

The introduction of HPV vaccines in Brazil: advances and challenges

INTRODUCTION

The impact of the human papillomavirus (HPV) infection all over the world is considerable. Its importance as a public health issue is demonstrated by its high frequency, association to uterine cancer (mostly), and clinical implications, besides the psychological impact on the affected people⁽¹⁾.

More than one of two women have been exposed to HPV throughout life; 10% have the virus in its chronic form, and, among these, one of five women has a chance of developing uterine cancer without screening tests or in case, the examination is flawed^(2,3). It is worth mentioning that uterine cervix cancer usually affects women aged around 40 years, at a time when their family, professional, and social responsibilities are significant⁽⁴⁾.

It is estimated that annually, around the world, there are about 530 new cases of uterine cervix cancer, and 266,000 deaths associated with HPV⁽⁵⁾. Because of the growing population, if changes are not made in prevention and control, the projections for the next few years reveal an important increase in cases of invasive uterine cervix cancer attributed to HPV 16 and 18 (responsible for 70% of the cancer cases), from 391,016 new cases in 2012 to 444,167 cases in 2025⁽⁶⁾. Therefore, it is currently known that the high disease burden caused by HPV is a global health issue.

According to a report by the World Health Organization (WHO), from September 15, 2010, the epidemiological data regarding the prevalence and incidence of HPV and associated conditions in Brazil are similar to those of other countries, especially in South America, where uterine cervix cancer and genital warts are a major problem for governments and the economically active population⁽⁷⁾. All over the world, 32 million new cases of genital warts are estimated every year; in Brazil, around 1.9 million/year, and most are associated with HPV 6^(8,9).

It is important to mention that in Brazil, uterine cervix cancer is the third most common type of cancer affecting the female population; it is estimated that 17,000 new cases will be registered, and that about 5,000 women will die from it every year⁽¹⁰⁾.

Therefore, the availability of vaccines preventing HPV has been a powerful tool to prevent uterine cervix cancer and other HPV-associated diseases. After 2006, these vaccines were licensed in more than 130 countries, and introduced to more than 60 vaccination programs. Australia, the United Kingdom, the United States, and Canada were the first countries to introduce this vaccine⁽¹¹⁾. Its safety and efficacy are well established and recognized. Ever since its approval, in June 2006, more than 190 million doses were distributed all over the world⁽¹²⁾.

IMPLANTATION OF THE HPV VACCINE IN BRAZIL

In Brazil, the decision to incorporate the vaccine in the National Immunization Schedule of the National Immunization Program (PNI) was preceded by a cost-effective study analyzing different scenarios for its introduction, and the recommendation from the Technical Advisory Group (CTAI) of PNI, which sustained its implantation. After technical analysis, the National Commission of Technology Incorporation in the Unified Health System (CONITEC) approved the introduction of this vaccine to PNI.

The sustainability of this vaccine was guaranteed by a partnership for technology transfer established between the national laboratory Butantan and Merck Sharp & Dohme⁽¹³⁾.

Thus, in 2014, the Ministry of Health introduced the quadrivalent HPV vaccine in the Unified Health System (SUS). The vaccine, together with the current actions to screen uterine cervix cancer will allow this disease to be prevented in the next decades⁽¹³⁾. This vaccine protects against the viral types 6, 11, 16, and 18. Viruses 6 and 11 are responsible for 90% of anogenital warts, and types 16 and 18 are in charge of 70% of the uterine cancer cases^(14,15). The target group selected for vaccination included adolescents aged from 9 to 13 years, because this vaccine is highly effective among girls in this age group not exposed to HPV, before sexual initiation, leading to the production of antibodies ten times higher than that found in a naturally acquired infection in a 2-year period⁽¹³⁾.

The implantation in Brazil was gradual: in 2014, the HPV vaccine was offered to teenagers aged from 11 to 13 years in the vaccination routine, preferably in public and private schools and in basic health units. The target audience was 5.2 million adolescents in this age group, and the goal was to vaccinate 80% of the target group, which represented 4.16 million girls⁽¹³⁾.

In 2015, the HPV vaccine was offered to girls aged from 9 to 11 years. In 2016, it will be available for girls aged between 9 and 13 years⁽¹⁶⁾.

The initial strategy used by the Ministry of Health was the extended one: 1st dose, 2nd dose 6 months later, and 3rd dose 5 years after the 1st dose (0, 6, and 60 months)⁽¹³⁾. In 2016, as in the United Kingdom and other countries, this scheme was changed to two doses (0 and 6 months), because some studies showed that the two-dose scheme presented noninferior antibody response (among healthy girls aged from 9 to 14 years) when compared with women aged from 15 to 25 years who were administered three doses⁽¹⁷⁾. This recommendation is already in the vaccine information.

In 2015, women aged from 14 to 26 years living with human immunodeficiency virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) were incorporated to the target population of

the vaccination, considering that the complications resulting from HPV are more frequent among patients with HIV and AIDS⁽¹⁸⁾. For this population, the HPV vaccines were available not only in the health units, but also in the Reference Centers for Special Immunobiologicals (CRIEs) and in the Specialized Care Services (SAE), which have vaccination facilities. In this population group, the three-dose scheme was maintained (0, 2, and 6 months)⁽¹⁶⁾.

Regarding the safety of the HPV vaccine, since its licensing in 2006, the Advisory Committee on Vaccine Safety from the WHO (GAVCS) has systematically investigated safety matters about HPV vaccines, and has issued many reports about this subject.

Until the present time, there is no evidence to change the recommendations for the use of the vaccine. This conclusion is also restated by the institution in charge of pharmacovigilance in the United States (Centers for Disease Control and Prevention – CDC) and the European Medicines Agency (EMA)⁽¹⁹⁾.

In 2015, scientific societies such as the Brazilian Society of Pediatrics, Infectious diseases, Immunology, and the Brazilian Federation of Obstetric Gynecology elaborated reports supporting the use of the HPV vaccine in the country, reaffirming its safety and importance to prevent uterine cervix cancer.

As the vaccine, in terms of global health, will only have an impact by reaching at least 70% of vaccine coverage, generating “global immunity” (reducing the transmission even among people who have not been vaccinated), a series of initiatives were adopted by the Ministry of Health, involving state and city health secretariats, scientific societies, field of education, and churches. Media campaigns (electronic, spoken, and written) were conducted, and online courses were provided to health and education professionals. Educational materials addressed to health and education teams, to teenagers, and their families were elaborated and distributed.

It is important to mention that the HPV vaccine is available in the public network all year long, for girls aged between 9 and 13 years who have not been vaccinated or who have not completed the scheme (0 and 6 months), and for women aged between 14 and 26 years living with HIV/AIDS⁽¹⁶⁾.

RESULTS

Vaccination data are recorded in real time, in the website pni.datasus.gov.br. There, it is possible to accompany the evolution of the vaccine per federation unit, city, and age group.

Monitoring of such data allowed verifying that the Brazilian strategy used for the first vaccine dose in schools, in 2014, was successful. In less than 3 months, it was possible to overcome the goal of vaccinating 80% of the Brazilian adolescents aged between 11 and 13 years. It is known that countries such as Australia and Denmark have also used schools as a vaccination site, reaching vaccine coverage of 85%, whereas the United States, Sweden, New Zealand, and Germany, which used only the health units, reached less than 40% of the coverage; therefore, it is concluded that this strategy was positive in Brazil⁽²⁰⁾.

Another successful factor in the first stage of the Brazilian vaccination was the intensive participation of states and cities in the

vaccination process, as well as the well-coordinated strategy between health and educational sectors. There was also an efficient communication that provided professionals from these two fields, families, and specially teenagers, with information that sensitized and advised about the importance of this vaccine.

All of these factors allowed Brazil to reach the vaccine coverage goal of 100% for the first dose of the vaccine (D1) by the end of 2014, considering that other countries took much longer to be able to immunize such a large portion of the population; for instance, the United Kingdom vaccinated 4.5 million girls in 2 years⁽²¹⁾.

Considering the vaccine coverage data accumulated in Brazil for girls aged from 9 to 11 years vaccinated with the second dose (D2) of the HPV vaccine (**Table 1**), it is possible to observe vaccine coverage of 84%, overcoming the preestablished goal of 80%, in 2014 and 2015. However, in 2015, for the group aged between 9 and 11 years, vaccine coverage for D1 was 63.8% (**Table 2**) and for D2 (**Table 3**) was 36.7%⁽²¹⁾. In this sense, it is essential that local managers can identify strategies and partners they consider to be more adequate to search for higher adherence of this population, also assessing the possibility to promote the vaccination in the school environment, both for D1 and D2. The objective is to improve the vaccination results in this age group, to reach high and homogeneous rates of vaccine coverage, as it happened for the target population aged from 11 to 13 years⁽²¹⁾.

The data presented next are preliminary and represent the records of the information system in the PNI until the date this document was elaborated.

ADVERSE EVENTS

In Brazil, in 2014, 1,727 adverse events related to the HPV vaccine were registered, and 91.0% of those were not considered as severe — local reactions (pain at the application site, edema, and moderate erythema) and systemic manifestations (migraine, 100.4°F fever or higher, syncope, or fainting). Of the 32 severe events, 9 cases of anaphylaxis, 10 neurological events, and 13 reactions of anxiety associated with immunization were observed⁽²²⁾.

As demonstrated, most events associated with the HPV vaccine were classified as mild (not severe). The most frequent syncope among adolescents and young adults was the vasovagal syncope, particularly common among people with emotional lability. There is usually a triggering factor such as intensive pain, expectation of pain, or sudden emotional shock⁽²³⁾. Many factors, such as prolonged fasting, fear of the injection, warm or crowded places, standing up for a long time, and fatigue can increase the probability of its occurrence. This type of event may occur with any type of injection. Therefore, the Ministry of Health recommends that girls are vaccinated while sitting down.

It is important to clarify that many vaccines (and other injections) rarely produce reactions, and only the cases of anaphylaxis and anxiety reactions were classified as consistent with the HPV vaccine in the evaluation of causality. According to the records, all of these adolescents fully recovered and felt good. In the first stage, 4,987,416 doses of the vaccine were applied, presenting an incidence anaphylaxis rate of 0.7/100,000 applied doses. The analysis

by Brotherton et al.⁽²⁴⁾ found an anaphylaxis incidence rate in Australia of 2.6/100,000 applied doses, and this country also presented high vaccine coverage, demonstrating that the cases registered in the country were below expectations.

Every event classified as severe is investigated to check if there is a causal relation between the event and the vaccine, or if it is just a temporal relation. When millions of people are vaccinated in a short period of time, diseases and events that would naturally occur with those people can be mistakenly attributed to the vaccine. Therefore, it is necessary to investigate each case.

Vaccination against HPV in the school environment is a strategy used by many countries to reach high vaccine coverage. This strategy was essential for Brazil to have reached 100% of the vaccine coverage in the target population with the first dose—considered to be one of the highest coverage rates in the world. However, the close relationship of the students may favor the occurrence of adverse events related to the anxiety reaction. One adolescent presented signs and symptoms after being vaccinated. Afterward, a group of colleagues began to present, at the same time, an unexpected behavior or apparent sickening without the presence of an apparent cause. Facts like these have happened in Brazil and in other countries, and may be related with any vaccine, as they are associated with the fear of the injection, and not to the composition of the vaccine.

In 2014, 23 cases of psychogenic reaction were notified after the adolescents were vaccinated in the school environment.

Psychogenic reactions after vaccination have been reported in other countries, such as Australia. There, in 2007, 720 girls aged between 12 and 17 years were vaccinated (same HPV vaccine used in Brazil) in the same school, and, 2 hours later, 26 girls presented with symptoms including dizziness, syncope, and neurological complaints, such as difficulty in walking. Without evidence of organic etiology after laboratory and imaging examinations, or similar reports of adverse events in another place using the same vaccines, the conclusion was that this was a mass psychogenic response to the vaccination⁽²⁵⁾.

In Colombia, in August 2014, about 280 adolescents from the same school who were vaccinated against HPV presented symptoms such as fainting, headaches, numbness, and pricking sensation in many parts of the body. After being taken to the hospital, no clinical causes were found to justify these symptoms. In the country, there was speculation that the HPV vaccine had been the cause of these problems, which led the Colombian minister of health to state that these cases had been a psychogenic reaction⁽²⁵⁾.

CHALLENGES

The Brazilian experience with the operation of major vaccination campaigns was essential to effectively include the HPV vaccine in the National Vaccination Schedule, especially because the target group was a population that is not used to

Table 1 – Vaccine coverage, HPV quadrivalent dose 1, females aged from 11 to 13 years old, 2014.

UF	9 years old			10 years old			11 years old			12 years old			13 years old			Total		
	Pop	D1	Cov (%)	Pop	D1	Cov (%)	Pop	D1	Cov (%)	Pop	D1	Cov (%)	Pop	D1	Cov (%)	Pop	D1	Cov (%)
AC	–	–	–	–	–	–	9,062	9,558	105.5	9,134	8,399	92.0	7,492	8,212	109.6	25,688	26,169	101.9
AM	–	–	–	–	–	–	40,995	30,170	73.6	41,193	6,710	16.3	33,963	4,461	13.1	116,151	41,341	35.6
AP	–	–	–	–	–	–	8,236	9,911	120.3	8,357	7,766	92.9	6,918	7,896	114.1	23,511	25,573	108.8
PA	–	–	–	–	–	–	85,088	88,300	103.8	85,826	82,052	95.6	71,111	78,265	110.1	242,025	248,617	102.7
RO	–	–	–	–	–	–	15,468	15,234	98.5	15,752	14,750	93.6	13,222	13,797	104.4	44,442	43,781	98.5
RR	–	–	–	–	–	–	5,392	5,923	109.9	5,425	4,897	90.3	4,463	4,704	105.4	15,280	15,524	101.6
TO	–	–	–	–	–	–	14,409	17,049	118.3	14,628	14,107	96.4	12,211	13,555	111.0	41,248	44,711	108.4
AL	–	–	–	–	–	–	34,007	35,346	103.9	34,609	31,954	92.3	28,669	31,566	110.1	97,285	98,866	101.6
BA	–	–	–	–	–	–	132,156	130,935	99.1	134,619	119,243	88.6	112,753	122,953	109.1	379,528	373,131	98.3
CE	–	–	–	–	–	–	83,579	94,458	113.0	86,452	85,911	99.4	72,779	87,505	120.2	242,810	267,874	110.3
MA	–	–	–	–	–	–	73,299	75,859	103.5	74,144	66,730	90.0	61,438	66,519	108.3	208,811	209,108	100.1
PB	–	–	–	–	–	–	34,368	36,311	105.7	35,014	33,262	95.0	29,468	29,587	100.4	98,850	99,160	100.3
PE	–	–	–	–	–	–	83,392	82,030	98.4	84,939	78,527	92.5	70,844	81,374	114.9	239,175	241,931	101.2
PI	–	–	–	–	–	–	30,671	30,724	100.2	31,296	28,552	91.2	26,120	27,369	104.8	88,087	86,645	98.4
RN	–	–	–	–	–	–	29,040	26,817	92.4	29,750	25,627	86.1	25,007	27,537	110.1	83,797	79,981	95.5
SE	–	–	–	–	–	–	20,759	22,158	106.7	21,292	19,456	91.4	17,790	20,132	113.2	59,841	61,746	103.2
ES	–	–	–	–	–	–	30,099	33,309	110.7	30,801	28,440	92.3	25,775	27,809	107.9	86,675	89,558	103.3
MG	–	–	–	–	–	–	165,947	187,600	113.1	170,648	159,765	93.6	143,809	159,636	111.0	480,404	507,001	105.5
RJ	–	–	–	–	–	–	129,745	131,210	101.1	133,511	120,133	90.0	111,451	129,402	116.1	374,707	380,745	101.6
SP	–	–	–	–	–	–	330,791	384,440	116.2	339,546	331,474	97.6	283,411	336,248	118.6	953,778	1,052,162	110.3
PR	–	–	–	–	–	–	88,845	93,434	105.2	91,504	76,611	83.7	77,245	79,676	103.2	257,594	249,721	96.9
RS	–	–	–	–	–	–	84,048	81,170	96.6	86,567	77,144	89.1	72,981	81,486	111.7	243,596	239,800	98.4
SC	–	–	–	–	–	–	51,094	53,452	104.6	52,763	47,975	90.9	44,705	51,647	115.5	148,562	153,074	103.0
DF	21,157	16,889	79.8	21,606	19,730	91.3	22,119	11,160	50.5	22,484	5,701	25.4	18,840	2,663	14.1	106,206	56,143	52.9
GO	–	–	–	–	–	–	53,104	58,676	110.5	54,233	52,359	96.5	45,486	49,965	109.9	152,823	161,000	105.4
MS	–	–	–	–	–	–	22,045	27,936	126.7	22,565	24,804	109.9	19,014	24,549	129.1	63,624	77,289	121.5
MT	–	–	–	–	–	–	27,947	28,868	103.3	28,473	25,283	88.8	23,918	25,226	105.5	80,338	79,377	98.8
Brazil	21,157	16,889	79.8	21,606	19,730	91.3	1,705,705	1,802,038	105.7	1,745,525	1,577,632	90.4	1,460,913	1,593,739	109.1	4,954,906	5,010,028	101.1

Source: <http://pni.datasus.gov.br>

Pop: Population of the federation unit; D1: first dose; Cov (%): vaccine coverage.

Note: Vaccination data (doses and coverage) among girls aged between 9 and 10 years made available only for the Federal District.

Table 2 – Vaccine coverage, HPV quadrivalent dose 1, females aged between 9 and 11 years old, 2015.

UF	9 years old			10 years old			11 years old			Total		
	Pop	D1	Cov (%)	Pop	D1	Cov (%)	Pop	D1	Cov (%)	Pop	D1	Cov (%)
AC	8,669	7,452	86.0	8,853	6,821	77.1	9,062	5,040	55.6	26,584	19,313	72.7
AM	39,826	26,931	67.6	40,378	23,154	57.3	40,995	16,743	40.8	121,199	66,828	55.1
AP	7,787	5,599	71.9	7,999	4,971	62.2	8,236	3,872	47.0	24,022	14,442	60.1
PA	82,101	41,885	51.0	83,547	40,366	48.3	85,088	30,382	35.7	250,736	112,633	44.9
RO	14,687	11,266	76.7	15,071	10,337	68.6	15,468	7,666	49.6	45,226	29,269	64.7
RR	5,193	4,705	90.6	5,286	3,613	68.4	5,392	2,673	49.6	15,871	10,991	69.3
TO	13,696	11,744	85.8	14,036	9,379	66.8	14,409	6,129	42.5	42,141	27,252	64.7
AL	31,843	28,326	89.0	32,878	23,327	71.0	34,007	19,356	56.9	98,728	71,009	71.9
BA	124,991	74,982	60.0	128,467	67,757	51.2	132,156	47,983	36.3	385,614	188,722	48.9
CE	75,760	68,950	91.0	79,479	58,148	73.2	83,579	46,301	55.4	238,818	173,399	72.6
MA	70,124	52,178	74.4	71,624	46,780	65.3	73,299	34,254	46.7	215,047	133,212	62.0
PB	32,675	23,822	72.9	33,505	21,971	65.6	34,368	16,376	47.7	100,548	62,169	61.8
PE	78,606	72,637	92.4	80,892	62,345	77.1	83,392	49,508	59.4	242,890	184,490	76.0
PI	28,752	19,088	66.4	29,654	17,460	58.9	30,671	11,007	35.9	89,077	47,555	53.4
RN	27,132	16,953	62.5	28,040	15,207	54.2	29,040	11,747	40.5	84,212	43,907	52.1
SE	19,196	16,767	87.4	19,926	13,988	70.2	20,759	9,459	45.6	59,881	40,214	67.2
ES	28,088	30,252	107.7	29,033	25,152	86.6	30,099	18,690	62.1	87,220	74,094	85.0
MG	153,328	131,601	85.8	159,404	110,950	69.6	165,947	72,613	43.8	478,679	315,164	65.8
RJ	118,424	80,266	67.8	123,755	72,516	58.6	129,745	58,074	44.8	371,924	210,856	56.7
SP	304,971	299,622	98.3	316,943	254,813	80.4	330,791	158,506	47.9	952,705	712,941	74.8
PR	82,037	57,554	70.2	85,300	49,845	58.4	88,845	35,758	40.3	256,182	143,157	55.9
RS	77,272	57,977	75.0	80,532	53,161	66.0	84,048	40,550	48.3	241,852	151,688	62.7
SC	46,948	47,296	100.7	48,919	37,803	77.3	51,094	23,340	45.7	146,961	108,439	73.8
DF	21,157	3,157	14.9	–	–	–	–	–	–	21,157	3,157	14.9
GO	50,007	33,400	66.8	51,475	29,793	57.9	53,104	23,133	43.5	154,586	86,306	55.8
MS	20,762	17,143	82.6	21,374	14,438	67.6	22,045	10,859	49.3	64,181	42,440	66.1
MT	26,579	20,210	76.0	27,228	16,810	61.7	27,947	12,152	43.5	81,754	49,172	60.2
Brazil	1,590,611	1,261,763	79.3	1,623,598	1,088,905	67.1	1,683,586	772,151	45.9	4,897,795	3,122,819	63.8

Source: <http://pni.datasus.gov.br>

Pop: Population in the federation unit; D1: first dose; Cob (%): vaccine coverage.

Table 3 – Vaccine coverage, HPV quadrivalent dose 2, females aged between 9 and 12 years old, 2015.

UF	9 years old			10 years old			11 years old			12 years old			Total		
	Pop	D2	Cob (%)	Pop	D2	Cob (%)	Pop	D2	Cob (%)	Pop	D2	Cob (%)	Pop	D2	Cob (%)
AC	4,334	1,423	32.83	8,853	2,632	29.73	9,602	3,512	38.76	4,567	1,794	39.28	26,816	9,361	34.91
AM	19,913	6,511	32.70	40,378	8,872	21.97	40,995	9,874	24.09	20,596	4,071	19.77	121,882	29,328	24.06
AP	3,893	405	10.40	7,999	972	12.15	8,236	2,084	25.4	4,178	1,573	37.65	24,307	5,034	20.71
PA	41,050	5,706	13.90	83,547	12,834	15.36	85,088	18,433	21.66	42,998	10,326	24.02	252,683	47,299	18.72
RO	7,343	2,667	36.32	15,071	4,956	32.88	15,468	5,810	37.56	7,876	3,581	45.47	45,758	17,014	37.18
RR	2,596	833	32.08	5,286	1,684	31.86	5,392	2,418	44.84	2,712	1,607	59.24	15,987	6,542	40.92
TO	6,848	2,001	29.22	14,036	4,211	30.00	14,409	5,907	41.00	7,314	2,387	32.64	42,607	14,506	34.05
AL	15,921	5,614	35.26	32,878	11,333	34.47	34,007	14,212	41.79	17,304	7,708	44.54	100,111	38,867	38.82
BA	62,495	10,932	17.49	128,467	25,377	19.75	132,156	34,106	25.81	67,309	20,167	29.96	390,428	90,582	23.20
CE	37,880	19,002	50.16	79,479	34,305	43.16	83,579	40,167	48.06	43,226	20,342	47.06	244,164	113,816	46.61
MA	35,062	8,484	24.20	71,624	17,612	24.59	73,299	24,932	34.01	37,072	14,328	38.65	217,057	65,356	30.11
PB	16,337	6,043	36.99	33,505	10,669	31.84	34,368	12,743	37.08	17,507	4,818	27.52	101,717	34,273	33.69
PE	39,303	14,738	37.50	80,892	28,459	35.18	83,392	37,008	44.38	42,469	21,210	49.94	246,056	101,415	41.22
PI	14,376	3,400	23.65	29,654	7,605	25.65	30,671	9,344	30.47	15,648	3,638	23.25	90,349	23,987	26.55
RN	13,566	2,035	15.00	28,040	4,673	16.67	29,040	6,837	23.54	14,875	5,237	35.21	85,521	18,782	21.96
SE	9,598	2,626	27.36	19,926	5,894	29.58	20,759	7,288	35.11	10,646	3,539	33.24	60,929	19,347	31.75
ES	14,044	7,504	53.43	29,033	14,743	50.78	30,099	17,181	57.08	15,400	6,199	40.25	88,576	45,627	51.51
MG	76,664	28,718	37.46	159,404	59,893	37.57	165,947	74,604	44.96	85,324	24,735	28.99	487,339	187,950	38.57
RJ	59,212	13,932	23.53	123,755	29,572	23.90	129,745	41,411	31.94	66,755	22,400	33.56	379,467	107,345	28.29
SP	152,485	79,887	52.39	316,943	180,428	56.93	330,791	180,647	54.61	169,773	72,843	42.91	969,992	513,805	52.97
PR	41,018	9,976	24.32	85,300	21,316	24.99	88,845	31,254	35.18	45,752	14,455	31.59	260,915	77,001	29.51
RS	38,636	14,289	36.98	80,532	31,869	39.57	84,048	38,842	46.21	43,293	13,566	31.34	246,509	98,566	39.98
SC	23,474	11,049	47.07	48,919	23,853	48.76	51,094	27,104	53.05	26,469	9,699	36.64	149,956	71,705	47.82
DF	10,578	117	1.11	10,803	162	1.50	–	–	–	–	–	–	21,381	279	1.30
GO	25,003	5,365	21.46	51,475	11,154	21.67	53,104	17,298	32.57	27,116	11,322	41.75	156,699	45,139	28.81
MS	10,381	2,706	26.07	21,374	5,584	26.13	22,045	7,758	35.19	11,300	4,947	43.78	65,100	20,995	32.25
MT	13,289	3,127	23.53	27,228	7,055	25.91	27,947	9,021	32.28	14,236	5,388	37.85	82,701	24,591	29.73
Brazil	795,305	269,090	33.83	1,634,401	567,717	34.74	1,683,586	679,825	40.38	861,720	311,880	36.19	4,975,013	1,828,512	36.75

Source: <http://pni.datasus.gov.br>

Pop: population in the federation unit; D2: second dose; Cob (%): vaccine coverage.

attending health services to be vaccinated. The articulation of the three management spheres: city, state, and union, both in the health and in the education field, with the acknowledged positive response of the Brazilian population to the initiatives involving the promotion of health, was essential to reach the short-term goal in the first year of the vaccine implantation.

However, it is necessary to constantly mobilize the society toward vaccination, and the attention of the teams regarding its technical and operational aspects, as well as to sensitize the girls and to provide immediate responses to the negative rumors resulting from the mistaken information in the media and social network, without any scientific evidence supporting this news, especially spread by antivaccine groups. The latter is the biggest and the hardest challenge faced to be successful when it comes to high coverage rates and, consequently, the effective protection of the Brazilian adolescents against uterine cervix cancer.

Another important matter is the necessary discussion about the possible adverse events with the health teams, so it is possible to conduct adequate monitoring and notification, and that the diagnosis and care addressed to these possible adverse events can be conducted as fast as possible.

In this context, the involvement of scientific societies is fundamental, asking their members to take part as essential parties in terms of raising awareness about the importance of this vaccine for the Brazilian population.

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