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## RESEARCH

### Vacinas do esquema básico para o primeiro ano de vida em atraso em município do nordeste brasileiro

Vaccines of the basic scheme for the first year of life late in northeastern Brazilian city

Las vacunas del esquema básico para el primer año de edad avanzada en la ciudad brasileña del noreste

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#### ABSTRACT

**Objective:** To evaluate the achievement of the basic vaccination schedule for children in the first year of life assisted by teams of the Family Health Strategy in a northeastern Brazilian city. **Method:** Cross-sectional descriptive study with proportional probability sample of 184 children. Vaccination cards were used as a source of information. **Results:** Vaccination 100% of the children were found to BCG alone (TB) and the first dose of hepatitis B vaccine. Smaller proportions of vaccinated children were found to MMR (81.6%), vaccine rotavirus (82.3%) and pneumococcal vaccine (85.2%). **Conclusion:** Major delays in the completion of the vaccines were found for the yellow fever vaccine, MMR vaccine and rotavirus. **Descriptors:** Vaccines, Immunization schedule, Infant care.

#### RESUMO

**Objetivo:** Avaliar o cumprimento do calendário básico de vacinação de crianças no primeiro ano de vida assistidas por equipes da Estratégia Saúde da Família em um município do nordeste brasileiro. **Método:** Estudo descritivo transversal com amostra probabilística proporcional constituída por 184 crianças. A carteira de vacinação foi utilizada como fonte de informação. **Resultado:** Vacinação em 100% das crianças foi encontrada apenas para a vacina BCG (contra a tuberculose) e primeira dose da vacina contra hepatite B. As menores proporções de crianças vacinadas foram encontradas para a tríplice viral (81,6%), vacina contra rotavírus (82,3%) e vacina pneumocócica (85,2%). **Conclusão:** Maiores atrasos na realização das vacinas foram encontrados para a vacina contra febre amarela, tríplice viral e vacina contra rotavírus. **Descritores:** Vacinas, Calendário de vacinação, Cuidado do lactente.

#### RESUMEN

**Objetivo:** Evaluar el cumplimiento del calendario de vacunación básica de los niños en el primer año de vida con la asistencia de los equipos de la Estrategia de Salud de la Familia en una ciudad del nordeste brasileño. **Método:** Estudio descriptivo transversal con muestra probabilística proporcional de 184 niños. Tarjetas de vacunación se utilizaron como una fuente de información. **Resultados:** La vacunación del 100% de los niños fueron encontrados con BCG solo (TB) y la primera dosis de la vacuna contra la hepatitis B. Proporciones más pequeñas de los niños vacunados se encontraron a MMR (81,6%), la vacuna rotavirus (82,3%) y la vacuna contra el neumococo (85,2%). **Conclusión:** Los principales retrasos en la finalización de las vacunas se encontraron resultados para la vacuna contra la fiebre amarilla, la vacuna triple vírica y el rotavirus. **Descriptor:** Vacunas, Programa de vacunación, El cuidado infantil.

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## INTRODUCTION

**V**accination is a preventive health action with specific direction for the protection of health, which consists of a proven and effective way to prevent the onset of vaccine-preventable diseases. It is action considered by the World Health Organization (WHO) as one of the basic measures to be taken in developing countries with the purpose of improving the conditions of childhood health and reduce mortality in early life.<sup>1</sup> This is because during the first years of life children have weak immune system due to immunological immaturity, and this condition facilitates the emergence of diseases that are immunopreventable.<sup>2</sup>

The effectiveness of immunization has been conditioned to high rates of vaccine coverage to decrease the morbidity and mortality from immunopreventable diseases.<sup>3</sup> Vaccination coverage is an important indicator of health, which consists of the proportion of children who received specific vaccines in relation to the total number of children in specific age group existing in the population in a particular geographic area and the current year.<sup>4</sup> In Brazil, for immunization of children should be considered appropriate must follow the basic vaccination schedule set by the National Immunization Program of the Ministry of Health (NIP / MH). The basic schedule for the first year of life corresponds to the set of vaccines considered of priority interest to public health in the country and is currently comprised of 11 vaccines to be administered until the end of the first year of life.<sup>5</sup>

The difficulties in achieving the immunization goals is an important public health problem, which has been linked to several factors, including lack of parents, fear of false and true adverse reactions, insecurity, lack of vaccines and difficult access to vaccines rooms.<sup>6</sup> There are also special situations that may interfere with compliance with the vaccination schedule that may contribute to the delay of the vaccine, or a change by special vaccine. Among such conditions are the newborn preterm, underweight children, with allergic to any component of the vaccine reaction and children with immunodeficiency.<sup>7</sup> Moreover, the above situations can contribute to decrease adherence to fulfillment of basic vaccination schedule, facilitating the emergence of infectious diseases that need to be controlled in Brazil and worldwide.<sup>8</sup>

To monitoring the compliance of the vaccination schedule of the child is necessary to use the instrument in can be noted that all information about the applied vaccines and dates of administration, and the instrument used in Brazil is the child's health booklet, used nationwide to also follow the growth and development of children.<sup>9</sup>

Delays in completion of the vaccines at the correct intervals or its realization should be known by health services to enable appropriate action by the team of workers, especially the nursing staff. Considering the importance of vaccination for the child's health, the study

aims to assess the achievement of the basic vaccination schedule for children in the first year of life assisted by teams of the Family Health Strategy in a northeastern Brazilian city.

## METHOD

This is a cross-sectional study with a quantitative approach, held in a city in northeastern Brazil, whose overall population is 57,690 inhabitants, of which in 2011, 402 were children aged 0-1 year, according to the information for Primary Care (SIAB).<sup>10</sup> The city has 24 teams of the Family Health Strategy, with seventeen located in the urban area. A probabilistic sample was proportional to the number of children under one year old in each of the seventeen Basic Health Units - UBS urban area, and consisted of 184 children of 352 mothers living in urban areas, considering margin error of 5%, confidence level of 95% and a finite population of size  $n = 352$ .

Study participants were children enrolled in UBS who were aged 0-1 years and who had the child health booklet filled. The variables studied were age, sex, child's age, received vaccines, late vaccines and age of receipt of vaccines. Data were collected from March to July 2012 and were processed using the Statistical Package for Social Science (SPSS) version 19.0. Descriptive statistics consisted of calculations of the distribution of absolute frequency and percentage of children who received or were overdue for each of the vaccines in the basic schedule for the first year of life. The research project was approved by the Ethics Committee in Research of the University Center UNINOVAFAPI (CAAE0474.0.043.000-11). All ethical principles of Resolution 196/96 of the National Council on Health were obeyed.

## RESULTS E DISCUSSION

In Table 1 is presented the distribution of children studied by age and sex. It was observed that more than half (53.2%) were female. Regarding age, it was observed that 33.6% were aged between 10 and 12 months and 24.4% were aged between 0-3 months.



**Table 1.** Distribution of children studied by age and sex.

Characteristics	N	%
<b>Sex</b>		
Male	86	47,7
Female	98	53,2
<b>Age (months)</b>		
0 a 3	45	24,4
4 a 6	39	21,1
7 a 9	38	20,6
10 a 12	62	33,6

Source: Direct research

Vaccines are pharmaceutical products containing immunizing agents in various forms, including live attenuated viruses or bacteria, dead bacteria or virus or inactivated and purified components or modified antigens, which aims at the prevention of transmissible diseases.<sup>7</sup>

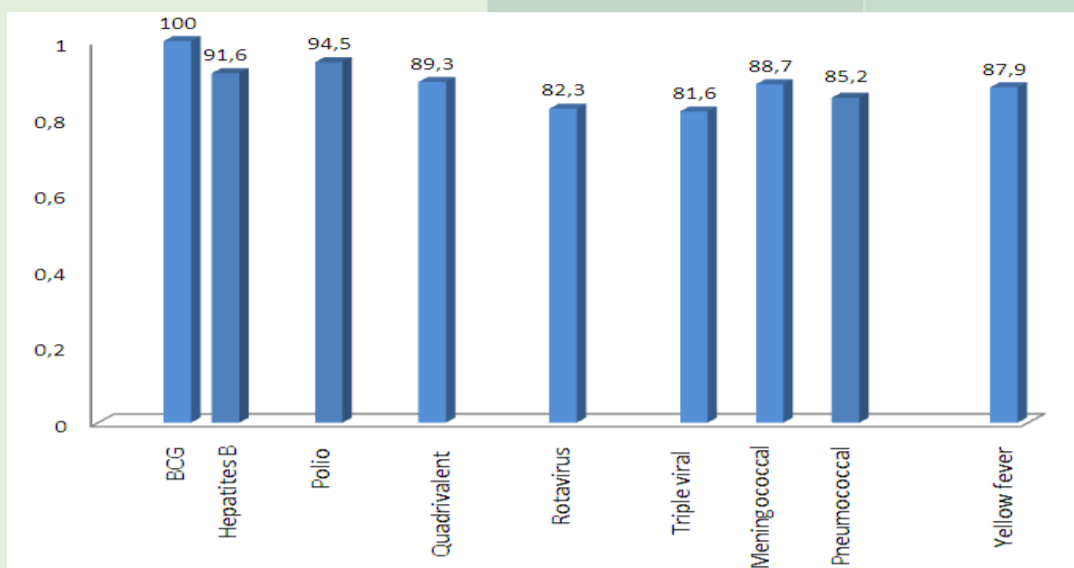
Vaccination schedule is the chronological sequence of the vaccines that are recommended systematically in a country, or a particular entity, in order to properly immunize the population against diseases for which there are safe, effective and affordable vaccines. Routine vaccination follows a national schedule with vaccinations to every individual from birth, to ensure, at the individual level, the specific prevention of vaccine-preventable diseases, and in the collective level, the induction of immunity mass, responsible for interruption of transmission.<sup>2</sup> Considering the good results obtained in some countries, the verification of compliance calendars vaccine has been emphasized.<sup>11</sup>

When considering the distribution of the children surveyed as vaccines received basic scheme (Graph 1), it was observed that 100% received BCG and the first dose of hepatitis B vaccine

It is noteworthy that, according to the recommendation of the Ministry of Health, BCG should be administered as early as possible after birth, and the hepatitis B vaccine within 12 hours after birth to all newborns with healthy weight greater or equal 2 kg, even in the case of HIV positive children or children of mothers with Acquired Immunodeficiency Syndrome (AIDS), indigenous children, or children with negative tuberculin skin test and no symptoms.<sup>12</sup> The results obtained in this study are due to the fact that these vaccines are routinely administered soon after birth and before hospital discharge, since the city has a regional hospital that is a reference for all microregion and children born in the hospital receiving BCG and the first dose of hepatitis B vaccine before leaving the referred hospital.

In the case of meningococcal and pneumococcal vaccines percentages of children vaccinated with the first dose were, respectively, 88.7% and 85.2% (Graph 1).

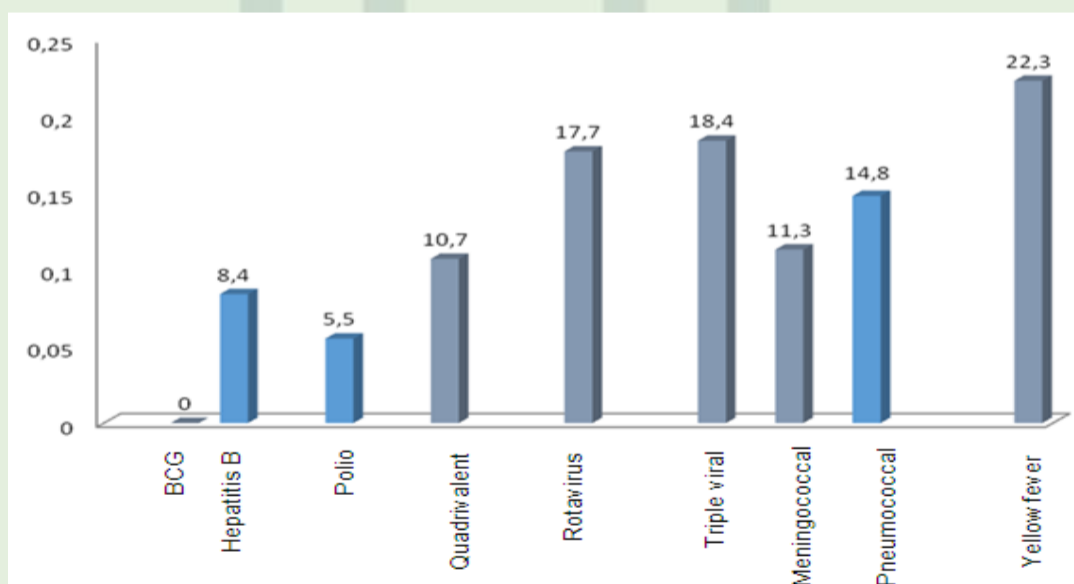
**Graph 1.** Percentage of children under 1 year living in the urban area of the city of Floriano-PI distribution according vaccines received



Source: Direct research

The percentage of children with delayed vaccines are presented in Chart 2. Vaccines with the greatest percentage of delay were the yellow fever vaccine (22.3%), MMR (18.4%) and rotavirus (17.7%), while vaccines with lower percentages of delay were BCG (0%), polio vaccine (5.5%) and hepatitis B vaccine.

**Graph 2.** Distribution of children under one year of residents living in the urban area of the city of Floriano-PI, according delayed vaccines.



Source: Direct research

Different results were found in a study that evaluated the immunization status of children 0-2 years of age enrolled in the areas served in a Family Health Unit in the municipality of Belém do Pará.<sup>13</sup>

In that study vaccines were more likely to delay the Hepatitis B vaccine, DTaP-Hib and Sabin, and the authors pointed out as possible explanations of the fact be taken in three doses, which coincided with Carnival Week, Independence Day and Christmas occasions the health unit does not work and community health workers are in recess, and

end up not noticing immediately after the holidays vaccination in families under their care. Also in research conducted in São Luis - Maranhão with children 12-59 months, the delay was more frequent vaccination for hepatitis B vaccine, the case for the third dose of vaccine.<sup>14</sup>

When analyzing the results it is important to note that the children in the study scenery municipality, the vaccines with the greatest percentage of delay were those whose initial administration occurs later as is the case of yellow fever vaccine and MMR, or one of the includes several doses, in which case the rotavirus vaccine.

Several factors may have contributed to the yellow fever vaccine have been one of the most subject to delay, including the fact that the initial dose be administered only at nine months of age, the city has not presented outbreaks that would lead even the anticipation your application for six months and also not being among the municipalities in the state of Piauí in which there is clear indication of the vaccine for residents and travelers.<sup>15</sup>

As for MMR, a possible explanation for the high proportion of delays is related to the fact that its application be performed when the child is one year old, and for being the farthest can create a psychological sense of tranquility and generating a casual forgetfulness, usually being the vaccine with parents or guardians care less.<sup>13</sup>

In case of rotavirus vaccine is emphasized that it should be administered in two doses with the first dose applied to two months (1 month and 15 days to 3 months and 15 days) and the second at 4 months (3 months and 15 days 7 months and 29 days)<sup>15</sup>, and that the vaccine should not be applied outside these time limits, failing to increase the risk of a child being intussusception, although such risks are insignificant.<sup>16</sup>

Despite the importance that vaccines have on disease prevention, particularly in childhood, many children still fail to be vaccinated in the country by many different factors, and oversight of basic vaccination schedule for children can increase the risk of death and / or sequelae for diseases that could and should be prevented.<sup>13</sup> So, among other measures have been recommended to intensify the information, even in motherhood, so that children return to the basic units at the ages indicated in the vaccination schedule.<sup>12</sup>

## CONCLUSION

The Family Health Strategy (FHS) constitutes an important means of action in relation to primary health care, which may contribute to the control or eradication of infectious and preventable diseases. And, in the current context of health policy, the immunization is preferably performed by the FHS, with the participation of a multidisciplinary team working in a defined area and population registered.

The results obtained in this study revealed a high percentage of delays in the implementation of the basic schedule of vaccines, especially yellow fever vaccine, MMR

vaccine and rotavirus vaccine, demonstrating the need for planning of health education and initiatives for strengthening actions contributing to promote the achievement of the basic vaccination scheme in the first year of life, in order to reduce and prevent the reappearance of vaccine-preventable diseases.

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