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## INDIVIDUALIZATION OF VACCINATION AS AN INTEGRAL PART OF PERSONALIZED MEDICINE TODAY

### ІНДИВІДУАЛІЗАЦІЯ ВАКЦИНАЦІЇ ЯК НЕВІД'ЄМНА ЧАСТИНА ПЕРСОНАЛІЗОВАНОЇ МЕДИЦИНИ СЬОГОДЕННЯ

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The beginning of the third millennium was marked by the emergence of a new project in medicine – predictive and preventive personalized medicine (PPPM).

Predictive Preventive and Personalized Medicine is defined as “a rapidly evolving field of healthcare based on an integrated, coordinated, individualized approach to analyzing the onset and course of disease for each patient (or as “integrated medicine that includes the development of personalized genomics – based treatments, testing for predisposition to diseases, prevention, combining diagnostics with treatment and monitoring of treatment”. From the standpoint of genetics, two characteristic foundations of modern medicine are defined: an individual approach to the patient (prevention, treatment and diagnosis of any disease is based on the genetic characteristics of each subject, his genetic uniqueness) preventive (predictive) nature of medicine [1].

The personalization of medicine is one of the key trends in the development of global healthcare, which is associated with the prospects for the transition from a reactive model to a proactive, predictive and preventive one. Viewing modern medicine as “expensive, reactive, inefficient, and largely focused on one format that suits all and in all cases”, proponents of the new approach also emphasize the expansion of patient participation in health care and the establishment of “patient-centric” strategies. Expected results – effective population screening, early childhood prevention, identification of health risks, patient stratification for optimal therapy planning, prediction and reduction of adverse effects of drug therapy and drug interactions, creation of individual disease profiles – all this allows us to consider personalized medicine as medicine. future. At the same time, expectations and new prospects open up fears and new opportunities for strengthening the medicalization of society [2, p. 210].

O The main obstacle in the development of personalized medicine, along with the still high cost of the necessary research, is the lack of training of specialists, a large gap between the new valuable diagnostic and therapeutic opportunities it provides and the ability of practitioners to evaluate and apply them in practice, as well as the lack of objective data. proving the usefulness for the patient of presymptomatic testing of hereditary predisposition to multifactorial diseases. Moreover, there is no information about how and what environmental factors provoke the development of the disease in a particular person.

The task of personalized medicine is to identify, describe, designate, and compile a complete picture of the patient’s condition. But even if the doctor will have all the information about the patient’s health, informing the patient about his current and predicted condition will be of paramount importance. This process includes the possibility of incorrect (inadequate understanding of the doctor) interpretation of information, multiplied by the need to make a decision that affects the change in the patient’s usual way of life. Technologies can work clearly, accurately, the doctor’s recommendations will be exhaustive, but whether or not to execute them will depend on the decision of each patient [3, p. 9].

What will make the patient comply with the doctor’s recommendations? External and / or internal motivation: internal motivation will prevail if a person understands and accepts the seriousness of the danger to his health, to maintain / change his usual way of life, that is, a person is sick and seeks to alleviate, change, correct his situation. External – pressure from outside. The activity of a doctor is quite strictly regulated by legal and ethical standards. The patient is, in general, free in his behavior and protected in his freedom by

the principles of bioethics, for example, the principle of respect for the autonomy of the patient and the existing legal norms, among which is the duty of the doctor to obtain voluntary informed consent. The doctor may act according to a regulated normative order, but the patient will rather act in accordance with his social and spiritual attitudes, adequate to the state of health. However, sometimes the fourth English “P” (from the English participation – participation) is added to the three “Ps” in the name of modern medicine, implying that the patient participates in making a decision regarding his treatment and, among other things, takes part of the responsibility for medical intervention oneself, then it is worth thinking about changing the traditional relationship between the doctor and the patient.

Vaccination personalization is the creation of safe and effective immunity in each vaccinated person through the additional administration of vaccines and the use of immunological correction tools for the development of post-vaccination immunity.

The preventive function of vaccination is likely to be realized most effectively when the population approach is complemented by an individual approach, and in the near future, with the help of genetic studies of integral medicine, which will help to significantly reduce the risks of side effects of vaccination. Today, in the context of constant transport migration of people within the country and around the world, it is more than ever necessary to establish a dialogue between these two approaches – deontological on the part of the doctor and mythologized fear on the part of parents. From an ethical point of view, it is advisable not only to explain to parents all the risks of both refusal of vaccination and vaccination itself, but also to conduct a medical examination of each individual child at the request of the parents. In the context of the ubiquity of the mass media and the Internet, the old methods of one-sided persuasion and propaganda seem to be ineffective and questionable from an ethical point of view. It is desirable to prevent mass refusals of vaccination in such a way that parents are sure that the risks of vaccination for their children are minimized.

When discussing the issues of immunological individualization of vaccination and developing the principles for its implementation, it is important to agree on the very concept of immunological individualization of vaccination. The following definition can be given: immunological individualization of vaccination is a correction of the immune response to vaccines using various means and methods of vaccination in order to create sufficient immunity in each vaccinated person. For such a correction, you can use different doses and vaccination schedules, as well as additional means of immunomodulating the immune response.

The immune response to vaccination varies from person to person. Individuals who respond poorly to one vaccine may respond well to another vaccine. Of paramount importance in this phenomenon are the genetic characteristics of the organism, which have been well studied in experiments on inbred mice using synthetic peptides containing 8-12 amino acids as antigens. Any large molecular antigen used to prepare a vaccine contains several such determinant groups, each of which causes its own immune response. The immunological response to a vaccine is essentially the sum of the responses to the peptides, so the differences between strong and weak vaccine responsive groups are smoothed out. Ideally, it is desirable to have an idea of the strength of a person's immunity to a particular infection even before vaccination. There are methods for mathematical prediction of the immunological efficacy of vaccination (revaccination) based on the immunological monitoring of large groups of people. However, the problem of predicting the development of immunity to a vaccine in individual people is practically not developed. The difficulties of such forecasting lie in the fact that the immune response to a vaccine is always specific, the body reacts differently to different vaccines. In the practice of vaccination, it is impossible to arbitrarily change vaccination schedules, however, even now, in the instructions for the use of vaccines for the prevention of certain infections (rabies, tularemia, Q fever, etc.), it is prescribed to administer additional doses of drugs to recipients, provided that the level of antibodies after the previous vaccination did not reach protective titer.

Advantages of individualization of vaccination: collective immunity is formed in a shorter period, the circulation of infectious agents is reduced, the number of cases of bacteriocarrier and virus carrier is reduced, a large contingent of the population will be protected, the other contingent will be spared from hyperimmunization, the frequency of adverse reactions during vaccination will decrease, many ethical problems of vaccination will be solved.

Immunological personalization of vaccination can be carried out by selecting a vaccine among similar vaccines, choosing doses, vaccine administration schemes, using adjuvants and other immunomodulating agents. Naturally, each vaccine has its own characteristics, and each vaccine preparation requires its own tactics of immunological correction. At the same time, general methods and means of correcting the immune response to various types of vaccines can be recommended.

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administration schemes, using adjuvants and other immunomodulating agents. Naturally, each vaccine has its own characteristics, and each vaccine preparation requires its own tactics of immunological correction. At the same time, general methods and means of correcting the immune response to various types of vaccines can be recommended. In conclusion, it should be noted that the problem of immunological individualization concerns not only vaccines, but also other immunobiological drugs, primarily various immunomodulators, which are widely used for the prevention and treatment of many types of human pathology [4, p. 216].

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