EDITORIAL

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# THE INFANT MORTALITY RATE - AS ONE OF THE TARGET INDICATORS OF DEVELOPMENT OF THE HEALTH SYSTEM IN THE REPUBLIC SAKHA (YAKUTIA)

**ABSTRACT**

The article analyzes the infant mortality rate of the Sakha Republic (Yakutia) in the period of implementation of major projects in the health field from 2000 to 2015. It is noted that according to official health statistics, the infant mortality rate in the Republic Sakha (Yakutia) steadily decreases.

**Keywords: infant mortality rate, Yakutia.**

## INTRODUCTION

Infant mortality is one of demographic factors that most clearly reflect the country's level of development and on-going economic and social changes.

In the late nineteenth century researcher V. L. Seroshevsky pointed out that in the Yakut province "... children are dying in the first years awfully" [5]. In Yakutia in the early twentieth century infant mortality also had a significant size. In the published "Materials of the Commission for the study of the Yakut ASSR" from 1931, in the 1920-ies in the Viluy and Olekminsk districts infant mortality was 608,5‰[7]. Infant mortality in 1940 in the Yakut ASSR was 237,4‰ [4]. In general, over the years 1940-2015 infant mortality in Sakha (Yakutia) decreased 31.2% and amounted in 2015 to 7.6‰.

## MATERIALS AND METHODS

In the article the analysis of indicators of official health statistics for the 2000 to 2015 the Sakha Republic (Yakutia) and for regions, taking into account the socio-territorial zones of Yakutia [6] and staffing physicians neonatologists in areas of the country.

## RESULTS

The infant mortality Rate in the Sakha (Yakutia) during the study period 2000-2015 exceeded the national average, however over the period since 2000 reduced 2.5 times in 2015was 7.6‰ (see table. 1).

The calculation of the total infant mortality rate for the 2008-2015 in the Republic are subject to the staffing physician neonatologist revealed the following features. So, in areas equipped with a neonatologist, the infant mortality rate is clearly lower and amounted to: in 2008 is 8.9‰ at the level of this indicator in the Republic of 9.1‰; in 2009- 10,2 ‰, ((in general Republic of Sakha (Yakutia) – 8,9‰), in 2010 - 8.0‰ (in general Republic of Sakha (Yakutia) -7.2‰), in 2011 - 6.7‰ (in general Republic of Sakha (Yakutia) - 6.3‰), in 2012 - 10.4‰ (in general Republic of Sakha (Yakutia) -9.6‰) in 2013 - 8.0‰ (in general Republic of Sakha (Yakutia) - 9.6‰) in 2014 - 6.5‰ (in general Republic of Sakha (Yakutia) - 8.0‰) in 2015 - 6.9‰ (in general Republic of Sakha (Yakutia) - 7.6‰). In areas understaffed the neonatologist has a high rate of infant mortality than in the whole of Sakha (Yakutia) with the exception of 2014 (see table. 2).

If you do the analysis of this indicator in the context of the Arctic socio-territorial zone with respect to complex transportation infrastructure consists of 11 districts, in which also there is no neonatologist in the state of central regional hospitals, the infant mortality rate is higher than in the Republic of Sakha Yakutia, and in 2010 reached the highest level and amounted to 15.6‰ (see table. 3).

In the dynamics since 2010 this indicator tends to decrease in 2015 showed 13.0 (in the Republic Sakha Yakutia to 7.6‰). All these areas have the population to 10 thousand people, so the calculation of infant mortality rates triggered the law of small numbers and even 1 case of infant mortality gives a large number in general. In addition, one should note the positive fact that a number of areas of the arctic socio-territorial zones to prevent infant mortality during the year, 2 years or more, which requires more in-depth analysis of factors that affect such positive results in the protection of mother and child. Undoubtedly, the result of enormous hard work of pediatricians and obstetricians in areas of the Sakha Republic, as well as the perinatal center and pediatric center of Republican hospital №1-NCM, Yakutsk hospitals.

In the structure of infant mortality in 2000. I - rank position is perinatal causes, the II place – congenital malformations, III respiratory illnesses, IV – injuries and poisoning, V – infectious diseases. Then in 2015 notes: I ranked place also perinatal causes, the II place – congenital malformations and in the dynamics of this cause of infant mortality is a clear downward trend, III respiratory illnesses, IV – traumas and poisonings, on the V – syndrome of sudden death (see table. 4).

**Table 1**

**ДDynamics of infant mortality in the Russian Federation, Republic of Sakha (Yakutia) in 2000 and 2015 according to Goskomstat of Sakha (Yakutia) from the website: http://sakha.gks.ru according to Goskomstat of Russia from the site: http://www.gks.ru**

| | 2000 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| RS (Ya) | 17,6 | 10,6 | 7,2 | 6,3 | 9,6 | 9,6 | 8,0 | 7,6 |
| RF | 15,3 | 11,0 | 7,5 | 7,4 | 8,6 | 8,2 | 7,4 | 6,5 |

**Table 2**

**Comparative data of the average infant mortality rate in Republic Sakha (Yakutia) subject to staffing neonatologists areas for 2008-2015 [2]**

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| Districts staffed by a neonatologist | 8,9 | 10,2 | 8,0 | 6,7 | 10,4 | 8,0 | 6,5 | 6,9 |
| The areas are not staffed by neonatologists | 14,2 | 13,2 | 11,8 | 11,1 | 11,4 | 10,3 | 6,8 | 12,7 |

Table 3

**Dynamics of infant mortality in the arctic socio-territorial zone (11 districts) [2]**

| Areas | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| Abyysky | - | - | 14,9 | 13,2 | - | 14,3 | - | 15,2 |
| Allaihovsky | - | - | - | 18,5 | - | 20,0 | 15,4 | 18,9 |
| Anabar | 54,7 | - | 18,2 | 14,7 | 15,6 | 12,7 | 12,7 | 13,3 |
| Bulun | - | 16,4 | 16,0 | 20,0 | 14,0 | 7,0 | - | - |
| Zhigansky | 10,1 | 24,7 | 20,8 | - | 11,4 | - | - | - |
| Momskiy | 24,4 | 24,1 | 12,0 | - | 29,4 | 11,5 | 9,4 | 51,5 |
| Nizhnekolymskiy | 26,0 | 36,2 | 41,5 | 12,8 | 13,3 | 12,2 | - | 12,7 |
| Olenek | - | 13,0 | 20,2 | - | 9,9 | 20,2 | - | 11,4 |
| Srednekolymskiy | 13,7 | 15,9 | 7,2 | 13,8 | 6,9 | - | - | 20,7 |
| Ust-Yanskiy | - | 28,9 | 20,8 | 19,2 | 31,5 | 16,1 | 6,8 | - |
| E-Bytantayskiy | 18,9 | - | - | 35,7 | - | 31,2 | 17,9 | - |
| the average value | 13,4 | 14,4 | 15,6 | 13,4 | 12,0 | 13,2 | 5,6 | 13,0 |

Table 4

**The structure of infant mortality reasons in the Republic of Sakha (Yakutia), 2000-2015 (%) [1-3]**

| Causes of infant mortality | 2000 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| Perinatal causes | 47,8 | 34,6 | 37,0 | 37,4 | 47,0 | 55,0 | 53,1 | 45,8 |
| Congenital malformations | 25,4 | 21,6 | 20,2 | 31,8 | 31,5 | 15,0 | 21,8 | 19,1 |
| Injury and poisoning | 8,8 | 16,3 | 11,8 | 9,3 | 6,0 | 7,1 | 6,8 | 6,9 |
| Diseases of the respiratory | 11,4 | 7,9 | 11,8 | 7,5 | 5,4 | 6,5 | 8,2 | 9,9 |
| sudden infant death syndrome | … | 5,9 | 7,6 | 7,5 | 6,5 | 8,3 | 5,4 | 6,1 |
| Infectious diseases | 3,1 | 3,3 | 7,6 | 1,9 | 0,6 | 1,8 | - | 4,6 |

Table 5

**The structure of infant mortality by age periods in the Republic of Sakha (Yakutia), 2000-2015 (‰) [1-3]**

| Ages | 2000 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| Early neonatal mortality (0-7 days) | 9,0 | 4,4 | 2,9 | 3,0 | 4,6 | 4,5 | 3,2 | 3,4 |
| Neonatal mortality (0-28 days) | 11,9 | 5,35 | 3,7 | 3,8 | 6,1 | 6,0 | 5,3 | 4,5 |
| Post-neonatal mortality (29 days to years) | 5,7 | 5,25 | 3,5 | 2,5 | 3,5 | 3,6 | 2,7 | 3,1 |

Crucial in the mortality of children under 1 year is the age factor. A significant contribution to infant mortality still contributes to neonatal mortality (more than 55 % of the total number of cases). It should be noted that during the study period, there is a persistent decline in early neonatal mortality from 9.0‰ (2000) to 3.2‰ (2015); neonatal mortality from 11.9‰ (2000) to 4.5‰ (2015); post-neonatal mortality from 5.7‰ (2000) to 3.1‰ (2015) (tab. 5).

**Conclusions:**

The analysis of infant mortality in the Republic of Sakha (Yakutia) during the study period from 2000 to 2015 identified the following positive trends:

1. There is a persistent decline in infant mortality rates 2.5 times

2. In the structure of causes of infant mortality perinatal causes, congenital malformations, diseases of the respiratory system are on the first place

3. There is a persistent decline in early neonatal mortality, neonatal mortality, post-neonatal mortality.

Infant mortality is a key indicator of the development of the health system. In recent years, the Ministry of health of the Republic of Sakha (Yakutia) carried out huge work on improvement of perinatal and pediatric services in the region, an increase in medical genetic studies of the fetus and newborn, ensuring the availability and quality of high-tech medical aid to children up to 1 year at all stages of its rendering in the Sakha (Yakutia). One of the key points was the establishment of the intensive care advisory services on the basis of the Perinatal and Pediatric centers of the Republican hospital №1-NCM, as well as an effective routing scheme pregnant women and mothers. However, requires constant monitoring of the infant mortality rate that will allow for early identification of preventable causes, and determine development priorities for the maternity service and child health in the region.

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MATERIALS OF THE CONFERENCE «ACTUAL PROBLEMS OF PEDIATRICS», DEDICATED TO THE 25TH ANNIVERSARY OF RHN№1 - THE NATIONAL CENTER OF MEDICINE OF THE HEALTH MINISTRY OF THE RS (YA)

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# THE INCIDENCE OF HOSPITALIZED CHILDREN AND ADOLESCENTS OF THE REPUBLIC OF SAKHA (YAKUTIA)

**ABSTRACT**
Improving the availability and quality of specialized and high-tech medical care to children and adolescent is one of the priority tasks of state policy in the sphere of health care [1-3]. Pediatric center "Republican hospital №1-National center of medicine" (Director, PhD Lyudmila Alekseevna Nikolaeva) is the country's only medical institution providing specialized, highly skilled and high-tech medical care for child and adolescent population. The article presents data of hospitalized morbidity of children and adolescents of the Republic of Sakha (Yakutia) on applications to a Pediatric Centre for a 15 year period.
**Keywords:** children, adolescent, incidence of morbidity, Yakutia.

## INTRODUCTION

Historically, despite the vast territory, the network of medical institutions providing specialised and high-tech medical care for children's population is extremely centralized in the city of Yakutsk. GBU Pediatric center "Republican hospital №1-National center of medicine" this is the only medical institution in the Republic, providing specialized, highly skilled and high-tech medical assistance to children and adolescents.

According to official statistics, reflecting the state of health of patients, primary and general morbidity of children and adolescents is extremely heterogeneous and varies in the Republic of Sakha (Yakutia) over a wide range. During the study period a marked increase in the rates of primary and total morbidity of children and adolescents in Sakha (Yakutia), associated of course with the increased availability of medical care provision to this population, as well as high detection of disease using modern methods of diagnosis [4,5]. And yet, in our opinion the most adequate picture of the health status of children and adolescents can give the analysis of the hospitalized morbidity of children and adolescents in the only specialized medical-prophylactic institution of the Republic.

## MATERIALS AND METHODS

In the framework of the present study the aim was to investigate the dynamics of the hospitalized morbidity of children and adolescents of the Republic of Sakha (Yakutia), GBU Pediatric center of the Ministry of health of the Republic of Sakha (Yakutia) "Republican hospital №1-National center of medicine" for the period from 2001 to 2015. All the results are processed by known methods of statistical analysis.

## RESULTS

Pediatric center, GBU RS (Ya) "Republican hospital №1-National center of medicine" started its work in 2000. As shown in table 1 since 2000, the hospital is equipped with 172 beds and bed fund gradually expanded to meet the needs and uptake of child and adolescent population. Thus, in 2001 the hospital is equipped with 302 beds since 2002, 312 beds pediatric.

Annually in the department of the pediatric center come from 7383 kids (2001) 10228 children in 2015. The proportion of patients from the village from 27.1% in 2001 to 33.5% in 2015, due to the fact that rural areas are home to 45% of the total child population. About 60% of the basis of the specialized branch of medical. Emergency patients account for 40 % of all hospitalized.

The structure of hospitalized patients in perinatal center "Republican hospital №1-National center of medicine" presented in table 2. In our opinion the most adequate picture of the health status of children and adolescents of the Republic of Sakha (Yakutia) reflects the hospitalized morbidity. In dynamics since 2001 in almost all classes of diseases observed increase in the incidence of hospitalized children and adolescents of the Republic of Sakha (Yakutia). In the structure of hospital morbidity of the child population in 2015 1 - diseases of the nervous system (669.6 per 100.000 child population), 2 - diseases of the respiratory system (511.9), 3 - injuries and poisoning (503.8), 4 – diseases of the genitourinary system (403.5), 5 - diseases of the digestive system (371.8).

Table 1

**Key performance indicators, hospital GBU Pediatric center of the Ministry of health of the Republic of Sakha (Yakutia) «Republican hospital №1-National center of medicine» for 2000-2015**

| | 2000 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|
| The number of beds | 277 | 312 | 312 | 312 | 312 | 312 | 312 | 312 | 312 |
| admitted to the hospital | 7234 | 8650 | 9768 | 9726 | 10324 | 9808 | 10245 | 10228 | 10285 |
| discharged from hospital | 7203 | 8661 | 9784 | 9596 | 10361 | 9757 | 10212 | 10194 | 10271 |
| The proportion of patients from the village, in % | 37,4 | 28,9 | 31,6 | 30,4 | 32,0 | 31,7 | 39,8 | 33,5 | 29,8 |
| The proportion of emergency patients, in % | 32,5 | 46,0 | 47,3 | 44,8 | 49,0 | 43,3 | 41,7 | 40,9 | 40,3 |