nancies were significantly higher than in peripheral blood of healthy adults (491,4±49,9 pg/ml versus 277,5±64,4 pg/ml respectively; p<0,05) but IL-4 serum concentrations in cord blood were significantly lower than those in blood of adults (27,4±10,2 pg/ml versus 126,3±27,2 pg/ml respectively, p<0,05).

During the first week of life in physiological conditions serum levels of proinflammatory cytokines and IL-4 significantly increased in comparison with cord blood levels. CD3+ and CD4+ cell numbers had the same dynamics while the number of CD8+ cytotoxic T-lymphocytes significantly decreased. The level of zymozan-induced chemiluminescence of peripheral blood leukocytes became significantly lower till the 7th day of life in comparison with cord blood. The values of immunological parameters under the physiological conditions were different from those situations when early postnatal period was complicated with respiratory distress-syndrome (RDS) or pneumonia (significantly lower serum levels of IL-I and TNF, reduced absolute numbers of CD3+, CD4+, CD8+ and B-cells. significantly higher level of spontaneous chemiluminescence in peripheral blood of neonates suffered from RDS or pneumonia versus healthy infants on the 5th-7th day of life. Recovery from pneumonia or RDS was accompanied with restoration of pro- and anti-inflammatory cytokine balance, elevation of absolute lymphocyte number and serum IgM level, reduction of natural killer number and level of expression of CD25+ receptor to IL-2 as well as normalization of spontaneous CL level.

So we describe the mode of normal early postnatal immunological adaptation in healthy full-term newborn infants and immunological distress-syndrome in neonates with RDS or pneumonia. The data are important for the further decisions concerning immunological intervention in neonatal period.

The work is submitted to Scientific Conference "Basic and applied research", Brazil (Rio de Janeiro), February 19 - March 3, 2009. Came to the Editor's Office on 22.12.2008.

TERRITORIAL HEALTH DIFFERENCIES IN RUSSIAN FAR EAST POPULATION

Sukhoveyeva A.B.
Institute of Complex Analysis of Regional Problems,
Far East Branch
Russian Academy of Science
Birobidzhan, Russia

The health of population is a biosocial phenomenon, as it depends both on the body features of separate people and external conditions. That is why the health level can be thought of as a factor of adaptation of a concrete population group to natural and socioeconomic environment of the territory reflecting how the given environment is comfortable for normal life activity of this group of people [1].

To study the Russian Far East population health we used the factors of life expectancy at birth (LE), men and women separately, in the rural and urban areas, and infant mortality.

The population health and territorial difference definition integral estimations were carried out on the basis of the health index calculated with the help of four LE factors and the infant mortality factor on the method of linear scaling. It is based on the definition of referential points (maximum and minimum values of indicators) and shows the position of a separate region between them. First, the calculation of special indexes on every factor is performed by the formula:

$$Y=(X-Xmin)/(Xmax-Xmin), \text{ to calculate the LE}$$
$$Y=(Xmax-X)/(Xmax-Xmin), \text{ to calculate the infant mortality,}$$

where Y – is a special index, X – the factor of this or that region, Xmin and Xmax – referential points [3]. The Y value varies anywhere from 0 to 1. Zero corresponds to the worst complex estimation, and 1 – to the best one.

The same minimum and maximum values (25 and 85 years accordingly) were chosen as the LE factor referential points. The smallest and largest values of the given factors were chosen as the minimal and maximal referential points for infant mortality in Russia in 2006 – 4,7 (St.-Petersburg) and 33,0 (Koryak AD) per 1000 of newborns accordingly. The spread in values of the chosen factors varied from 1,1 to 3,1 times.

The LE territorial differences manifest themselves considerably stronger in the rural area. A most vivid demographic feature of the FEFD subjects compared to average Russian factors is a tragically low rural area female LE level (Russia – 71,8 years). Even in the safest Republic of Sakha (Yakutia) in the Far East it is lower than the average Russian one (71,3 years). The rural area male LE in 2006 in the majority of FE regions, exclusive of the Republic of Sakha (Yakutia) - 60,2 years, is lower than the average Russian factor. The infant mortality factors in 2006 in the FE regions are higher than the average Russian one (10,2%) and vary from 10,6% in the Republic of Sakha (Yakutia) to 33,0% in the Koryak AD.

When calculating the LE index, first, we calculated and then summarized the indexes on separate components (men and women in town and village) weighted ¼. At the second stage the final health index was calculated as an arithmetic middling of the two special LE indexes and infant mortality.

We assumed that the health index maximum value fell on Sakha (Yakutia) – 0,73, the minimum value – 0,26 – on the Koryak AD. The difference between the minimum and maximum values of the health indexes among the Far East regions makes 2,8 times.

Proceeding from the obtained health indexes we marked out 4 groups of the FE regions by the health index value and the LE and infant mortality level combination. The first group with the population health level **above the average** was made up of Sakha (Yakutia) and the Primorski Krai, in the territory of which 45% of the FE population live. A relatively high LE and low infant mortality are typical of the given subjects' population. The **average** population health level is observed in the Khabarovsk Territory, Magadan, Amur, Kamchatka and Jewish Regions and makes 53,8% of the residents from the whole District population. The population of these regions has average LE and infant mortality values or one factor is lower and the other is higher. The population health level **under the average** is defined in the Chukchee AD (comprising 0,75% of the FE population), which a relatively low LE and high infant mortality are indicative of. The **low** population health level is defined in the Koryak AD with the part of 0,35% of the whole Far East District population. An extremely high infant mortality and low LE are common to the population of the given district.

An **index-map** with the FE regions' population health level territorial difference has become the result of our research.

The analysis of the FEFD population health state allowed coming to the following conclusions:

- The Far East as a whole has average and under-the-average health factors in Russia (the health index in the whole Russia in 2006 – 0,72).

- The LE factors irrespective of sex and the type of locality in the FE territory is much different from the average Russian ones and vary between 1 and 14,7 years.

- Regional differences in the population health state within the Far East are essential. The greatest territorial variability is typical of the rural area female LE, which makes 14,7 years. The rural area male LE makes 13 years. In the urban area the difference makes 11 years for both sexes.

- On the final health index value and the combination of LE and infant mortality index values there are 4 groups of regions marked out in the Far East with the differentiation on the health state. The majority of the FE subjects has an average population health level (53,7% of the FE population).

References:

1. Public health and economy / B.B. Prokhorov, I.V. Gorshkova, D.I. Shmakov, Ye.V. Tarasova – M.: MAKC Press, 2007 – p. 292.

2. Regions of Russia. Socioeconomic factors. Statistical Collection Rosstat, M., 2007.

3. Cherkovets M.V., Role of socioeconomic factors in Central Russia population health formation. Thesis of Cand. Sc. (Geography), M., 2003.