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BIOLOGICAL SECURITY AND PREVENTION OF THE DEVELOPMENT OF EPIZOOTICS IN UKRAINE IN THE CONTEXT OF THE RUSSIAN-UKRAINIAN WAR

БІОЛОГІЧНА БЕЗПЕКА ТА ЗАПОБІГАННЯ РОЗВИТКУ ЕПІЗООТІЙ В УКРАЇНІ В УМОВАХ РОСІЙСЬКО-УКРАЇНСЬКОЇ ВІЙНИ

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Military operations on the territory of Ukraine are accompanied by significant changes in ecological and sanitary-epidemiological conditions. The destruction of settlements, infrastructure facilities, the undermining of dams, etc., all this leads to a large-scale transformation of the hydrological regime, flooding and subsequent drainage of significant territories, changes in the structure of soil and water ecosystems. These

processes form a complex of biological risks that require systematic analysis within the framework of the state biosafety policy [1, p. 3–4]. The modern approach to assessing such risks is based on the One Health concept, which involves an integrated understanding of the interrelationships between human, animal, and environmental health [2, p. 1].

The war makes its adjustments in ensuring a stable epizootic and epidemiological situation with many pathogens that are factors of zoonoses. Control of biological threats at the national level plays a critically important role. The urgent task for veterinary and medical specialists is to predict the epidemiological situation that may await Ukraine due to the occupation of a significant territory, the undermining of the Kakhovka hydroelectric power station, and the shallowing of the Kakhovka reservoir. This is the main reason for the destruction of a harmonious ecosystem: people ↔ animals ↔ plants.

Due to the destruction of the country's medical and veterinary infrastructure, the population and animals cannot receive proper assistance in the event of an outbreak of infections. Contamination of water resources, an increase in the number of stray animals, and a lack of preventive measures to prevent disease outbreaks – all this poses a challenge to specialists responsible for biological security.

There is currently no reliable information about the condition of veterinary laboratories and the equipment of existing medical facilities in the temporarily occupied and flooded territories. Small private farms have been destroyed, and animals have been left unattended.

Bioterrorism is the use of biological weapons to cause death, fear, destruction, or various upheavals to achieve political, ideological, social, and religious goals [3, p.16–19].

During World War I, there were attempts to use such biological agents as the bacteria Bacillus anthracis (the causative agent of anthrax) and Pseudomonas mallei (the causative agent of glanders) to kill horses and livestock. [4, p. 1–8].

The threat of bioterrorism is becoming increasingly visible in modern security policy, especially in the context of the war unleashed by Russia. The flooding of the Dnieper region led to ecocide: victims among people, domestic and wild (protected) animals, a blow to the environment, an increase in the level of diseases among people, animals, and plants. The destruction of the reservoir, mining, and bombing of territories caused shifts in the ecological system of the entire south of Ukraine: Zaporizhzhia, Odessa, Mykolaiv, and Kherson regions. This, in turn, has increased the migration of animals, birds and insects, which can be carriers of many infectious agents. rabies, anthrax, leptospirosis, botulism, classical and African swine fever, tuberculosis and paratuberculosis, salmonellosis,

tetanus, etc. And this is not a complete list of diseases that should be expected due to military actions. The emergence of epizootics is only a matter of time.

Anthrax is a soil-borne zoonotic disease caused by a pathogen found on all continents of the globe [4, pp. 1-8]. Anthrax is potentially contagious to most mammals. The bacterium survives for decades as spores in meadows contaminated with abandoned or buried carcasses of previously deceased animals. People usually become infected with anthrax through contact with infected animals or through occupational or dietary exposure to contaminated animal products such as meat, hair, or skin. The cutaneous form of anthrax is more common in humans, accounting for up to 95% of cases. It is estimated that 2,000–20,000 cases of human anthrax are recorded annually worldwide [5, p. 2799–2806].

There are more than 11,000 anthrax burials in Ukraine. The threat of the disease is constant. Occupied territories with burials of anthrax corpses of animals pose a threat of spreading the pathogen. Anthrax spores are resistant to temperature fluctuations and many disinfectants. Anthrax spores germinate at positive temperatures, which coincides with the beginning of the spring period. Currently, in the combat zone, there is a danger of destruction of preserved places and dispersion of contaminated soil [6, p. 2].

Old burials pose a potential danger, since most of them are located in areas where there are no longer settlements, or are not marked on maps, so the new generation of veterinary specialists does not know about their existence. The largest number of old burials is concentrated mainly in the northern, central, southern and partly in the western regions of Ukraine. For example, in the territory of Donetsk region there are 47 old anthrax burials (total – 80), and in Luhansk region – 142 (total – 275). Their number is of concern to veterinary medicine specialists, especially for predicting the epizootic situation with anthrax. [7, p. 34–41].

Conclusions. The destruction that occurs in the conditions of the Russian-Ukrainian war causes a complex of ecological changes that potentially affect the epidemiological situation. Ensuring biological safety requires an integrated interdisciplinary approach to restoring sanitary and veterinary monitoring systems, developing modern methods of molecular diagnostics and maintaining an adequate level of preventive immunization. For this purpose, it is necessary to produce or purchase the necessary number of vaccines, serums, test systems and disinfectants to protect and create a reliable predicted epidemiological and epizootic situation in Ukraine. Neglecting these factors jeopardizes the national security of the state and the emergence of particularly dangerous diseases.

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