

**ACTUALITY OF THE APPLICATION OF THE HEALTH TECHNOLOGY
ASSESSMENT IN POPULATION VACCINATION**

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Immunization is the basis of the saving of the world's population health. Today it is one of the important issues of each state. In 1974, WHO has developed an expanded program of immunization in order to reduce the incidence of the most common infectious diseases such as whooping cough, diphtheria, tetanus, polio, measles and tuberculosis. The main tasks of this program were: reduction of morbidity and infant mortality; increase in the duration of human life; active longevity; the destruction of some infections. Ukraine joined it in 1993 when the first national immunoprophylaxis program had been adopted [2].

Vaccination or immunization (lat. immunis – free, exempt from anything) – the most effective and cost-effective protection against infections. It consists in the entry into the body of a given antigen in a non-aggressive form, but in immunogenic doses for induction of a protective immune response and the formation of immune memory. Immunization provides active and passive biological resistance to certain infectious diseases [3]. In order to achieve the best results in the area of saving the life of the population, it is necessary to continuously monitor the incidence of infectious diseases and actively implement methods for preventing their spread. Immunoprophylaxis is the best way to do this.

The main strategic objectives and activities of the health sector in relation to the planned vaccine prophylaxis of the world's population are defined in the Global Vaccines Action Plan (GVAP), which was approved in May 2012 at the 65th session of the World Health Assembly. This document describes the period of 2011-2020 as the Decade of Vaccines. The goal of the GVAP is to improve health by spreading the full benefits of immunization to the world's population to 2020 and beyond. According to the recommendations of the WHO, for the establishment of an appropriate level of population immunity, the level of coverage by the preventive vaccinations for each recommended nosology should be 95% [2]. Low immunization rates have a real and immediate impact on the population. Each year, due to vaccination against diphtheria, measles, pertussis and tetanus, it is possible to prevent from two to three million child deaths worldwide. Immunization also plays an important role in the fight against infectious diseases. Vaccines prevent the spread of the disease, not only among immunized, but also among unvaccinated people, through the process known as “collective immunity”. Tetanus, for example, is infectious and can prevent vaccination, but it is non-contagious, therefore its population immunity does not concern it. Therefore, mass immunization has an added benefit, which gives more control over the diseases. Developing an effective vaccine, for example, helped completely eliminate smallpox, even in the absence of 100% coverage [1, 3]. Vaccines also provide protection not only from the diseases against which they are developed, but also from the related problems. So, the measles vaccine reduces the incidence of dysentery, bacterial pneumonia and limits other complications; a human papillomavirus vaccine protects women from cervical cancer. Hence, immunization is more cost-effective than treating infectious diseases and fighting their outbreaks.

According to official data from WHO and UNICEF, Ukraine ranks 52nd among the 71 countries of the world in terms of vaccination rates, with a total of 26 doses of vaccines per 1000 population. The leaders in vaccination are Malta, Canada and the Republic of Korea. These countries have doses of vaccines that are about 13 times higher than those of Ukraine.

In Ukraine, according to the National Preventive Vaccine Calendar, a mandatory age-based vaccination is required for 10 infections: diphtheria, pertussis, measles, poliomyelitis, tetanus, tuberculosis, rubella, epidemic mumps, hepatitis B and hemophilic infection (Order of the Ministry of Health of Ukraine, dated 18.05.2018, No. 947, Order of the Ministry of Health of Ukraine, dated 16.09.2011, No 595) [1].

According to the ATC classification system (Anatomical Therapeutical Chemical classification) immunobiotics used for scheduled vaccine prophylaxis belong to the group J – Antimicrobials for systemic use, and form a subgroup of the second level J07 – Vaccines, which are further subdivided, namely: J07A – Bacterial vaccines, J07V – Viral Vaccines and J07C – Combined bacterial and viral vaccines.

According to the State Register of Medicinal Products of Ukraine, in January 2019, 40 trade names of drugs for vaccination have been registered on the domestic market, 16 (40%) of which are bacterial vaccines; 17 (42.5%) – viral and 7 (17.5%) – combined vaccines. Analyzing immunobiological preparations for planned vaccine prophylaxis by subgroups, it has been established that 11 vaccines have been registered for vaccination against diphtheria, pertussis, tetanus, of which mono-component vaccines: containing diphtheria toxoid – 1 vaccine, tetanus toxoid – 2 vaccines, two-component containing both diphtheria toxoid and tetanus toxoid – 4 vaccines, and three component vaccines – 4 vaccines. For vaccine against tuberculosis, 3 vaccines by trade names have been registered. Vaccines against *Haemophilus influenzae* B contain 2 trade names. Vaccination against measles, mumps and rubella is a subgroup of viral vaccines with 5 trade names. Vaccines against hepatitis B are presented on the market by 7 trade names. Vaccinations against poliomyelitis, which are also part of the viral vaccines, have 5 trade names. The last studied subgroup is a combined vaccine. It has 7 trade names. An analysis of the range of immunobiological drugs for the planned vaccine prophylaxis by the producer countries has shown that the largest share of the market segment belonged to foreign producers, namely 33 trade names, or 82.5% of the market, and only 7 trade names (17.5%) have been registered by domestic producers, that determines the import dependence of the vaccine market in Ukraine. The leading place among the foreign producer countries belongs to Belgium, namely 14 vaccines, accounting for 35% of the registered vaccine market, the second place – India 4 vaccines, or 10%, the third – Hungary 3 vaccines – 7.5%, next – Bulgaria, USA, Korea, Denmark and France, which make up 5% of the market (by 2 vaccines) and the smallest share, namely 2.5%, belongs to Poland and the Slovak Republic, producing 1 vaccine for the Ukrainian market.

To summarize, the tendencies established by the results of the study determine the urgent need for the application of the basic approaches and methods health of th technologies assessment (namely vaccines assessment) in order to increase the availability of vaccines to the population, which will result in an increase of the population immunization level in Ukraine, which will ensure a reduction of the economic burden of diseases treating and complications that can be prevented by timely vaccination.

References

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