-Minister Decree (2023) reaffirms institutional mandate

CORE FUNCTIONS

In practice, UKS serves as a long-standing bridge between the education and health sectors, combining promotive, preventive, and facilitative functions within schools. The program's promotive role is most visible through classroom-based health education that teaches hygiene, nutrition, and personal well-being, often embedded into the national curriculum. Teachers – particularly those designated as guru UKS – deliver these lessons with support from district health offices, sometimes supplemented by digital or printed materials.[21,22,23] In recent years, the scope of UKS has widened to include adolescent health topics such as menstrual hygiene, mental health, and, in a few provinces, early sexual and reproductive health (SRHR) awareness.[24] These additions reflect the program's flexibility: UKS provides the framework and teachers the continuity, allowing new topics to be layered into existing routines rather than requiring separate, resource-intensive outreach programs.[25]

19 Kementerian Pendidikan dan Kebudayaan. (2023). UKS | Usaha Kesehatan Sekolah.
20 Kementerian Pendidikan dan Kebudayaan. (2022). Revitalisasi UKS melalui Sekolah Sehat.
21 Kementerian Pendidikan dan Kebudayaan. (2023). UKS | Usaha Kesehatan Sekolah.
22 Kementerian Pendidikan dan Kebudayaan. (2022). Revitalisasi UKS melalui Sekolah Sehat.
23 Lisu, E. S., Takaeb, A. E. L., & Ndun, H. J. N. (2022). Study on Implementation of School Health Program (UKS).
24 Ibid
25 Ibid

The preventive dimension of UKS comprises tangible health services that reach children on a recurring basis. This includes mass deworming campaigns, nutritional assessments, and vision screenings, as well as coordination of *Bulan Imunisasi Anak Sekolah* (BIAS) – the School Children's Immunization Month that brings *puskesmas* (community health center) teams to schools for vaccination days.[26,27] These efforts are scheduled around the academic calendar and create a predictable rhythm for parents and teachers alike.[28] UKS also supports menstrual-health interventions and small-scale clinical referrals, while parent–teacher associations help reinforce health messages and maintain student follow-up.[29]

VACCINE SCHEDULE FOR BIAS (HISTORICAL)
Historical two-dose schedule; see the 2025 single-dose transition described in the text.

Grade (approx. age)	**Vaccine**	**Purpose**
Grade 1 (~7 yrs)	MR (Measles-Rubella)	Booster to sustain measles and rubella immunity
Grade 1 (~7 yrs)	DT (Diphtheria-Tetanus)	Booster against diphtheria and tetanus
Grade 2 (~8 yrs)	Td (Tetanus-diphtheria)	Booster to maintain tetanus and diphtheria protection
Grade 5 (~11 yrs)	Td (Tetanus-diphtheria)	Adolescent booster
Grade 5 (~11 yrs)	HPV (girls)	Cervical cancer prevention (dose 1)
Grade 6 (~12 yrs)	HPV (girls)	Cervical cancer prevention (dose 2*)

Schools maintain basic WASH infrastructure – toilets, water access, and hand-washing stations – and organize the logistics of service delivery days, including classroom scheduling, consent form distribution, and follow-up for absentees.[30] Development partners such as UNICEF, GIZ, and Save the Children have strengthened these facilitative elements through teacher training, WASH upgrades, and digital monitoring pilots, though implementation remains uneven across districts.[31,32]

26 Kementerian Pendidikan dan Kebudayaan. (2023). UKS | Usaha Kesehatan Sekolah.
27 Kementerian Pendidikan dan Kebudayaan. (n.d.). Immunisasi [Program guidance].
28 Ibid
29 Kementerian Pendidikan dan Kebudayaan. (2022). Revitalisasi UKS melalui Sekolah Sehat.
30 Ibid
31 UNICEF Indonesia. (2020, September 4). Hygiene education and behavior change program worth IDR 47 miliar launched.
32 Fit for School Program / GIZ. (n.d.). Key Aspects of Implementation in Indonesia.

Table 2: UKS interventions by school level and age group

UKS Intervention	Early Childhood (PAUD/RA, -4-6 yrs)	Primary School (SD/MI, -7-12 yrs)	Junior Secondary (SMP/MTs, -1~15 yrs)	Senior Secondary (SMA/SMK/MA, -16-18 yrs)
Health education (PHBS, hygiene, nutrition)	●	●	◦	◦
Personal hygiene & WASH promotion	●	●	◦	◦
Nutrition education	◦	◦	◦	◦
Mass deworming	-	◇ (typically grades 1-6)	-	-
Iron supplementation (TTD)	-	◇ (upper primary in some districts)	● (esp. adolescent girls)	●
Vision screening	-	◇ (select grades)	◦	◦
Dental screening	-	◦	◦	◦
HPV vaccination (BIAS)	-	◇ (grades 5-6; girls)	-	-
Other routine immunization (BIAS)	-	◇ (grade-specific)	-	-
Menstrual health education	-	-	●	●
Mental health awareness/life skills	-	(basic)	●	●
Clinical referrals (via puskesmas)	◇ (as needed)	◦	◦	◦

Acronyms:

UKS - National school health program
PHBS - Clean and healthy behavior framework
PAUD - Early childhood education
RA -Islamic early childhood education
SD - Primary school
MI - Islamic primary school
SMP - Junior secondary school
MTs - Islamic junior secondary school
SMA - Senior secondary school
SMK - Vocational secondary school
MA - Islamic senior secondary school
TTD - Iron supplementation (adolescent girls)

Figure 4: Main functions of UKS



Promotive

Health education embedded in national curriculum

Topics: Hygiene, nutrition, personal well-being, menstrual hygiene, mental health, early SRHR awareness

Delivered by guru UKS, supported by district health offices, digital/printed materials

Modular: New topics added without disrupting routines.



Preventative

Recurring school-based health services

Main programs:
1. Mass deworming
2. Nutritional assessments
3. Vision screenings
4. BIAS vaccination coordination with *puskesmas*
5. Menstrual health interventions
6. Small-scale clinical referrals



Facilitative

Maintains WASH infrastructure: Toilets, water, hand-washing stations

Organizes logistics for service delivery: Classroom scheduling, consent forms, absentee follow-up

Strengthened by partners (UNICEF, GIZ, Save the Children) via training, WASH upgrades, digital monitoring

UKS'S STRENGTH IN ABSORBING NEW INTERVENTIONS

A core strength of UKS lies in its ability to integrate new health interventions without disrupting the existing rhythm of school operations. This adaptability is not accidental – it is the result of a structured, iterative pathway that ensures innovations are tested, refined, and institutionalized before scaling.[33,34] Each stage of this pathway serves a distinct purpose, as described below.

PROBLEM IDENTIFICATION AND STAKEHOLDER CONSENSUS

The process begins with defining the health problem and building agreement among stakeholders at both national and local levels. This step is critical for legitimacy and resource mobilization. Ministries of health and education, district health offices, school administrators, and parent associations are engaged early to align priorities and clarify roles. Parent associations in particular help bridge communication between schools and households – facilitating consent, reinforcing trust in vaccination or health activities, and ensuring that parents understand program objectives. Their participation also strengthens accountability at the school level. Without this consensus, interventions risk remaining fragmented or donor driven.

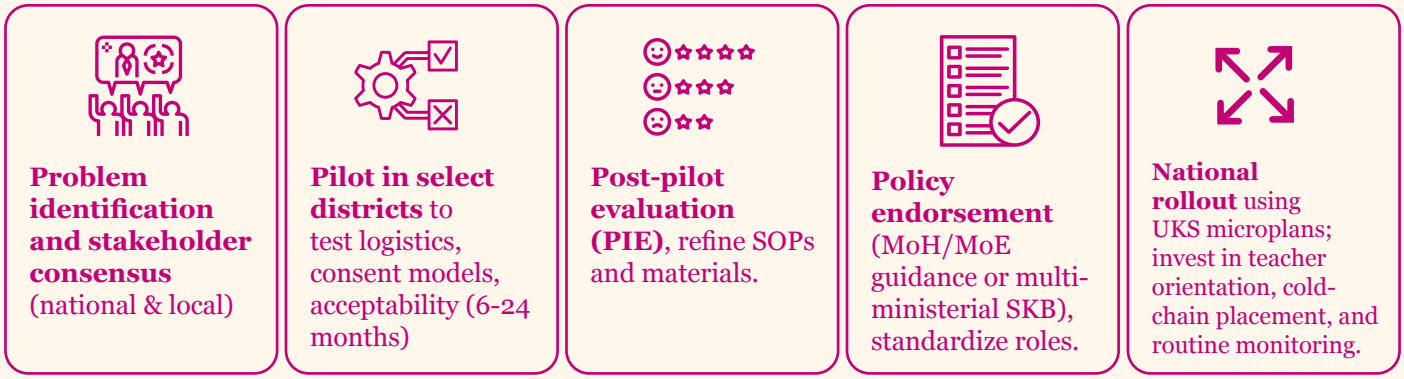
PILOT PHASE IN SELECTED DISTRICTS

Pilots are the proving ground for operational feasibility. Conducted over 6–24 months, they test logistics (e.g., cold-chain capacity for vaccines), consent models, and community acceptability. Pilots also reveal practical challenges – such as scheduling conflicts with exams or gaps in WASH infrastructure – that could derail scale-up if left unresolved.[35] This stage emphasizes learning rather than coverage, allowing flexibility to adapt before committing to national rollout.

POST-PILOT EVALUATION (PIE)

After pilots, UKS conducts a structured evaluation to capture quantitative outcomes (coverage, dropout rates) and qualitative insights (teacher and parent feedback). These findings inform refinements to SOPs, training materials, and communication strategies.[36] For example, if consent form return rates were low, SOPs might introduce new timelines or digital consent options. This evidence-based approach strengthens implementation fidelity.

HOW UKS ABSORBS NEW ACTIVITIES - THE TYPICAL PATHWAY



33 Purba, F. S., Eliska, E., & Khairina, Y. (2025). Evaluation of The School Health Unit (UKS) Program Based on The CIPP Model in the Implementation of Health Services in Public Elementary School, Tebing Tinggi City.
34 Warnaini, C., Didar Haq, A., Kadriyan, H., Shibuya, F., & Kobayashi, J. (2025). A dynamic journey of comprehensive school health policy implementation in response to the COVID19 pandemic in Lombok, Indonesia.
35 Ibid
36 Purba, F. S., Eliska, E., & Khairina, Y. (2025). Evaluation of The School Health Unit (UKS) Program Based on The CIPP Model in the Implementation of Health Services in Public Elementary School, Tebing Tinggi City.

POLICY ENDORSEMENT AND INSTITUTIONALIZATION

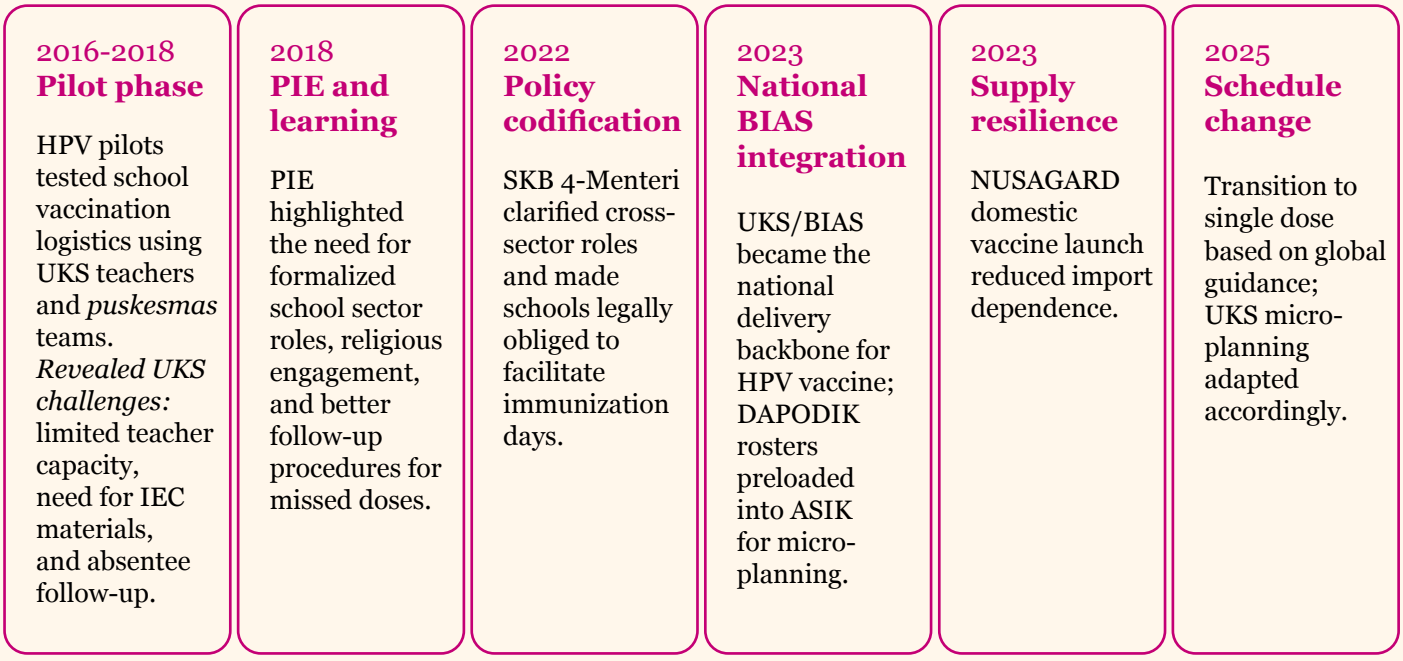
Once operational models are validated, policy endorsement formalizes the intervention and embeds it within Indonesia's governance framework. This typically occurs through the School Health Working Group (Tim Pembina UKS/M) – a multi-ministerial body comprising the ministries of health, education, culture, research and technology, religious affairs, and home affairs. Each ministry has defined functions: Health provides technical standards and supplies, Education oversees school implementation, Religious Affairs ensures integration in madrasahs, and Home Affairs links national directives to local governments.

The same structure operates at provincial and district levels, where UKS teams convene education and health offices, school supervisors, and community representatives to adapt policies into local plans and manage budgets. Through this coordinated structure, policy endorsement clarifies roles, secures funding, and ensures consistent implementation across Indonesia's decentralized system.

NATIONAL ROLLOUT USING UKS MICRO-PLANS

The final stage leverages UKS's micro-planning system to integrate new activities into school routines. Micro-plans detail service delivery schedules, teacher orientation sessions, and resource distribution. For vaccine-based interventions, this includes cold-chain placement and monitoring protocols. Routine monitoring is embedded from the outset, using checklists and increasingly digital tools to track coverage and identify gaps.[37]

Figure 5: Evolution of HPV vaccine introduction through UKS (integrated timeline with UKS mechanics)[38]



WHY THIS MATTERS

The UKS pathway embodies a modular design: new health interventions are layered onto existing promotive, preventive and facilitative functions within schools, rather than implemented as standalone outreach campaigns. This ensures that services leverage existing teacher networks, school infrastructure and the predictable academic calendar – thus reducing scheduling conflict,

37 Ibid

38 Note: NUSAGARD is locally manufactured in Indonesia through a technology transfer partnership between PT Bio Farma and MSD (Merck & Co., Inc.). While the vaccine is filled, finished and approved domestically, its underlying technology and bulk active substance originate from MSD's 4-valent HPV vaccine platform, with Bio Farma gradually building capacity for more upstream production.

lowering marginal implementation costs, and maintaining continuity of school operations.[39]

In the case of HPV vaccination, this modular architecture played a decisive role. The HPV immunization program was integrated into the established BIAS platform, which already routes vaccines through the school health system under UKS. Because the modalities of teacher-led consent, classroom-based delivery, and micro-planning of school health activities were already in place, the new HPV module could tap into these channels rather than building new logistics from scratch. For example, nationwide policy mandated that Grades 5 and 6 girls (age 11-12) be vaccinated as part of BIAS from August 2023.[40]

From a modest baseline (coverage as low as ~3% in 2020), administrative reporting indicates first-dose coverage rose to approximately 90–95% in targeted cohorts following national rollout, although coverage varies substantially across districts.[41] A vertical stand-alone vaccination program would likely have required separate consent, scheduling, training, monitoring, and cold-chain infrastructure tied to schools; instead, the modular UKS approach allowed iteration through pilots, refinement of SOPs, and micro-plan adaptation before institutionalization.

FINANCING AND INCENTIVES

The financing architecture of UKS sustains school health activities across Indonesia's decentralized system. Unlike programmatic interventions that rely on single funding streams, UKS operates through a web of interlinked budgets distributed across multiple ministries and levels of government. These include national allocations from the Ministry of Health (MoH) and the Ministry of Education, Culture, Research and Technology (MoECRT), complemented by local government funds (APBD) – under the Ministry of Home Affairs – and occasional partner support.[42,43,44]

CORE FUNDING CHANNELS AND BUDGET LINES

At the center of UKS financing lies the MoH's budget, particularly through the *Biaya Operasional Kesehatan* (BOK) – the Health Operational Fund transferred to district health offices and subsequently to *puskesmas*. Within this structure, vaccine procurement and cold chain logistics are embedded in the National Immunization Program (Program Imunisasi Nasional). The BOK provides earmarked sub-grants for health worker per diems, vaccine transport fuel, and maintenance. This mechanism was crucial for the HPV vaccine rollout, which relied on pre-existing BOK lines to cost delivery logistics without creating new vertical funding structures.[45]

In parallel, the local government budget (APBD) – which is controlled by the Ministry of Home Affairs (MoHA), governing district and municipal budgets – finances operational and coordination costs shared between district Health and Education Offices. This typically covers cross-sector meetings, teacher mobilization, school outreach, and community engagement. However, allocations vary widely.

39 Lisu, E. S., Takaeb, A. E. L., & Ndun, H. J. N. (2022). Study on Implementation of School Health Program

40 Yap, J., Satria, F. B., Lubis, I. N. D., et al. (2025). Challenges in Expanding Access to the HPV Vaccine Among Schooling Girls: A Mixed Methods Study from Indonesia.

41 Ibid

42 Kementerian Pendidikan dan Kebudayaan. (2023). UKS | Usaha Kesehatan Sekolah.

43 Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2024).

44 Limasalle, P., Soewondo, P., Trihono, et al. (2022). Subnational Governments' Autonomy vs. Capacity: The Need for St ronger Management Systems for Health Financing in Indonesia.

45 Setiawan, D., Annisa, A. N., Lianawati, L., Hutubessy, R. C., & Yeung, K. H. (2023). The cost analysis of human papillomavirus vaccination program in Indonesia.

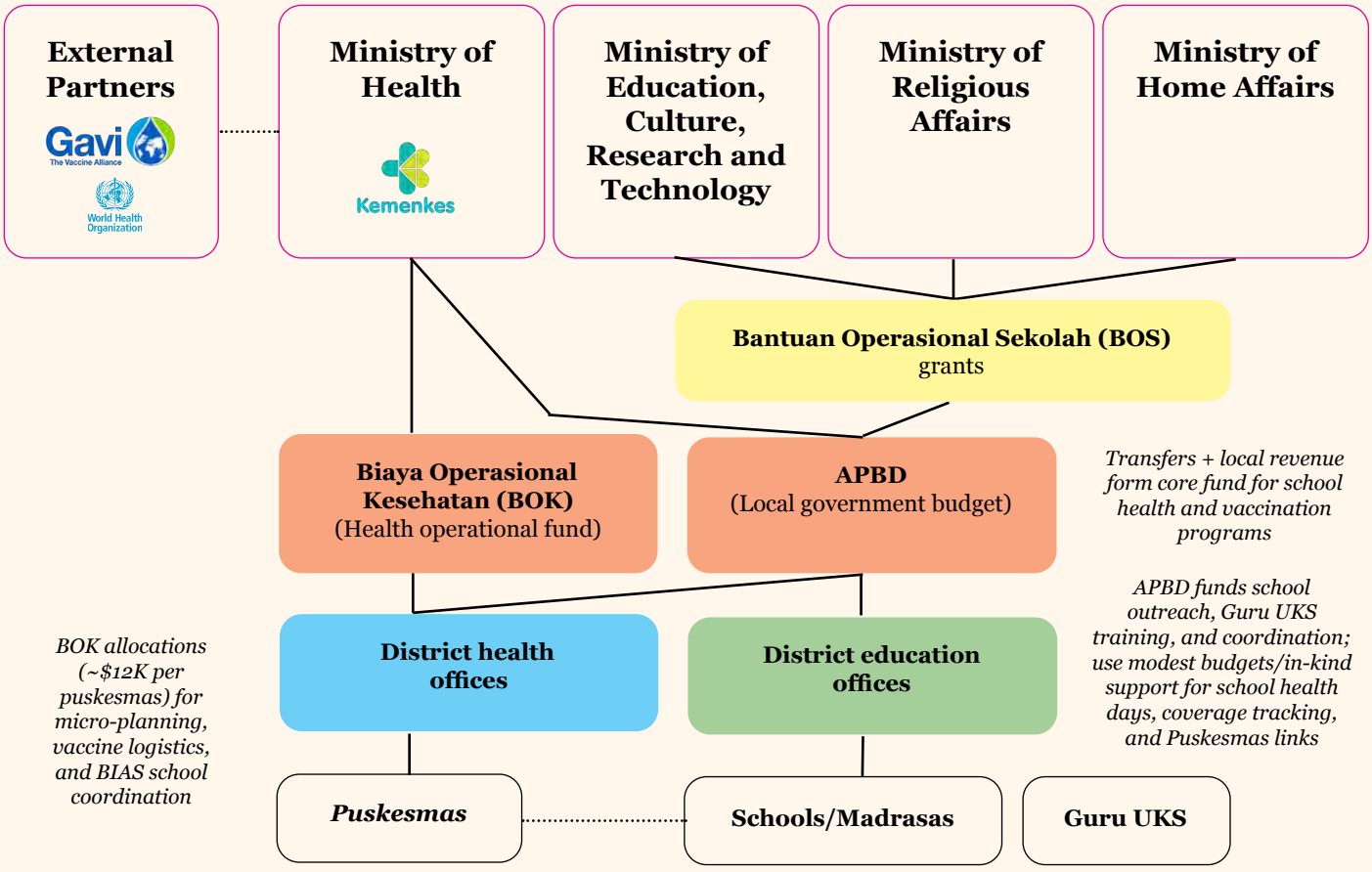
Some districts dedicate up to IDR 40 million (≈USD 2,500) annually to UKS, while others report irregular or no specific budget – a key source of inequity in program implementation across provinces.[46,47,48]

At the school level, the MoECRT and the Ministry of Religious Affairs (MoRA) extend the financing framework through *Bantuan Operasional Sekolah* (BOS) and RA/Madrasah BOS grants – national school operational funds that cover day-to-day non-salary expenditures such as teaching materials, maintenance, and student welfare. Schools may allocate up to 5% of BOS budgets to health promotion, hygiene, and minor UKS activities. In practice, however, these funds are rarely ring-fenced, and school principals must balance UKS needs against competing academic and extracurricular priorities.

Finally, partner and donor contributions – notably from UNICEF, WHO, and Gavi – have historically supported catalytic investments such as cold chain expansion, social mobilization materials, and initial training. For instance, between 2016 and 2022, partner financing for HPV demonstration and expansion phases supported over 6,700 teacher trainings and 1,639 health worker trainings, illustrating how external support tends to focus on one-off systems strengthening rather than recurrent costs.[49,50]

Figure 6: UKS financing architecture

Central ministries and partners channel ~USD 380M annually through national health and education budgets.



46 Purba, F. S., Eliska, E., & Khairina, Y. (2025). Evaluation of The School Health Unit (UKS) Program Based on The CIPP Model in Tebing Tinggi City.
47 Fuady, A., Anindhita, M., Haniifah, M., et al. (2024). Bridging the gap: financing health promotion and disease prevention in Indonesia.
48 UNICEF. (2024). Enhancing public finance for better health services for children in Indonesia (Budget Brief).
49 UNICEF Indonesia. (2020). School Health and Hygiene Promotion in Indonesia.
50 UNICEF Indonesia. (2025). A future without cervical cancer through HPV immunization.

To clarify the relative scale and functional role of these financing streams, the following table summarizes the main sources of UKS financing, their managing institutions, primary uses, and indicative magnitude.

Table 3: UKS financing breakdown by use and scale

Financing Source	**Managing Institution**	**Primary uses within UKS / HPV delivery**	**Indicative scale**
MoH - BOK (Health Operational Fund)	Ministry of Health › districts › *puskesmas*	Health worker per diems; vaccine transport fuel; cold-chain maintenance; outreach logistics	Recurrent national envelope; district allocations vary by population and geography
National Immunization Program (NIP)	Ministry of Health (central)	Vaccine procurement; national and subnational cold chain; forecasting and supply management	Centrally financed; largest cost component, insulated from district variation
APBD (local government budgets)	District governments (MoHA oversight)	Cross-sector coordination; teacher mobilization; school outreach; meetings and supervision	IDR 0-40 million per district annually (USD 0–2,500); highly variable
BOS / Madrasah BOS (school grants)	MoECRT / MoRA › schools	Health promotion; hygiene activities; minor Up to 5% of school BOS budgets; rarely UKS consumables	Up to 5% of school BOS budgets; rarely ring-fenced
Partners & donors (UNICEF, WHO, Gavi)	External partners	Training (teachers and health workers); social mobilization; cold-chain expansion; digital tools	Time-bound, project-based; front-loaded during pilots and scale-up

Taken together, the financing architecture reveals a highly asymmetrical cost structure. National systems finance the most expensive components (vaccines and cold chain) while the functionality of coordination, human resources, and equity depends on comparatively small but highly variable district- and school-level allocations. As the table above illustrates, these subnational investments are modest in absolute terms, yet their activation has out-sized effects on planning quality, coverage consistency, and institutional durability, often determining whether delivery functions as a system or relies on individual initiative.

FINANCING AS A DETERMINANT OF FUNCTIONALITY

Districts that maintain regular APBD allocations for school health coordination tend to report more structured UKS meetings, timely micro-planning, and higher teacher engagement. Where allocations lapse, coordination often reverts to ad hoc efforts led by motivated individuals rather than institutional processes – though many additional factors, including school enrollment, geography, and local leadership, also shape program performance.[51,52]

51 Purba, F. S., Eliska, E., & Khairina, Y. (2025). Evaluation of The School Health Unit (UKS) Program Based on The CIPP Model in Tebing Tinggi City.

52 Fuady, A., Anindhita, M., Haniifah, M., et al. (2024). Bridging the gap: financing health promotion and disease prevention in Indonesia.

The financing system also shapes human resource functionality. While Indonesia counts over 2.7 million teachers nationwide, only a small proportion – often one or two per school – are formally designated as UKS focal teachers. Their participation in health-related activities depends heavily on district-level budget releases for training and coordination.[53] Without predictable funding, many trained teachers are reassigned or lose functional engagement over time, weakening institutional memory and continuity. This causes an observed operational constraint: districts with intermittent APBD releases and irregular training budgets consistently report weaker UKS coordination, higher staff turnover among focal teachers, and greater reliance on informal, person-dependent arrangements.

HPV AS A CASE ILLUSTRATION

The HPV vaccine introduction underscores how UKS financing mechanisms can be leveraged for new interventions. Instead of establishing a separate funding line, the rollout utilized the existing BOK and APBD channels to support vaccine delivery, while partner contributions filled training and communication gaps. This minimized duplication and aligned HPV delivery with broader UKS routines, but also exposed systemic vulnerabilities: delays in BOK disbursement, uneven local cost-sharing, and the fragility of depending on short-term external grants for critical enablers like training.[54]

53 Limasalle, P., Soewondo, P., Trihono, et al. (2022). Subnational Governments' Autonomy vs. Capacity: The Need for Stronger Management Systems for Health Financing in Indonesia.

54 Yap, J., Satria, F. B., Lubis, I. N. D., et al. (2025). Challenges in Expanding Access to the HPV Vaccine Among Schooling Girls: A Mixed Methods Study from Indonesia.

Delivery platforms & program design: how UKS anchors service delivery

NATIONAL AND PROVINCIAL OVERSIGHT: STEERING POLICY AND STANDARDS

The Tim Pembina UKS/M – jointly led by the Ministries of Health (MoH), Education, Culture, Research and Technology (MoECRT), Home Affairs (MoHA) and Religious Affairs (MoRA) – sets policy direction, establishes technical standards, and coordinates national strategy. This coordination extends beyond policy alignment into personnel organization: the Tim Pembina defines the roles and reporting pathways of UKS actors across ministries, ensuring that multi-sector collaboration translates into recurring and predictable health actions.[55] By embedding these expectations into the UKS structure, the national team transforms inter-ministerial coordination into the daily work routines of teachers, nurses, and education officials.[56]

At the provincial level, Provincial Health Offices (PHO) act as intermediaries between national policy and district implementation, managing both technical and personnel systems. They supervise *puskesmas* teams, oversee cold-chain logistics, and coordinate cascade trainings that reach both health workers and guru UKS. Provincial UKS/M committees often maintain rosters of trained school health teachers and facilitators, updating them annually through coordination meetings where national standards are localized. Provinces that allocate dedicated budgets for training and supervision demonstrate higher coverage and reporting consistency – underscoring how stable provincial investment sustains both personnel motivation and front line performance.[57]

DISTRICT-LEVEL COORDINATION: TRANSLATING POLICY INTO PRACTICE

District Health Offices (DHO) and District Education Offices (DEO) conduct biannual micro-planning sessions that bring together UKS coordinators, immunization officers, and school representatives to translate targets into workable routines. Using DAPODIK enrollment data, districts estimate target populations and synchronize school calendars with BIAS vaccination weeks, allowing teachers, nurses, and health cadres to operate on predictable schedules and minimize classroom disruption.[58]

HEALTH SERVICE INTERFACE: THE *PUSKESMAS* TEAMS

Puskesmas teams – typically composed of nurses, midwives, and vaccinators – are rostered weeks in advance to visit clusters of schools during pre-announced BIAS windows. These teams bring vaccines and health materials, ensure injection safety, manage adverse-event monitoring, and report outcomes through digital or paper tools.

Each *puskesmas* team generally covers 4–6 schools per day, reaching 300–500 students depending on geography and enrollment density.[59] Their ability to maintain this rhythm depends on timely operational funding: per diems, fuel, and cold chain maintenance are all drawn from BOK sub-grants. Front line performance is thus directly tied to the financial flows that enable mobility and outreach, reinforcing how personnel performance within UKS is a function of both human capacity and financing reliability.

Puskesmas staff are trained in dose handling, adverse-event screening, and record-keeping, while teachers receive short orientations focused on communication, observation, and absentee follow-up. The training cascade follows a “train-the-trainer” model: provincial trainers coach district

55 Kementerian Kesehatan Republik Indonesia. (2023). Surat Keputusan Bersama Empat Menteri tentang UKS dan Imunisasi Sekolah (SKB 4-Menteri).
56 Ministry of Religious Affairs Indonesia. (2023). Pedoman Pelaksanaan UKS di Madrasah dan Pesantren.
57 Purba, F. S., Eliska, E., & Khairina, Y. (2025). Evaluation of The School Health Unit (UKS) Program Based on The CIPP Model.
58 Aisyah, D. N., et al. (2025). Using an Electronic Immunization Registry (ASIK) in Indonesia: Cross-Modal Study.
59 Ibid

officers, who in turn orient *puskesmas* teams and school health teachers using simple one-page job aids.[60]

SCHOOL-LEVEL ACTORS: THE ROLE OF GURU UKS

Each participating school designates at least one teacher as the UKS focal point, responsible for integrating health education into lessons, mobilizing students, organizing parental consent, and maintaining basic health records. Indonesia's education system employs over 2.7 million teachers, of whom roughly 400,000 undertake some UKS-related responsibilities.[61] Publicly available documents do not provide a current national headcount of teachers who have completed structured UKS or health-promotion training. Ministry guidance defines the content and standards for a "*guru UKS terlatih*," and subnational evaluations indicate that only a minority of schools meet full UKS indicators, implying gaps in formal training coverage. Most perform these roles alongside full teaching loads, often without formal incentives or protected time, but their consistent engagement keeps the system functioning.[62]

During the HPV vaccination rollout, around 6,700 teachers and preschool educators received dedicated training in interpersonal communication and mobilization – demonstrating that modest, well-targeted investments in personnel capacity can quickly strengthen UKS's operational backbone. However, such efforts remain episodic, often driven by donor support rather than routine budgetary planning.

School health teachers and principals prepare the physical space for vaccination (classrooms, halls, or covered playgrounds), manage student flow to reduce crowding, and supervise post-vaccination observation periods. At the district level, health promotion officers and immunization coordinators synchronize calendars with education counterparts, assign teams, and verify supplies against pre-loaded rosters.

EMBEDDING HEALTH ROUTINES IN THE SCHOOL YEAR

The cumulative effect of these linked personnel layers is predictability. Because BIAS vaccination weeks and school health activities are synchronized with the academic calendar, schools and *puskesmas* teams can plan months ahead, reducing administrative friction and ensuring high student participation.[63] These recurring routines – underpinned by the coordination of teachers, health workers, and district officers – are what transform UKS from a project-based platform into a functioning, institutionalized system. However, the long-term resilience of these routines depends on sustaining personnel support through predictable financing, ongoing training, and clear incentives.[64] Where these mechanisms hold, UKS operates as a conduit between ministries and classrooms. Where they lapse, the system relies on goodwill rather than structure – a fragile equilibrium that underscores the importance of continued investment in the human infrastructure of school health.[65]

Behind that visible choreography lie several practical systems that reduce friction and errors. Cold-chain placement is planned at the micro-plan stage: vaccines are shipped to district stores, allocated to *puskesmas* by SATUSEHAT stock dashboards, and then distributed to schools in

60 Kementerian Kesehatan & Kementerian Pendidikan. (2024). Petunjuk Teknis Pelaksanaan Bulan Imunisasi Anak Sekolah (BIAS).
61 Lisu, E. S., Takaeb, A. E. L., & Ndun, H. J. N. (2022). Study on Implementation of School Health Program (UKS).
62 UNICEF Indonesia. (2025). A future without cervical cancer through HPV immunization.
63 Kementerian Kesehatan & Kementerian Pendidikan. (2024). Petunjuk Teknis Pelaksanaan Bulan Imunisasi Anak Sekolah (BIAS).
64 Purba, F. S., Eliska, E., & Khairina, Y. (2025). Evaluation of The School Health Unit (UKS) Program Based on The CIPP Model in the Implementation of Health Services in Public Elementary School, Tebing Tinggi City.
65 Setiawan, D., Annisa, A. N., Lianawati, L., Hutubessy, R. C., & Yeung, K. H. (2023). The cost analysis of human papillomavirus vaccination program in Indonesia.

insulated cold boxes timed for the day of delivery.[66] Other interventions are delivered separately: deworming and iron supplementation occur during routine UKS health days and mass campaigns, whereas HPV vaccine doses are administered during the School Children Immunization Month (BIAS) in 5th and 6th grade, a deliberate separation that preserves cold-chain integrity and clinical oversight while enabling other UKS interventions to continue on their regular cycles.

Complementary delivery channels are essential because no school platform, however well organized, reaches every adolescent. For girls not enrolled in formal schools, Indonesia relies on a mix of posyandu (village health posts), mobile outreach teams, and selected private clinics to provide catch-up doses. These outreach activities are not parallel stand-alone campaigns but are planned in coordination with the UKS school-health platform. UKS micro-plans, developed jointly by district health and education offices, use school enrollment data to define the in-school target population; outreach planning then begins from the residual gap, identifying adolescents not captured through schools.

Indonesia has reactivated around 300,000 posyandu posts nationwide, which function as the primary community-based delivery points for these out-of-school cohorts. Field-based outreach pilots (for example, in 29 villages) used community cadres to identify under-immunized adolescents and refer them to posyandu or scheduled mobile sessions, with vaccination status subsequently recorded in the national immunization registry. Although exact figures for motorbike- or boat-based outreach to adolescents are not published, the wide variation in first-dose HPV coverage across districts (ranging from ~17% to ~100%) indicates that districts with weaker school reach or higher out-of-school populations depend more heavily on these UKS-linked outreach mechanisms. International reviews consistently find that outreach delivery is more costly per child than school-based vaccination, underscoring why micro-planning that starts with school platforms and strategically targets outreach only to residual populations is critical for cost-effectiveness.[67,68]

Two operational innovations proved especially important in reducing barriers to uptake. First, the opt-out consent model: in Indonesia, the standard school-based program interprets a child's presence on the vaccination day (after prior notification) as consent, rather than requiring a signed "opt-in" form. Studies have found that opt-in requirements significantly raise administrative burden and participation refusals during the pilot phase of the HPV program. While national policy does not mandate written informed consent for the target cohort of the HPV program (girls aged 9-14) and imposes no legal penalties for refusal, districts that pair opt-out mechanics with active advance notices, teacher-led parent meetings and endorsements by community/religious leaders typically report higher coverage.[69]

Second, the tight data-integration between education and health systems: the Ministry of Health's ASIK immunization registry was introduced in 2022 and enables *puskesmas* teams to record vaccine delivery digitally, while education rosters from DAPODIK are used to pre-load school lists and monitor absentees. In remote districts, offline mobile forms sync later, maintaining the data feedback loop even without full connectivity. A recent study found that the introduction of ASIK reduced average reporting gaps (paper vs digital) by ~16-25% across multiple antigens.[70,71]

Embedding the vaccination delivery within the National Immunization Program (NIP) further

66 SATUSEHAT Platform Dashboard Monitoring Integrasi SATUSEHAT. (2025). Ministry of Health Republic of Indonesia.
67 Sekretariat Kabinet Republik Indonesia. (2022, May 13). Gov't reactivates 300,000 health services posts to improve
68 Yap, J., Satria, F. B., Lubis, I. N. D., et al. (2025). Challenges in Expanding Access to the HPV Vaccine Among Schooling Girls: A Mixed Methods Study from Indonesia.
69 Daniast Susilo, F. C., et al. (2024). The Ethical Paradox of Informed Consent in HPV Vaccination: Examining … Asian Journal of Medicine and Health.
70 SATUSEHAT Platform Dashboard Monitoring Integrasi SATUSEHAT. (2025). Ministry of Health Republic of Indonesia.
71 SATUSEHAT Platform Dashboard Monitoring Integrasi SATUSEHAT. (2025). Ministry of Health Republic of Indonesia.

leveraged underlying systems and infrastructure:

- The NIP, launched in 1977, is Indonesia's routine immunization program covering multiple vaccine-preventable diseases and aligned with global and regional immunization strategies.[72]
- Its mandate includes vaccine procurement, forecasting, supply-chain & cold-chain oversight, technical assistance (guidelines, monitoring & evaluation), training, quality assurance, and integration across public/private providers.
- Through NIP systems, vaccines are provided free of charge, routine delivery is supported at *puskesmas* level, and coverage targets are embedded in national development plans.
- For the school-health delivery platform (UKS/BIAS) the NIP provides the backbone: clinical ownership, cold-chain logistics, adverse event monitoring (AEFI), vaccine supply predictability, and technical standards. That means school-based teams do not operate in isolation but ride on a mature delivery system – helping make school delivery of HPV more routine and sustainable.[73]

NATIONAL IMMUNIZATION PROGRAM

Established System: NIP (since 1977) anchors all routine immunization in Indonesia, ensuring national standards, cold-chain, and free vaccines.	**Integrated Delivery:** UKS/BIAS uses existing NIP infrastructure (staff, cold-chain, AEFI systems) for efficient vaccine delivery.	**Sustainability Link:** Embedding HPV in NIP prevents duplication, strengthens coordination, and routinizes school vaccination.

Because UKS utilizes, and therefore HPV rollout sits inside, this NIP framework, the school-based opt-out consent and data-integration innovations become all the more effective: default-consent simplifies operations; data-integration improves list accuracy, dose forecasting and catch-up scheduling; and NIP infrastructure ensures that whatever occurs at schools gets fed into the national immunization registry, AEFI reporting and supply-chain planning.[74] These elements likely contributed to the comparatively high first- and second-dose coverage reported nationally, though the relative contribution of each factor has not been quantified.

Technical improvements have further strengthened reliability. Under the SMILE cold-chain digitalization program, vaccine stock-outs dropped by about 70% and over-stocking by 47% in pilot districts. Likewise, digital vaccine tracking in West Java and Banten connected more than 2,700 health centers, cutting down logistics gaps and missed vaccination days. SMILE is a practical supply-chain package (a mobile/web inventory app, district dashboards and electronic temperature loggers) that plugs directly into the NIP and UKS/BIAS delivery chain.

Rather than existing as a separate logistics tool, its dashboards and alerts are used by *puskesmas* vaccination teams and district UKS/MoECRT planners to time school immunization sessions, confirm vaccine availability before BIAS windows, and flag schools that need outreach or catch-up. In pilot districts, that front-line visibility helped cut vaccine stock-outs by about 70%, reduce over-stocking by ~47%, and – with digital tracking in West Java and Banten – link over 2,700 health sites to district planners, reducing missed vaccination days.[75]

72 World Health Organization. (2023). Indonesia National Immunization Program Overview.
73 UNICEF Indonesia. (2022). School Health and Hygiene Promotion in Indonesia.
74 Aisyah, D. N., et al. (2025). Using an Electronic Immunization Registry (ASIK) in Indonesia: Cross-Modal Study.
75 GovInsider. (2024, Nov 19). Indonesia's SMILE cold-chain digitalization reduces vaccine stock-outs.

Operationally, SMILE's value is the immediate, action-oriented information it provides to the same actors who run UKS: automated low-stock and temperature-excursion alerts prompt rapid redistribution or session rescheduling; inventory records remove lengthy manual reconciliations; and district dashboards support evidence-based decisions about pooled transport, cold-chain placements, or targeted teacher facilitation.



PHOTO BY ANDRI HELMANSYAH (UNSPLASH)

School-based HPV vaccine delivery

Governance and coordination

At the national level, the Joint Decree of Four Ministries (SKB 4-Menteri) – first signed by the MoH, MoERCT, MoRA and MoHA – is the single most important governance instrument that clarifies responsibilities for school health.[76] The SKB does three practical things: it codifies the Ministry of Health's technical and clinical ownership (vaccine policy, procurement, AEFI surveillance), it affirms the Ministry of Education's responsibility for access, rosters and teacher mobilization, and it creates a formal channel for the Ministry of Religious Affairs to engage pesantren and faith leaders in demand generation. By giving each ministry a named role and a legal reference, the SKB reduces inter-sectoral ambiguity and creates an enforceable expectation that schools will cooperate with public-health campaigns.[77,78]

Operationalizing that national mandate happens at the district level through routine tri-sector coordination. District health, education and religious affairs officers meet to translate national micro-plans into school-by-school action: assigning *puskesmas* teams, confirming school rosters, arranging transport, and scheduling BIAS dates.[79] Practical tools – simple Memoranda of Understanding and cost-sharing templates – are used to allocate responsibilities and cash flows for transport, per-diems, cold-chain maintenance and modest teacher facilitation stipends.[80] Where these MOUs are used, BIAS days and accompanying UKS activities proceed with far fewer surprises; where MOUs are absent or informal, last-minute funding gaps and role confusion commonly produce missed visits or stock mis-allocation. District coordination forums therefore perform a gate-keeping function: they are where policy becomes operations and where joint accountability is made concrete.

COMMUNITY ENGAGEMENT & UKS AS THE DEMAND ENGINE

Pre-vaccination:
confirming and reassuring parents

- Information via Whatsapp, meetings, television and radio
- Printed materials
- Myth-busting sessions

During vaccination:
consent and on-site support

- Reminders via Whatsapp
- Parental consent
- Reassurances

Post-vaccination:
follow-up and monitoring

- Health checks
- Follow-ups
- Feedback

Schools in Indonesia already function as trusted public institutions, and UKS activities reinforce that trust through continuous, visible engagement. Classroom lessons on hygiene and nutrition, parent–teacher meetings, and improvements in school WASH facilities create a "credibility halo" that extends to vaccination efforts.[81,82] By the time HPV vaccination was introduced, it entered an environment where health messages are already normalized, reducing perceptions of novelty or risk. Sustained UKS engagement through WASH, deworming, nutrition screening, and routine school health checks has already familiarized students, parents, and teachers with school-based health activities. For instance, hygiene and sanitation campaigns in West Sumatra and hand-washing programs in Bandung improved student knowledge and skills scores by 50–70 %, while teacher-led interventions in Samarinda embedded health behaviors into daily routines. These

76 KEPUTUSAN BERSAMA Empat Menteri RI No 03/KB/2022, HK.01.08/MENKES/1325/2022, 835/2022, 1195091.A/2022 tentang Penyelenggaraan Peningkatan Status Kesehatan Peserta Didik (SKB 4Menteri).
77 Ibid
78 Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2023). UKS | Usaha Kesehatan Sekolah.
79 Ministry of Religious Affairs. (2023). Pedoman Pelaksanaan UKS di Madrasah dan Pesantren.
80 Purba, F. S., Eliska, E., & Khairina, Y. (2025). Evaluation of The School Health Unit (UKS) Program Based on The CIPP Model.
81 Purba, F. S., Eliska, E., & Khairina, Y. (2025). Evaluation of The School Health Unit (UKS) Program Based on The CIPP Model.
82 UNICEF Indonesia. (2020). School Health and Hygiene Promotion in Indonesia.

existing channels for education, consent, and delivery mean that operational systems—scheduling, collaboration with local health centers, and monitoring—are already in place. As a result, HPV vaccination can be introduced while leveraging a culture of school health to lower perceived risk and enable smoother uptake.

Teachers serve as the first and most credible line of defense against misinformation. According to the scoping review titled "The behavioral and social drivers of HPV vaccination among parents and young people in Indonesia," spouses and teachers were identified as the most cited influencers in vaccine decision making – more frequently mentioned than healthcare providers in multiple quantitative studies. In one of the included studies, for example, spouses were cited as the most influential decision-maker by between 28.1% and 70.4% of parents, while teachers were also prominent influencers among parents in multiple studies.

Recognizing this, program designers developed rapid-response toolkits that equipped school health teachers with concise FAQs, copies of religious rulings confirming the vaccine's halal status, and short testimonial stories from respected community figures. These materials were not distributed as abstract campaigns but were integrated into parent–teacher sessions, allowing teachers to address fears in real time.

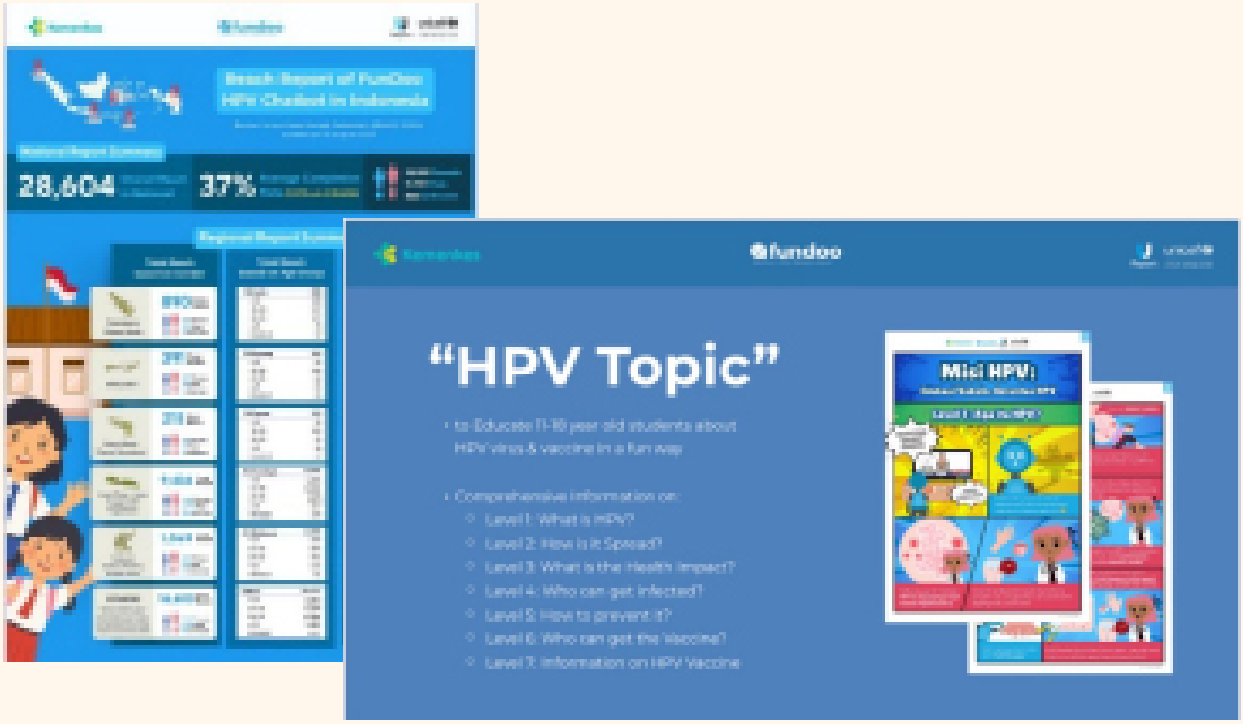
While there are no publicly available district-level estimates directly quantifying the impact of these materials on rumor resolution rates or the second dose coverage specifically, broader surveillance data indicate wide variability in HPV uptake across districts, with some areas achieving nearly universal coverage and others lagging far behind, a pattern consistent with differences in communication and engagement approaches. Drawing on this and behavioral evidence, teachers' active engagement has been associated with higher reported willingness among parents and students to vaccinate and with districts that sustain higher coverage between doses, though this relationship has not yet been quantified in a controlled comparative analysis.[83,84]

TRUST IN UKS AND VACCINATION PROGRAMS

Teachers and spouses are the most trusted messengers on vaccine decisions, ahead of healthcare workers	**High HPV acceptance** 96% of parents 92% of students are willing to vaccinate	**Confidence in vaccine effectiveness** 50% of parents 84% of students believe it works	**Schools normalize health behaviors and provide accessible delivery:** >90% of parents accept school-based vaccination

UKS serves as a central mechanism for engaging young people, not only as recipients of services but as active advocates for their own health. Within the UKS framework, peer education activities, classroom competitions, songs, and student health clubs provide structured opportunities for adolescents to become messengers within their own social networks.[85]

83 Daniast Susilo, F. C., et al. (2024). The Ethical Paradox of Informed Consent in HPV Vaccination: Examining ... Asian Journal of Medicine and Health.
84 Athifa, A., et al. (2025). The behavioral and social drivers of HPV vaccination among parents and young people in Indonesia: a scoping review.
85 Lisu, E. S., Takaeb, A. E. L., & Ndun, H. J. N. (2022). Study on Implementation of School Health Program (UKS).



Digital tools, integrated into the UKS system with support from UNICEF and the Ministry of Health, amplify this engagement. The *FunDoo* chatbot, specifically, functioned as a core component of UKS outreach: it offered a safe, anonymous platform where students could ask questions about vaccines, menstruation, nutrition, and sexual and reproductive health, receiving responses that were both evidence-based and culturally appropriate.[86]

FunDoo also included interactive quizzes, reminders for vaccination schedules, and tailored content by age and grade, enabling UKS coordinators to track engagement and identify gaps in knowledge or misconceptions. Complementing this, U-Report polls allowed UKS focal teachers to collect rapid feedback on awareness, barriers to participation, and local perceptions. Together, these platforms blended institutional authority with peer-level digital engagement and supported efforts to normalize vaccination and address misinformation – especially in pilot provinces and among young people reached digitally. However, *FunDoo's* Indonesia user base (approximately 28–30k users) was small relative to the national HPV target cohort, so while the digital tools amplified local engagement, they were a complement to, not a substitute for, teacher-led community engagement and school-based delivery at scale.[87,88]

DATA, MONITORING & UKS-DRIVEN MICRO-PLANNING

At the core of the UKS data architecture are three interlocking systems. First, DAPODIK, the Ministry of Education's school information system, supplies up-to-date enrollment rosters and class lists that establish reliable denominators for planning.[89] Second, ASIK functions as the electronic immunization registry where individual dose records are created, updated and reconciled.[90] Third, SATUSEHAT provides logistics and stock visibility across the vaccine supply chain so that immunization teams and district managers can monitor stock levels, shipments and cold-chain performance.[91]

86 UNICEF Indonesia. (2024). FunDoo: Digital Engagement for Adolescent Health.
87 Ibid
88 UNICEF Indonesia. (2024). U-Report Polling for HPV Awareness and Engagement.
89 Ministry of Education and Culture. (2024). Data Pokok Pendidikan (DAPODIK) System Overview.
90 Aisyah, D. N., et al. (2025). Using an Electronic Immunization Registry (ASIK) in Indonesia: Cross-Modal Study.
91 GovInsider. (2024, Nov 19). Indonesia's SATUSEHAT platform aims to streamline healthcare delivery.

UKS focal teachers perform a crucial "last mile" data quality function: several days before vaccination, they review DAPODIK class lists, confirm current attendance, annotate transfers and mark students who are repeatedly absent or likely to be out of school. These localized corrections are handed to *puskesmas* staff who adjust ASIK pre-loads so that vaccinators show up with accurate lists and correct vial counts.[92] After vaccination days, dose administration is entered into ASIK – either directly by health teams on tablets or through offline forms that sync later – closing the loop and instantly flagging missed students for catch-up through posyandu or subsequent BIAS rounds.[93,94]

Operational constraints are real and persistent. Connectivity is uneven across Indonesia's islands; some *puskesmas* and schools have intermittent or no internet access, making real-time syncing into ASIK and SATUSEHAT impossible. The pragmatic workaround has been a hybrid workflow: teams capture data offline on standardized mobile forms or paper registers and synchronize when they return to areas with connectivity. This requires disciplined SOPs for offline entry – field formats that match ASIK fields, clear naming conventions, and a documented sync process – otherwise local errors multiply during reconciliation. Human capacity is the other limiting factor. Digital tools are powerful only if users understand when and how to use them; short, practical training modules for UKS focal teachers and *puskesmas* vaccinators, combined with on-site mentorship during the first BIAS rounds, have shortened the learning curve and materially improved data accuracy.[95]

Beyond operations, the data ecosystem enables performance management. District managers and donors can track leading indicators – percent of districts reporting weekly in ASIK, percent of schools with trained UKS focal teachers, and proportion of out-of-school girls identified and vaccinated – that show whether systems are functioning or whether resources should be diverted to support a lagging area. More granular KPIs include the mismatch rate between DAPODIK and ASIK rosters, ASIK record sync delay (days), vaccine stock-out days per district (SATUSEHAT), and the percentage of absentees who receive catch-up doses within a specified window. These metrics are useful not only for accountability but also for rapid troubleshooting: if a district has high sync delay and rising stock-out days, donors and MoH can prioritize connectivity kits and transport pooling rather than generic line-item increases.[96,97]

Indonesia's approach also demonstrates practical equity tracking. By combining DAPODIK rosters with programmatic reporting in ASIK and outreach tracking from posyandu logs, managers can estimate how many eligible girls are out of school and monitor whether outreach campaigns are closing those gaps. That said, identifying and reaching out-of-school adolescents remains resource-intensive and often requires cross-sector partnerships and local civil society mapping; the data systems make these efforts measurable, but they do not make them inexpensive.[98]

92 Ibid
93 Ministry of Health Indonesia. (2025). ASIK Dashboard Coverage Report.
94 Ibid.
95 Ibid.
96 GovInsider. (2024, Nov 19). Indonesia's SATUSEHAT platform aims to streamline healthcare delivery.
97 Yap, J., Satria, F. B., Lubis, I. N. D., et al. (2025). Challenges in Expanding Access to the HPV Vaccine Among Schooling Girls: A Mixed Methods Study from Indonesia.
98 Johns Hopkins Bloomberg School of Public Health – IVAC. (2024). HPV Vaccine Introduction in Indonesia: Findings from Key Informant Interviews.

What worked – how UKS strengths translated into rapid, equitable HPV scale-up

Indonesia's achievements reflect the confluence of structural, programmatic and sociocultural levers that reinforced one another in practice. The first lever was institutional durability: UKS existed as an operational routine long before HPV, meaning that schools, district officers and parents already had shared scripts for school health events. In districts with mature UKS practice, introducing a new vaccine did not require parent persuasion about where to bring a child or who would administer injections – those expectations already existed. That predictability lowered the marginal transaction costs of scaling. On the ground this meant shorter preparatory windows, fewer ad-hoc logistics failures and the ability to re-use micro-planning templates year after year.

The second lever was legal and multi-sectoral clarity. The SKB 4-Menteri did not merely symbolically align ministries; it created an operational handbook that district teams could reference when negotiating with schools or religious institutions. Where SKB-driven directives were backed by local circulars or district-level MOUs, district managers reported faster school mobilization and more predictable cost-sharing agreements. For example, in districts that adopted standardized MOUs, transport pooling and per-diem payments were agreed weeks in advance, eliminating last-minute improvisation and the consequent risk of canceled visits.

Third, data systems worked as a multiplier. The practical advantage of DAPODIK-ASIK-SATUSEHAT was not only the registry itself, but the ability to convert centralized data into school-by-school action plans. In high-performing districts Kaders, *puskesmas* nurses and UKS focal teachers ran a simple routine: verify the roster three days before BIAS, reconcile transfers and absentees, and deliver a corrected pre-load to the vaccinator. That one behavioral habit – local verification linked to a central registry – reduced over-ordering and under-coverage and made logistics predictable at scale.

Fourth, cultural alignment turned technical gains into social acceptance. The program invested time in halal certification and in systematic engagement with *pesantren* and mosque networks. This engagement involved more than a single meeting: it included structured visits to madrasa leadership, inclusion of faith-based messaging in school-parent meetings, and visible endorsements that were distributed as short notes teachers could read aloud. These endorsements reduced the salience of religion-based objections quickly and were especially powerful in conservative coastal districts where faith leaders' voices carry daily authority.

Finally, a combination of procedural design choices supported legitimacy at the point of service. The opt-out consent model shifted the administrative equilibrium: rather than relying on parents to return signed forms, schools communicated vaccination dates and proceeded unless a parent declined. When opt-out was combined with visible WASH and screening services – hand-washing stations, nutrition checks, on-site observation areas – parents perceived the day as a comprehensive health event, not an isolated injection campaign.

Together, these structural, data-driven, cultural and procedural elements created a reinforcing system where coverage scaled quickly without sacrificing equity.

What did not work – where UKS constraints limited performance and why

Despite these strengths, several persistent constraints limited uniformity of impact and exposed the program to specific vulnerabilities. The most visible constraint is heterogeneity in subnational capacity. Indonesia's decentralized system produces sharp contrasts: some districts have well-resourced UKS teams, routine mentorship, and engaged parent committees; others have little institutional memory of school health beyond an occasional campaign. This unevenness is not simply about money – it is about managerial systems: whether districts have standard operating procedures, whether UKS focal teachers are nominated and trained, and whether the district health office prioritizes mentorship. During the HPV vaccine rollout, these differences manifested clearly: districts with strong UKS structures achieved high coverage with minimal stock wastage, while others struggled with planning fidelity and incomplete data reporting. The consequence is predictable performance variance: national averages mask subnational pockets where operational quality and data integrity are weak.

Teacher workload and the absence of systematic incentives constitute another systemic friction. In most schools, the UKS role is appended to an existing teacher portfolio with no dedicated time or formal compensation. Where teachers are asked to coordinate vaccination campaigns, conduct parent outreach, and manage data verification alongside full classroom responsibilities, quality erodes over time. Staff churn exacerbates the problem: when a trained teacher transfers and informal replacements are appointed, institutional knowledge is lost. In the context of HPV vaccination, this human factor contributed to inconsistencies in session planning, consent collection, and follow-up visits, undermining the otherwise strong institutional platform.

SRHR and adolescent mental-health modules remain largely pilot-stage in many districts, limiting the school-health program's ability to address the full spectrum of adolescent needs that would support vaccine acceptance and follow-up. Cultural sensitivities, a lack of standardized curricula, and weak referral pathways to adolescent-friendly health services have slowed mainstreaming. As a result, UKS's potential as a holistic adolescent-health delivery platform remains under-realized, particularly in areas where HPV uptake was slower due to parental concerns or misinformation.

Logistics and geography are persistent, expensive constraints. Technical systems such as SATUSEHAT provide stock visibility but cannot eliminate the physical costs of moving vaccines across islands, mountainous regions, or remote rural areas. Cold-chain breaches, last-mile fuel shocks, and weather disruptions create recurring volatility in some provinces. During HPV campaigns, these challenges occasionally led to delayed sessions or temporary stockouts. Supply visibility is necessary but not sufficient: without contingency transport pooling, pre-positioned cold boxes, and locally maintained solar fridges, these regions remain fragile.

Finally, reaching out-of-school girls remains labor- and cost-intensive. Community mapping, NGO collaboration, and mobile outreach teams are indispensable but expensive per dose. During the HPV rollout, districts that invested in these parallel systems were able to reach more marginalized girls, whereas those relying solely on school-based delivery left gaps in coverage. Achieving equity therefore, requires dedicated operational systems, sustained funding, local trust-building, and careful data management to avoid double-counting or missed cohorts; schools alone cannot achieve this goal.

Lessons for other LMICs – operational principles and practical sequencing

The Indonesian experience provides concrete, transferable lessons for low- and middle-income countries seeking to strengthen school-based health interventions. A central insight is the value of building on existing platforms rather than creating single-purpose campaign units. Trusted teachers, established routines, and predictable school calendars lower transaction costs and enhance program sustainability. Leveraging these pre-existing structures allows health initiatives to operate more efficiently and reliably, producing greater long-term impact than parallel, ad-hoc campaigns. Equally important is the sequencing of investments. Pilots that test logistics, consent models, and cultural engagement should precede national roll-outs. Once approaches are proven, institutionalizing roles through ministerial instruments and district-level MOUs ensures that scaling occurs within a robust governance framework. Thoughtful sequencing reduces operational risk, clarifies responsibilities, and increases the likelihood of sustainable adoption across diverse districts.

Data interoperability emerges as another critical factor. Linking education rosters with immunization registries yields immediate operational gains, including more accurate forecasting and reduced vaccine wastage. Integrating data systems strengthens decision-making at both local and national levels, allowing program managers to anticipate gaps, allocate resources efficiently, and respond proactively to emerging challenges. Cultural alignment is equally essential. Proactive engagement with community and faith leaders prevents misinformation and builds trust. Embedding dialogue with local stakeholders into the micro-planning process ensures that social and religious concerns are addressed early, rather than reactively, reducing barriers to participation and increasing uptake.

Equity considerations must also be built in from the outset. Programs need to account for out-of-school populations, allocate dedicated outreach budgets, and recognize that reaching marginalized groups will be more resource-intensive per child. Early attention to these factors ensures that health interventions are inclusive and that gains are shared across all segments of the population. Investments in human systems further reinforce sustainability. Modest stipends, protected time for focal teachers, and hands-on mentorship have proven more effective than one-off training workshops in changing behavior and retaining skilled personnel. Strengthening these human elements ensures continuity, enhances program quality, and embeds expertise within the local system.

Finally, donor support is most effective when directed toward one-time systems investments that have clear handover milestones. Digital infrastructure, cold-chain hardware, and formalized MOUs reduce recurring fiscal needs and make national absorption feasible. When combined, these

lessons illustrate that a deliberate, system-oriented approach – anchored in existing structures, supported by robust data, and attentive to human and cultural factors – can transform school health programs into sustainable, high-impact platforms capable of delivering long-term public health benefits.



PHOTO BY GADING IHSAN (UNSPLASH)

Table 4: UKS and HPV Scale-Up: What worked, what didn't, and transferable lessons

Theme	What enabled performance (Indonesia)	Constraints & risks	Transferable lesson for LMICs
Institutional platform	UKS was a long-standing routine; schools, parents, and districts shared expectations for school health days, lowering transaction costs for new vaccine introduction.	UKS maturity varied widely by district; weak institutional memory limited planning fidelity in low-capacity areas.	Build on existing school-health platforms rather than creating vertical campaigns; invest early in institutional routines.
Governance & coordination	SKB 4-Menteri and local MOUs clarified roles, enabled faster school mobilization, and predictable cost-sharing.	Absence of district circulars or MOUs led to ad-hoc coordination and last-minute logistics.	Formalize roles through ministerial instruments and district MOUs before scaling.
Data & micro-planning	DAPODIK-ASIK-SATUSEHAT linkage enabled roster verification, accurate forecasting, and reduced wastage through school-level micro-planning.	Data quality depended on teacher availability and local validation; weaker districts had incomplete reporting.	Link education rosters to immunization registries and institutionalize local verification routines.
Human resources	UKS focal teachers and *puskesmas* staff coordinated delivery, consent, and follow-up within routine workflows.	Teacher workloads, lack of incentives, and staff turnover eroded continuity over time.	Provide protected time, modest incentives, and mentorship to sustain focal roles.
Social & cultural alignment	Halal certification and sustained engagement with pesantren and mosque networks reduced religion-based refusals.	Delayed or shallow engagement allowed misinformation to persist in conservative districts.	Address cultural and religious concerns early through trusted local authorities.
Service design & legitimacy	Opt-out consent and bundling with WASH/ screening framed vaccination as a comprehensive health event.	Where services were delivered as isolated campaigns, parental trust was weaker.	Design vaccination as part of a broader, visible school-health package.
Logistics & equity	School-based delivery achieved rapid, low-cost scale; outreach (*posyandu*, mobile teams) filled gaps.	Geography, cold-chain volatility, and the high cost of reaching out-of-school girls constrained equity.	Plan outreach as a targeted complement to school delivery, with dedicated budgets and contingency logistics.
Financing & partners	Existing BOK/APBD lines financed delivery; partners supported training and systems strengthening.	Delays in disbursement and reliance on short-term external grants created fragility.	Use donor funds for one-time system investments with clear transition to domestic financing.

Appendix 1: List of interviewed stakeholders

WHO Indonesia
Ministry of Primary and Secondary Education (Directorate of Primary School)
Ministry of Health
CISDI (NGO)
Ministry of Primary and Secondary Education (Directorate of Junior School)
Practitioner in Education and Youth
Clinton Health Access Initiative (CHAI)
IAKMI (Ikatan Akademi Kesehatan Masyarakat Indonesia)
Universitas Muhammadiyah Jakarta
Primary Healthcare Cireundeu, Tangerang Selatan
UNICEF Indonesia



PHOTO BY DWI CAHYO (UNSPLASH)

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.

For more information send an email to info@haskeconseil.com