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# Здоровые дети — будущее страны

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## МАТЕРИАЛЫ КОНГРЕССА

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ  
ЗАКОНОДАТЕЛЬНОЕ СОБРАНИЕ САНКТ-ПЕТЕРБУРГА  
КОМИТЕТ ПО ЗДРАВООХРАНЕНИЮ ПРАВИТЕЛЬСТВА ЛЕНИНГРАДСКОЙ ОБЛАСТИ  
КОМИТЕТ ПО СОЦИАЛЬНОЙ ПОЛИТИКЕ САНКТ-ПЕТЕРБУРГА  
ФГБОУ ВО «САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ ПЕДИАТРИЧЕСКИЙ  
МЕДИЦИНСКИЙ УНИВЕРСИТЕТ» МИНЗДРАВА РОССИИ  
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## COMPARATIVE ANALYSIS OF DYNAMICS OF TUBERCULOSIS PREVENTION, DIAGNOSTICS AND TREATMENT EFFECTIVENESS INDICATORS IN DIFFERENT COUNTRIES

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**Keywords:** TB statistics; TB prevalence; immunization rate; TB dynamics.

### Introduction

It's been more than 40-years since the beginning of implementation of Expanded Programme on Immunization (EPI) dedicated to the struggle against spreading of dangerous infectious diseases including such communicable disease as tuberculosis (TB). Regardless of really successful outcomes, there are still many reasons of increasing the likelihood of an TB epidemic.

### Materials and methods

The study of this issue was provided with bibliographical, statistical and analytical methods and it is based on data during 1992–2015 in Ukraine, Russian Federation (RF), European and Central Asian area (E&CA), and World average indicators. Basic data were collected from World Bank's, WHO's and UNICEF's datasets.

The main indicators which were chosen for analysis are next:

- birth rate, crude (per 1 000 people);
- child immunization rate for BCG (% of one-year-old children);
- incidence of TB (per 100 000 people);
- TB case detection rate (% of all forms)
- TB treatment success rate (% of new cases);
- TB death rate (per 100 000 people).

### Results

Analysis of indicators specified earlier shows that:

1) comparison between birth rate and child immunization rate for BCG from 1992 till 2015 shows that:

– there is positive birth rate trend (in 2015 it grew by 5‰ from lowest in 1999 and came to 13,3‰) in RF and still child immunization rate for BCG is high and it is almost stable 96 % during last few years. However, there different situation in Ukraine and the world in general;

– child immunization rate for BCG has increased all over the world: it was the lowest in 1992 (79,99%), then in 2012 it was the highest (89,90%), and it was 87,86% in 2015, but it possibly related with negative tendency of birth rate all over the world (it decreased from 24,55‰ in 1992 to 19,13‰ in 2015);

– also we can observe cyclical changes in birth rate in Ukraine (at first it has decreased to 8,3‰ in 1998, then it has increased to 11,4‰ in 2012, but it has rapidly decreased to 10,7‰ during last 2 years). However, there is worse situation with child immunization rate in Ukraine. The lowest rate was 89% in 1993, but then it was high and it varied within 96–98% during 1996–2007, however, during last 2 years we can see horrible numbers: child immunization rate is 39% only.

2) even so, low child immunization rate is not the only one problem in Ukraine. The second problem is prevalence of TB among population. Of course, it is the lowest in 2015 not only in Ukraine (it has decreased form 127 cases in 2004 to 91 cases in 2015), but in RF (form 138 cases in 2003–2004 to 80 cases in 2015) and all over the world (from 172 cases in 2000–2003 to 142 cases in 2015). Still it is one of the highest rates in E&CA, where mean rate is 36 cases per 100 000 of population in 2015;

3) few more important factors are quality of diagnostics and treatment of TB. TB case detection rate is one of the international indicators that shows the effectiveness of diagnostics. Analysis of this series shows that there are stable positive trend in TB detection rate, however it also can be related with prevalence decrease. This conclusion is confirmed with the coefficient of correlation that shows strong and indirect relations between number of incidences of TB and TB case detection rate. Thus it is  $-0.95$  for RF;  $-0.89$  — for World average;

–0.85 — for E&CA and –0.66 — for Ukraine.

Also the coefficients of correlation between number of incidences of TB and TB death rate are next: 0.984 for RF; 0.94 — for World average; 0.995 — for E&CA and 0.952 — for Ukraine.

There is also positive trend exists in TB treatment success rate dynamic row, but there is weak (for Ukraine, RF and E&CA) or moderate (for World) indirect relation with number of TB incidences, but there is direct moderate relation between TB successful treatment rate and health expenditure per capita for all of the countries.

### **Conclusions**

The decline in the effectiveness of TB control may lead to the following negative consequences in the future:

- a decrease in the immune layer of society;
- outbreaks of TB epidemics;
- an increase in government expenses to struggle the consequences of the epidemic;
- recession of the country's economy, etc.

That is why the priority of the state policy should be responsibility for the proper level of immunization of the population and allocate funds for the support of medical programs against TB prevalence in order to prevent these consequences.