

# 1. RESULTS AND DIRECTIONS OF ACTIVITIES TO ENSURE THE EPIDEMIOLOGICAL SAFETY OF THE POPULATION IN MODERN CONDITIONS

1.1 doi: 10.15789/2220-7619-2018-4-1.1

## FEATURES OF HIV EPIDEMIC SITUATION AMONG CHILDREN AND TEENAGERS OF THE FAR EASTERN FEDERAL DISTRICT

E.A. Bazykina<sup>1,2</sup>, O.E. Trotsenko<sup>2</sup>, V.B. Turkutuyukov<sup>1</sup>, L.A. Balakhontseva<sup>2</sup>, V.O. Kotova<sup>2</sup>

<sup>1</sup>*Khabarovsk Research Institute of Epidemiology and Microbiology, Khabarovsk, Russia;* <sup>2</sup>*HI Pacific State Medical University, Vladivostok, Russia*

The objective of the research was to evaluate the fraction of children and teenagers in the structure of the HIV-positive people subjected to regular medical check-ups in the Far Eastern Federal District (FEFD) during 2013–2017.

Three age groups were analyzed during the study: 0–7 years old, 8–14 years old, teenagers (15–17 years of age). The data of the official reporting form No. 61 was utilized.

An increase in the fraction of HIV-infected teenagers by 6.5 times from 0.04±0.02% in 2013 to 0.3±0.05% in 2017 ( $p = 10^{-6}$ ) was detected. The percent of children aged 0–7 years rose by 38.29% from 0.47±0.07 to 0.65±0.07% ( $p = 0.07$ ). A decline of the index by 45.9% was registered in children aged 8–14 years from 0.61±0.08 to 0.33±0.05% ( $p = 0.003$ ). A statistically significant decline of the index by 43.21% from 0.81±0.12% down to 0.46±0.08% ( $p = 0.014$ ) in the age group of 8–14 years as well as an increase of the fraction of HIV-positive teenagers by 4.8 times from 0.05±0.03% up to 0.29±0.06% ( $p = 0.0007$ ) in 2013–2017 was registered only in the Primorsky Region. In 2017, the Magadan Region children and teenagers were free of HIV-infection. No cases of HIV-positive children aged 8–14 years were registered in Jewish Autonomous District and Kamchatka Region while in the Chukotka Autonomous District children aged 8–14 years and teenagers were free of HIV. That said HIV-positive children aged 0–7 years were registered almost in all constituent entities of the FEFD. The fraction of specified HIV-positive children was higher compared to the mean rate in the FEFD (0.65±0.07%) in Amur Region (2.4±0.79,  $p = 0.011$ ) and Republic Sakha (Yakutia) (1.65±0.37%,  $p = 0.03$ ).

The increase of the fraction of HIV-positive children aged 0–7 years necessitates strengthening of preventive measures against mother-to-child transmission of HIV. The rise of the teenagers' proportion in total structure of HIV-positive people can indicate on their low HIV awareness and highlights the need to improve the preventive measures against HIV in this age group.

1.2 doi: 10.15789/2220-7619-2018-4-1.2

## MODERN CHARACTERISTICS AND TENDENCIES OF DIARRHEAL INFECTIONS EPIDEMIC PROCESS IN RUSSIA

E.A. Cherepanova<sup>1,2</sup>, A.A. Goliusov<sup>3</sup>, A.V. Linok<sup>3</sup>, N.N. Filatov<sup>2,3</sup>, E.G. Simonova<sup>2,3</sup>

<sup>1</sup>*Federal Center of Hygiene and Epidemiology of Rospotrebnadzor, Moscow, Russia;* <sup>2</sup>*I.M. Sechenov First Moscow State Medical University, Moscow, Russia;* <sup>3</sup>*I. Mechnikov Research Institute of Vaccines and Sera, Moscow, Russia*

In recent years diarrheal infections enhance their leading role in the structure of population infectious diseases.

The global trend towards the expansion of viral pathogens range and laboratory diagnostics development have changed the etiological structure of pathogens. At present nearly 70% of the reported diarrheal infections cases with identified etiology in Russia caused by viral pathogens. The results of molecular-genetic and epidemiological analysis indicated an increase of circulating pathogens genetic diversity, as well as strengthening of norovirus infection etiological significance. Since the implementation of registration system norovirus incidence rate has increased by 15 times. In Moscow, noro — and rotavirus infections outbreak incidence was 34% (2011) and 38% (2016). The maximum number of infection cases (414 people) was detected in outbreaks caused by norovirus.

Every fourth etiologically identified case of diarrhoeal infection in Russia belongs to food zoonoses. Among them, salmonellosis holds the leading positions. In recent years its incidence rate has a weak decrease tendency with 25–36 cases per 100 000. Salmonellosis outbreaks are second by registration frequency only to viral etiology outbreaks and are recorded among adults mainly. In Moscow, the share of children in the salmonellosis outbreak structure was 18.6%.

Despite the evident decrease in shigellosis incidence in Russia (with an average annual rate of 17.2%), this infection remains relevant for several regions. Among them are not only regions with water supply quality problems (Republics of Tuva, Dagestan, Khakassia, Karachay-Cherkessia, Astrakhan region, etc.), but also megacities. In Moscow, where incidence rate doesn't exceed 5 cases per 100 000, shigellosis leads by the focal index (27.3). Shigellosis keeps the second place in terms of the outbreak morbidity, having a large proportion of children (76%) in its structure.

Finally, one of the significant trends is a comorbidity growth, which reveals itself by the increase in the number of outbreaks with multiple etiology.

1.3 doi: 10.15789/2220-7619-2018-4-1.3

## ON THE TIMELINESS OF VACCINATION IN CHILDREN'S OUTPATIENT DEPARTMENT

A.A. Golubkova<sup>1</sup>, E.S. Koltunova<sup>2</sup>, T.A. Platonova<sup>1</sup>, O.Yu. Olshvang<sup>1</sup>, I.V. Zhilayeva<sup>2</sup>, V.V. Abdulvalieva<sup>2</sup>

<sup>1</sup>*Ural State Medical University, Yekaterinburg, Russia;* <sup>2</sup>*Children's City Clinical Hospital No. 11, Yekaterinburg, Russia*

Vaccination is an effective preventive measure, aimed at reducing the morbidity, lethality and mortality from many infectious diseases. However, the full effect of vaccination is provided only when the immunization is high, at least 95% of population.

The purpose of this study was to assess the completeness and timeliness of children immunization in children's outpatient department within the time frames regulated by National calendar of preventive vaccination.

During the study, the history of development (f.112/y) and preventive vaccination records (f.063/y) were analyzed for 631 children under the age of 18 months.

It was found that vaccination coverage of children in decreed age groups for any vaccination regulated by

the law did not meet the benchmark of 95% recommended by the World Health Organization.

Only 81.3% ( $\phi = 7.79$ ,  $p < 0.01$ ) were timely vaccinated for the first time against hepatitis B, only 35.5% ( $\phi = 19.92$ ,  $p < 0.01$ ) received the third vaccination on time; and only 77.9% ( $\phi = 9.25$ ,  $p < 0.01$ ) were vaccinated against tuberculosis. The proportion of children timely vaccinated against whooping cough, diphtheria, tetanus and polio, was 45.5% ( $\phi = 19.80$ ;  $p < 0.01$ ), and those who have completed the full vaccination set until 6 months accounted for 22.3% ( $\phi = 22.42$ ,  $p < 0.01$ ).

The coverage of children with vaccination against measles, rubella and mumps in the decreed period (12 months) was also insufficient and represented 42.5% ( $\phi =$  of 17.03,  $p < 0.01$ ) which does not guarantee epidemiological welfare of the territory, and in case of introduction of infection it can lead to its spread among the unvaccinated population.

According to the vaccination documentation, parents refusal to vaccinate and medical conditions (prematurity, low weight at birth, respiratory distress, neonatal jaundice, maternal HIV-infection) were causes of failure to immunize children against tuberculosis and hepatitis B in maternity. Temporary medical exemptions to immunization (acute respiratory infection, intestinal infection, allergic dermatitis), delayed appearance to the vaccination, and parents refusal to vaccinate were the leading causes of violation of the timing for subsequent vaccination in the outpatient department.

Thus, the examination of outpatient medical records revealed serious shortcomings in terms of preventive vaccination regulated by National calendar and timing of vaccination in young children, which forms a group of people susceptible to infection which is sufficient for activation of the epidemic process.

#### 1.4

doi: 10.15789/2220-7619-2018-4-1.4

### REGISTRATION OF DYSENTERY SONNEI CASES IN SPECIALIZED MEDICAL INSTITUTIONS OF THE LENINGRAD REGION

O.A. Istorik<sup>1</sup>, E.A. Mikhailova<sup>1</sup>, M.A. Chorniy<sup>1</sup>, Z.N. Matveeva<sup>2</sup>, A.A. Porin<sup>2</sup>, L.A. Kaftyreva<sup>2</sup>

<sup>1</sup>Department of Rospotrebnadzor of the Leningrad Region, St. Petersburg, Russia; <sup>2</sup>St. Petersburg Pasteur Institute, St. Petersburg, Russia

We conducted an epidemiological investigation of infectious disease group focus that emerged in January 2018 in one of the specialized hospitals in the Leningrad region.

Within eight days in one of hospital departments nine patients and the department nurse developed similar symptoms: abdominal pain, fever and diarrhea. In all cases, "Acute gastroenteritis of mild severity" was initially diagnosed. Subsequently every case had *S. sonnei* positive result of feces examination. In blood sera specific antibodies were detected in diagnostic titres.

The presumed source was the patient admitted to the hospital in the incubation stage. Numerous violations of the hospital sanitary and epidemiological regime as well as personal hygiene by patients and staff made it possible to implement a contact-household transmission route and the emergence of a group illness. Patients were transferred to the clinic of infectious diseases, preventive and anti-epidemic measures in the hospital allowed to quickly stop the outbreak. Strains of *S. sonnei* characterized by identical enzymatic properties and antibiogram. The strains were resistant to ampicillin, tetracyclines, chloramphenicol, sulfonamides, trimethoprim, and were characterized

by a low level resistance to fluoroquinolones. Sensitivity persisted in the expanded spectrum of cephalosporins (ceftazidime, cefatoxime, cefepime) and carbapenems (merapenem), aminoglycosides (gentamicin, tobramycin, amikacin), nitrofurans.

The genotyping of isolated strains using RAPD-PCR, like the phenotypic methods, showed their identity.

During laboratory and clinical examination of medical and technical personnel of the department, as well as workers of the food unit, shigelosis patients and carriers of *S. sonnei* were not identified.

A shigellosis outbreak in a specialized hospital with a long stay of patients, caused by *S. sonnei*, arose as a result of the introduction of infection to the department, and had nosocomial spreading through a contact-household transmission route.

#### 1.5

doi: 10.15789/2220-7619-2018-4-1.5

### ZIKA FEVER IN THE WORLD AND THE RISK OF ITS DISTRIBUTION IN THE RUSSIAN FEDERATION

A.B. Khaitovich, M.E. Lukyanova

V.I. Vernadsky Crimean Federal University, Simferopol, Russia

Zika fever is an arbovirus transmissible disease caused by Zika virus and transmitted by mosquitoes *Aedes aegypti* and *Aedes albopictus*. Discovered for the first time in 1947 in Uganda, the Zika virus led to diseases among people in the 1960s–1980s in Africa and Asia, then to outbreaks in 2007 on the island of Yap in the Western Pacific and in 2013–2014 in French Polynesia. The epidemic, which began in the fall of 2015 in South and Central America, reached 70 countries and led to more than half a million cases. The aim and objectives of the work are to analyze the dynamics of the incidence of Zika fever and to identify tendencies in the distribution in the regions of the world, to identify the features of mosquito biology and to assess the factors affecting the spread of these diseases and the incidence among humans, and to determine the risks of spreading the fever to other areas.

With the help of GIS, an epidemiological analysis of the incidence and spread of Zika fever was carried out, and the features of mosquito biology were determined. Information about the incidence is obtained from the information messages of the WHO and Rospotrebnadzor. Statistical and graphical methods of investigation were used to process the results.

The epidemic process of Zika fever in South and Central America has come to an end. The analysis of morbidity, which was carried out, showed that the outbreak was uneven in time and space, with 6 phases of the epidemic process identified. The obtained data for biological characteristics of populations of two species of mosquitoes allowed us to attribute *Aedes aegypti* to the group of more important species for epidemic spread — to the main carriers, and *Aedes albopictus* to less significant, secondary carriers. The information obtained does not give an accurate prediction of the further spread of Zika fever in different regions. But it can be assumed that there can be a region in the Russian Federation — the Black Sea coast of the Russian Federation (the Caucasus and the Crimea), which should be assessed at present as unfavorable for the formation of a focal point for augmented transmission of infection. However, with changing climatic conditions, the situation may change. The causative agents of some fevers may expand the regions of distribution and this is associated with the same types of mosquito vectors as in the case of Zika fever.