



Symposium

# Emerging Threats for Human Health

Impact of Socioeconomic and Climate Change on Zoonotic Diseases

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### P31 Viral hepatitis B, C and D and their outcomes in Republic of Sakha (Yakutia)

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The Republic of Sakha (Yakutia) (RS(Y)) is one of the most disadvantaged territories of the Russian Federation for the prevalence of hemocontact viral hepatitis B, C and D, as well as their adverse outcomes - cirrhosis and primary liver cancer. This unfavorable epidemiological situation is associated with climatic and geographic features (the Far North conditions), with prevalence of immunodeficiency, which frequency is increasing under the influence of an unfavorable ecological situation, which is notable characteristic of the RS(Y). According to official statistics, in 2017 there were 328 cases of chronic hepatitis B (CHV), (34.2 per 100,000 cases) and 501 cases of chronic hepatitis C (CHC) (52.1 per 100,000), in the structure of chronic viral hepatitis, the proportion of CHB and CHC in 2017 was 39.5% and 60.5%, respectively. Currently, according to the register "Chronic viral hepatitis in the Republic of Sakha (Yakutia)", 15 145 people are registered, 6417 of them with chronic hepatitis B, with chronic hepatitis C - 6781, with chronic hepatitis D - 1101, with mixt - 641, with unverified etiology - 4, 385 of them with cirrhosis of the liver (LC), 27 people with primary liver cancer (PLC). High prevalence of hemocontact viral hepatitis is observed in the Suntar, Ust-Aldansky, Neryungrinsky, Myrninsky, Khangalas districts of the republic and Yakutsk. With Buryatia, Tyva and Tyumen region, Yakutia is among the regions of Russia with the highest incidence rates in patients with viral hepatitis. For the period from 2000 to 2015 the incidence rates of liver cancer exceed in 4-5 times in Yakutia in comparison with the Russian Federation. High incidence of CVH and their outcome in the central, polar and western Yakutia region could

be explained by insufficient level of qualified medical and preventive care in these regions. Significant coefficients of rank correlation ( $p < 0.05$ ) between incidence of CVH B, C and D with outcomes in cirrhosis ( $r_{sp} = + 0.94$ ) and liver cancer ( $r_{sp} = + 0.83$ ), and between chronic hepatitis D with cirrhosis ( $r_{sp} = + 0.94$ ) and liver cancer ( $r_{sp} = + 0.89$ ) has been obtained. However, there was no statistically significant association for CHC and CHB separately.

The main cause of the liver cirrhosis was HDV infection - 51.72%, which is could be explained by more severe course and rapid transition into liver cirrhosis. In the structure of the causes of HCC, the greatest percentage has chronic viral hepatitis C - 41.38% which is characterized by a latent course and detection in the late stages of the disease (37.9%). The mortality rate after cirrhosis and liver cancer in 2016 was 4.5 cases per 100 thousand of us. For the period from 2009 to 2016 this indicator has grew (2009 - 2.3 per 100 thousand people - 2016 - 4.5 per 100 thousand of us.).

The study of the long-term incidence of viral hepatitis B, C and D in the RS(Y) to let us clarify the frequency of various nosological forms of the disease (chronic hepatitis, cirrhosis and liver cancer). Regions of Yakutia, the most affected viruses of hepatitis B, C and D with a progressive course of the disease had been identified. To create a preventive system and stages of treatment for patients with chronic viral hepatitis, including in the cirrhotic stage and with the primary cancer a specialized hepatological center formation is recommended.

### P32 The impact of lifestyle transformation on the health of the indigenous population of Yakutia

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**Introduction:** Lifestyle transformation has a significant impact on human health. In this situation the northern populations are vulnerable groups. For mitigation of effects of lifestyle transformation on the health, monitoring of situation is necessary assess the current health status and potential future negative health outcomes.

**Methods:** To characterize the health status and nutrition were used statistical data of Federal State Statistics Service of the Republic of Sakha (Yakutia). Basal metabolic rate, seasonal variation of thyroid function present used results of study among indigenous adult population from Central Yakutia (Berdigestjah, 62°N., 126°E.). Participants: healthy adults-volunteers (>19 years old). Time of study: two field seasons— August/September 2009, January 2011. Methods: BMR – indirect calorimetry; Anthropometry; Health measures; Hormonal measures; Physical activity; Questionnaire on socio-demographics & lifestyle. Prevalence of metabolic disorders present used results of study among indigenous adult population from Central (Berdigestjah, 62°N., 126°E.) and northern (Zhigansk, 66°N, 123°E) Yakutia. Participants: indigenous adults (≥20 years old). Time of study: 2009, 2010 May-July. Methods: Anthropometry; Health measures; Hormonal measures; Lipid, Glucose measures; Physical activity; Questionnaire

**Results:** Traditional Yakut food contains large amounts of fats and proteins. It is a component of adaptation to cold stress. In the end of the XIX century traditional nutrition per one member of middle income family consisted of 80% of the products of animal origin. Modern diet of Yakut people includes

11-13% of protein, 27-34% fat and 53-62% of carbohydrates. Result of study among the Yakut has documented elevated basal metabolic rates and declines in thyroid hormone levels (fT3 and fT4) during the winter. It is response to extreme cold stress. Socioeconomic transition a change almost every aspect of life of circumpolar population (increase of psycho-emotional stresses, physical activity, nutrition, traditional subsistence activities and others). It accompanied by failure of established mechanisms of evolutionary adaptation to extreme factors and lead to the development of pathological conditions. About stress adaptation reserves of the organism under the influence of complex environmental factors and suggest low life expectancy, high rates of morbidity and mortality among the population of northern regions.

**Conclusion:** in sum, the study has shown that the indigenous Yakut of northeastern Siberia marked elevated basal metabolic rates, seasonal changes in thyroid function, high prevalence of metabolic disorders, increase of morbidity and mortality. These populations carry the double burden of the adverse effects of both natural and socio-economic factors affecting health. In terms of lifestyle transformation and future of climate change, these groups are among the most vulnerable. Climate warming is expected to change in the spectrum of diseases, increase the proportion of infectious diseases, the numbers of cardiovascular events, of stress-factors, the changing of nutrition. Therefore it is necessary to forecast possible trends in health and consider possible measures to maintain the health and life of population.



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