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SECRETARIA DE SALUD  
DIRECCION GENERAL DE PROMOCION DE LA SALUD  
PROGRAMA AMPLIADO DE INMUNIZACIONES (PAI)

A circular illustration in the background shows a doctor in a white coat and stethoscope interacting with two children, a girl and a boy, in a clinical setting.

**MULTI YEAR PLAN  
OF THE  
EXPANDED PROGRAM  
OF IMMUNIZATION  
(EPI) HONDURAS  
2011-2015**

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## Executive Summary

In 1979 the Ministry of Health of Honduras created the Expanded Program of Immunization (EPI), currently located in the General Direction of Health Improvement, whose mission is oriented to decrease morbidity and mortality with vaccine-preventable diseases, through the immunization of the population under five years old, with emphasis in children under 2, pregnant women, people older than sixty and groups at risk, to keep the certification of the eradication of polio up to the world declaration, and guarantee the elimination of Measles, Rubella and Congenital Rubella Syndrome (CRS), elimination of neonatal tetanus, control of serious child tuberculosis, whooping cough, diphtheria, mumps, hepatitis B, Hib invasive diseases and severe diarrheas caused by Rotavirus, promoting the conscious participation of the general population, local governments, public, private and civil society organized institutions. The vision is “a technical-normative program responsible of guaranteeing the access to immunization services, according to the national vaccination scheme and the target population in a permanent and free way; capable of responding, in an effective and prompt manner, to the population’s demand for vaccines with quality, equality and solidarity through technical-normative and administrative processes with ample social participation, within the framework of decentralization policies and co-management of the Ministry of Health”.

During period 2006-2009, progress of the program is outstanding in favor of the children of Honduras, reaching annual vaccination coverage over 90% for all vaccines, which has impacted in the reduction of cases, disabilities and death each year for vaccine-preventable diseases, impacting meaningfully in the reduction of child’s mortality. Vaccine-preventable diseases have stopped being one of the major causes of disease and death. Main achievements are summarized in:

- ✓ 28 years without any record of Diphtheria (last case being 1981)
- ✓ 20 years without any record of Polio (last case being in 1989)
- ✓ 12 years without any record of Measles (last case being in 1997)
- ✓ 7 years without any record of CRS (last case being in 2002)
- ✓ 5 years without any record of Rubella (last case being in 2004)
- ✓ Important decrease of Neonatal Tetanus, TB Meningitis and Mumps in children under five

Notwithstanding, there are enormous challenges in order to keep the achievements and incorporate new vaccines and expand the use of the under used ones.

Regarding financing, beginning 1987, after the formulation of the Multi Year Plan for 1987-1989, the acquisition of vaccines with national funds is incorporated to the budget of the Ministry of Health, as well as the required syringes; progressively incorporating the rest of the program’s components to the allocated budget of the Ministry of Health. Commencing 1998 and with the formulation and approval of the Vaccination Law by the Congress of the Republic, financial sustainability of EPI is secured, by incorporating in the National Budget of the Republic, a budget allocation for the acquisition of vaccines, syringes, safety boxes and other supplies acquired by EPI, which, together with the

formulation of the five-year plan for 1996-2000, 2006-2010, incorporates national and foreign funds and EPI'S operating plan and annual budget (POA/EPI) by national funds, it was achieved that an average of 1.8% of the funds of the allocated budget for the Ministry of Health for the period 1998-2005 were assigned to EPI, which in the last five years (2006-2010-) is less than 1%.

For the five-year period 2011-2015, considering the current situation of the program, operating objectives have been established, oriented to improve the efficacy and efficiency of the program by means of the annual achievement of vaccination coverage in population under two, 11-year old population, pregnant women and groups at risk by immune-biological type equal or over 95%, nationwide, to keep the operation of the cold chain in green in all the levels of the services network of the 20 department regions, to keep active the epidemiologic surveillance for the occurrence of vaccine-preventable diseases in process of eradication, elimination and control and to promote the offer and demand of vaccination services in a conscious manner at the health workers level and benefited population and to secure safe injections and supply of vaccines, syringes and safety boxes.

Goals have been planned according to these objectives:

- Homogeneous vaccination of at least 95% of the population under 5, with emphasis in population under 2, 11-year old population, pregnant women, people over 60 and groups at risk with EPI vaccines all over the municipalities of the country..
- Keep the certification for the eradication of Polio up to the declaration of a polio-free world.
- Keep the elimination of Measles, Rubella and Congenital Rubella Syndrome (CRS).
- Keep the elimination of neonatal tetanus.
- Control of whooping cough, diphtheria, severe forms of tuberculosis, mumps, hepatitis B and invasive diseases (meningitis, pneumonia, epiglottitis, cellulites) caused by the *Haemophilus influenzae type b bacteria*, influenza, diarrheas caused by Rotavirus and pneumonias caused by pneumococcus.

To achieve goals, the strategies and actions are clearly defined for the 14 components: political priority and legal bases, planning and programming, organization and coordination, biological-supplies-infrastructure, cold chain, training, communication and social mobilization, operating costs, supervision and monitoring, implementation, information system, epidemiologic surveillance, investigation and evaluation. At the same time, main interventions for the improvement of the vaccination coverage and timings have been clearly defined.

The plan presents the required financing for the operation of the program for the period 2011-2015 by component, financing per year, and this is EPI's fifth multi-year plan, based on the analysis of the national situation of the program in all its components, Plan of the Health Sector to 2021, Plan of the Nation to 2038, Strategy for the Accelerated reduction of Mother/Child deaths (RAMNI), Objectives for the Development of the Millennium (ODM) and the recommendations from the Technical Advisor Group (TAG) on PAHO/WHO's vaccine-preventable diseases for the Americas, which constitute the basic elements that support EPI's Multi-Year Plan for 2011-2015.

In the Multi-Year Plan 2011-2015, in comparison to the previous five-year period, there is an increase of the foreign donors in the component Biologicals and supplies, associated to the co-financing of Rotavirus and Pneumococcal vaccines through the Global Alliance for Vaccines and Immunization (GAVI), being the average annual budget of US\$ 17 million. Main external financing funds are from GAVI, PAHO and UNICEF. To overcome the gaps, possible sources are ACDI and IDB funds from the vaccination project financed by Carlos Slimel, by means of the presentation of project profiles, within the framework of the Mesoamerican Initiative of Public Health.

The multi-year plan is oriented to keep the vaccination coverage and its impact in the decrease of morbidity and mortality because of vaccine-preventable diseases, in population under five years old, with emphasis on the population under two, 11-year old, and groups at risk, to keep the certification of the eradication of polio up to the world declaration, and guarantee the elimination of Measles, Neonatal Tetanus, elimination of Rubella and Congenital Rubella Syndrome (CRS), and control of serious child tuberculosis, whooping cough, diphtheria, mumps, hepatitis B, Hib invasive diseases, severe diarrheas caused by Rotavirus, and pneumonias caused by pneumococcus, promoting the conscious participation of the general population, local governments, public, private and civil society organized institutions

## **I. Introducción**

The Expanded Program of Immunization (EPI) Honduras is a preventive program, whose actions are framed in one of the axis of the health policy, that is to say, to guarantee public access to health services with equality, quality and efficiency; progress of the program is outstanding, especially in favor of the children of Honduras, by preventing annual deaths, furthermore, reducing the risk of becoming handicapped as a consequence of suffering of a vaccine-preventable disease (VPD), which translates in a high impact in the decrease of infant's mortality.

Within the framework of strategic planning, the EPI Multi-Year plan is submitted for the period 2011-2015, which adjusts to the Health Plan to 2021, Plan of the Nation to 2038, Strategy for the Accelerated reduction of Mother/Child death (RAMNI), Objectives for the Development of the Millennium (ODM) and the recommendations from the Technical Advisor Group (TAG) about PAHO/WHO's vaccine-preventable diseases for the Americas, which constitute the basic elements that sustain the achievement of national and international goals or eradication, elimination and control of vaccine-preventable diseases (VPD). Actions are focused on keeping the achievements, completion of the pending agenda and facing future challenges.

This plan presents an analysis of the situation of the program in the main components during the period 2006-2009; identifying the limitations; pointing out the achievements according to the proposed objectives and goals; offering short term actions to improve the impact of the interventions. This is a result of the different stages of the surveillance strategy, which incorporates the monitoring, supervision and evaluation of the program in all its components in the different levels (municipal, departmental and central) of the health system, as well as the vision, mission, objectives, goals, actions by component, activities and annual required financing.

The planned actions, as well as their financing have been analyzed and agreed with the different foreign cooperation agencies that are members of the Health Sector Coordinating Committee (HSCC) regarding the EPI and with the authorities of the Ministry of Health, and they are revised at the end of each year.

## **II. Analysis of EPI situation**

### **Vaccine coverage**

- The National Institute of Statistics (INE) conducted a census of the living population in 2001, making projections for 2015. Based on a national analysis carried out by the Department of Statistics of the Ministry of Health and EPI, it was concluded that the population under 1 and 1-4 was over estimated; this information has been validated by the results of national surveys (ENCOVI 2004, ENDESA 2005-2006), the verification of administrative coverage by Rapid Monitoring of Coverage (MRC), conducted in 2008 in 100% of the towns of Honduras. Therefore, in compliance to the

recommendations drawn by the international evaluation implemented to EPI by PAHO/WHO in 2007, a National Cross Sector Commission was organized to revise projections of population, with participation of INE, Ministry of Health (Department of Statistics and EPI), PAHO/WHO, UNICEF, UNFPA and the Solidarity Network, which, supported by PAHO/WHO International Consultant, stated, based in technical considerations regarding the decrease in the fertility rate that was required, that it was urgent for INE to make adjustments to the population. In August 2008, INE formally informed the Ministry of Health about the adjustment of the population younger than 1 and 1-4, by towns, for the period 2004-2015. With that base, correction in EPI's vaccination coverage was made, since 2004, at the national, departmental and municipal level. (Table 1).

**Table 1. Estimates of difference in population under 1yr and 1-4yr according to Ministry of Health Official data, and adjustment to population by INE. Honduras 2004-2008**

Years	Population under 1		Difference	Population 1 a 4 years		Difference
	Estimated*	Adjusted		Estimated*	Adjusted	
2004	195,826	187,087	8,739	757,750	809,522	51,772
2005	197,159	182,320	14,839	770,870	789,386	18,516
2006	197,208	182,067	15,141	855,867	762,634	-93,233
2007	198,222	181,506	16,716	855,867	740,513	-115,354
2008	199,400	180,677	18,723	870,910	726,276	-144,634

*\*Department of Statistics*

- Vaccination activities for no-pathological Hepatitis B newborns started in 2007, at hospitals and mother/child clinics; the average reached coverage in 2007-2009 was over 90%; 94% in 2008; and 93% in 2009. Only 13/25 public hospitals apply vaccines to newborns, being HMCR (Hospital Mario Catarino Rivas) and Olanchito the ones reporting the lowest coverage, not exceeding 70%, followed by the hospitals in Tela, San Marcos de Ocotepeque and Progreso, with coverages around 70%. The remaining hospitals achieve coverage between 80 and 94%. This low coverage is conditioned to no vaccination operations on weekends and holidays, due to management problems by not assigning these activities to the staff on duty, missing the opportunity to protect newborns. For 2008 a total of 46 mother/child clinics were operating and applying vaccines to newborns. This number increased to 59 in 2009 and most of them reached coverage of over 90%.
- Regarding application of BCG vaccine to newborns weighing more than 2,500 grs., it is observed that for 2009 the number of hospitals applying the vaccine to more than 95% of the newborns are 15/25 (60%), decreasing in relation to 2008, when 72% (18/25) hospitals achieved the expected goal of 95% or higher, being the hospitals in Gracias, Olanchito, Progreso and HMCR, the ones which did not reach 80% of coverage. 35/59 mother/child clinics achieved coverage of 90% or over.

It must be said that hospital and IHSS clinics reach coverage over 90%, contributing with 12% of the national coverage.

- Since 1991 coverage over 90% is achieved, for all EPI vaccines that are applied to population under 2 (BCG, Sabin; DPT/HepB/Hib and MMR). During 2006-2009 coverage between 93 and 98% was maintained to Pentavalent, considering this vaccine as baseline for the vaccination coverage. For 2009 an increase is reached, by applying vaccines to an average 6,000 children under 2 more than in 2008 for each of the vaccines. (Table 2).

Coverage for BCG exceeds 100% because of the over record of the applied doses, as 74% of deliveries happen in hospitals, where babies are applied the vaccine and some HU report in their information systems, the doses that correspond to them out their population, which duplicates it in SIVAC; for this reason the implementation of a nominal vaccination system is a priority.

**Table 2. Vaccination Coverage per vaccine type in population under 2, Honduras 2006-2009**

YEARS	POPULATION < 1 YEAR	BCG		SABIN		DPT/HB/Hib		MMR		
		SD	%	THIRD DOSE	%	THIRD DOSE	%	POPULATION 12-23 mo.	SD	%
2006	182,067	177,165	97	171,905	94	172,285	95	178,127	173,434	97
2007	181,506	180,766	100	170,826	94	170,609	94	177,880	170,728	96
2008	180,677	182,547	100	168,801	93	168,744	93	177,336	167,841	95
2009	179,571	187,972	100	175,295	98	175,470	98	176,521	176,132	100

Source: EPI/MOH

In 2009 the Rotavirus vaccine is institutionalized in the national vaccination scheme and applications started on February 15 in some regions, and in others until March. The target was estimated according to the start date of the vaccination for first doses 10.5 months and for second doses 8.5 months. The reached coverage for first doses was 93.5%; however, for second doses only 82% was achieved; this situation was conditioned, in part, that the age for the application of the first and second dose is limited, and also because many mothers don't have their children vaccinated at the HU, missing the opportunity to protect their children. Another factor that affected this year was a strike of the health staff for more than 3 months, which did not allow the completion of the vaccination scheme in children who had received their first dose before the strike. (Table 3).

**Table 3. Rotavirus Vaccination Coverage Per Dose in population between 2-7.5 mo., Honduras, 2009**

Years	Target population < 1 year	Target population first dose	Immunized	%	Target population 2nd dose	Immunized	%
2009	179,571	157,125	146,905	93	127,197	103,745	82

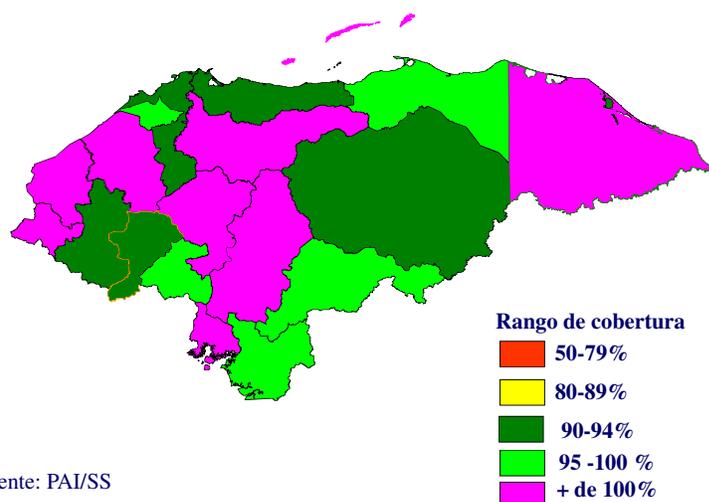
Source: EPI/MOH

- By analyzing the coverage of vaccination in children under 2, by HR for 2009, we observe that 75% (15/20) regions exceeded the coverage in 95%, for all the vaccines; but not the regions in Atlántida, Cortés, Intibucá, Lempira and Olancho; however, their coverage ranges from 90-93%. It is important to point out that for BCG vaccine, due to the fact that the information system does not allow the debugging of the information in hospitals from procedence, where 75% of deliveries take place. This does not reflect the real coverage by each department. Regarding the Rotavirus vaccine, only 3 HR out of 20 achieved coverage of 95% or higher (Islas de la Bahía, La Paz and Valle).
- Considering the Pentavalent as baseline of vaccine coverage in children under 1, the priority regions for intervention in 2009 are Intibucá, Olancho, Atlántida, Cortés and Lempira (Table 4 and Map 1).

**Table 4. Department Health Regions showing coverage range of MMR vaccine in population 12-23 mo., Honduras 2008**

≥ 95%	90 to 94%	80 to 89 %
Colón	Atlántida	None
Comayagua	Cortés	
Copán	Intibucá	
Choluteca	Lempira	
El Paraíso	Olancho	
Francisco Morazán		
Gracias a Dios		
Islas de la Bahía		
La Paz		
Ocotepeque		
Santa Bárbara		
Valle		
Yoro		
Metropolitana DC		
Metropolitana SPS		

**MAPA 1. COBERTURA CON VACUNA PENTAVALENTE EN POBLACION MENOR DE 1 AÑO POR DEPARTAMENTO, HONDURAS 2009**



Fuente: PAI/SS

**COVERAGE OF PENTAVALENT VACCINE IN POPULATION UNDER 1, PER DEPARTMENT, HONDURAS 2009**

- Regarding the vaccination coverage for children under 2 by towns, it is observed that in period 2006-2009 the number of towns at risk for coverage lower to 95, around the country, decreased, presenting annual variations for the different vaccines. During this period, an average of 45% of towns reached coverage over 95% for Sabin, DPT/HB/Hib and 56% for MMR. It must be said that these data don't reflect the real situation as in 2008 population under 1 was adjusted and no calculations per town have been carried out for 2004-2007. In 2008, with adjusted population data, it is observed that over 50% of towns reached coverage over 95% for Sabin, Pentavalent and MMR, being 2009 when the highest coverage is reached in towns, with 67% out of 298 towns with coverage over 95%. Evidence of problems in the redistribution of the population under 1 per town continue, considering that in average, more than 43% of towns present coverage over 100% for the different vaccines around the country. (Table 5)

**Table 5. EPI Coverage of vaccines in children under 2, Honduras 2006 a 2009**

YEARS	SABIN				DPT/PENTAVALENT				MMR			
	< 95%		>95%		< 95%		>95%		< 95%		>95%	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	202	68	96	32	203	68	95	32	143	48	155	52
2007	200	67	98	33	199	67	99	33	182	61	116	49
2008	154	52	144	48	158	53	140	47	137	46	161	54
2009	99	33	199	67	100	34	198	66	95	32	203	68

Source: EPI/MOH

- By analyzing the coverage of EPI vaccines in children under 2 by rank, it is observed that for 2009 there are no towns with coverage under 50% and that only 4% of the towns present coverage under 80% for Sabin and Pentavalent and 5% for MMR, most of them are over 95%.
- One of the indicators to measure the efficiency of EPI and the missing vaccination opportunities is the drop-out rate for Sabin, DTP/HepB/Hib and MMR, which has maintained during the period in less than 5%, and this shows an improvement in used vaccination opportunities. However, in period 2006-2007, negative dropout rates were registered, evidencing problems in the recording of the information around the country, making interventions for the control of the quality of data, getting positive rates since 2008. (Table 6).

**TABLE 6. DROP-OUT RATE PER VACCINE TYPE IN POPULATION UNDER TWO YEARS, HONDURAS 2004-2008**

YEAR	SABIN			PENTAVALENT			MMR		
	FIRST.	THIRD	%	FIRST.	THIRD	%	FIRST PENTAVALENT	SD MMR	%
2006	168,080	171,905	- 2.24	168,036	172,285	-2.5	168,036	173,434	- 3.2
2007	168,836	170,826	-1.18	169,446	170,609	-0.69	169,446	177,880	-4.97
2008	173,358	168,801	2.63	173,048	168,744	2.48	173,048	167,825	3.11
2009	181,270	175,295	3.0	181,117	175,470	3.0	181,117	176,132	2.8

Source: EPI

- At the national level there is no updated technology for calculating vaccination coverage by cohort in population under five; therefore, the used method is the measurement of vaccination of a five year-cohort, which indicates that in this range, coverage over 97% for all vaccines is reached. (Table 7).

**TABLE 7. COHORT OF VACCINATION IN CHILDREN UNDER 5, PER VACCINES, HONDURAS 2005-2009**

YEAR	POPULATION < 1 YEAR	BCG		SABIN		PENTAVALENT		MMR		
		IMMUNISED		IMMUNISED		IMMUNISED		IMMUNISED		
		<1 YEAR	1-4 YEARS	<1YEAR	1-4 YEARS	< 1YEAR	1-4 YEARS	12-23 MO. POP.	12-23 MONTHS	2-4 YEARS
2005	182,320	178,776	1,452	178,930	6,577	179,330	6,349	189,169	173,637	3,830
2006	182,067	177,165	1,344	171,905	5,655	172,285	5,261	190,456	173,434	3,678
2007	181,508	180,766	2,206	170,826	4,637	170,609	4,660	177,880	170,728	3,614
2008	180,677	182,547	1,217	168,801	4,696	168,744	3,726	177,336	167,841	7,034
2009	179,571	187,972	2,658	175,295	5,351	175,470	5,076	176,521	176,132	3,350
<b>TOTAL</b>	<b>913,659</b>	<b>907,226</b>	<b>8,931</b>	<b>865,757</b>	<b>26,916</b>	<b>866,438</b>	<b>25,072</b>	<b>911,362</b>	<b>891,772</b>	<b>21,506</b>
<b>COVERAGE</b>		<b>100.2%</b>		<b>97.7%</b>		<b>97.6%</b>		<b>100.2%</b>		

Source: SIVAC

- From 2009 on, Sabin booster doses are applied at 18 months old, achieving coverage of 82%, having in mind that the application started by the end of this quarter in most of the regions.
- Regarding DPT booster doses to 18-month old and 4 year-old population in 2006-2008, coverage of 95% was not exceeded; for 2009, 97% coverage was reached with the first revaccination and 86% for the second.
- Booster doses of TT to 11-year old female and male population in period 2006-2009 has not reached 95% coverage; in 2009 86% was reached, constituting high risk for the occurrence of NNT and no neonatal tetanus.
- Hepatitis B vaccine is applied to groups at risk; Yellow Fever to international travelers going to high risk areas, Salk and Pediatrics TT for the population whom Sabin and Pertussis component of DPT/Pentavalent are contraindicated.

### **Vaccination campaigns**

- Mass application of vaccines by means of the national vaccination campaigns is the basic strategy adopted by the country for the sustainability of the eradication of polio and the interruption of the transmission of the wild virus before the risk of being introduced to the country, through the spread of the vaccine poliovirus in the shortest possible time. During period 2005-2008 an annual vaccination campaign has been held, obtaining coverage over 95%, except for 2005 (93%).
- Simultaneous to the national campaign, within the framework of the target for the elimination of Measles and Rubella, the implementation of the fourth monitoring campaign for MR vaccine for population from 1-4 took place. Since 1996 four campaigns have been conducted, with coverage over 95%. In the 2008 the coverage of the campaign was 97%.
- Within the framework of integral care to infants and to improve the deficiency of vitamin “A”, the mother/child population are given supplements at each vaccination campaign, at the national level; being the annual contribution for the coverage of 6-11 month population of 36%; 65% for 1-4 population with first doses and 8% in puerperal women.

### **Cold Chain**

- Cold Chain is a vital component for the operation of the Expanded Program of Immunization (EPI). When analyzing the operation of the cold chain during the period 2006-2009, it is observed that its green functionality has slightly increased, maintaining an average green of 82%, yellow 0%, red 5% and No Information in 12%.

- The analysis of the conditions of the cold chain by Department Health Regions shows that the departments with greater problems in the operating of the cold chain in red are: Gracias a Dios (24%), Choluteca (13%), Yoro (11%), Islas de la Bahía (9%), Valle (8%), El Paraíso (8%), La Paz (8%) and Atlántida (7%).
- To date, 95% of the HU in all the country have been input in the new program of the Cold Chain Inventory.
- Nearly 90% of the kerosene/LPG-operated absorption refrigerators have been replaced by solar ones, installed at difficult accessed HU. This equipment is efficient and reliable, needs little maintenance and is easily operated as it does not need fuel for running.
- In the period 2007 to 2009 and using national funds, support from the Embassy of the Sovereign Order of Malta, UNICEF, counterpart USAID (UECF) and funds from the Agency for Development, through PAHO, electric refrigerators were acquired for the introduction of the Rotavirus vaccine and to expand the storage and conservation of the vaccines in the health establishments.

### **Safe Immunisations**

The Plan for Safe Injections was formulated in 2003, implemented with GAVI support and its implementation is executed nationwide. These are among the main achievements:

- ✓ Supply the health services network of the 20 departmental regions with AD syringes and needles for use in vaccination services in a two-delivery process during the year, to guarantee the offering of vaccination services, basically in the safe application of injectable vaccines for the target population and health personnel in charge of applying the vaccines, and securing their safe disposal.
- ✓ 100% of the HU are supplied with AD syringes; injectable vaccines are applied using the appropriate AD syringe, (according to the vaccine type); the exception was TT vaccine, which was applied with disposable syringe, but since 2010 an AD syringe is used.
- ✓ Compliance of the norm of not recapping syringes used in vaccination, is associated to the training of 100% of the health personnel who is responsible of the vaccination operations, by means of meetings and on duty sessions for the compliance of the norm of not recapping the needle, supporting the process with educational material like bulletins and posters where steps for a risk-free vaccination for population, health staff and the whole community are summarized.
- ✓ Regarding the process of destroying safety boxes using safe methods, the greatest achievement is the standardization by the Ministry of Health. Through the Department of services development, it was formulated and published in Diario Oficial La Gaceta, the Special Regulations for the disposal of dangerous waste generated in health establishments, which in Articles 67, 69 and 71 state that

health establishments lacking a system of physical-chemical treatment, must deposit sharp and dangerous waste in a safety pit, otherwise they must be disposed in craves at local cemeteries. This Rules and Regulations is in process of implementation in the HU and socialization with local governments for the construction of safety pits; safety boxes continue being buried, burned or sent to the municipal dumpsite, where the service is available.

- ✓ Since 2007 100% of the HU CESAMOS have received destroyers for portable needles used in vaccination processes, hence reducing the risk of transmission of diseases by sharp objects.

### **Information, Education and Communication Component**

During this period, information, education and communication has been monitored through the IEC/EPI Plan at the national and departmental level; being necessary to strengthen the monitoring for the implementation at the municipal level, hence reducing the missed opportunities for vaccination. It has been incorporated to the mother/child strategy financed by USAID, the EPI topic to support radial communication for the sustained program, national vaccination campaigns and introduction of new vaccines. Due to the political crisis of the country, this strategy was interrupted in the second semester 2009. In 2010 IEC Plan will be formulated for the five-year period 2011-2015.

#### ***Current situation of surveillance of Vaccine-Preventable Diseases (VPD)***

Tendency in the incidence of mortality rate caused by vaccine-preventable diseases is decreasing; in summary, these are the achievements:

- ✓ 28 years without any record of Diphtheria (last case being 1981)
- ✓ 20 years without any record of Polio (last case being in 1989)
- ✓ 12 years without any record of Measles (last case being in 1997)
- ✓ 7 years without any record of CRS (last case being in 2002)
- ✓ 5 years without any record of Rubella (last case being in 2004)
- ✓ Important decrease of Neonatal Tetanus, TB Meningitis and Mumps in children under five

#### **Progress of the National Plan for the Elimination of Measles**

During 2006-2009 surveillance has been kept in suspicious cases of Rubella and Measles. In 2009, 133 suspicious cases were reported, 77 of which were notified in towns with a population over 100.000. It has to be pointed out that these cases occurred in 9 of the 12 towns with this amount of population. The sanitary regions that reported the most cases were Cortés, Metropolitana del Distrito Central, Metropolitana de San Pedro Sula, Choluteca and Comayagua. The sanitary regions of Colón, Gracias a Dios,

Intibucá, La Paz, and Olancho are silent risk regions for 2009. The regions of Colón and La Paz have not presented cases in repeated occasions, therefore an active search will have to be done all over the region.

133 suspicious cases of Measles and Rubella were excluded by the lab as Measles/Rubella in 100%, but 27.8% (37) were positive for Dengue and 72% (96) were negative for Measles/Rubella and dengue. A reduction in the notification of cases was observed, in relation to 2008 (219 cases).

9.7% out of the 133 cases were special (13) because of undetermined results, which were already classified by the Commission; two cases were excluded for Measles/Rubella or dengue; 10 cases were classified as dengue and 1 was classified post-vaccine measles. Those cases were reported by the following Departmental HR: Metropolitana de San Pedro Sula, Metropolitana del Distrito Central, Lempira, Choluteca, Cortés and Comayagua.

During 2009, through the passive surveillance (lab) of dengue, 78 cases with eruption were collected and 2 cases were classified as special cases, one having a positive result for measles and the other for rubella. A second blood sample was taken and the results turned negative; therefore, the classification commission for MR and CRS ruled the two cases out based on lab, clinical and epidemiological studies; 100 % of the cases that were admitted for this surveillance were ruled out for M/R.

In reference to the national and international indicators for 2009, its compliance is kept in 90% in six out seven established indicators, as one of the indicators does not apply for the country, due to the lack of confirmed cases and the indicator of taking and delivery of samples to the virology lab within 5 days continues in 77%.

During 2009 no active search was conducted due to the political crisis in the country.

## **Eradication of Polio**

In 1987 the country assumed the commitment to eradicate polio and on that year the National Plan for the Eradication of Polio was implemented.

In 1988 surveillance for Acute Flaccid Paralysis (AFP) was established within the framework of the eradication of polio, and in August of that year the Comisión Nacional de Erradicación de la Poliomielitis (CONEPO) was organized, which is still active by making analysis of each AFP case and classifying them based on clinical, epidemiological and lab criteria, according to the established definitions. The last case of polio in the country was confirmed on May 29, 1989, in La Ceiba. In 1994, the CONEPO certified the eradication of the circulation of the wild poliovirus. The strategies oriented to reach annual vaccination coverage over 95% in population under 5, national vaccination campaigns and active epidemiological surveillance of AFP in children under 15 are maintained up to date.

Mass application of vaccines by means of the national vaccination campaigns is the basic strategy adopted by the country for the sustainability of the eradication of polio and the interruption of the transmission of the wild virus before the risk of being introduced to the country, through the spread of the vaccine poliovirus in the shortest possible time. During period 2006-2009 three national vaccination campaigns were conducted with additional doses of Sabin, reaching coverage of over 95%.

### **Surveillance of Acute Flaccid Paralysis (AFP)**

In the period 2006 to 2009, 268 cases of AFP have been studied; 100% of the cases have undergone a complete survey, keeping a national rate superior to the expected, of 1 case X 100,000.

In 2009, 698 suspicious cases of AFP were surveyed, and only 19% (13) has not yet been evaluated by the CONEPO, due to financial problems, a situation that originated delays in the final classification, as the cases have not yet been evaluated by the Neurology and Psychiatry services. According to clinical, epidemiological and lab criteria, 100% were ruled out as Polio, isolating other enteroviruses in 9 cases and 60 cases resulted negative.

It is observed by Departmental Sanitary Regions that 2/20 are silent risk regions in the reporting of suspicious cases for 2009 (La Paz and Ocotepeque). It has to be said that Comayagua, Cortés, El Paraíso, and Metropolitana del Distrito Central are the regions that have notified the greater number of cases since 2006, including Olancho with 6 cases in 2009 and Atlántida (9), Yoro (6) and Metropolitana de San Pedro Sula (5) in 2009.

### **Compliance of epidemiological surveillance indicators for the certification of the eradication of Polio**

Within the framework of the plan for the eradication of Polio, four surveillance indicators for AFP have been established; for the period 2006-2010 they keep their compliance over 80%.

## **Eradication of Rubella and Congenital Rubella Syndrome**

### ***Rubella***

Within the eradication of Measles, surveillance to Rubella has been strengthened, which has allowed to systematize the reporting of the occurrence of cases. Rubella was endemic, with a high rate of sub-notification; in the nineties, an annual average of 146 cases were reported, with an incidence rate of 2.55 cases X 100.000 inhabitants.; the most affected group was children under 1, followed by 1-4 years old. From 2005 on, no more cases of Rubella have been confirmed.

### ***Congenital Rubella Syndrome (CRS)***

Systematization of the epidemiological surveillance of CRS since 1997 has allowed the study of 119 suspicious cases of CRS, which main congenital malformation was cataract. From 2003 to 2009 no other case was confirmed, which confirms the impact of mass MR vaccination in women and men in 2002-2003.

During 2009, 55 suspicious cases of CRS were reported, which means an increase in the report of 100%, in relation to 2008; 100% of the cases were ruled out after the lab tests. Notifications were in these hospitals: HMI (18), HMCR (13), IHSS/SPS (9), HRO (2), HGSM (2), HRA (1), HGA (1), HGA (4), HRSF (1) CESAMO Alonso Suazo (1) and CESAMO El Paraíso.

The main source of notification of suspicious cases is the public sector, followed by social security; 85% of the regions have reported cases and 15% of them are silent risk; age of cases was younger than a month old (38%) (21 cases).

### ***Progress of the national plan of control-elimination of No neonatal Tetanus (NNT)***

In 1990 the country assumed the commitment to eliminate Neonatal Tetanus and basic strategies were: a) sustained vaccination to women in reproductive age (WRA) 12-49 years old with two doses of TT in the identified municipalities at risk and in the rest of the towns in the country. In 1992 the vaccination scheme was modified from two doses of TT to five for WRA; b) Epidemiologic surveillance; and c) promotion of clean deliveries.

In 1997, because of the diphtheria re emergency in adult population in South America, immunobiological TT was substituted by DPT with the same vaccination scheme of five doses, orienting efforts to complete WRA scheme with third, fourth and fifth doses and start scheme with TT to the cohort of WRA reaching 12.

Since 2002, a TT booster dose (every 10 years) started to be applied to 11-year old male and female population, assuming that this cohort received at least 4 DPT doses when being under 5. Besides protecting the population of girls entering the cohort of WRA and

to keep control and elimination of Neonatal tetanus, the application of vaccines to groups at risk was expanded, at the towns at risk for occurrence of Neonatal and no neonatal tetanus, with emphasis in agroicultural workers, military people, etc. Since 2009 the vaccination of WRA is suspended and the vaccination to unvaccinated pregnant women is established.

In general, the behaviour of Neonatal Tetanus is descending. In period 2006-2009 two cases with an incidence lower than 1X1000 live births occurred. After 3 years without NNT cases, in 2008 a case from the Sanitary Region in Valle was reported, child of mother with complete vaccination scheme, delivery without a midwife or at her home's patio. The child survived, reporting an incidence rate of 0.05X1000 live births.

Again, in 2009 another case of Neonatal Tetanus was confirmed from the Metropolitan HR in San Pedro Sula; the child is son of a 25-year old migrant mother with HGO G=3, P=3, HV=3, without any prenatal control, who has never been vaccinated; delivery assisted by her grandmother in a dirt floor shed; the umbilical cord was cut with unsterilized scissors. The boy starts with symptoms 4 days after his birth and presents fever, irritability and jaundice, evolving to generalized rigidity and dying six days after his hospitalization.

## **Diseases under control**

### **Diphtheria**

For 28 years no new cases of diphtheria have been confirmed in the country; since it is a reemergent disease in the world and especially in the Americas, active surveillance is kept; therefore there are tools for the diagnosis in labs. In February 2006 a suspicious case in the departmental region of Yoro, in El Progreso, was reported, which was ruled out. During 2007-2009 no suspicious cases were reported in any region.

### **No Neonatal Tetanus**

Epidemiological surveillance of Neonatal Tetanus allowed, starting in 1993, the surveillance of no neonatal tetanus; in period 2006-2009 62 cases were notified, keeping a lower rate to 1 X 100.000 inhabitants; 44 deaths were recorded during this time.

The most affected Departmental Health Region was Metropolitan San Pedro Sula with 4 cases, followed by Cortés, with 3 cases, registering an incidence rate, nationwide, lower than 1X 100.000 inhabitants. 10 deaths were documented for a total national mortality level of 0.13X 100.000 inhabitants.

In 2009, according to the total of confirmed cases (20), the most affected age group was older than 50, with 11 cases (55%), followed by people < 15 with 6 (28.5%). The larger number of cases came from the urban area, with 11 cases (55%) and 9 from the rural area (45%). Gender with more risk was male, with 11 cases (55%) and 9 cases (45%) for females.

According to occupation, 9 were housewives, 8 were in school, 1 mason and 1 indigent. These cases and deaths could have been prevented if 100% coverage of WRA, infants' population (with their DTP scheme) and vaccinations to groups at risk was guaranteed.

### ***Pertussis***

Incidence rate of ***Pertussis*** at the national level in period 2006-2009 has been maintained over 1X100,000 inhabitant, except for 2007, which was under 1X100,000 inhabitants.

In 2009, 206 suspicious cases of ***Pertussis*** were reported; according to clinical and epidemiological criteria, those 126 cases were classified as compatible. 1 case was confirmed by the lab and it belongs to the region in Cortés and 79 cases were overruled, for an incidence rate of 1.7X100,000 inhabitants, registering 6 deaths and observing a mortality rate of 0.08X100,000 inhabitants.

The most affected age group was 2-11 months with 84 cases (66%), followed by the 1-4 years with 12 cases (9%).

The analysis of the vaccination condition of the cases indicates that 23.6% (30) were not of age to receive immunisation since they were younger than 2. It is important to point out that 25% (21) of the cases 2-11 months had zero dose and only 45% (39) had a complete scheme for their age. About gender, the most affected one is male, 55% (123 cases). Nasopharyngeal swab samples were taken to 152 out 206 reported cases (74%); being able to isolate *Bordetella pertussis* in one of the cases; the remaining cases had already started antibiotic therapy. According to this information, difficulties in the isolating of the bacteria, associated to the technique and use of the antibiotics must be considered.

Incidence rate observed by departmental HR was calculated, recording the highest rates in the Metropolitana del Distrito Central, Francisco Morazán, El Paraíso and Gracias a Dios; in the remaining affected regions the incidence rate is  $\leq$  1X100.000 inhabitants.

When making a relation of the incidence and the vaccination coverage with doses and booster doses in population under 5, it was observed that Región Metropolitana del Distrito Central recorded the highest incidence rate  $\geq$  1X100.000 inhabitants; this coverage is lower than 95%.

### ***TB Meningitis***

In general, by analyzing the registered cases during 2006-2009, a lower rate of 1 case per 100,000 children under 5 is maintained.

In 2009 three cases of TB Meningitis were registered, which correspond to age group 1 to 4 years; two of the cases received their BCG dose as newborns and another case received it at age 8 months. 100% of the cases were diagnosed by cephalo-spinal study. Cases were from

the Department HR of Atlántida, Comayagua and Metropolitana de San Pedro Sula; a national incidence rate of 0.33X 100.000 children under 5 was observed.

### ***Haemophilus influenzae B Meningitis***

Surveillance to bacterial meningitis is kept since 2000 at a national sentinel hospital (Hospital Escuela, in the D. C.).

It has been observed a sustained decrease of suspicious cases in ages 1month to 5 years. In 2006-2008 not a single case was recorded. In 2009, 75 suspicious cases of Hib Meningitis were reported, and 1 case was confirmed by the lab, a 19-month old boy from Comayagua, who had received three doses of DPT/HepB/Hib.

### ***Hepatitis B***

Epidemiological surveillance of Hepatitis B started in 1996, and it has been observed that the behaviour of this disease, at the national level, in period 2006-2009, presents an annual average of 103 cases with a marked decrease in 2008, conditioned to failure in its surveillance. The magnitude of this problem might be even greater than the evidenced in this analysis, as surveillance of this disease makes emphasis at the hospital services (outpatient services, hospitalizations and blood bank).

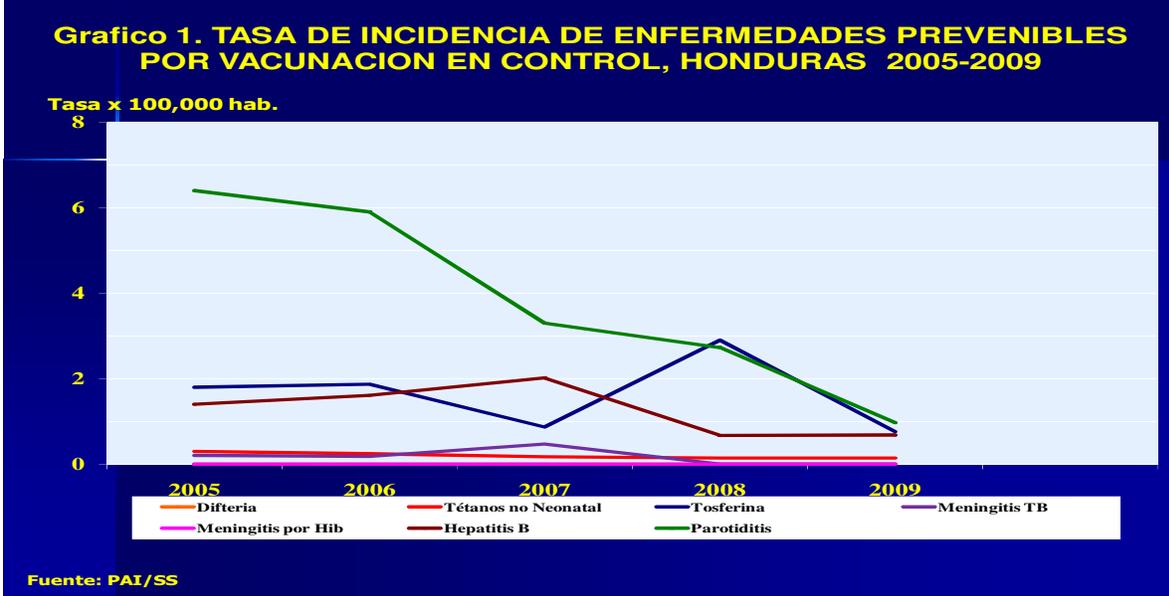
In 2009, 84 cases were confirmed; 45 were classified as acute infection and 39 as carriers. Per age group, the most affected one was older than 15, followed by group 5-14 years and the female gender registered the most cases (43). By sanitary regions, the highest rates are registered in descending order: Atlántida and Metropolitana del Distrito Central. Islas de la Bahía, La Paz and Valle were silent regions, which manifests failures in the surveillance of this disease. The incidence rate per age group during period 2006-2009 shows that people over 15, followed by 5-14 years old group are the most affected.

When making a relation of the behavior of Hepatitis B with the vaccination strategies initiated in a sustained manner in 1994 for groups at risk, which have been expanded every year and in 2009, population under 1 in the combined vaccine DPT/HepB/Hib (Pentavalent), whose current cohort is years It is expected to control this disease in the long term, situation that can be modified by incorporating to the national vaccination scheme mass vaccination of elementary school children and adolescents, taking into account that the main ways of transmission are sexual and perinatal.

### ***Mumps***

Mumps has been endemic in Honduras; however, the under registration was high. According to the Ministry of Health Statistics, in 1994 the incidence rate was 1.82 per 100,000 inhabitants; starting the 22<sup>nd</sup> epidemiologic week of 1997 incorporation for the annual report is achieved. The incidence rate has been decreasing since 2002, observing in 2009 a 2.5 X 100,000 inhabitants rate. In general the tendency is descending (See Graph 1).

**Graph 1. INCIDENCE RATE OF VACCINE-PREVENTABLE DISEASES UNDER CONTROL, HONDURAS, 2005-2009**



### *Surveillance of other vaccine-preventable diseases*

Within the framework of introduction of new and under-used vaccines, surveillance is conducted through the Direction of Health Surveillance with support from EPI, by VPD sentinel sites.

### *Influenza*

Sentinel surveillance of influenza in the country started in 1983 in 5 sites, which was interrupted because of problems in the provision of reactivities and supplies. In 2005 the sentinel surveillance of influenza is re started in 4 sites: 1 hospital of the IHSS chain in SPS and 3 health centers.

It is important to mention that annually, the process of collection of cases, taking and processing of samples and its later identification has not been regular; however, during three years, the time when the greatest possibility of the influenza virus occurs during the epidemiological weeks 28-38.

During 2008, 8 cases of influenza were confirmed. 5 of these cases correspond to the age group 15-49. 100% are males; 2 cases are female in the 15-49 age group, and a female case in the 1-4 age group. 7 cases were confirmed for B Influenza; 5 of these correspond to females, 3 cases of 15-49 years and 2 cases 1-4 years; 2 cases are male, 1 from the age group 15-49 and the other 5-14 years.

In 2008 43% (9/21) of viruses was collected, being A Influenza, Parainfluenza 3 and Respiratory Syncytial Virus the ones that were reported the most, with 24% (5/21) each.

In 2009, by means of the sentinel surveillance, 384 cases of influenza were confirmed. Most of the cases corresponds to the group age 15-59 (349), followed by 1-4 years group (29 cases).

### ***Diarrheas caused by Rotavirus***

Five years from the implementation in the country of the gastrointestinal surveillance system for Rotavirus under the modality of sentinel sites located in six hospitals, to which two national hospitals were selected: Hospital Escuela and Hospital Mario Catarino Rivas, three regional hospitals: Hospital de Occidente, Hospital del Sur and Hospital Atlántida and the Hospital de Especialidades (IHSS), constituting a network of hospital labs, with capacity to give a rapid and prompt diagnoses. This surveillance system has allowed us to learn that Rotavirus is the etiologic agent responsible for the outbreak of diarrheic diseases that occurs in the first quarter of the year. Positive results up to 90% were found on the samples at some sentinel sites, affecting children under 5 with severe diarrheas and their complications.

Furthermore, coinciding diagnoses with other pathological agents like bacteria and parasites was established; additional parallel tests are done, like coproculture and parasitological, and a baseline of intestinal invagination in the pre introduction phase of the vaccine.

To reach the objectives of this surveillance, the Direction of Surveillance has worked in securing that the sentinel sites have the basic requirements, like equipment and supplies for the lab surveillance, the strengthening of the technical capacity of the doctors in epidemiology and the lab staff at the six sentinel sites and their labs, the prompt delivery of samples to the Laboratorio Nacional de Virología for a quality control check, as well as referral to CDC in Atlanta for the typification of circulating strains. To carry out all these activities we have received the technical and financial support of PAHO/WHO of the Immunisations Unit in Washington and the Program for the use of Appropriate Technology in the Health Field (PATH).

The information given in this surveillance system has allowed monitoring of the plan for the introduction of the Rotavirus vaccine and the technical and financial preparation to secure its introduction. On February 16, 2009, the technical and operational guidelines for Rotavirus vaccination were given to all the departmental sanitary regions. Immunisation started in all the regions in February as well.

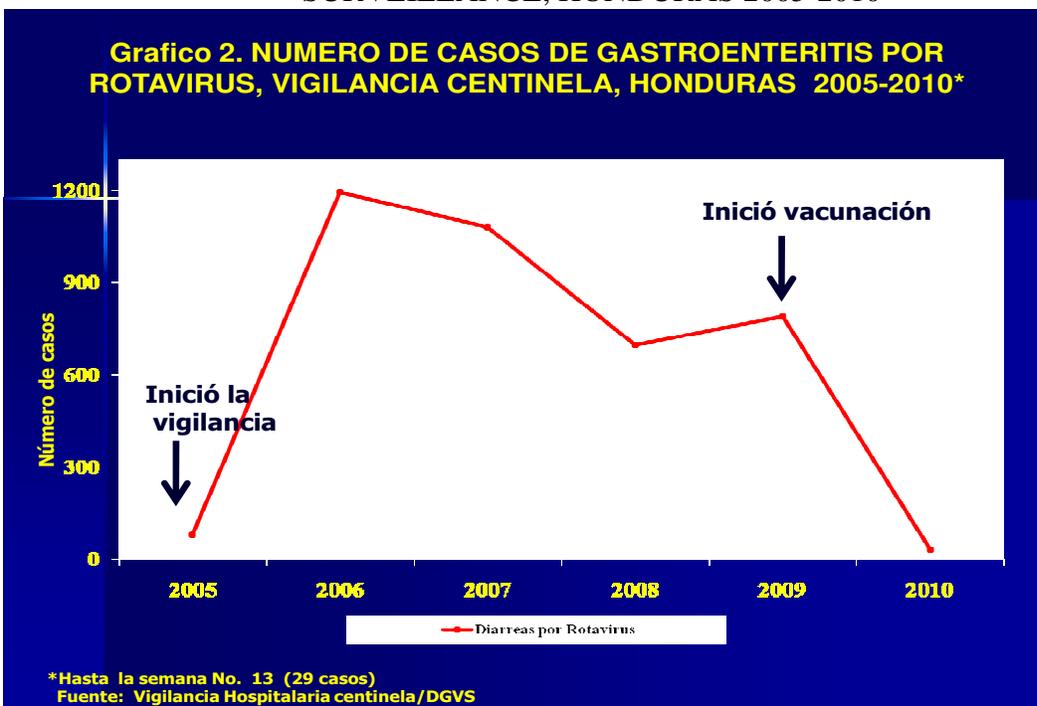
3680 suspicious cases were detected in 2009 and samples were taken to 1898. 844 (44.46%), gave positive. During this year no samples were sent to CDC for their genotypification, according to the virology lab report.

A decrease in the hospitalized cases due to diarrheas is observed in 2009, as well as the reduction in the detection of suspicious cases and low rate in taking of samples, operating with a low efficiency of 52% and 44% of positiveness.

Efficiency in the operation of the sentinel sites has been qualified as excellent in the western and southern hospitals, good efficiency in IHSS, HE and Atlántida and very bad efficiency in HMCR.

Since the beginning of the surveillance, samples have been sent to CDC for their genotypification, identifying that more frequent strains in period 2005-2007 were G2P(4) with 52% y not typeable G2 with 12%. In the period from 2007-2008, the most isolated strain was G1P (8), and for this reason, short term impact would be expected when introducing the Rotavirus vaccine. Evidence of the impact of vaccination is made evident at week 13 of 2010 (Graph 2).

Graph 2. CASES OF GASTROENTERITIS CAUSED BY ROTAVIRUS. SENTINEL SURVEILLANCE, HONDURAS 2005-2010\*



## Sentinel Surveillance of Bacterial Meningitis and Pneumonias

### Bacterial Pneumonia

Sentinel surveillance of bacterial pneumonias at the Hospital Escuela was implemented in 2000, which has been maintained during period 2006-2009.

In 2009, 650 suspicious cases for pneumonia in children under 5 were collected at HE. 415 cases were classified as probable, being confirmed 43 cases by lab studies, resulting a positive case for Type B Haemophilus Influenzae and 42 cases for other bacteria.

### ***Bacterial Meningitis***

In 2009 the sentinel surveillance at HE reported 47 suspicious cases of meningitis and 26 of these were classified as probable. An epidemiological card was filled out for those patients and samples of LCR were taken for cytochemistry and only 22 of them were done a study for LCR bacteria, resulting 2 positive cases for Streptococcus pneumoniae (both cases died), 1 case for Type B Haemophilus Influenzae, 1 positive case for other bacteria and 18 negative cases.

### ***Surveillance of events supposedly attributable to vaccines or immunization (ESAVI)***

In 2000 ESAVI surveillance started. In period 2006-2009 136 ESAVI were studied, classifying 24 cases as related to the program, 70 to intrinsic properties of the vaccine and 42 coinciding with vaccines; it must be pointed out that the vaccine related to most ESAVI was DPT/HepB/Hib.

During 2009, 39 adverse events were reported. 38.4% (15) was associated to DPT immunobiological; 28.2% (11) to DPT/HB/Hib; 12.8% (5) to Rotavirus; 10.2% (4) to MMR; 5.1% (2) to BCG, 2.5% (1) to TT and 2.5% (1) to Influenza; of these, 10 cases were classified as serious events related to vaccines; 8 as slight event related to vaccines; 3 as serious event coinciding with vaccines; 12 slight event coinciding with vaccines and 6 programmatic errors. Immunobiological DPT/HB/Hib registered the highest rate of serious adverse events related with vaccines. No deaths were registered during this year.

Following PAHO's recommendation and according to the plan for the introduction of the Rotavirus vaccine, surveillance of intestinal invagination was initiated, pre and post introduction of the vaccine. The Direccion Nacional de Vigilancia de la Salud started in 2005 surveillance of invagination to children under 5 at the same sentinel sites that conduct the surveillance for gastroenteritis caused by Rotavirus and since 2009, post introduction of the vaccine, surveillance is reoriented to children under 1.

### **Main Limitations**

Analysis of the efficacy of the program through the vaccine coverage shows enormous progress in the last decade; progress that with no political williness manifested by the central government, through the authorities at the highest level of the Ministry of Health and the unceasing work of the health staff at the different levels and particularly at the local level, would have not been possible. However, it is important to point out that limitations continue in the offering of vaccination services and epidemiological surveillance activities, such as:

- ✓ Lack of systematic supervision at the central, regional, municipal and local level because of logistic or financing problems.
- ✓ Closed HU for long periods because of lack of human resources, vacation time, prophylactic vacation, maternity leaves, sick of absence, etc.
- ✓ Lack of systematization in the delivery of the the basic package for health services (BPHS) in communities with difficult access and at risk, due to logistic, transportation and financial problems.
- ✓ Schedules limited to work hours by availability of resources, which limits the access to the working population.
- ✓ Constant opening of HU without guaranteeing the supply of the minimum basic equipment needed for the provision of vaccination services (refrigerating unit).
- ✓ Increase in criminality, that is to say, spreading of gangs in developing neighbourhoods in the main cities of the country, which limits the access of the personnel and risk their personal security and the population's as well, who prefer not to visit the centers for attention because of fear of being robbed.
- ✓ Scarce monitoring and systematization of the incorporation of the medical private sector to EPI vaccination and surveillance actions.
- ✓ Lack of systematization of EPI/IEC plan at the HU level.
- ✓ Problems in the program management in some regions and towns, translated in absence of analysis and characterization of the causes for towns at recurring risk, with coverage under 95%, conditioned by the lack of monitoring and monthly analysis at HU and health areas.
- ✓ No operation of the Unidad de Análisis de Salud (UDAS) in most of the department regions, which does not allow the weekly analysis of the occurrence of cases and the decision making for the improvement of the surveillance.
- ✓ Inconsistency among the cases reported to EPI and the ones notified to TRANS-1.
- ✓ No compliance of case investigation standards related to prompt notification, handling of cases, feedback to the different levels in the services network.
- ✓ Lack of systematization in the active search of VPD.
- ✓ Problems at the Department of National Statistics to update software of transmissibles with the new base of sentinel sites of AFP and M/R at the departmental level.

### **III. Financial Analysis**

- EPI financing is based on a multi year plan that is prepared every five years. Current plan is for period 2011-2015, which was discussed and negotiated with the members of the Health Sector Coordinating Committee that supports the program for more than two decades now and new donors.
- In period 2006 – 2008, in average, 93% of EPI total cost corresponded to national funds and the remaining 7% to external funds. For 2009 the contribution of external funds increased to 25%, conditioned by the donation of the Rotavirus vaccine by GAVI Alliance and the support given to the program by PAHO. For 2010 the contribution of national funds was meaningfully decreased to 65%, associated to the

pre-budgetting of GAVI co-financing for Rotavirus and Pneumococcal vaccine, and donation of the H1N1 Influenza vaccine by PAHO.

- In the Multi-Year Plan 2011-2015, in comparison to the previous five-year period, there is an increase of the foreign donors in the component Biologicals and supplies, associated to the co-financing of Rotavirus and Pneumococcal vaccines through the Global Alliance for Vaccines and Immunization (GAVI), being the average annual budget of US\$ 17 million. Main external financing funds are from GAVI, PAHO and UNICEF. To overcome the gaps, possible sources are ACDI and IDB funds from the vaccination project financed by Carlos Slimel, by means of the presentation of project profiles.
- In this five-year period national funds will finance biologicals, syringes and safety boxes for traditional vaccines, co financing for Rotavirus and Pneumococcal vaccines, part of travel expenses for the implementation of National Vaccination Campaigns, supervision, acquisition of Cold Chain equipment, acquisition of parts and fuel for the running of the cold chain (Graph 3).

Graph 3. National and External Financing of EPI Honduras 1998-2010



- EPI sustainability perspective for its operations in the short and medium term is through national financing, including Rotavirus vaccine at the local price, but not Pneumococcal or other new vaccines. Strategies in process are the reformulation of the Vaccination Law to incorporate some priority components of EPI and the permanent advocacy before the Ministry of Finance.
- When analyzing the tendency of financing by component for 2011-2015, it is observed that in average, the component biologicals, supplies, infrastructure, represent 78% of the annual total, followed by the component Cold Chain with 7.5%. The remaining components keep the same historical tendency, except for the component training in 2010, associated to the process of updating EPI standards at the national level and information system in that same year, associated to the implementation of the nominal system. (Table 8).

Cuadro 8  
Consolidado de Plan Multianual del Programa Ampliado de Inmunizaciones (PAI) por componente, Honduras 2011-2015

Componentes	2011	2012	2013	2014	2015	Total
Prioridad política y bases legales	37,3	27,0	27,1	27,20	27,30	145,9
Planeación y Programación	34,0	31,0	31,5	32,0	32,0	160,5
Organización y coordinación	22,5	22,5	22,5	22,5	22,5	112,5
Biológicos, Suministros, equipo e infraestructura	12750,7	13962,0	13984,5	13960,0	14018,6	68675,8
Cadena de Frío	1379,6	1340,9	1363,2	1283,9	1242,0	6609,6
Capacitación	422,5	60,5	59,1	57,9	56,8	656,8
Comunicación y Movilización social	381,5	371,6	371,7	371,9	372,1	1868,8
Gastos operativos	651,6	669,0	686,3	704,2	722,9	3434,0
Supervisión y monitoreo	169,5	170,1	147,4	150,5	153,6	791,1
Ejecución	668,1	800,2	697,7	715,3	733,7	3615,0
Sistema de Información	110,9	50,0	50,0	50,0	50,0	310,9
Vigilancia epidemiológica	213,0	219,0	223,3	228,1	234,4	1117,8
Investigación	45,0	30,0	30,0	30,0	30,0	165,0
Evaluación	71,0	65,0	65,0	67,0	69,0	337,0
<b>TOTAL</b>	<b>16957,20</b>	<b>17818,8</b>	<b>17759,3</b>	<b>17700,50</b>	<b>17764,90</b>	<b>88000,7</b>

#### IV. Nature, objectives, vaccination scheme, goals and strategies.

##### **Nature**

Technical-normative unit that, within the rectoring functioning of the Ministry of Health, regulates and standardizes vaccination actions and the contents of its surveillance in all the levels of the National Health System; spreads and supervises the application of the technical norms to which health suppliers must adjust to; promotes and coordinates the development of new methods and instruments; provides technical assistance for the standardization of the health services; rescues the knowledge that is generated in the action of services; promotes, integrates and coordinates scientific investigation to generate new knowledge and evidences; promotes the development of human resources; and keeps a systematic monitoring, supervision and evaluation processes. This function is translated in the formulation of proposals, policies, strategies, plans, procedures, and specific norms, which must be made official by the corresponding level.

*Operating Objectives*, they are oriented to improve the EPI efficiency and effectiveness of

1. To promote spontaneous offer and demand of vaccination services in a continuous manner at the level of health workers and benefited population in the framework of healthy towns policy.
2. To provide the services network of the 20 department health regions with immuno biologicals, syringes, materials, reactivities, elimination boxes, stationery and equipment for the implementation of vaccination, epidemiological surveillance and safe injections.

3. To achieve, annually, vaccination coverage in population under two, under 5, 11 year old, pregnant women, older than 60 and groups at risk by immunobiological type equal or over 95% at the national level.
4. To keep the operation of the cold chain in green in all the levels of the services network of the 20 department regions, to guarantee storage and conservation of immunobiologicals according to EPI guidelines.
1. To guarantee safe application of injectable immunobiologicals to EPI target population by implementing biosafety rules to protect the health worker and the environment.
2. To keep active epidemiological surveillance of the occurrence of vaccine-preventable diseases in process of elimination and control, through an efficient and prompt response according to the disease, in compliance with the international epidemiological surveillance indicators and EPI surveillance standards as well.

## National Vaccination Scheme, 2010

Vaccine type	Dose according to scheme and age group					
BCG	Newborn Single dose					
Hepatitis B	Newborn to 0-24 hours					
Sabin	2 months	4 months	6 months	18 months		1-4 yrs. Additional doses every 4 yrs*
Rotavirus	2 months	4 months				
DPT/HepB/Hib	2 months	4 months	6 months			
DPT				18 months	4 years	
MMR	12 months					1-4 years MR in campaigns
TT	11 years					
	Pregnant women and not-immunised groups at risk			Booster shot every 10 years		
	First dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose			
Yellow Fever	Over 1 yr** one dose					
Hepatitis B	Groups at risk					
	1 <sup>st</sup> dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose			
Influenza	Groups at risk en riesgo*** an annual dose					
Td	Groups at risk****					
Salk*****	2 months	4 months	6 months	4 – 6 yrs		

\*At annual vaccination campaign

\*\* Travelers to zones at risk of transmission

\*\*\*Over 60, health workers and population 6-64 with chronic diseases

\*\*\*\* Patients with adverse reactions to DPT

\*\*\*\*\* Groups at risk, immunodepressed patients and children under 5 living in the same house.

## GOALS

1. Homogeneous vaccination of at least 95% of the population under 5, with emphasis in population under 2, 11-year old population, pregnant women, people over 60 and groups at risk with EPI vaccines all over the municipalities of the country.
- Keep the certification for the eradication of Polio up to the declaration of a polio-free world.
- Elimination of Measles
- Keep the control-elimination of neonatal tetanus
- Elimination of Rubella and Congenital Rubella Syndrome (CRS) by 2010
- Control of whooping cough, diphtheria, severe forms of tuberculosis, mumps, hepatitis B and invasive diseases (meningitis, pneumonia, epiglottis, cellulites) caused by the *Haemophilus influenzae type b bacteria*, influenza and diarrheas caused by Rotavirus

## Strategies

EPI has defined six intervention strategies to reach its objectives and goals:

1. Sustained horizontal vaccination:
  - a. Inside the health establishments, which comprises all the population that demands the vaccination service, as well as other medical services. The population goes to the health establishments because of a spontaneous need, or they are collected by checking their vaccination cards.
  - b. Outside the health establishments, these are the vaccination services that are offered to the public that does not demand it for several reasons like: geographical, cultural or economic inaccessibility in order to be able to be assisted by the offer of a BPHS. The staff organizes two visits to the communities or AGI (geographical areas of influence) during the year. This allows the application of pending doses and increase or achieve optimum coverage. The outside establishment vaccination activities are planned with anticipation, they are announced, logistic support is sought and LINVI's are checked to prioritize visits.
2. Special vaccination activities: are conducted in communities at risk due to low coverage and occurrence of cases of vaccine-preventable diseases, by means of fixed posts or home to home visits. These special activities are carried out when a suspicious case takes place in a community, then visits and vaccines are applied to vulnerable groups. The activity includes checking of the vaccination card, application of immunobiologicals, taking of a sample for confirmation in the lab if necessary, and possible monitoring until the effective control of the problem is guaranteed.
3. Mass vaccination: done at the national level at least once a year, for a short time, with objectives and specific goals within the framework of elimination and eradication of diseases; its objective is to apply as many doses of a vaccine as possible through the coordination and efforts of all sectors, which allows to take the service to all the accessible and inaccessible communities of the country. There is an annual mass vaccination campaign (in 1984 the first vaccination week was held) for a short time, to apply as many doses of a vaccine as possible through the coordination and efforts of all sectors, especially the HU and municipal authorities that are the entities responsible of the welfare of the town.

4. Delivery of the BPHS: this strategy that comes from EPI to guarantee the delivery of the standard package of interventions that guarantees cost-effective attentions for the population living in extreme poverty, including indigenous groups. It includes actions in regards to morbidity, health improvement services for children including nutrition; integral care to pregnant women, surveillance and control of vectors, vaccination and community organization.
5. Epidemiological surveillance of the diseases that can receive vaccines: surveillance in all the network of public and private services allows the detection, report, investigation and documentation of every suspicious case of a vaccine-preventable disease for the implementation of control measures. Special vaccination activities are conducted when a suspicious case happens in a community, by visiting and applying the vaccine, which includes checking of the vaccination card, application of immunobiologicals, taking of sample for confirmation in the lab, if necessary and possible monitoring until epidemiological discharge guaranteeing the problem is under control.
6. Information, education and communication plan: related to activities for the production of audio visual materials, taking as a base the interpersonal and group communication at the health system level, oriented to the modification in knowledge, attitudes and practices of the public and health workers regarding vaccination.
7. Social participation: within the framework of the pact for children, to achieve the vaccination target; it is incorporated to all sectors of civil society, through local governments (municipal corporations) and private companies.
8. Implementation of EPI computer-based information system at the departmental and municipal level.

## **V. Actions for period 2011-2015**

Based on the analysis of the situation of EPI, achievements, identification of limitations and gaps of period 2006-2010, the main actions for the new period have been defined:

### **1. Political priority and Legal Bases**

- Implementation of the vaccination law to guarantee the annual budget allocation into the National Budget and compliance of the vaccine agreement between the MOH and PAHO for the prompt supply of vaccines, syringes and cold chain to EPI.
- Reformulation of the vaccination law by the Congress of the Republic to incorporate the government's responsibility in the allocation of budget for the introduction of new vaccines, the components of the cold chain, epidemiological surveillance, social mobilization, supervision, monitoring and evaluation; as well as its free nature, tax exemption, and others.

- Monitoring and compliance of agreements related to EPI (RESSCAD, SISSCA, etc.)
- Monitoring of the socialization and implementation of Decree No. 1222 regarding the regulation of vaccination in the modality of concentration, and individual in the private sector.
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- Monitoring of the incorporation of the requirements and the guide for the implementation of the PARF network into the request process of a sanitary register of vaccines by means of the minister's decree, as well as modification of RPISS regarding the registration of vaccines.
- Agreements with schools forming human health resources for the sustained vaccination of those students, according to the national scheme of groups at risk.
- Organization of multidisciplinary Pro Vac teams for the formulation of economical studies.

## **2. Planning and Programming**

- Formulation of EPI Annual Plan at the national and department level and financing management actions.
- Management and search of additional funds to strengthen critical EPI components through the formulation and presentation of projects to international donors, NGO/PAHO and private companies at the national and department level.
- Monitoring of the process for the estimation of EPI target population by community, HU, town and department, based on national guidelines.
- Revision and implementation of an updated vaccination chart with new planned vaccines to improve their control, the control of syringes and decrease annual drop-out rates of EPI vaccines to minimum expected levels, to optimize the use of the vaccines.
- Design and implementation of software for the control of biologicals and supplies in EPI.

## **3. Organization and Coordination**

- Review EPI organizational structure in all levels within the framework of the process for the revision of the Organizational Development (OD) of the MOH.
- Meetings with CCIS/CCNI/CONEPO and National Committee of verification of the elimination of Measles, Rubella and CRS.
- Monitoring meetings regarding the coordination with schools and FCM to keep EPI contents updated.
- Monitoring of national coordination mechanisms with IHSS.
- Strengthening of the coordination with HSS/GAVI implementing unit.
- Strengthening the local coordination with municipal governments by means of AMHON to support EPI priority activities regarding municipal development plans, with emphasis in towns at risk and HU with decentralized health models.
- Strengthen intraborder vaccination and epidemiological surveillance actions.

#### **4. Biologicals, supplies, equipment and infrastructure**

- Provide vaccines, syringes, boxes for the elimination of syringes, cold chain equipment, materials and other supplies, at the national level, according to updated standards.
- Strengthen the Virology and Microbiology labs by means of provision of reactivities, materials and lab supplies for the diagnosis of vaccine-preventable diseases within the framework of the epidemiological surveillance of the diseases under elimination and control.
- Provide stationery, programming charts, cold chain and epidemiological surveillance for the control, monitoring and evaluation of the different levels of the services network in compliance to EPI standards.
- Continue with the process of adaptation, remodelation and provision of basic furniture for vaccination areas, acquisition of needle destroyers used in the vaccination services and construction of safety pits.
- Equipping with software and hardware for the operation of new SIVAC at the departmental level and in towns with high population.

#### **5. Cold Chain**

- Complete updating of inventory in the cold chain, inputting of data and installation at the pending departmental health regions.
- Expand the storage capacity of the cold chain at the department level, for the introduction of the new vaccines and replace equipment that is no longer useful.
- Construction and equipping of departmental warehouses of biologicals in the metropolitan region of SPS, Francisco Morazán, El Paraíso, Valle and Santa Bárbara.
- Remodeling of warehouses of biologicals in Comayagua, Olancho, Choluteca and Copán.
- Monitoring of the annual acquisition of parts and fule for the cold chain at the national level.
- Continue the process of readaptation of cold chain repair shops in the departmental regions that have not started the process yet, and to strengthen the cold chain with donation of tools, equipment (substitution of cold chambers, kerosene operated refrigerators for electrical and/or solar ones), thermos, thermometers and ice packages.
- Annual updating and implementation of the national/departmental plan of technical, logistic, preventive and curative maintenance of the cold chain with emphasis in solar energy equipments.
- Revision of the national alert system of the cold chain.

## **6. Training**

- Train EPI technical team at the central and departmental level through scientific meetings, congresses, self-instruction modules and other methods.
- Revise and update EPI guidelines.
- Train health staff of all levels in updated EPI guidelines.
- Continue the process of training and updating of schools that form health human resources, school of medicine, associations of health professionals (doctors, nurses and others) about the application of EPI updated guidelines, with emphasis in new vaccines and cold chain.
- Incorporate at the national and departmental level of private and public hospitals, IHSS, NGO, Development Agencies and community leaders to the process of updating of the EPI guidelines, with emphasis in vaccination schemes, epidemiological surveillance, new vaccines, cold chain and safe vaccines through specific in-service training processes
- Implementation of the training plan for staff in the public, private and community sector about the new vaccines to be introduced.
- Technicians update their technical knowledge about the cold chain, with emphasis in new technologies.
- Analysis of the performance of technicians in the cold chain in new departmental regions.

## **7. Communication and Social Mobilization**

- Reformulation of IEC/EPI national plan.
- Monitoring of the process of implementation IEC/EPI Plans at the departmental and municipal level, incorporating the organized civil society and community leaders in the auto-management of resources within the framework policy of the health sector, documenting and systematizing the actions.
- Consolidate the process of design, validation and printing of educational material, radio spots, radio serials, television spots and documentary about EPI guidelines with the departmental participation to support the national vaccination campaigns and sustained program for the reduction of missed vaccination opportunities, strengthening the production of educational material at the local level and the incorporation of the private companies in its production.
- Harmonization and incorporation of the mass media, public and private sector to the management and establishment of strategic alliances to support the sustained program and national and departmental campaigns for the spreading of educational messages and other communication and information related activities.
- Implementation of a promotion campaign for the introduction of new vaccines, national vaccination campaign and influenza campaign; incorporate the public sector, private companies and town governments within the framework of IEC/EPI Plan.

- Strengthen IEC/EPI plan at the departmental and municipal level with the provision of speakers and megaphones for the implementation of local posted and ambulatory megaphoning for the diffusion of messages to support the sustained program and national and departmental campaigns.
- Strengthen the incorporation of the EPI subject to the mother/child strategy.
- National and departmental launching of the annual campaigns.
- Exchange of successful experiences about EPI.

## **8. Operating costs**

- All actions in this component are oriented to EPI management regarding salaries, acquisition of cars, stationery and office materials, public services, maintenance of office equipment, building and cars, as well as sending of samples, customs clearance of vaccines, syringes, safety boxes and cold chain equipment.

## **9. Supervision and Monitoring**

- Formulation of the national and departmental EPI annual supervision plan.
- Organization and training of a national technical supervision team integrated by departmental epidemiologists and EPI departmental coordinators.
- Monitoring of EPI supervision process in all components from the central/departmental/municipal/local level and national campaigns and/or campaigns in the planning programming and implementation stages, identifying and documenting the achievements, problems and proposed interventions, determining the level of responsibility according to the services network.
- Quarterly monitoring of EPI Operating Annual Plan (POA) and EPI/RAMNI indicators.
- Systematization of the MRC process, incorporating it as a supervision element according to levels in the services network.
- Monitoring of EPI operation in HU with new management models.

## **10. Implementation**

- Strengthen the regular vaccination program by means of vaccination actions that include: inside the health establishment, outside the health establishment and BPHS to reach annual homogeneous coverage of 95% in 80% of the towns of the country.
- Implementation of a national vaccination campaign to search for pending population during the Vaccination Week of the Americas (VWA), integrating other interventions for health improvement and prevention.
- Implementation of annual vaccination campaign to search for vulnerable population, integrated to the Vaccination Week of the Americas, integrating interventions for health improvement and prevention.
- Execution of the V monitoring MR campaign in 2010.
- Monitoring of the characterization and prioritization process of interventions in towns and communities at risk because of coverage rates lower than 95 in the 20

departmental regions of the country and rescue of local vaccination strategies with community leaders in the monitoring and search of vulnerable population under 2.

- Implementation of departmental vaccination campaigns in regions at risk because of coverages under 95%—one per year—and special vaccination operations in towns at risk, new and reincident, and association of towns prioritizing interventions, integrating them to mother/child campaigns.

## **11. Information system**

- Revision and updating of EPI information subsystem, reinstallation and monitoring of computerized SIVAC to improve the quality of the information records at all levels.
- Application of methodology for the audit of quality of data in prioritized HR due to problems in the vaccination data.
- Design of EPI information subsystem, validation and national implementation.
- Revision of SIVAC user's manual and of LINVI guidelines.

## **12. Epidemiological surveillance**

- Strengthening of epidemiologic surveillance of vaccine preventable diseases and adverse events with the public and private national sector that allows the detection, collection, investigation, taking of samples, monitoring and implementation of control measures in 100% of suspicious cases and sending of samples of suspicious cases of diseases subject to eradication and elimination to international labs.
- Strengthening of hospital surveillance of vaccine preventable diseases.
- Support to the development of the sentinel surveillance of Influenza, diarrhea caused by Rotavirus, Meningitis and bacterial Pneumonias and special surveillance to HPV.
- Strengthening of the hospital surveillance of events of intestinal invagination post introduction of Rotavirus vaccine.
- Integration of surveillance of congenital malformations and CRS in the TORCHS surveillance.
- Monitoring of plans for the eradication of polio, elimination of Measles, Rubella and CRS and control and elimination of Neonatal Tetanus, control of the rest of EPI diseases and safe injections plan.

- Implementation of the systematization and weekly monitoring of epidemiological surveillance indicators of Acute Flaccid Paralysis (PESS), Measles/Rubella (MESS) and CRS at the national level and 20 departmental regions.
- Promote, through the units of national and departmental analysis, the use of sketches and maps at the local level, for monitoring of incidence and vaccine coverage.
- Elaboration, edition and printing of three national bulletins of EPI epidemiological surveillance for national diffusion of EPI progress.
- Monitoring of the systematization of the national form used for active search of vaccine-preventable diseases in the health services network.
- Organization of the National ESAVI Committee.

### **13. Investigation**

- Conduct specific investigations in coordination with the Facultad de Ciencias Médicas (School of Medicine), undergraduates and graduates in Public Health and Epidemiology about topics of interest for EPI.
- National diffusion of results of surveys conducted at all levels of the service network, POD, NGO and others.
- Socialization of results of the audit for the quality of vaccination data and studies of seroprevalence for Measles and Rubella.
- Execution of study about EPI freezing of vaccines.
- Carry out cost-effectiveness studies of Rotavirus and HPV vaccines.
- Promote publications related with EPI.

### **14. Evaluation**

- Monitoring of the implementation of recommendations from the international evaluation.
- Carry out of two technical-administrative evaluation meetings of all the components with the participation of departmental technical teams.
- Computerized systematization of the process for semestral and annual evaluation
- Application of methodologies for the evaluation of the Influenza vaccine with the help of CDC.

## **VI. Plan of activities per component and annual financing**

All the program components are presented next. Each component shows expected results, activities, financing by year for period 2011-2015, detail of the expenses and identified and agreed financing sources.

