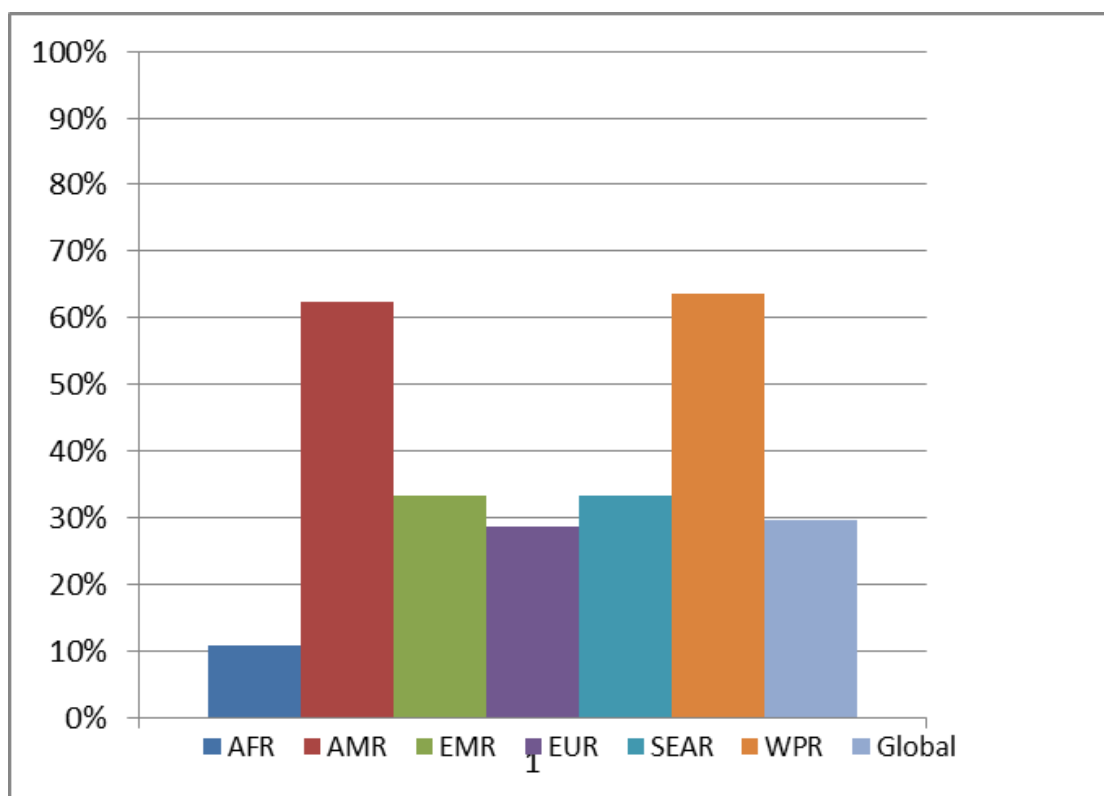


Annex 15A. Supplemental Figures and Tables for School-Based Vaccinations

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Figure 15A.1 Low- and Lower-Middle-Income Countries Reporting Vaccinations Given at School, 2012



Source: WHO-UNICEF. 2013. Expanded Programme on Immunization Joint Reporting Form (2012 data). Note: AFR = Africa, AMR = Americas; EMR = Eastern Mediterranean; EUR = Europe; SEA = South-East Asia; WPR = Western Pacific.

Table 15A.1. Countries Reporting School-Based Vaccination Programs

Region	# of LMIC and LIC Countries	# of Countries Reporting Routine Doses of Vaccines Given to Children at School	# of Countries Reporting Vaccines as Part of Comprehensive School Health Program	Percentage
AFR	37	4	4	11%
AMR	8	5	5	63%
EMR	9	3	2	33%
EUR	7	2	2	29%
SEAR	9	3	3	33%
WPR	11	7	6	64%
Global	81	24	22	30%

Note: Countries: Afghanistan, Arab Republic of Egypt, El Salvador, Eritrea, Guyana, Honduras, India, Indonesia, Kyrgyzstan, Kiribati, Micronesia, Mongolia, Mozambique, Nicaragua, Paraguay, Papua New Guinea, Sierra Leone, Samoa, Solomon Islands, Sri Lanka, Syria, Uganda, Uzbekistan, and Vanuatu.

Table 15A.2 Nations or Territories with HPV Vaccine on Routine Immunization Schedule (Year of Introduction)

Abu Dhabi, part of UAE † (2013)	Colombia † (2012)	Latvia (2010)	Puerto Rico †§
Andorra (2014)	Cook Islands (2011)	Lesotho * (2012)	Romania (2009-10, stopped 2011)
American Samoa †§ (2009)	Czech Republic (2012)	Lichtenstein (2012)	Rwanda (2010)
Anguilla † (2016)	Denmark (2007)	Libya (2014)	San Marino (2008)
Argentina (2011)	Ecuador (Apr 2014)	Luxembourg (2008)	Seychelles (2014)
Aruba † (2014)	Federated States of Micronesia †§ (2010)	Macedonia FYR (2009)	Singapore (2010)
Australia (2007)	Fiji † (2008-09, stopped 2010, restarted 2013)	Malaysia (2010)	Slovakia
Austria (2008)	Finland (2013)	Malta (2013)	Slovenia (2009)
Barbados (Jan 2014)	France †† (2006)	Marshall Islands § (2009)	South Africa * (Mar 2014)
Bahamas (June 2015)	French Polynesia † †† (2008)	Mexico † (2008, 2011)	South Korea (2016)
Belgium (2008)	Germany (2007)	Monaco	Spain (2007)
Belize (2016)	Greece (2009)	Netherlands †† (2010)	St. Eustatius † (2014)
Bermuda †	Guam †§ (2007)	New Caledonia † †† (2011)	Suriname (2013)
Bhutan * (2010)	Guyana *† (2012)	New Zealand (2009)	Sweden (2010)
Bonaire † (Sep 2015)	Honduras (2016)	Niue	Switzerland (2006)

Botswana * (2015)	Hungary (2014)	Northern Mariana Islands ‡§ (2008)	Trinidad & Tobago (2013, stopped 2013)
Brazil * (Mar 2014)	Iceland (2011)	Norway (2009)	Uganda * (2015)
Brunei (2011)	Ireland (2010)	Palau (2008)	United Kingdom (2008)
Bulgaria	Israel (2010)	Panama† (2008)	United States (2007)
Canada (2007)	Italy (2009)	Paraguay (2013)	US Virgin Islands ‡§
Cayman Islands ‡	Japan (2011)	Peru * (2011, stopped 2012, restarted 2014)	Uruguay (2013)
Chile (Sep 2014)	Kiribati * (2012)	Philippines † (2015 phased intro 24 provinces)	Vanuatu
		Portugal (2008)	

Notes: **Bold** signifies WHO Member State (n = 75, of which 73 are currently vaccinating, 2 have stopped). * National/territorial introduction has followed pilot. † National/territorial introduction in phases, either based on geography, target population, or both. ‡ Not a WHO Member State. § Introduction as a part of the United States Vaccine for Children Program; may or may not report separately to WHO on Joint Reporting Form as an official WHO Member State. †† Includes all overseas departments of France and overseas territories of the Netherlands.

Table 15A.3. List of HPV Vaccine Pilots, Demonstration Programs, and National Introductions in Low- and Middle-Income Countries, as of end of 2014

No.	Country [Reference]	Year (start)	Type of program	Primary and other strategies utilized	Eligible female population
1	Bhutan [37, 59, S39, S73]	2009	GAP pilot	9 schools	9-13 year olds in schools
	Bhutan [32, 51, 59]	2010-13	national	Health facilities + outreach	12-18 year olds (one year catchup); thereafter all 12 year olds
	Bhutan	2014	national	All schools in the country	Grade 5 or 12 years old if not in school
2	Bolivia [37, S39, S73]	2009	GAP pilot	57 schools	9-13 year olds in schools
	Bolivia [37, S39, S73]	2010	GAP pilot	258 sites (schools + clinics)	9-13 year olds at sites
3	Botswana [S77]	2013	donation	23 schools	Grade 6
	Botswana	2014	donation	3 districts, schools + outreach	All 9-13 year olds
4	Brazil [S37]	2010-11	GAP pilot	19 schools in research study	Grades 6 and 7
	Brazil [S73]	2014	national	School and Health facilities	11-13 year old first year (11 years in future years)
5	Cambodia [37, S39]	2009	GAP pilot	1 government hospital	10-18 year olds (employees' children)
	Cambodia [S39, S73]	2010	GAP pilot	10 sites	
6	Cameroon [37, 46, 64, S39]	2010	GAP pilot	20 clinics	9-18 year olds at clinics
	Cameroon [54]	2014	Gavi demo	Schools + outreach	9-13 year olds
7	Colombia [32, S75]	2012	national	Schools (2012) + outreach (2013)	Grade 4 (started 2012) and 9 years old if not in school (started in 2013)
8	Fiji [32, S40, S41]	2013	national	School	Secondary two
9	Georgia [S39, S73]	2010	GAP pilot	28 health facilities	<i>Not defined</i>
10	Ghana [S39]	2013	GAP pilot	School	Grades 4 and 5
	Ghana [54]	2013	Gavi demo	School, Health Facility, and Outreach	Grade 6, 11 year olds
11	Guyana [32]	2012	National (partial)	School, Health Facility	Primary/Secondary, 11-13 year olds
12	Haiti [37, S39, S73]	2009	GAP pilot	7 schools	9-13 year olds in schools
13	Honduras [S39, S73]	2011	GAP pilot	25 vaccination sites	<i>Not defined</i>
	Honduras [S39, S73]	2013	GAP pilot	298 schools	<i>Not defined</i>
14	India [24, 59, S38, S66]	2009-10	PATH demo	279 schools + 399 clinics, campaign-style	10-14 year olds at sites

	India [24, 59, S38, S66]	2009-10	PATH demo	258 schools + 273 clinics, routine delivery	10-14 year olds at sites
15	Kenya [S39, S73]	2011	GAP pilot	Health Facility	10-26 year olds
	Kenya [54]	2013	Gavi demo	School	Grade 4, 10 year olds
16	Kiribati [32]	2011-13	national	<i>No detailed information available</i>	<i>No detailed information available</i>
17	Lao PDR [54]	2013	Gavi demo	School	Grade 5, 10 year olds
18	Lesotho [37, S39, S73]	2009	GAP pilot	47 sites (schools + clinics)	10-18 year olds at sites
	Lesotho [32]	2012	national		
19	Madagascar [54]	2013	Gavi demo	School +outreach	Grade 5, or 10 years old if not in school
20	Malawi [54]	2013	Gavi demo	School +outreach	Grade 4, or 10 years old if not in school
21	Malaysia [32, 51]	2010	national	Schools	13 years of age
22	Mali [S39]	2012	GAP pilot	<i>No detailed information available</i>	<i>No detailed information available</i>
23	Marshall Islands [32, 51]	2009	national	Health facilities	11 -12 year olds
24	Micronesia, Fed Sts. [32, 51]	2010	national	Health facilities	11 -12 year olds
25	Moldova [S39, S73]	2013	GAP pilot	87 schools	<i>Not defined</i>
26	Mongolia [S39]	2012	GAP pilot	School	11-15 year olds
27	Mozambique [54]	2014	Gavi demo	School, Health Facility	10 year olds
28	Nepal [S33]	2008	donation	17 schools	10-26 year olds in schools
	Nepal [37, S39, S73]	2010	GAP pilot	24 sites (schools + clinics)	9-13 year olds at sites
29	Niger [54]	2014	Gavi demo	Health facilities + schools and outreach	11 year olds
30	Panama [32, 51]	2008	national	Schools + health facilities	10 year olds
31	Papua New Guinea [S39]	2012	GAP pilot	<i>No detailed information available</i>	<i>No detailed information available</i>
32	Paraguay [32, S76]	2013	national	Schools + outreach	10-11 year olds
33	Peru [24, 58, 59, S34, S38, S64, S66]	2007-08	PATH demo	264 schools	Grade 5 in schools
	Peru [24, 59, S35, S66]	2010-11	PATH demo	163 clinics	11 year olds at clinics
	Peru	2012, 2014 (restarted)	National	Schools + clinics + outreach	Grade 5 in schools or 11 year olds in the community
34	Philippines [S39]	2010	GAP pilot	Health Facility	14-25 year olds

	Philippines	2015	National	Schools + health facilities	
35	Rwanda [32, 48]	2011	national	All schools in the country + outreach in the community	Grade 6, all 12 year old girls
	Senegal [54]	2014	Gavi demo	Schools + outreach	9 year olds
36	Sierra Leone [54]	2013	Gavi demo	School, Health Facility and Outreach	9 year olds
37	South Africa [43]	2011	donation	31 schools	9-12 year olds in Grades 4 & 5
	South Africa [S56]	2014	national	Schools	Grade 4
38	Tanzania [38, 59, 62, S32, S44]	2010-11	GAP pilot/RCT	67 schools in randomized trial	Grade 6 at schools
	Tanzania [38, 59, 62, S32, S44]	2010-11	GAP pilot/RCT	67 schools in randomized trial	12 year olds at schools
	Tanzania [54, 59]	2014	Gavi demo	Schools +health facilities	Grade 4, or 9 year olds if out of school
39	Thailand [S39]	2010	GAP pilot	<i>No detailed information available</i>	<i>No detailed information available</i>
	The Gambia [54]	2014	Gavi demo	Schools + outreach	9 year olds
40	Uganda [24, 45, 49, 58, 59, S38, S45, S66]	2008	PATH demo	195 schools + 41 clinics	Grade 5 in schools and 10 year olds out-of-school
	Uganda [24, 45, 49, 58, 59, S38, S45, S66]	2009	PATH demo	195 schools + 41 clinics	Grade 5 in schools and 10 year olds out-of-school
	Uganda [24, 45, 49, 58, 59, S38, S45, S66]	2008-09	PATH demo	222 schools + 28 clinics, integrated with child health days	10 year olds at sites
	Uganda [24, 45, 49, 58, 59, S38, S45, S66]	2009	PATH demo	222 schools + 28 clinics, integrated with child health days	10 year olds at sites
	Uganda	2010-14	donation	14 districts, schools + clinics, integrated with CHD	Primary 4, 10 year olds
41	Uruguay [32, S75]	2013	national	Health facilities	12 year olds
42	Uzbekistan [S39, S73]	2009	GAP pilot	Health Facility	13-15 year olds
43	Vietnam [24, 42, 49, 58, 59, S30, S36, S38, S65, S66]	2008-09	PATH demo	38 schools	Grade 6 at schools
	Vietnam [24, 42, 49, 58, 59, S30, S36, S38, S65, S66]	2009-10	PATH demo	38 schools	Grade 6 at schools
	Vietnam [24, 42, 49, 58, 59, S30, S36, S38, S65, S66]	2008-09	PATH demo	34 clinics	11 year olds at clinics

	Vietnam [24, 42, 49, 58, 59, S30, S36, S38, S65, S66]	2009-10	PATH demo	34 clinics	11 year olds at clinics
44	Zambia	2013-14	donation	schools + health facility	Primary 4, 11 year olds
45	Zimbabwe [54]	2014	Gavi demo	School, Health Facility and Outreach	10 year olds

Abbreviations: GAP – Gardasil Access Program; Gavi – Gavi, the Vaccine Alliance.

Note: Since the end of 2014, country adoption of HPV vaccines has moved apace. Below is a list of developments since this time through January 2016.

Bangladesh [54]	Gavi demo	Approved in 2014 for a demonstration program in 2016
Benin [54]	Gavi demo	Approved in 2013 for a demonstration program in 2016
Botswana	National	Launched national program in 2015
Burkina Faso [54]	Gavi demo	Approved in 2014 for a demonstration program in 2016
Burundi [54]	Gavi demo	Approved in 2013 for a demonstration program in 2016
Cambodia [54]	Gavi demo	Approved in 2015 for a demonstration program in 2016
Cote d'Ivoire [54]	Gavi demo	Launched demonstration program in 2015
Ethiopia [54]	Gavi demo	Approved in 2014 for a demonstration program in 2016
Honduras [54]	National	Approved in 2015 for national launch in 2016
Liberia [54]	Gavi demo	Approved in 2013 for a demonstration program in 2016
Mali [54]	Gavi demo	Launched demonstration program in 2015
Nepal [54]	Gavi demo	Approved in 2014 for a demonstration program in 2016
Nigeria [54]	Gavi demo	Approved in 2015 for a demonstration program in 2016
Sao Tome & Principe [54]	Gavi demo	Approved in 2015 for a demonstration program in 2016
Senegal [54]	Gavi demo	Launched demonstration program in 2015
Solomon Islands [54]	Gavi demo	Launched demonstration program in 2015
Togo [54]	Gavi demo	Launched demonstration program in 2015
Uganda [54]	National	Launched national program in 2015
Uzbekistan [54]	National	Approved in 2013 for national launch in 2016

Table 15A.4 Summary of Facilitators and Barriers to Successful Tetanus Toxoid Vaccine Delivery in Schools

Key Success Factors for TT Vaccine Delivery in Schools	Challenges for TT Vaccine Delivery in Schools
<ul style="list-style-type: none"> • Government ownership and oversight, including financial commitment, of the initiative • Active involvement of Ministries of Health and Education, as well as teachers, parents, community leaders and other relevant organizations, in a health promotion drive was found useful [27, S61]. • Targeting program to both boys and girls • A very high school enrollment rate for both girls and boys increases its impact [23, S1, S61]. Over 50 percent primary school enrollment rate for girls is required before introducing school-based TT, and the grade targeted should be before the children start dropping out of school [23]. • Parental consent, usually obtained through sending out information from the schools and other media to parents, was helpful. In Indonesia, this consent is interpreted from the presence of the child in school on the vaccination day and is considered implied consent [44, S1]. • Considering school-based immunization as part of the outreach immunization services around nearby health facilities and conducting school immunization session visits only once a year on a specific month increases performance and reduces the cost of implementation and increases effectiveness (for example, Indonesia’s experience with the school immunization month in November) [S1]. • Having school immunization as part of a broader school health program offering a package of interventions that includes life-based health education, deworming with anti-helminthes, dental hygiene and general checkup promotes its general acceptance [S62]. 	<ul style="list-style-type: none"> • Lack of coordinated efforts among key stakeholders (such as the Ministry of Health, Ministry of Education, other relevant governmental and nongovernmental agencies, and parents) to achieve the goal of school immunization [S61] • Poor documentation and lack of reporting on school immunization activities and coverage achievements by most countries [32] • Limited demand for data on delivery of TT-containing vaccines by international stakeholders and donors in immunization or education • Inability to reach non-enrolled students [S1] • Sustained funding for ongoing program implementation

Table 15A.5 Summary of Facilitators and Barriers to Successful Human Papillomavirus Vaccine Delivery in Schools

Key Success Factors for HPV Vaccine Delivery in Schools	Challenges for HPV Vaccine Delivery in Schools
<ul style="list-style-type: none"> • Consistently high coverage of the recommended target group for HPV vaccine has been achieved through school-based delivery [24, 37-39, 43, 45, 48, 51, S34-S37, S45, S46]. • HPV vaccine acceptance is high, even when knowledge about cervical cancer, HPV and HPV vaccine may be low [42, S27, S30, S44]. • Involvement of the Ministry of Education and, especially involvement of teachers at schools to organize pupils and to disseminate information, is extremely important [S34, S37, S45, S64, S65]. • Adequate social mobilization is needed. This may include posters, leaflets, community and parent meetings, radio and television broadcasts, newspaper articles. Teachers and health workers play a crucial role in raising awareness [37, 38, 42, S27, S30, S45, S66]. • Visible endorsement by national and local leaders from health, education and other influential sectors is critical for credibility and community trust [24, 42, 45, 48, S34, S36]. • Written parental consent or implied consent procedures can be used, depending on the country's regulations and preference [24, 38, 45, S45, S65]; consent procedures in private schools may be different from those used in public schools. • Establishing community ownership may enhance parental acceptance and longer term sustainability [47, S27, S28, S31, S36]. • Mixed delivery strategies allow girls who miss a dose at school to receive this at the health facility and may achieve higher coverage than school-based delivery or 	<ul style="list-style-type: none"> • School-based delivery requires the cooperation and close coordination between the health and education sectors [37-39, 45, 48, S34, S36, S66]. • There may be logistic challenges in terms of reaching distant schools and transporting vaccines to schools [45, S34, S36]. • The eligible population can be difficult to estimate if school register records are inaccurate or have not been updated [37, 38, 45]. • Determining the age of young adolescents can prove challenging, especially in environments where birth certificates, baptismal records, or other documentation are inadequately utilized [24, 43, 45, 48]. • Teaching staff may be uncooperative or may require significant financial incentives to participate [37, 38]. • Reaching parents whose children are enrolled in private schools or boarding schools may be difficult, and private schools may be reluctant to allow vaccination because of concern over parents' reactions [38]. • Depending on the number of visits that health workers must make to a school to deliver each dose and the number of schools a health facility covers, health workers may have significant days away from work stations [45, S34]. • Planning vaccine schedules may be challenging if school terms and examination dates are not announced with sufficient time before vaccination commences; careful scheduling is needed to avoid vaccination dates falling on examination days and during holidays [38, 43, 45, 48, S27, S36, S66].

health facility-based delivery strategies alone [24, 37, 38, 43, S35, S36, S45, S64, S65].

- School absenteeism, holidays, and pupil transfer to new schools contribute to failure to receive vaccine or to complete the vaccine course [38, 43, 45, 48, S27, S36, S66].
 - Securing and maintaining additional funding that may be required for health workers to deliver HPV vaccines to schools [58, 62].
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