

Screening for congenital hypothyroidism in the Russian Federation (1997-2013)

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Background

Screening program for congenital hypothyroidism (CH) in Russian Federation was introduced in 1994. For the past 20 years the number of regions and laboratories, included in the screening program has been constantly increasing. That resulted in better coverage of newborns in Russia. Until 2006 the national screening program included screening for CH and PKU. From 2006 till present all newborns are screened for 5 conditions: CH, PKU, congenital adrenal hyperplasia, mucoviscidosis, galactosemia.

In 1994 the laboratory test were conducted in 32 facilities, by 2003 that number increased to 48 in 2011 – 79. The screening program has always been funded from Federal Budget of Russian Federation, since 2006 within “Health” national priority program.

Laboratory methods include determination of TSH Levels in dried blood spots, mainly using “DELFIA” immunodiagnostic systems(Finland)

Objective

We aimed to estimate the prevalence of CH in Russia since 1997 till 2013* and study the differences in CH prevalence among regions of Russia.

Data & Methods

The statistical data was obtained from the Ministry of Health of Russian Federation. Both monthly and annual data was provided by regional health authorities and medical genetics laboratories where serum TSH was measured. That data was further aggregated, standardized and filtered for the purposes of the research.

The sample contains data on the number of newborns, the number of examinees, the number of identified cases of CH in the regions of the Russian Federation from 1997 to 2013 and is designed as a panel-data sample. We used basic principles of data analysis and descriptive statistics.

Results

According to the obtained data set **21 954 192** out of **23 799 014** newborns has undergone through the screening program, **5 835** cases of CH were registered . Average coverage of the newborn screening program of the analyzed period is **88,5%** with lowest coverage of **67,9%** in 1997 and highest coverage of **99,8%** in 2012.

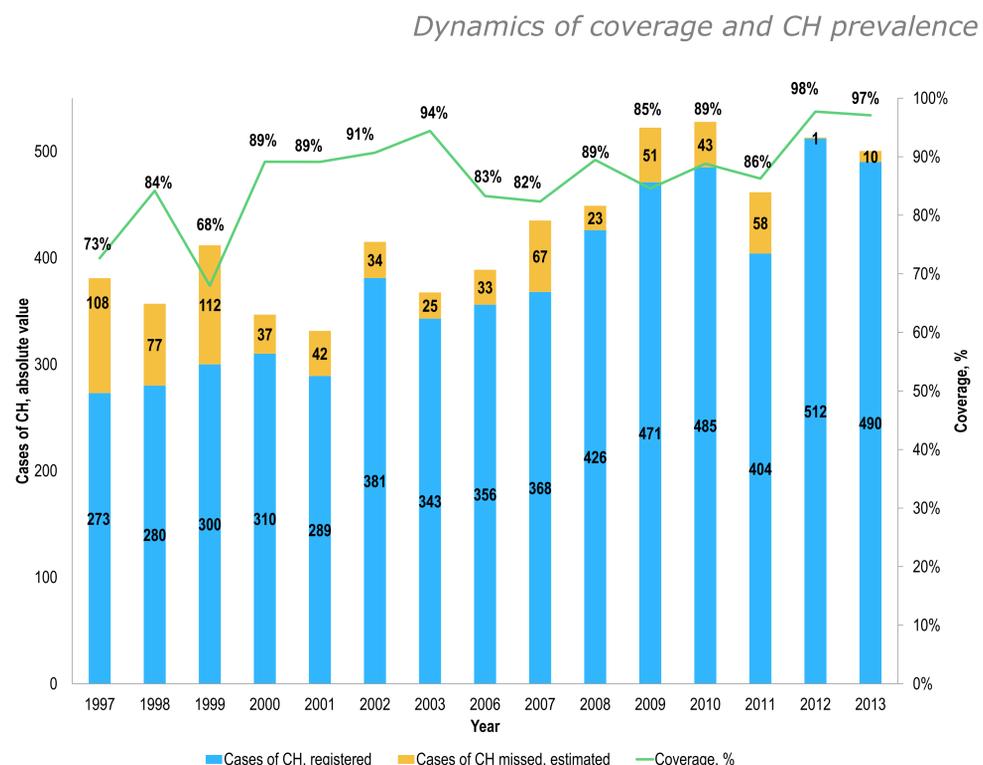
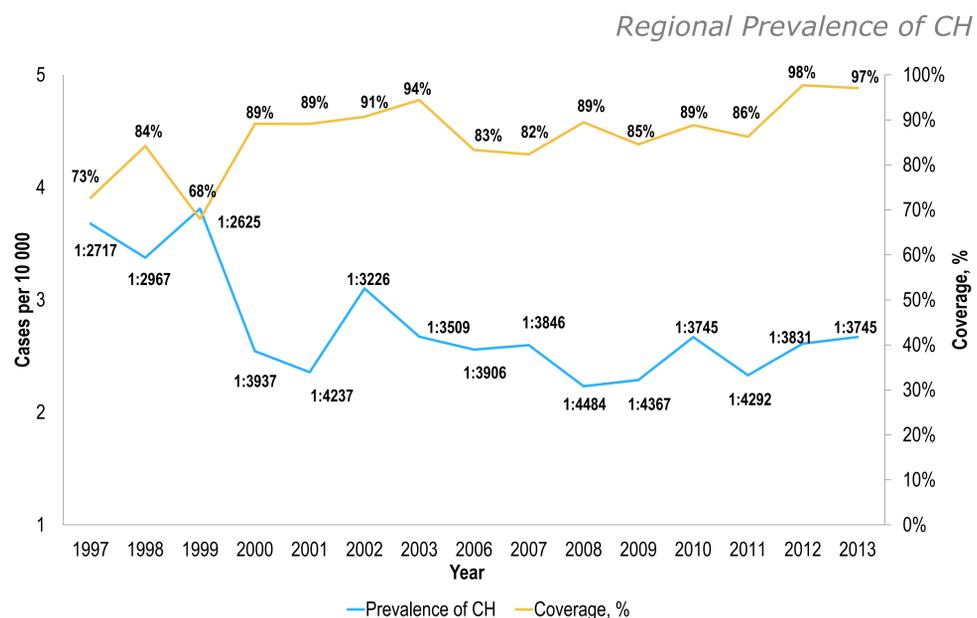
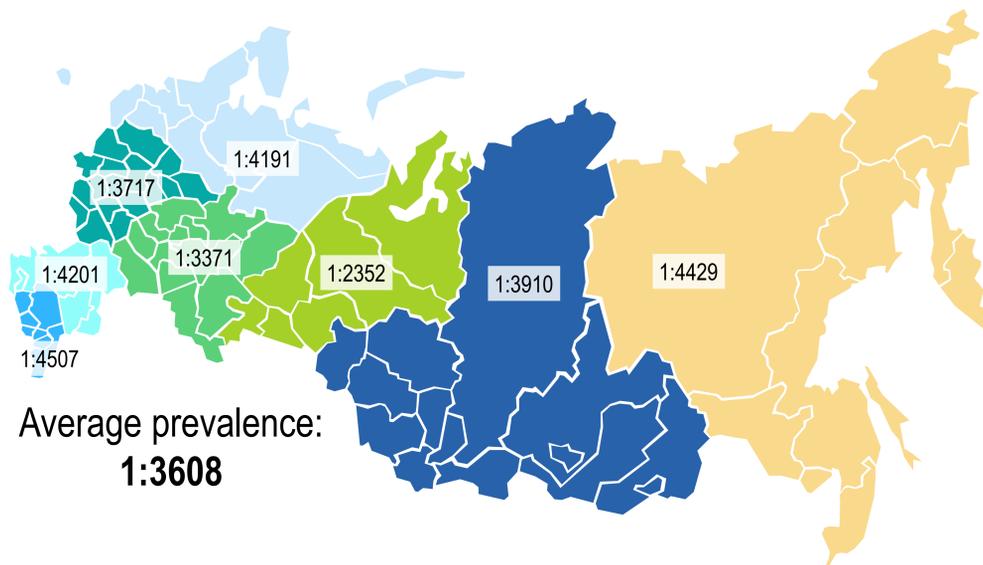
Average prevalence of CH in the analyzed period – **1:3608**, with highest registered prevalence of **1:2909** in 1999 and lowest registered prevalence of **1:4307** in 2003.

Our results indicate significant differences among Russian regions both in terms of coverage and prevalence. The lowest average coverage of **72,3%** and lowest prevalence of **1:4507** are observed in the North Caucasus federal district. The highest coverage of **97,2%** along with the highest absolute value of all registered HC cases – **1413 (1:3717)** is found in Central federal district. The highest prevalence of HC is found in Ural federal district – **1:2352** whilst the coverage is **86,5%**.

Conclusions

The average frequency of CH in Russia is 1:3600 newborns. The prevalence of CH varies across regions of Russia. We found correlation between coverage and the number of registered cases. Further analysis of laboratory diagnostics quality control and external factors is required.

Results



Dynamics of registered and missed cases of CH

*Years 2004, 2005 were excluded from the analysis due to low quality of data