

RESEARCH ARTICLE

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Evaluation of Albanian Immunization Program with Hepatitis B vaccineERIDA NELAJ¹, MIRELA LIKA (ÇEKANI)², SILVA BINO¹¹ Institute of Public Health, Department of Epidemiology and Control of Infectious Disease, National Immunization Program² Tirana University, Faculty of Natural Sciences, Department of Biology**Abstract**

There are about 150 million carriers of hepatitis B virus all over the world, most of whom are unaware that they are carriers. Most babies born to mothers who are carriers also become carriers. About 25% of untreated babies who are infected with hepatitis B virus subsequently develop severe chronic liver disease or even liver cancer. Hepatitis B kills about 1.1 million people annually. It can be prevented through a safe and effective hepatitis B vaccine. This vaccine has been introduced in Albanian Immunization Program nationwide in 1994. Hepatitis B is given at birth followed by three doses at 2, 4 and 6 months where Hepatitis B is included in DTP-HepB-Hib vaccine. The aim of this study was to evaluate Immunization Program with Hepatitis B vaccination in order to prove program efficacy, increase public confidence in immunizations and advocate for sustainable immunization programs. Methodology was based on three components such as Immunization coverage surveys, serologic surveys and surveillance for acute cases of Hepatitis B. Results of this study showed that vaccination coverage is really high, more than 95% and with drop-out rates less than 10%. Anti-HBs levels in immunized children are very high comparing to unimmunized ones. Incidence of Hepatitis B in children 0-14 years old is almost zero. Such results tell us that vaccination with Hepatitis B is one of the most fruitful strategies on long term control of Hepatitis B in a country with a high HBV endemicity like ours.

Key words: immunization, vaccination coverage, Anti-HBs, Hepatitis B incidence

1. Introduction

Hepatitis B (HepB) is a major public health problem worldwide. Approximately 30% of the world's population, or about 2 billion persons, have serologic evidence of hepatitis B virus (HBV) infection. Of these, an estimated 350 million have chronic HBV infection and at least one million chronically infected persons die each year from liver cancer and cirrhosis. HBV is second only to tobacco as a known human carcinogen.

A safe and effective vaccine against HepB has been available for nearly 20 years. HepB vaccine is effective in preventing HBV infections when it is given either before exposure or shortly after exposure. At least 85%-90% of HBV-associated deaths are vaccine-preventable.[8, 9]

Even Immunization Program in Albania started in 1993; health sector has been producing vaccines such as Bacillus Calmette Guerin (BCG), Diphtheria Tetanus Pertussis (DTP) and Measles except the one of live oral polio (OPV) which has been imported. In 1994 Ministry of Health introduced for the first time Hepatitis B vaccine for all newborn babies. Actual Albanian immunization schedule for Hepatitis B is: one dose at birth (called protection dose) followed by

three doses at 2, 4 and 6 months where Hepatitis B is included in DTP-HepB-Hib vaccine.

The aim of the study was evaluation of Immunization Program with Hepatitis B vaccine in order to prove that what we are doing is working: Immunization → Decreased incidence and mortality; increase public confidence in immunizations and advocate for sustainable immunization programs.

2. Material and methods

Methodology used, was based on three main components:

1) **Immunization coverage surveys.** Most immunization coverage surveys are based on data that are routinely collected during immunizations, making these an inexpensive way to gather information. Coverage surveys can provide data on how many people initiate hepatitis B vaccination; how many complete all three doses; and how many babies receive the birth dose. It can also allow comparisons of hepatitis B immunization coverage rates with those of more established vaccines such as DTP.[1],[3, 10]

Our study was based on surveys of Hepatitis B vaccine indicators included in routine immunization coverage through the years 1995-2012

2) Serologic surveys. Serologic surveys can provide a more direct measure of the impact of an immunization program by comparing the prevalence of infection before and after the program is implemented. Serologic surveys typically measure HBsAg (present in those with chronic infection) and antibody to hepatitis B core antigen (anti-HBc) (present in those who have been infected in the past or are chronically infected).[4, 11]

The aim was to compare sero-prevalence of infection in target population (0-14 yrs and >14 yrs) before & after commencement of immunization program. [5, 6]

3) Surveillance for acute cases of hepatitis B. This type of disease surveillance is useful in countries in which there is a high incidence of acute hepatitis B cases like our country. Acute disease surveillance requires a standardized case definition that includes clinical and laboratory components, and a strategy for identifying ill persons. In our country we do not have sufficient laboratory diagnostic capacity to distinguish among types of viral hepatitis, so in our system of reporting diseases (14Sh - form) acute viral hepatitis are unspecified ones.[2]

We based our study on incidence of Acute Viral Hepatitis (unspecified), in 0-14 years old children, during 2000-2012.

3. Results and Discussion

Results on this study are presented according to each specific objective and their indicators as they were designed on the methodology part.

- *Indicators for immunization coverage:* Percentage of immunization coverage for each indicator of HepB vaccination (% of HepB1, HepB2, HepB3, Drop out of HepB1-HepB3 and Drop out HepB3-DTP3) [1, 10]
- *Limitations:* Coverage surveys do not provide a direct measure of the impact of vaccination on disease burden. Although high vaccine coverage often correlates with decreased disease burden, it is possible to have high coverage and low vaccine efficiency (e.g., if frozen vaccine is used, the vaccine is not administered properly, or the vaccine is administered after infection occurs [i.e., perinatal infection]).[12, 13]

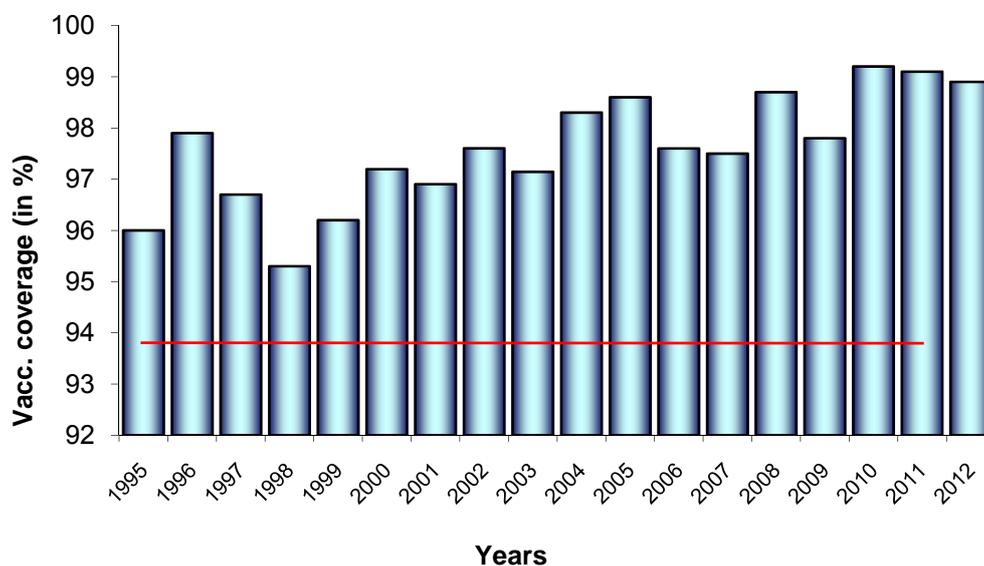


Figure 1: Third dose of Hepatitis B vaccination coverage through years

As we can see from this graph national vaccination coverage is over than 95% through the years, reaching sometimes the level of 99%. The coverage level more than 95% is also reached by most of the districts in Albania.

Also, drop out rate is an indicator which tells us the level of unfinished immunization schedule. According to WHO recommendations it should not be

more than 10%. Through years drop out is not more than 10% in country level. Regarding to the drop out values for each district there are some with more than 10% rate but this levels are decreased by years.

The internal migration was one of the main factors affecting this rate and it seems to be stabilized in the last years.

Another indicator which reflects the establishment of Hepatitis B vaccine in the national

schedule is its comparison with DTP vaccine (a very well established vaccine). [14] It results to be very well established from 2000 till 2008 and it continue to be in the same level as DTP now days since they are given in a combined vaccine DTP-HepB-Hib.

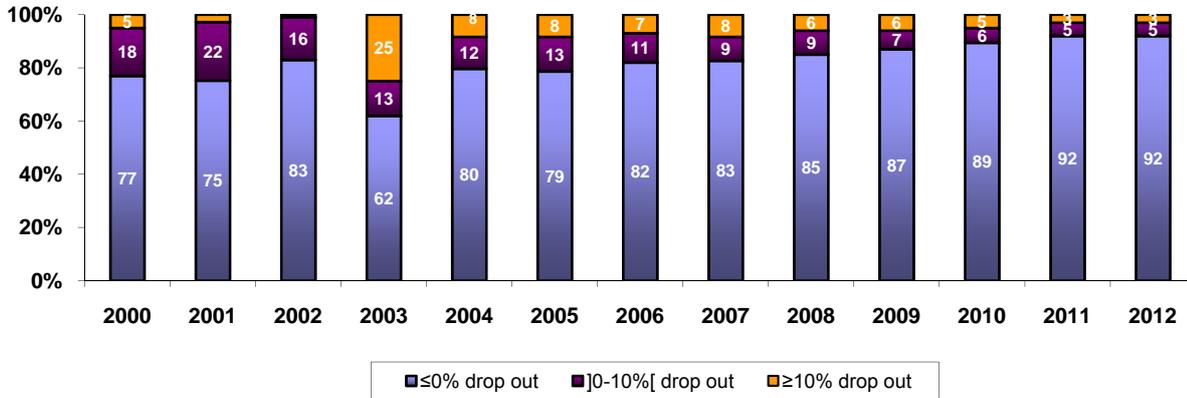


Figure 2: Percentage of district level's drop out rates for HepB3 versus HepB1 doses through years

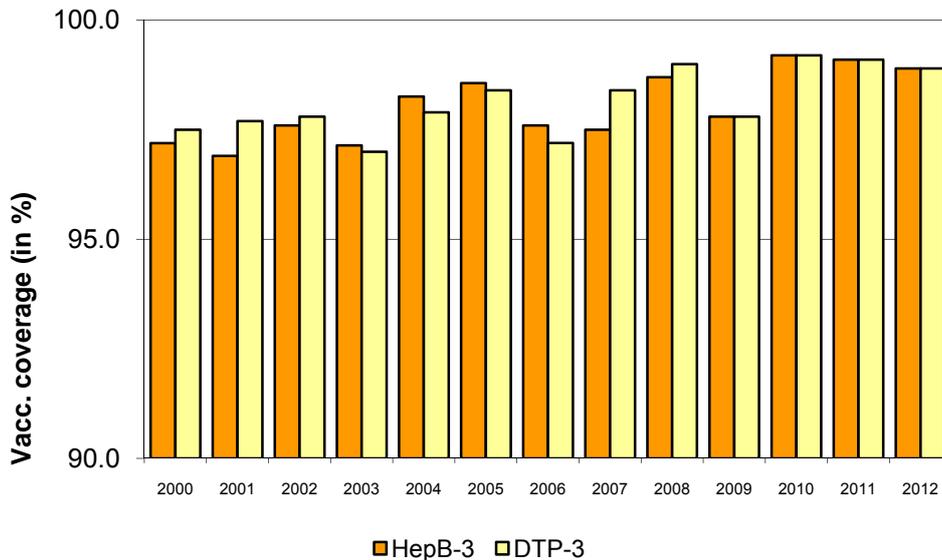


Figure 3. Vaccination coverage of Hepatitis B third dose compared with the third dose of DTP

Indicators for serologic surveys: Prevalence of serologic markers in these target population, through studies done at Virology-Immunology Laboratory in the Institute of Public Health, during these years.

Table 1. Prevalence of Hepatitis B marker's vaccinated and not vaccinated children.

Prevalence of Hepatitis B marker's			
Age group	HBsAg +	Anti HBs	Anti HBc
0-14 years	1,40%	71,80%	8,50%
>14 years	15,3%	54,60%	56%

Table 2. Prevalence of Hepatitis B marker's in different age groups

Prevalence of HBsAg			
	Serume	HBsAg +	HBsAg + (%)
Total	806	157	20,7%
0-14 vjec	409	33	8,7%
>14 vjec	397	124	31,2%

Anti-HBs prevalence is much higher in vaccinated children than in the not vaccinated ones, as well as HbsAg+ prevalence is much lower in 0-14 yrs old children in comparison with >14 yrs old ones.

Indicator regarding surveillance of acute viral Hepatitis B: Incidence of new cases with Acute Viral Hepatitis in 100,000 habitants per year. [7]

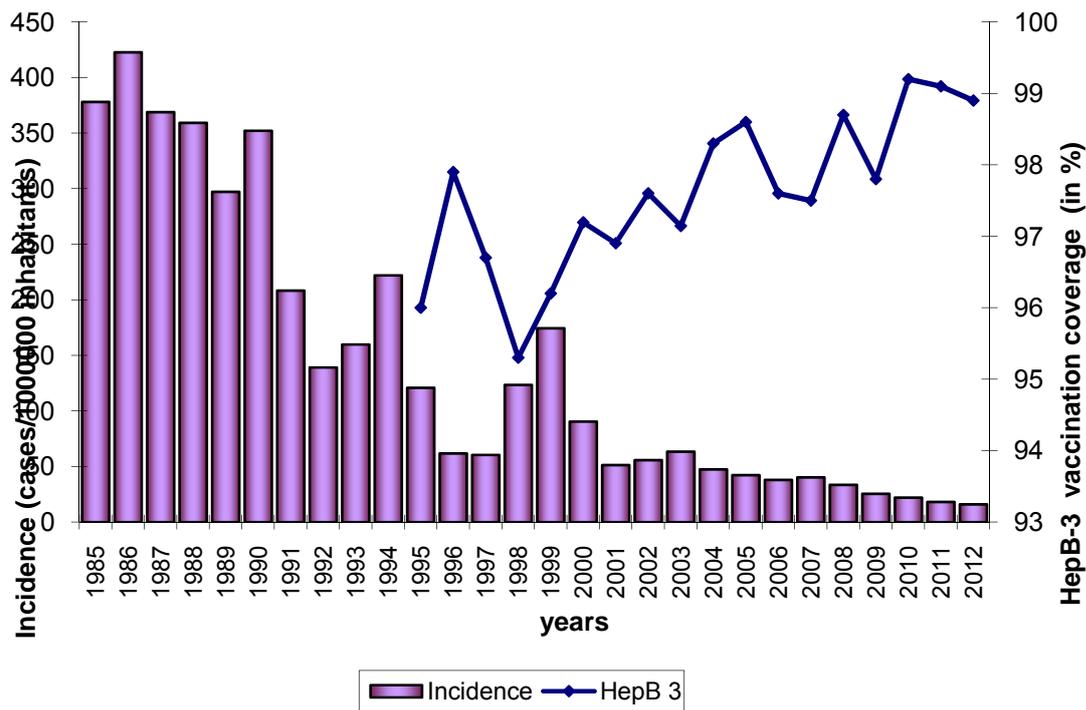


Figure 3. Incidence of unspecified viral hepatitis compared with vaccination coverage through years.

As we can see, from this graph, unspecified acute Viral Hepatitis incidence is decreasing with years while vaccination incidence continue to be at high levels all the time.

4. Conclusion

- Vaccination coverage is over than 95% in country and districts levels. Drop out is not more than 10% in country level. Regarding to the drop out values more than 10% in some districts levels they are decreased by years. Hepatitis B vaccine was as well establish as DTP vaccine, till 2008 and it continue to be in the same level as DTP now days since they are given in a combined vaccine DTP-HepB-Hib.
- Anti-HBs prevalence is much higher in vaccinated children than in the not vaccinated ones, as well as HBsAg prevalence is much lower in 0-14 yrs old children in comparison with >14 yrs old ones.
- Acute Viral Hepatitis incidence is decreasing with years.
- On the basis of vaccination coverage data, sero-survey results and epidemiological surveillance data, the national policy of mandatory vaccination of infants against hepatitis B is instituted (from 1994 onwards) in Albania, as

the most fruitful strategy for long term control of hepatitis B in a country with a high HBV endemicity.

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