

## **National program for the introduction of personalized and preventive medicine in the Republic of Kazakhstan**

### **Relevance**

Today, all developed and rapidly developing countries in the world are investing heavily in scientific research in the field of personalized and preventive medicine. Today, it is a generally recognized and indisputable fact that social and environmental factors have the greatest impact on human health, that is, diet, the presence of bad habits, regularity of physical activity, environmental pollution, professional influences, income level, degree of education, social environment, etc. affect the risk of major diseases (CVD, oncology, DM II, respiratory) to a greater extent than all other factors combined.

In this context, the Republic of Kazakhstan is still a "white spot" on the global epidemiological map, especially from the point of view of the epidemiology of chronic non-communicable diseases (CNCD). In our country, the medical statistics of CNCD are based on standardized indicators that do not allow comparing them with those of other countries, as well as correctly conducting a comparative analysis of regional indicators. The true incidence rates should be determined as a result of national epidemiological studies, which have not been regularly conducted in our country.

The COVID-19 pandemic has raised a number of important practical questions for researchers and society as a whole, including what percentage of the population has acquired immunity after infection, what is the picture of the true prevalence of this infection by region and in individual population groups, what factors caused the risk of infection.

Thus, as a result of epidemiological studies, not only true indicators of the prevalence of diseases, including COVID-19, will be obtained, but also the awareness of patients about the existing disease, treatment coverage will be studied and the level of control of the treatment will be established - the achievement of target levels. All this will be analyzed in relation to the mortality rates obtained, which will also allow us to draw conclusions about the contribution of medical care to the health indicators of the population.

**Aim:** To develop management solutions and digital tools based on the principles of personalized medicine and public health aimed at the prevention and treatment of significant diseases in the Republic of Kazakhstan

**Expected results:** Epidemiological studies of the impact of socio-economic, psychosocial and behavioral factors on the health of the population of the Republic of Kazakhstan will be conducted, followed by the development of management decisions.

### **Research Group**

1. A.A. Turmukhambetova – scientific supervisor, Doctor of Medical Sciences
2. F.U. Nildibaeva - Research assistant of the Department of Internal Diseases
3. D.N.Sheryazdanova - Research assistant of the Department of Internal Diseases
4. V.F.Parakhina - Master
5. N.M. Zhanbasinova - Candidate of Biological Sciences

### **Publications**

1. Dmitriy Babenko, Anar Turmuhambetova, Tim Sandle, Antonella Chesca In silico comparison of molecular typing methods for characterization of *Staphylococcus aureus* // *Acta Medica Mediterranea*. - 2016. - Vol.32. - P.1651-1657 (IF 0,154; Web of Science)

2. Marchenko, A.B., Nildibayeva, F.U., Sorokina, M.A., Laryushina, E.M., Turgunova, L.G., Turmukhambetova, A.A. Level of FABP3, FABP4, Nt-proBNP and total cardiovascular risk in the population of Central Kazakhstan // *Macedonian Journal of Medical Sciences*. - 2017. – Vol.5 (1). – P.33-36 (IF 0,162; Scopus)

3. Babenko Д.; Turmuhambetova, A.; Sandle, T.; Pestrea, S.A.; Moraru, D.; Chesca, A. IN SILICO COMPARISON OF DIFFERENT TYPES OF MLVA WITH PFGE BASED ON

PSEUDOMONAS AERUGINOSA GENOMES // Acta Medica Mediterrane. – 2017. - Vol. 33, Issue 4. – P.607-612 (IF 0,196; Web of Science)

4. L. Turgunova, Ye Laryushina, A. Turmukhambetova, B. Koichubekov, M.Sorokina, and I. Korshukov The Incidence of Depression among the Population of Central Kazakhstan and Its Relationship with Sociodemographic haracteristics // Behavioural Neurology. – 2017. – Vol.7, Article ID 2584187, 7 pages (IF 1,311; Web of Science)

5. Turgunova, L., Koichubekov, B., Turmuhambetova, A., Sorokinam, M., Laryushina, Y., Korshukov, I.,Shalygina, A., Baidildina, B. Biochemical markers of hypertension, prehypertension | [Marqueurs biochimiques de l'hypertension, prehypertension] // Annales de Cardiologie et d'Angeiologie. – 2018. – T. 67(3). – P.161-166 (IF 0,302; Web of Science)

### **Achieved results**

Participated in the design of a sample of a cross-sectional study and a study of the causes of mortality. The LEC has been approved to conduct a cross-sectional study of the adult population of the Karaganda and Kostanay regions. We participated in the development of a survey questionnaire that allows us to assess demographic data, behavioral indicators, the history of existing diseases, adherence to a healthy lifestyle, passing screening examinations and vaccination, as well as taking into account physical examination data. The analysis of screening survey data in the Karaganda region for 2017 was carried out. According to the official statistics of the Health Department of the Karaganda region for 2017, a cluster analysis of morbidity indicators, screening examination parameters for the identification of risk factors for NCDs was carried out, which allowed to combine settlements into clusters in order to determine priority measures in a particular locality in the future.

### **Information for potential users**

Target consumers of the results obtained: public health