HEALTHY LIFESTYLE. PREVENTION

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ORGANIZING MANDATORY VACCINATION AGAINST TICK-BORNE ENCEPHALITIS IN RUSSIA: HISTORY AND MODERNITY

The study presents the results of the analysis of regulatory legal acts and the practice of applying the rules related to mandatory vaccination against tick-borne encephalitis. The purpose of the study: analysis of the procedure for mandatory preventive vaccinations against tick-borne encephalitis and the implementation of the right to vaccination. Materials and methods: analysis of regulatory and legal acts in the field of immunoprophylaxis of tick-borne encephalitis by the method of expert assessments, comparative legal, analytical, statistical methods. Medical and epidemiological analysis of the content of the Calendars of preventive vaccinations regarding vaccination against tick-borne encephalitis from 1980 to 2021. Results: In 2023, most of the territories of the constituent entities of the Russian Federation were endemic for tick-borne encephalitis. In 2024, 4 million citizens of the Russian Federation were vaccinated against tick-borne encephalitis. Historical retrospective has shown that vaccination against tick-borne encephalitis was started for the purpose of disease prevention in endemic territories in relation to certain professional categories of the population. At the same time, immunoprophylaxis was mainly carried out according to epidemiological indications, with the exception of 1980-1997, when it was included in the routine vaccination. When establishing the mandatory vaccination, 4 acts are taken into account: Federal Law "On Immunoprophylaxis of Infectious Diseases"; Calendar of Preventive Vaccinations; SanPiN 3.3686-21; List of works, the performance of which is associated with a high risk of infectious diseases and requires mandatory preventive vaccinations. SanPiN 3.3686-21 expands the contingent that receives preventive vaccinations against tick-borne encephalitis. Conclusions and discussion: mandatory vaccination is defined by the list of professional risk groups and requires a decree of the chief state sanitary doctor or an order from the head of the organization. To increase the effectiveness of immunoprophylaxis and prevent abuse, it is necessary to systematize regulatory and legal acts.

Keywords: vaccination, immunoprophylaxis, tick-borne encephalitis, vaccinations, vaccination calendar, legal regulation, categories of the population

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Introduction. In the Far Eastern Federal District, as a territory with a large number of forests and a high number of virus carriers, one of the main medical and epidemiological problems [6] is tick-borne viral encephalitis (hereinafter referred to as the «TBE»).

It is known that the incidence of tick-borne encephalitis increases in countries endemic for tick-borne encephalitis in both Europe and Asia [25, 26]. This problem is undoubtedly relevant and requires a solution in accordance with modern legal acts to preserve the health and well-being of the population [22, 23]. In Russia, in 2023, numerous entities were registered as territories endemic for tick-borne encephalitis [7, 21] (see Fig. 1). In the Far Eastern Federal District (hereinafter referred to as the «FEFD»), only 3 entities do not have registration of tick-borne encephalitis: Kamchatka Krai, Magadan Oblast, and Chukotka Autonomous Okrug. Of the thirty-five territories of the Sakha Republic (Yakutia), four are endemic for tick-borne encephalitis, including the Aldan, Neryungri, Lensky, and Olekminsky Districts. In the remaining entities of the FEFD, all or most of the administrative territories are endemic.

In 2023, more than 503 thousand people in the country suffered from ticks, which is 6.5% more than the long-term average (472,491), and also 12.6% more than in 2021 [22]. According to Rospotrebnadzor, 4 million people in Russia were vaccinated against tick-borne encephalitis in 2024.

The medical significance of tick-borne encephalitis is determined by the high mortality rate, disability and severity of the disease [3, 5, 7, 22, 23]. The legal significance is determined by the relationship between the principle of voluntary vaccination and the mandatory nature of immunoprophylaxis, due to the need to mitigate the consequences of complications of the central nervous system disease and reduce the risk of contracting a zoonotic infection [11, 12].

The aim of the study is to analyze the procedure for mandatory vaccination against tick-borne viral encephalitis, categories of citizens subject to vaccination and the implementation of the right to vaccination.

Materials and methods. Regulatory and legal acts in the field of immunoprophylaxis against tick-borne encephalitis in Russia were studied. The following methods were used: comparative legal, analytical, medical-epidemiological, statistical, content analysis, expert assessments.

The article provides an analysis of data from authors devoted to immunoprophylaxis against tick-borne encephalitis, in particular A.S. Kilyachina, E.A. Leushina, Yu.A. Zubova, A.G. Sergeev, and others. The works of foreign research in this area are studied, in particular O.N. Khanenko, U. Kunze, M. Müller, A. Pilz, J. Shedrawy and others [24, 25, 26].

Results and discussion. The constitutional right to health protection includes

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the sanitary and epidemiological well-being of the population [12].

Prevention of infectious diseases by medical and epidemiological methods, including immunoprophylaxis, is carried out through the use of vaccines against tick-borne encephalitis, which is a specific prevention of the infectious transmissible disease viral tick-borne encephalitis. Despite the diverse range of entities that carry out such activities – from government bodies to public associations – specific preventive measures are limited to the national calendar (hereinafter referred to as the «Calendar») of preventive vaccinations (part 1) and the calendar of preventive vaccinations for epidemiological indications (part 2). The Calendar was approved by order of the Ministry of Health of Russia dated 06.12.2021 N 1122n [14] and is a normative legal document that establishes the names of diseases, a list of preventive vaccinations and categories of citizens subject to mandatory vaccination. Clause 7 in Part 2 refers to vaccination against tick-borne encephalitis [11, 14].

According to the International Statistical Classification of Diseases and Related Health Problems, Eleventh Revision (ICD-11) [8], TBE is included in viral infections of the central nervous system in 1C8G "Tick-borne encephalitis", and is subdivided into 1C8G.0 "Far Eastern tick-borne encephalitis", 1C8G.1 Central European tick-borne encephalitis, 1C8G.2 Siberian tick-borne encephalitis, 1C8G.Z Tick-borne encephalitis, unspecified. As of January 2025, ICD 10 has effectively ceased to be effective, and the implementation of ICD 11 was suspended in january 2024.

The neurotropic tick-borne encephalitis virus was first described as the etiologic factor of tick-borne encephalitis by Lev Aleksandrovich Zilber more than 85 years ago [4]. The area of tick-borne encephalitis virus coincides with the area of the main carriers of the pathogen – ixodid ticks of the species: *Ixodes persulcatus* and *Ixodes ricinus*, in some areas *Ixodes pavlovskyi*, additionally representatives of ticks of the genera *Haemaphysalis* and *Dermacentor* [17].

The TBE virus belongs to the *Flaviviridae* family, *Flavivirus* genus, *TBEV* species. TBE is caused by TBEV virus subtypes, such as the European subtype (*TBEV-Eur*), Siberian subtype (*TBEV-Sib*) and Far Eastern subtype. The Far Eastern subtype of the TBE virus affects the severity and outcome of the disease [17, 18].

The unknown disease diagnosed in 1922 as "toxic flu" in the taiga regions

Fig. 1. Subjects of the Russian Federation endemic for tick-borne viral encephalitis in 2023 (Figure created by V.I. Ratnikova using the website https://www.supervisited.ru)

of the Far East was investigated by the People's Commissariat of Health expedition in 1937 [20, p. 32-33], the etiological factor of the disease was determined - a virus. In 1938, the first inactivated vaccine based on the Far Eastern strain Sofjin was created [5]. In 1941, for emergency prevention of TBE, it was proposed to use serums obtained from convalescents and hyperimmunized animals [18, p. 1]. During this period, vaccination against TBE was experimental and tested on the territory of the Oborsky forestry enterprise in the Khabarovsk Territory [5]. In 1954, production of a vaccine against TBE began at the Tomsk Research Institute of Vaccines and Serums of the USSR Ministry of Health based on inactivated TBE virus obtained on the brain tissue of white mice, and then on chicken embryos.

In 1964, Academician of the USSR Academy of Medical Sciences M.P. Chumakov and his colleagues registered a new technology for processing the TE virus and an inactivated vaccine [2], which was used until 1984, when a new production strain of the TE virus No. 205, isolated in Khabarovsk Krai in 1973 by Professor L.A. Vereta and co-authors, was proposed [3]. The new vaccine had immunogenic activity against taiga encephalitis [1]. In 1966, vaccination against TBE was established as a preventive measure by the order of the USSR Ministry of Health dated 28.12.1966 N 990 "On the timing of preventive vaccinations for children and adolescents." In 1973, a new order was issued on the timing of preventive vaccinations, which divided them into planned vaccinations and vaccinations for epidemiological indications by decision of the Ministry of Health of the Union Republic. Vaccination against TBE was included in the group - for epidemiological indications. In 1980, a vaccination calendar was introduced, and from 14.01.1980, vaccination against TBE became routine, the vaccination start date was from 4 years, and a line appeared on revaccination - annually for 3-4 years. Routine vaccination against TBE was carried out for the population and individual professional groups living in endemic or enzootic territories (see Fig. 2). In 1990, NPO Virion (Tomsk) produced an sorbed inactivated vaccine against tick-borne encephalitis. In 1997, the order "On the calendar of preventive vaccinations" dated 18.12.1997 N 375 was approved. Vaccination against tick-borne encephalitis was included in the Calendar of Preventive Vaccinations for Epidemiological Indications from the age of 4 and with annual revaccination for 3 years. Subsequently, the Calendar was repeatedly changed - in 2001, 2011, 2014 and 2021 [14]. The genesis of changes concerning vaccination against tick-borne encephalitis in Russia is shown in Fig. 2.

The genesis of changes to the vaccination calendar regarding vaccination against tick-borne encephalitis shows that the indications of exact dates of vaccination and revaccination were removed in 2011, possibly due to the significant diversity of vaccines. As for the contingent, since 2001 the list of jobs associated with the risk of tick-borne encephalitis has been clarified, and has remained virtually unchanged since 2001.

In SanPiN 3.3686-21, the contingent of people who must undergo preventive vaccinations against tick-borne encephalitis is expanded (see Fig. 3).

The list is open. It specifies that the adult population is vaccinated taking into account the risk of disease, occupation or type of activity. If in the Calendar vaccination is required for persons working with live cultures of the tick-borne encephalitis pathogen, then in SanPiN 3.3686-21 - the activity is associated with the use of the TBE. In addition to these two acts, there is a list of works, the performance of which is associated with a high risk of contracting infectious diseases and requires mandatory preventive vaccinations [15] (hereinafter referred to as the «List»). This List is approved by the Gov-

ernment resolution and includes, among other things, the works established by the Calendar regarding construction, logging, work with live crops, etc. Thus, the question arises of who exactly is subject to mandatory vaccination and whether there is a legal possibility of refusal. In addition, the state guarantees free preventive vaccinations included in the Calendar within the framework of the compulsory medical insurance program. Regarding TBE, there is no regulation on the indications for its implementation, for example, poliomyelitis.

The provisions of Article 10 of the Federal Law "On Immunoprophylaxis of Infectious Diseases" (hereinafter referred to as Federal Law No. 157) [11] establish the mandatory decision-making on vaccinations by the chief state sanitary doctors of the Russian Federation and/or constituent entities of the Russian Federation in the event of a threat of infectious diseases that pose a danger to others [16]. Additionally, this norm is reflected in subparagraph 6 of paragraph 1 of Article 51 of the Federal Law "On the Sanitary and Epidemiological Welfare of the Population" [9] (hereinafter referred to as Federal Law No. 52).

Despite the above provisions of the laws, in practice there are several options for implementing mandatory vaccination. One of them is based on the fact that the provisions of the List and Article 5 of Federal Law N 157 are the norms on the basis of which the obligation to be vaccinated arises for those specified in it, regardless of the epidemiological situation under the threat of suspension or refusal to hire (Article 5 of Federal Law N 157). The employer issues an order on vaccination with a local definition of the list of employees subject to vaccination. In the absence of a complicated epidemiological situation, a category of persons not provided for in the List has the right to refuse preventive vaccinations [13].

The conditions for mandatory vaccination are:

1) the work is included in the List;

2) the employer requires vaccination specified in the Calendar for the required categories of employees, since he is obliged to carry out sanitary and anti-epidemic (preventive) measures (Articles 11, 25, 29, 35 of Federal Law N 52, SanPiN 3.3686-21);

3) the Calendar contains an indication of such categories of citizens. For example, item 9: work with patients with infectious diseases; item 10: work with live cultures of pathogens of infectious diseases; item 11: work with human blood and biological fluids. Employees of

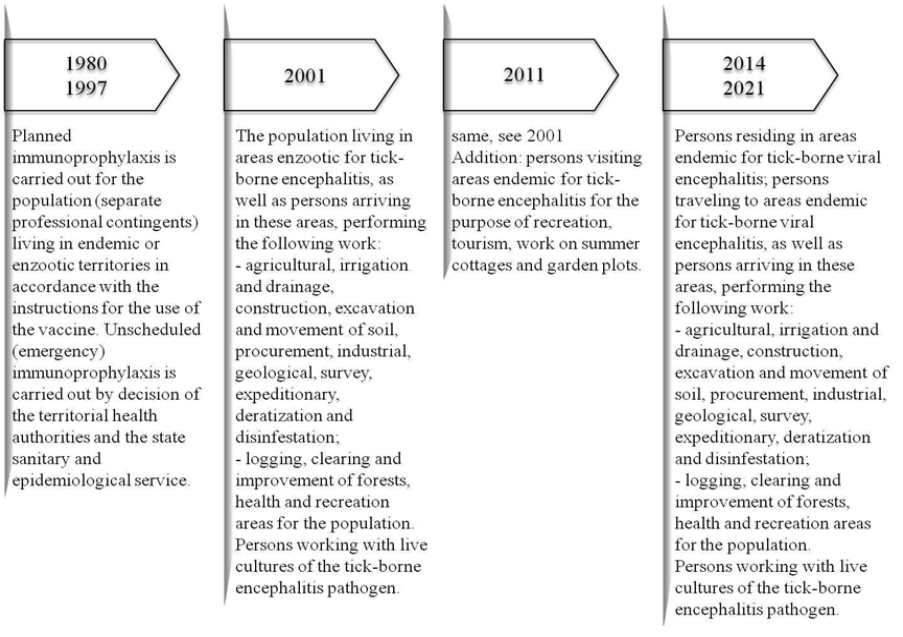

Fig. 2. Comparison of the contents of the Calendars of Preventive Vaccinations for Vaccination against Tick-Borne Encephalitis from 1980 to 2021

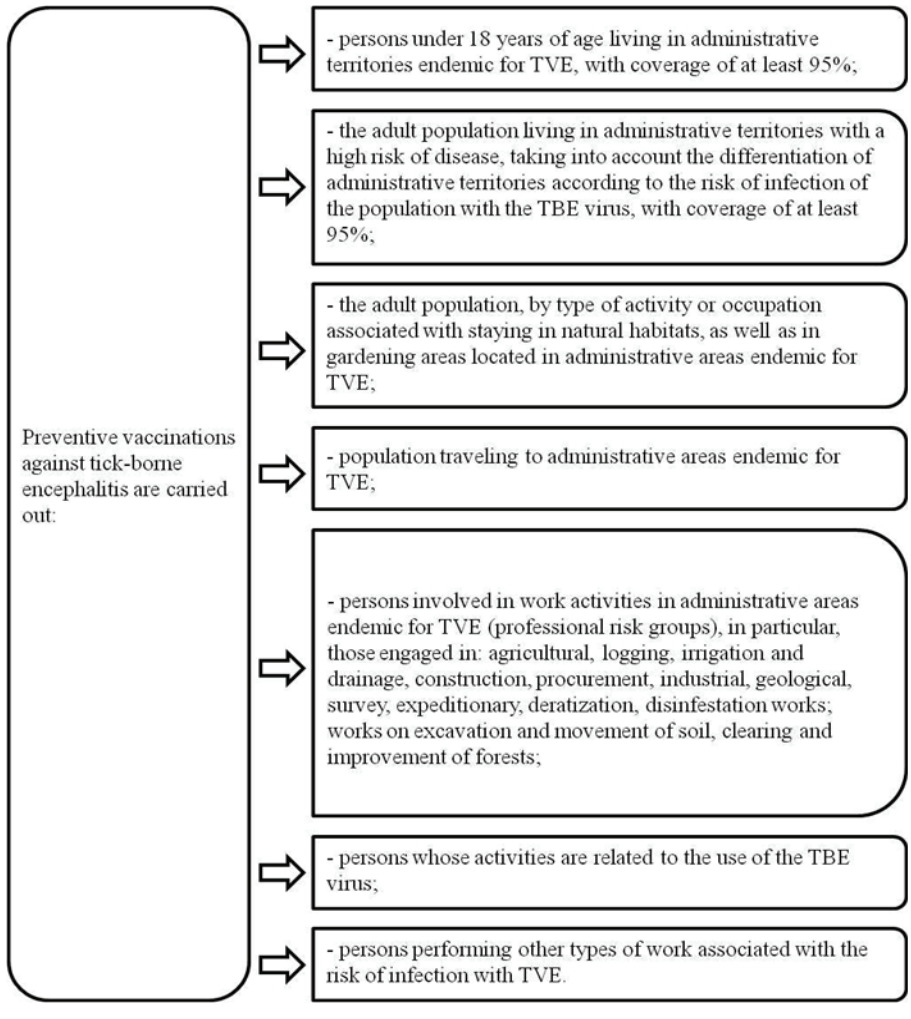

Fig. 3. List of persons who are given preventive vaccinations against tick-borne encephalitis (TBE), according to SanPiN 3.3686-21 "Sanitary and Epidemiological Requirements for the Prevention of Infectious Diseases"

medical organizations are required to be vaccinated against hepatitis B; diphtheria and tetanus; measles (36-55 years); flu (adults); hepatitis A, etc.

Analyzing these acts, we can identify the following: the employer is obliged to develop and implement sanitary and anti-epidemic (preventive) measures, which include preventive vaccinations. Which ones exactly are not specified, since the norm refers to Federal Law No. 157. At the same time, there are two emphases: the type of activity of the organization and the cases of paragraph 2 of Article 50 of Federal Law No. 52 [10, 17].

Based on this chain of legal norms, it turns out that much depends on the presence of a threat of occurrence/spread of diseases. Vaccination against TBE becomes mandatory if the subject has issued a corresponding decree of the chief sanitary doctor on vaccination of certain categories of citizens.

The conditions for the commencement of such vaccination are:

1) a resolution/act of the chief sanitary doctor on the vaccination of individual citizens or categories of citizens;

2) the employer requires vaccination specified in the Vaccination Calendar for Epidemiological Indications. If the employee does not have confirmed contraindications to vaccination and refuses the procedure, the employer is obliged to suspend him from work (Article 76 of the Labor Code of the Russian Federation).

Despite the above, according to the act of the chief sanitary doctor, immunoprophylaxis against any disease from the Calendars may be recommended.

Conclusion. The threat of epidemic diseases creates the need to maintain public health at the proper level, for which purpose the employer is obliged to comply with sanitary regulations, and citizens are obliged to take care of their health. Taken together, this leads to a restriction of the right of citizens to refuse vaccination, which will not be a violation of human rights and freedoms under paragraph 3 of Article 55 of the Constitution of the Russian Federation.

The above legal aspects create a medical and social problem, since the lack of vaccination in some cases may entail the violation of the rights of other persons entering into industrial contact with a potentially unprotected subject. A decrease in the number of vaccinated persons may entail a threat of an increase in the incidence of the disease in an area endemic for TBE. A legal problem arises - the inability of workers to exercise the right to refuse vaccination. The lack of vaccinations among workers, if their mandatory implementation is provided for by law, entails administrative liability of the employer under Art. 6.3 of the Code of Administrative Offenses of the Russian Federation, paragraph 1 - a fine of up to 10-20 thousand rubles, suspension of the activities of legal entities for up to 90 days.

Discussion requires clarification of the legal norms regarding the list of persons from professional risk groups and the method of implementing their right to free vaccination, indicating the operational epidemiological situation for tick-borne encephalitis and determining the degree of risk of infection with tick-borne encephalitis in each subject of the Russian Federation. Regarding mandatory vaccination against viral tick-borne encephalitis, the start date of vaccination and the list of contraindications require clarification.

The authors declare no conflict of interest in the submitted article.

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AWARENESS OF HEALTHCARE PROFESSIONALS ABOUT THE RISKS OF OCCUPATIONAL INFECTION WITH HEMOCONTACT INFECTIONS: QUESTIONNAIRE RESULTS

Cases of the introduction of pathogens of hemocontact viral hepatitis and HIV infection into medical organizations pose a potential threat of infection of medical workers in the course of their professional activities. The purpose of the study is to study the awareness of medical professionals about the dangers of occupational infection. Within the framework of this study, a survey of medical professionals was conducted according to the author's questionnaire. The results of a survey of 1,046 respondents on the issues of awareness of medical professionals in ensuring safety in the provision of medical care are presented. Cases of workplace emergencies were identified among 14.2 % of the surveyed medical workers. At the same time, 28.1 % do not register emergency cases in the "Emergency Register for medical procedures", and 10.7 % of doctors do not have vaccination against viral hepatitis B. This requires the development of measures to prevent and raise awareness of occupational infection among medical professionals.

Keywords: safety of medical workers; questionnaire; awareness; hemocontact infections; HIV; hepatitis B; hepatitis C

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Introduction. The relative indicator of the number of newly detected cases of HIV infection, as well as the incidence rate per 100 thousand population of the Altai Territory (80.7 and 65.5, respectively), according to the federal statistical observation form No. 2, "Information on Infectious and Parasitic Diseases," exceeded the average Russian value. In the Altai Territory, there was an increase in the proportion of viral hepatitis C in both the structure of the incidence of acute (48.57%) and chronic viral hepatitis (57.54%) [1]. The incidence of CHB and CHC in AK tended to increase by 2.2 times and 7.2 times, respectively (from 2000 to 2023) [1]. From 2013 to 2023, there was a 1.2-fold decrease in the incidence of HIV infection among medical workers in the Altai Territory (from 22.6 ± 0.2 0/0000 to 26.0 ± 0.2 0/0000, $p \leq 0.00001$) [2].

In the Krasnoyarsk Territory in 2023, 2295 cases of HIV infections were de-