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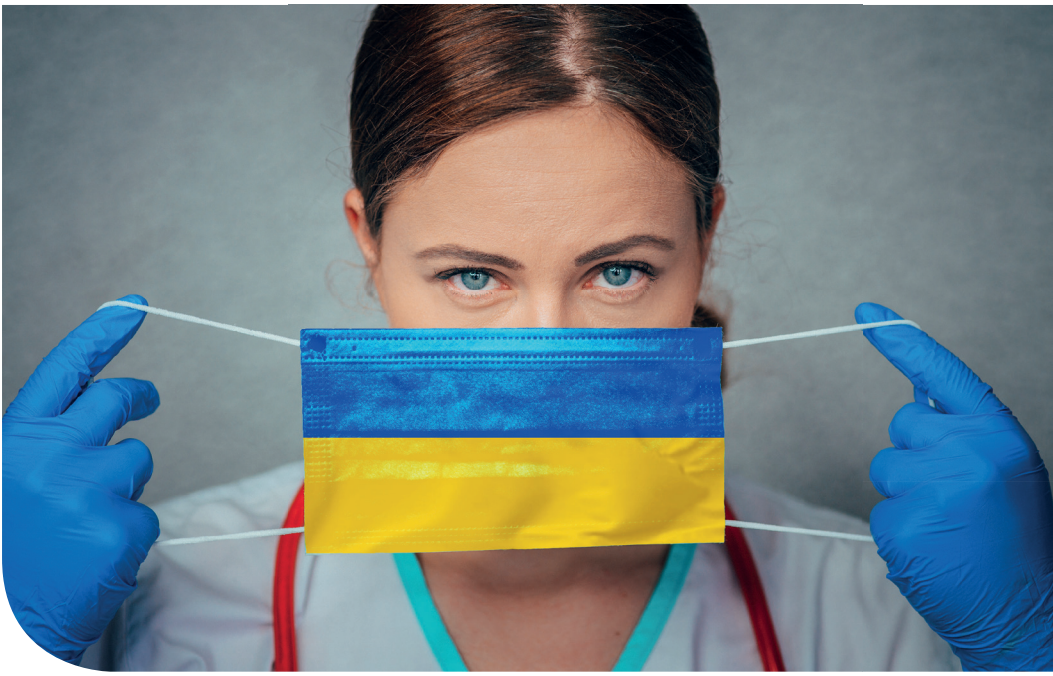
Public Health in Ukraine



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Contents

Editorial

The present volume 5 of the Akkon series of publications is dedicated to the topic of public health in a very important but neglected partner country to the European Union: Ukraine. It is aimed at our national and international project partners, as well as anyone interested in scientific and practical concepts and experiences for preventing disease, prolonging life, and promoting health across regional or national boundaries.

Despite its rich culture, great economic potential, high level of education and last but not least its sheer size – it is the largest state whose borders lie entirely within Europe and is 1.7 times the size of the Federal Republic of Germany – Ukraine seems far away in perception and awareness. Publications on recent dramatic events, such as the Ukraine conflict or the Crimea crisis, have done little to change this. In fact, the armed conflict in the eastern Ukrainian oblasts of Donetsk and Luhansk, which has been ongoing since February 2014, is still a burdening feature of many political and economic difficulties destabilizing the country. News coverage of health issues in Ukraine has recently been dominated by highly critical reports on the handling of the Covid 19 pandemic. This pandemic exacerbated existing weaknesses in the Ukrainian health care system, but at least it did not create any new ones.

Ukraine went independent in 1991 with the characteristics of the Soviet health care system. Since then, reform of the obviously inefficient system has been on the agenda. Statistics still show an alarming picture: The average life expectancy of Ukrainians, at 71.3 years, is ten years lower than that of countries in Central and Western Europe. In terms of tuberculosis-related deaths, the country occupies the sad top spot in Europe. The conflict in the east is fuelling the TB epidemic. The biggest challenge for the Ukrainian health system is the country's hybrid epidemiological profile: Most people die from noncommunicable diseases, but infectious diseases are still not well treated.

The Akkon University of Human Sciences, with its Institute for Research in International Assistance (IRIA), started here, launching its collaboration with Ukraine in 2018 with the project "Tuberculosis and Migration during the Ukraine crisis" – funded by the Federal Foreign Office.

This was complemented from 2017 to 2020 by the project "Strengthening the health system in Ukraine by promoting health sciences and effective bilateral cooperation". The objective of this work, commissioned by the German Federal Ministry of Health, was to improve health care in Ukraine by promoting health sciences.

Our approach: building sustainable personal and scientific relationships and exchange of know-how, basic analyses of the health care system and the conflict situation, and establishing partnerships with Ukrainian universities to improve medical education. We started from established university partnerships e.g. with Ternopil National Medical University, expanded the circle of partners, complemented the work in the subprojects with scientific exchange in various events coordinated by IRIA, such as: "International Ukrainian-German Public Health Symposium" or the "International Young Researchers' Symposium on Global Health – Satellite Symposium World Health Summit".

Measured against the goals set, this project was very effective: the introduction of the Master's program in Public Health was a success. In addition to the partner universities, other universities would like to continue the cooperation. The International Ukrainian-German Public Health Symposia have found their place in the scientific calendar of events and bring together numerous health experts, lecturers and young talents. By intensifying exchanges in the health sector, other areas such as military medicine and cooperation with humanitarian organizations can also be expanded in the eastern Ukrainian regions.

With these activities, we are not only contributing to the deepening of bilateral relations in the field of health and medicine between Germany and Ukraine. At the same time, we are part of a far-reaching reform process that has achieved remarkable breakthroughs in recent years:

1. For Ukraine as a low or middle-income country, improving inefficiencies in health care financing is a priority task. Since 2018, new financing principles for the primary health care system have been introduced: From line-item budgets of state-controlled institutions, there has been a shift to performance-based financing of autonomous healthcare institutions. Ukrainians now have the right to choose primary care physicians of their choice. As a result, providers receive funding from the National Health Service of Ukraine based on the principle that "the money follows the patient". Facilities can thus offer better services and develop strategically. In 2020, similar arrangements came into effect for specialists and hospital care. Given the high out-of-pocket payments Ukrainians have had to make to date (50% of all expenditures; Poland 21%; Germany: 13%), these changes and the strengthened role of primary care are considered one of the most profound shifts in Ukraine's healthcare system since independence.

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2. Procurement of medicines by the public sector – arguably the area of the Ukrainian healthcare system most affected by corruption – has been drastically changed. Therefore, in 2015, as an emergency measure against endemic corruption, the entire procurement system was handed over to international organizations. After this transformation period from 2015 to 2019, when international agencies took over drug procurement on behalf of Ukraine, it was transferred into the hands of the newly created state-owned company Medical procurement of Ukraine ("Medicines Procurement of Ukraine", MPU), which brought more transparency to procurement.

3. The "Center for Public Health" replaced the Soviet-style health service and introduced a modern approach to health care. There was a shift from control to monitoring and the focus is now on health education.

These recent reforms to the health system have also contributed to a better response to the Corona pandemic. As a result, catastrophic health and mortality scenarios have so far been avoided in Ukraine.

Nevertheless, much remains to be done. In addition to safeguarding what has been achieved, it is important to establish regional public health centers and make them functional.

Continuity in political leadership is certainly desirable.

We are experiencing with great respect a fundamental reform process supported by highly qualified actors with great openness and willingness to learn. With this publication, we want to give our Ukrainian partners a platform to express their expertise. Over all we would like to appreciate the enormously enriching professional and human encounters.

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#01

UKRAINIAN-GERMAN COLLABORATION IN BIOMEDICINE AND HEALTH – AN INTRODUCTION

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Public health specialists and epidemiologists always look at populations to estimate the impact of a pathogen on the overall health, the burden of disease and which measures are helpful to ease this burden or to prevent the population from diseases. Looking at populations and population-related health issues narrows the view to the population of interest, very often the inhabitants of a state on the national level. In some cases, this might help to develop national strategies to fight diseases. In many cases, however, it might be useful to also consider health issues in other countries, to learn from others' strategies and perceptions of health and disease and to exchange expertise in fighting pathogens.
Nearly all pathogens causing infectious diseases do not obey human borders or any other structures. Bacteria and fungi survive in favorable environmental settings and can infect human hosts whenever the situation allows and the hosts are susceptible. Viruses have to rely on their own pathogen mechanisms (like bacteria and fungi), but also on the behaviour of the host, so do many parasites. Knowledge about the pathogens, their ways of transmission, but also about the host population(s), their behaviour, contacts etc. helps in containing infectious diseases, also across borders.
In times of globalization, pathogens travel together with their human hosts, and the corona pandemic taught us how fast and severe newly emerging pathogens can act if there is no immunity against them in the human population.
Global issues of health become more and more important while health conditions are worsening, also due to climate change and other man-made conditions like military conflicts or environmental damage. Reasons enough to join forces, to improve salutogenetic approaches, like in public health, and to initiate partner projects between different populations. This is what we did, with financial support of the German Federal Ministry of Health, between Germany and Ukraine. To fight tuberculosis, HIV/AIDS, borreliosis, and more recently covid-19, this was one central aim of the health partnership we established between the Institute for Research in International Assistance at Akkon University for Human Sciences in Berlin and the Ternopil State Medical University in Ternopil and other partners throughout Ukraine.
Fighting (infectious) diseases always requires a functioning health care system. Ukraine's health care system is currently undergoing major reform processes (a „health care system in transition"), after evolving from a post-Soviet Semachko state. Also Germany's health care system has to change a lot because of demographic changes (too many elderly, too less young people), and for both systems, it might be beneficial to learn from each other's experiences. Thus, the Ukrainian-German partner projects also aimed at dissecting structures, ressources and disease-centered approaches of the health care systems to deduct recommendations for improvements.
All of these processes take some time, and thus it is crucial to ensure that enough young scientists and public health specialists will receive a comprehensive, quality-controlled training to take over in due time. The Ukrainian-German partner projects also comprises educational and exchange programs, internships and the development of a master of public health program at TNMU and other interested Ukrainian universities.
This brand new volume 5 of the Akkon Schriftenreihe assembles various scientific contributions on the results of the partner projects as well as on specific health challenges and aims at forming the basis of the ongoing and new partnerships between our two countries.—

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#02

SANSTANTSIYA'S GHOSTS

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Public-health functions were delivered in the Soviet Union and its satellites by the State Sanitary and Epidemiological Services (san-epid), constituted by extensive networks of facilities, quite uniform across the Eastern Bloc. The dissolution of the Soviet Union ushered a variety of health policies, ranging from radical reform to prudent conservatism (Maier and Martin-Moreno, 2011). Free-market apostles pushed for dismantling the old structures.

That the over-bureaucratic old services, popularly called Sanstantsiya (Bazylevych, 2011), required an overhaul is beyond doubt. *"The centrally planned and managed san-epid system was, in many countries, increasingly misaligned with new models of governance, in which the role of the state was changing rapidly, with power often being decentralized, in some cases to new actors in the private sector"* (Gotsadze et al., 2010). More fundamentally, san-epid services were just one component of the colossal party-state apparatus geared at controlling Soviet society. Thus, they could not transit into the new diverse realities untouched.

Independent Ukraine has remained unresolved in relation to reforming the inherited health system. Epidemiological surveillance and response have been neglected despite their relevance in such an epidemic-prone context. Within the broader reform process, the san-epid network has been replaced by the Public Health Centre (PHC) and the Centre for Food Safety (CFS). However, the settings in which public-health functions have to be exerted remain adverse. Old-fashioned mindsets stay impervious to modern public-health concepts. To compound matters, epidemiologists are not trained since years. Finally, the healthcare arena is siloed, with some communicable diseases covered by vertical programmes, and hospital hygiene separated from population-based control programmes. Finally, the worth of focussing on official structures in an environment permeated by informality must be appraised.

In Ukraine, views were polarised between the West-inspired reformers keen to dismiss whatever was tainted of 'Soviet', and the conservatives who saw merit in the old structure. Both views sound biased, so a fair appraisal of what replaced san-epid (or conversely the gap it left) needs dedicated research efforts, which complement perceptions with actual data, to be collected while the pandemic exposes weaknesses and strengths.

The analysis of the Ukrainian trajectory might be enriched by comparing it with those followed by other countries facing the same policy dilemma. In many post-Soviet republics, a new institutional design needs a refreshed mandate, alongside adequate capacity and resources to make a difference. Public-health functions are too critical to remain at the margin of the policy discussion, or to be debated with fossilised lenses. Moreover, essential public-health goods, such as epidemiological surveillance and response, need to be protected from the managed competition introduced by health reforms (Khaleghian and Das Gupta, 2005). A thorough assessment of legal status, design, implementation, resourcing and management of public-health structures is mandatory. By unpacking the changes occurred, light might be shed on trade-offs between conservatism and transformation.

No recent study of the many sequels to Sanstantsiya adopted across the post-Soviet world has been retrieved. The Covid-19 pandemic offers a unique opportunity to appraise the performance of the public-health structures put in place by different governments at different times, following different rationales. But even if it is ably managed by independent facilitators, tackling such a sensitive issue in the midst of the pandemic might backlash. Learning under duress is always tricky, but necessary. In fact, Covid-19 has exposed also the shortcomings of Western models previously regarded as the gold standard.

In a way, both approaches need to be revisited and replaced with novel designs, firmly grounded on each context and hopefully less ideological. To respond to unpredictable challenges, the public-health structures of the future must combine attributes usually lacking in conventional administrative bodies. *"Rather than tackling specific dangers, preparedness is concerned with 'generic capacities that will enable responses to a broad spectrum of contingencies'"* (Bell et al., 2012). Alertness, initiative, flexibility, connectedness, diversity, adaptation, spare capacity and trust are required to respond successfully to shocks.—

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#03

PUBLIC HEALTH IN UKRAINE

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Over the last decade, the public health system in Ukraine has undergone significant and extremely important changes, which aim to have a positive impact on the health of the population of Ukraine. The task of building a public health system in the regions has become an urgent need.
The driving force behind these changes was the creation of the Concept for the Development of the Public Health System in Ukraine and its approval by the Cabinet of Ministers by Order No 1002–r on November 30, 2016 [1]. The Concept for the Development of the Public Health System in Ukraine was created to ensure the intensive development of the public health system in Ukraine. According to this document, the Ministry of Health of Ukraine has established a Public Health Center – a health care institution responsible for maintaining and strengthening the health of the population, socio-hygienic monitoring of diseases, epidemiological surveillance and biological safety, population prevention of disease, epidemic control and strategic management in the field of public health [1]. However, due to various reasons, including political, economic and social, this process cannot be estimated as very intensive and quite productive [2].
Since then, the Center of Public Health, which is a leading governmental professional Public Health organization, has been making a significant impact on the development of Public Health in Ukraine.

Analyzing and studying documents on public health, many scientists and experts agree that the main functions of public health institutions located in the following areas:
- Surveillance and assessment of health and well-being of the population.
- Monitoring and responding to health hazards during health emergencies.
- Health protection, including the safety of the environment, labor, food, etc.
- Promoting health, influencing social determinants and reducing health inequalities.
- Disease prevention, early detection.
- Ensuring strategic management in the interests of health and well-being. The strategic planning process, with the participation of all stakeholders.
- Providing the public health sector with qualified personnel in sufficient numbers.
- Ensuring the functioning and feasibility of the existence of organizational structures and funding and incentives in the public health system, which should ensure the implementation of operational functions
- Awareness-raising activities (advocacy), communication and social mobilization in the interests of health.

Considering in more detail the functioning of public health institutions in Ukraine at the national and regional levels, we can note that to ensure the epidemiological surveillance and assessment of health and well-being of the population modern new tools were created. These tools have been used to monitor public health. The basic standards of activity and priorities are used. There are new structures, such as a clear reporting system, financing, monitoring of the quality of labor resources and rendering of services to consumers.
The demographic processes in Ukraine have signs of a long demographic crisis, which is closely related to the historical and socio-economic features of the country. It is one of the most important peculiarities of Ukraine, It is well known, that Ukraine is one of the countries with a gradual decline in demographic and reproductive potential, which leads to depopulation and population decline. At the beginning of 2016, the number of children among the population of Ukraine was 16.1%, people of working age – 61.8%, older people – 22.1%. The prevalence of women among the elderly due to higher mortality among men is a feature of gender imbalance. Along with the aging population, the increase in mortality, which is associated with circulatory and neoplasms, respiratory diseases, digestive disorders, infectious and parasitic diseases, is a topical issue. In Ukraine, cardiovascular diseases (e.g. stroke, heart attack) and malignant neoplasms are the leaders in prevalence and mortality among non-communicable diseases. The burden of non-communicable diseases in Ukraine is the result of a combination of genetic, physiological, environmental and behavioral factors, so public health centers have to play a significant role in preventing them, and their effectiveness should be enhanced. Behavioral factors are modified factors and can be changed. These include tobacco use, lack of physical activity, poor diet and alcohol abuse. Other equally important factors include metabolic factors: high blood pressure, overweight/obesity, hyperglycemia, hyperlipidemia. Among the non-communicable diseases caused by these risk factors, there are significant diseases of the digestive system and an increase in the proportion of deaths.
Liver fibrosis, alcoholic and nonalcoholic liver diseases, which account for more than 50% of deaths from digestive diseases, have contributed significantly to mortality from these causes of death.

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In Ukraine, experts consider four main risk factors for non-communicable diseases (tobacco, alcohol, nutrition and physical activity).
Alcohol is considered to be the main risk factor for adverse event deaths around the world. In Ukraine, mortality due to alcoholic liver disease (ALD) has taken the second place in the structure of death caused by diseases of the digestive system.
Therefore, the efforts of public health professionals and community initiatives in Ukraine are needed to reduce risks, including bad habits such as alcohol and smoking.
Regarding the monitoring and response to health hazards and during health emergencies, this area is also undergoing reform and innovation changes, including the improvement of systems and procedures to ensure preparedness and response to public health emergencies. This function also applies to the implementation of the International Health Regulations (IHR) [3].
The 2005 International Health Regulations (IHR 2005; sometimes the International Health Regulations; 2005) are an official document of the World Health Organization (WHO), adopted by the 58th WHO Assembly on May 23, 2005 [3]. This document regulates the actions of the World Health System in case of various emergencies in the field of health care. GH centers in Ukraine strictly adhere to the International Health Regulations 2005, the main purpose of which is to "prevent the international spread of diseases, control them and take appropriate measures at the level of public health."
An extremely important function of the Public Health Service in Ukraine is to protect the population's health, including ensuring the safety of the environment, labor, food, etc. This function of the Public Health Service of Ukraine covers the issues of risk assessment, management and communication, which are necessary to ensure the safety of the environment, work and food safety.
Through their activities at the national and regional levels, public health institutions of Ukraine promote health promotion, study and control the impact on social determinants and reduce inequalities in health indicators, which significantly affects the achievement of goals 3 and 10 of the SDGs. The Gini coefficient in Ukraine is 26.1 (2018) which is estimated as low, the Human Development Index in Ukraine is 0.779 (2019) which is estimated as high.
Disease prevention and early detection is another important function of public health institutions in Ukraine. This feature focuses on health services primarily within the health care system. It includes the prevention of diseases, their early detection and assistance to patients in managing diseases and maintaining the maximum quality of life.
The Main Center for Public Health in Ukraine, located in Kyiv and subordinated to the Ministry of Health of Ukraine, has taken on a key role in ensuring strategic management for the health and well-being of the population, overseeing and ensuring the strategic planning process, with the participation of all stakeholders. A relatively new function of the Center for Public Health in Ukraine has been the strategic planning of personnel policy in the industry, consulting and cooperation with educational institutions to provide the public health sector with qualified personnel in sufficient numbers.
In the research, conducted by Lototska Olena at all. (2019) [4] on the basis of health care institutions in Vinnytsia (a city in Central Part of Ukraine), an anonymous survey of 150 medical workers of different clinical departments was conducted. A number of questions were given to assess the symptoms of the emotional burning syndrome. Most of them were closed and provided answers "Yes" or "No", or the choice of one of the proposed options. The age of the respondents ranged from 20 to 50 years old. Work experience ranged from 2 to 25 years. Nurses from the psychiatric, surgical, resuscitation, therapeutic, neurosurgical, operating, traumatological, neurological, hematological, otolaryngological physiotherapeutic and admission departments of the hospital were interviewed. It was found that the negative impact of psycho-emotional factors on their health is noted by 62% of respondents. Most complaints of increased irritability for minor events were made by nurses of neurosurgical (76.9%) and admission (71.4%) departments; dizziness was most noted by physicians of intensive care units (46.6%) and ENT departments (41.6%). Employees of physiotherapy (66.6%) and psychiatric (58.8%) departments complained the most about headaches. Rapid fatigue was noted by 56.2% of nurses in the surgical department and 44.4% in the neurology department. Among nurses who have experienced a deterioration in their health, more than half (55.9%) of respondents are aware of the problem and prevent the further development of emotional burnout by various preventive measures. Carrying out a set of measures aimed at preventing the onset of emotional burnout will be useful not only to improve the quality of professional duties of nurses but also to create a favorable atmosphere in hospitals and other health care facilities [4].
Public health centers ensure the functioning and expediency of the existence of organizational structures and funding and incentives in the public health system of Ukraine, which should ensure the implementation of operational functions. Awareness-raising (advocacy), communication and social mobilization in the interests of health Centers of Public Health are aimed at improving the level of sanitary literacy of the population of Ukraine, which is traditionally at a high

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level, but with the emergence of new threats and challenges. Communication to increase the ability to receive, understand and use information, protect health policies and improve the well-being, quality of life and health of citizens is an important component of the work of Public Health Centers in this direction [5, 6].

It is very promising and necessary for the further development of the public health service in Ukraine to promote the development of research in the field of health care to create a strong evidence-based scientific basis for relevant policies and practices.

The main argument in favor of reforming preventive medicine in Ukraine, which is aimed at reorienting from health surveillance and infection control to the implementation of preventive measures more educational, is the promotion of a healthy lifestyle. Involvement of united territorial communities in this activity in the conditions of decentralization, transfer of funding to the local level and finally entrusting a significant part of the organization and implementation of preventive measures (educational work, registration and investigation of infectious diseases, including examination of disease foci, the establishment of contact persons, maintenance of relevant documentation, etc.) transferred to the primary care.

It should be noted that prior to the adoption of the Concept for the Development of the Public Health System in Ukraine in 2016, there was a system, the main part of which was the state sanitary-epidemiological service, which had similar tasks and functions that apply to the Public Health system today, such as preventive medicine; providing epidemiological surveillance, health assessment, monitoring of factors that affect human health; conducting educational work; involvement of the executive authorities and local self-government and the public in preventive measures; training; planning and conducting research and strategy. Nevertheless, they needed improvement, some changes in activities, increasing responsibility, updating in accordance with the requirements of contemporary situations and problems. It was also necessary to intensify international cooperation and partnership and to establish highly effective inter-institutional cooperation both in Ukraine and with foreign partners.

An example of this is the consolidation of the efforts of the Ministry of Health of Ukraine, the Center of the PH of Ukraine, and the regional centers of the PH, which have taken on a huge burden in the fight against the existing outbreak of coronavirus in Ukraine and the world. In Ukraine, the main burden of implementing anti-epidemic measures fell on the shoulders of state institutions "Regional Laboratory Centers of the Ministry of Health of Ukraine" with their separate structural units, former structural units of regional centers of sanitary and epidemiological services of Ukraine.

Another serious problem of the PH system in Ukraine, which was especially evident during the reform of the industry, is the insufficient number of public health specialists of epidemiological profile (epidemiologists, assistant epidemiologists) in the regions. They are trying to solve this personnel crisis by opening new educational and professional programs in Ukrainian universities, where bachelors and masters of public health are being taught.

The formation of social programs in public health is largely unsystematic – there are no generally accepted standards of public social reporting [7].

In this regard, the urgency of studying the basics of social programs, as well as practical mechanisms, their implementation in accordance with modern requirements is growing.

The current state of social programs in public health research has shown the presence of a number of theoretical, methodological, economic, organizational, legal problems [7]. Evidence suggests that investing in public health is generally cost-effective for the health care sector, other sectors, and the economy in a broad sense. A clear position of the state is important for the further development of social programs in public health. The state created the basic conditions for the development of such programs and these conditions were important for the initial stage of their formation. It is a need for creation a regulation system of such programs, which will reflect not only tax benefits, but also other preferences for developers of such programs. Particular attention should be paid to overcome the COVID-19 pandemic, which has made significant changes in a number of chronic and acute diseases.

CONCLUSIONS. The adoption of the Concept for the Development of the Public Health System in Ukraine in 2016 was a driving stage in the modernization of public health in Ukraine and had a positive impact on its development. There are still problems with the need to improve the further development and modernization of the public health system in Ukraine, which should be addressed at the national and regional levels, taking into account the international experience of the highly efficient systems in Europe and the World.—

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#04

THE ROLE OF PREVENTIVE MEDICINE AS AN IMPORTANT COMPONENT OF PUBLIC HEALTH AND BASIC ASPECTS OF FORMATION OF HEALTHY LIFESTYLE BEHAVIORS OF UNIVERSITY STUDENTS

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The purpose of the study is to cover the role of preventive medicine as an important component of public health and the main aspects of popularizing healthy lifestyle among students of higher educational establishments.
For achieving the purpose of the study, the following general scientific methods were used: bibliographic (analysis of scientific information), sociological (questionnaire survey) and generalization.
Prevention is one of the extremely important fields of medicine, which includes a complex of hygienic, medical, socio-economic, sanitary and technical measures aimed at eliminating risk factors that affect human health, disease prevention and increasing the level of public health. There are three types of prevention: primary, secondary, and tertiary. The primary prophylaxis is used to prevent a disease per se while secondary is aimed at early detection and treatment of the disease at the preclinical stage. Tertiary prophylaxis includes measures aimed at preventing the development of complications and deterioration in the course of illness, as well as dynamic monitoring of patients to prevent the emergence of unwanted disease complications such as: death, disability, development of chronic form of the disease. They all are of great importance to the public health system.
A certain lifestyle is of great influence on one's health. Very often disease prevention is associated with healthy lifestyle and many illnesses can be avoided by using simple hygienic methods. Unfortunately, Ukrainian people are very poorly educated in this topic. The increase of number of specialists, well prepared and motivated to promote a healthy lifestyle will have a positive impact on the level of public health.

CONCLUSIONS. It is extremely important to create civil health centers, suitable for work of preventive medicine specialists, who would promote healthy lifestyle, provide practical assistance to medical and educational institutions and, undoubtedly, would be financially interested in the results of their activities.

KEY WORDS. Preventive medicine, prevention, public health, healthy lifestyle.

From ancient times, humanity constantly attempts to focus the attention of one or another health care system on issues of disease prevention. Even in ancient China, the evaluation of a doctor's work and its payment depended not on the number of cured patients, but on the effectiveness of the preventive measures they took. In later times (460–377 BC) Hippocrates emphasized that "it is necessary to take care of the healthy, in order for them not to get sick". Many outstanding practical doctors emphasized on the importance of prevention, especially in the period of intensive development of natural sciences and hygiene in particular. More than a century ago, famous Russian surgeon M.I. Pirogov said, "The future belongs to preventive medicine". Today, the issue of prevention not only remains relevant, but it also already goes far beyond the scope of medicine and is an important tool for solving the most acute social problems associated with the subsequent existence and development of mankind.
Highly evaluating the importance of preventive measures, the WHO announced the XXI century to be a century of "preventive medicine". Governments and society understand that health investment ultimately increases the economic level of any state. To do this, not only a strategy for preventing diseases is necessary but also health promotion, that is, its maintenance and strengthening, measures should be taken.

The purpose of the study is to cover the role of preventive medicine as an important component of public health and the main aspects of popularizing healthy lifestyle among students of higher educational establishments.
For achieving the purpose of the study, the following general scientific methods were used: bibliographic (analysis of scientific information), sociological (questionnaire survey) and generalization.

RESULTS OF RESEARCH AND DISCUSSION. In the Ukrainian Encyclopaedia, the word "prevention" means a system of scientifically grounded measures in medicine aimed at preventing a disease, its development and health strengthening. Modern interpretation of this term reads as follows "actions aimed at reducing the probability of occurrence of a disease or disorder, interruption or slowing down progression of the disease, reducing the likelihood of disability". Indeed, prevention is one of the extremely important fields of medicine, which includes a complex of hygienic, medical, socio-economic and sanitary and technical measures aimed at eliminating risk factors affecting human health, disease prevention and ensuring high-level of public health. Preventive measures will be effective only if implemented at all levels, both public and individual.
Three types of prophylaxis are distinguished around the world: primary, secondary, and tertiary[1]. The primary prophy-

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laxis is used to prevent a disease per se. There are two types of it: public and individual. Often, they complement each other. Public prophylaxis includes all or most of the population since the purpose of such prevention is to reduce the risk of developing diseases in general. An example of it is vaccination of children and adults, informing the population of the influence of harmful habits on the human body or the importance of healthy lifestyle, etc. The purpose of individual prophylaxis is to prevent diseases among risk groups (for example, among people who smoke, use drugs, drink alcohol, or overeat, etc.).

Secondary prevention is aimed at early detection and treatment of the disease at the preclinical stage. The example of it is early detection using screening tests (breast examination or mammography, phenylketonuria screening, electrocardiography, etc.). Effective secondary prevention requires adequate means and methods of diagnostics, accessibility of medical care to all segments of the population, provision of health care facilities with the necessary medical equipment. And this depends on the state and society as a whole.

Tertiary prevention includes measures aimed at preventing the development of complications and deterioration in the course of illness, as well as dynamic observation of patients to prevent the emergence of unwanted complications such as: death, disability, development of chronic form of the disease. An example of tertiary prophylaxis is decreasing of cholesterol, prescribing beta-blocks for patients with myocardial infarction, rehabilitation measures after a stroke, etc.

Noting the great value of preventive medicine in the public health system, one should remember the important component to it, such as lifestyle that influences, according to WHO from 50 to 60% of human health. A healthy lifestyle is known to be a determinant factor not only for young generation, but also future adults [2, 3]. Therefore, the development and popularization of a healthy lifestyle among adolescents, and especially student youth are the basis for disease prevention and maintaining a healthy life. Very often disease prevention is associated with healthy lifestyle and many illnesses can be avoided by using simple hygienic methods. For example, studies have shown that just by washing hands with soap one can prevent many infectious diseases [4].

At the heart of a healthy lifestyle lies a system of behavior and habits of each individual, that are aimed at preventing diseases, ensure harmonious development, high working capacity and health. This is a large complex of biologically and socially purposeful, expedient methods and means of life corresponding to the needs and capabilities of a person adhering to them to ensure the formation, preservation and strengthening of health, ability to continue the genus and longevity. This includes, first of all, balanced nutrition, sufficient amount of sleep, adequate physical activity and no bad habits, etc.

The question of forming, preserving, and strengthening the health of adolescents and young people is of special relevance, since the health of the nation depends on their health. Students are the most vulnerable to the negative impact of social factors on health strata of society. They must be healthy to fully execute their educational, and in future professional functions.

The risk factors for health are inappropriate nutrition, hypodynamia, psychoemotional load, bad habits, dangerous working conditions, poor material and domestic conditions, adverse climatic and natural conditions, contaminated environments. Inappropriate nutrition and hypodynamia cause excessive weight and obesity, which leads to chronic diseases of the gastrointestinal tract and cardiovascular system; prolonged psychoemotional stress affects the nervous system, deteriorating mental ability; bad habits, namely alcoholism, tobacco smoking, drug addiction cause a number of diseases that might cause death (cancer, poisoning, tuberculosis, suicide, cardiovascular disease); irresponsible sexual life might hurt reproductive function (spread of sexually transmitted diseases, HIV infections, hepatitis, unwanted pregnancy, infertility).

Negative influence on students' health can also be caused by economic, environmental, socio-political circumstances. Thus, a sharp decrease in living standards, impoverishment of people, social inequality, uncertainty in the future, non-compliance with sanitation rules, unsatisfactory residential and hygienic conditions, low food quality, environmental pollution negatively affect the psychosomatic state of student youth. Inability and reluctance to rationally organize daily regimen, nutrition, and rest leads to the emergence of acute and chronic diseases.

However, the main reason for the deterioration of students' health is the lack of awareness of the importance of healthy lifestyle as a guarantee of good health. We developed and conducted anonymous questionnaire of 180 students under the age of 20–25, studying at I. Horbachevsky TNMU (students of 4th and 5th years of study). It has been found that only 57% of the 4th year students and 63% of the 5th adhere to daily regimen. The rules of rational nutrition are always and almost always adhered to by 40% and 50% of the 4th and 5th year students respectively. Most often, students consume unhealthy food on weekend and holidays (an average of 81% of cases). Also students say that they might be motivated to stop eating unhealthy to take care of their figure (63% of the 4th year students and 67% 5th), as well as of their health (17% of respondents from each year). The same number of students adhere to the three-time food regime (breakfast, lunch, dinner), 33%

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of the 4th year students and 17% of the 5th year students can do without lunch or breakfast. 50% of students on the 4th year and 67% of the 5th do not follow any kind of regimen whatsoever.

The analysis of students' responses proves the insignificant physical activity. Only 7% of the 4th year students and 17% of the 5th year exercise in the morning regularly, while 70% of respondents of the 4th year and 67% of the 5th do not exercise at all. A few respondents often use weekends for active recreation - 17% of respondents of the 4th year and 13% of the 5th. 60% and 67% of the 4th and 5th year students respectively do it sometimes. Every fifth student does not like active recreation at all.

Thus, about 70% of students suffer from hypodynamia, which can lead to pathological changes in metabolism, reducing the level of activity of enzymes, destructive changes in cells leading to tissue dystrophy or atrophy and is a result of reducing the level of body systems functioning [7]. Therefore, physical activity in the structure of educational and professional training of future specialists should not only be in the role of academic discipline, but also a necessary component of life of young people, and in the future – of every adult.

As for bad habits, 30% of students admitted to smoking. Almost every student is rarely but consuming alcohol (96%). 4% of students often consume alcohol. Most of the alcohol use is prompted by meetings with friends (30%) and holidays and weekends (53%).

Thus, it can be concluded that modern youth does not consider smoking and alcohol consumption as a negative factor affecting human health. The prevalence of smoking habits among young people is growing, despite certain prevention measures at the state level (inscriptions on cigarette packs about the dangers of smoking, films demonstrating changes in the organs and systems of the human body under its influence). As for the cause of early alcohol consumption by young people, it is facilitated by the expansion of the market of alcoholic beverages in modern Ukraine, their diversity, affordability, advertising, the tradition of alcohol consumption among the population. The usual ban on alcohol is not effective and can lead to alcohol consumption elsewhere. Therefore, measures for the primary prevention of alcoholism should be aimed at forming a negative attitude to the use of alcohol among the younger generation.

CONCLUSIONS. Unfortunately, Ukraine has a very low level of education for young people and the general population on healthy lifestyle. Often, the advertising of unhealthy foods (high-calorie and low-nutrient) in addition to unhealthy habits (in eating, for example) has a negative impact on the health of the population, especially children and young people. Therefore, the process of educating young people about their own health and forming a healthy lifestyle should begin in kindergarten and school. Society must see health as a trend. If the state creates conditions when it is profitable to be healthy, there will be more such people. Today, unfortunately, most doctors are mainly engaged in the treatment of diseases. Not everyone is interested in information on how not to get sick, or able to answer patients' questions about what is useful and what is harmful, especially when it comes to environment. Newly established public health centers should collect such information and make it available to physicians. The significant increase of number of well-trained and motivated disease prevention professionals will have a positive impact on public health.

Thus, given the annual growth of infectious and somatic diseases, cases of food poisoning, often sale of poor quality food, lack of control over working conditions, etc. it is extremely important to create public health centers, provide conditions for preventive medicine specialists, especially hygienists and epidemiologists, who would promote healthy lifestyle, provide practical assistance to medical and educational institutions and, undoubtedly, would be financially interested in the results of their activities. Prevention of diseases and propaganda of healthy lifestyle should become an economically beneficial for the state and the people.

PROSPECTS FOR FURTHER RESEARCH include studying and analyzing the implementation of preventive measures in public health practice.—

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#05

DIAGNOSING THE HEALTH OF LOCAL COMMUNITIES, IDENTIFYING GAPS AND NEEDS FOR ACTION PLANNING

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KEYWORDS: community health, diagnosing health, identifying gaps, identifying needs.

A *community* is a set of people characterized by a certain territorial or other proximity that allows interaction, and this interaction determines the common values or culture [1]. The defining characteristic of a community is people who have the potential to interact. Without the possibility to interact, common values and norms are impossible. In today's world of electronic communications, interaction can be virtual, as well as apply a more traditional individual approach. If many people interact with each other and share values and culture, the community can exist even in electronic form. Of course, virtual communities that exist through electronic means go beyond traditional anthropological ideas about the community.

The purpose of diagnosing health and assessing the needs of local communities is to obtain information for decision-making on priority issues and action planning. In essence, diagnosing the health of local communities is used to collect data on the needs and strengths of a particular group, community or population [8].

When assessing needs, four types thereof should be taken into account: expressed, normative, conscious and relative needs [2]. Expressed need is a problem that is manifested through behavior, demand for services, and is measured as the number of people who apply for services, types of services, utilization rates. A normative need is a deficit, shortage, or surplus identified by experts and health professionals based on a scientific understanding of what should be. A conscious need is a lack based on the feelings and perceptions of the population, that is, the look through the eyes of the person experiencing it. Relative need is a shortage or deficit identified by comparison between advantaged and disadvantaged groups.

There are five types of models for health diagnosis and needs assessment: epidemiological diagnosis, public health diagnosis, social diagnosis, asset diagnosis, and rapid diagnosis (Table 1). Each model has its own vision, as well as advantages and disadvantages. In practice, the selected model can be supplemented with elements of other models in accordance with the resources and purpose of the assessment [4].

	Epidemiological model	**Public Health model**	**Social model**	**Asset model**	**Rapid diagnosis**
Who is diagnosed	Population	State, community or region	Population, selected groups	Communities, neighbourhoods	Communities, neighbourhoods
Data sources	Registers, national surveys, national databases	State and local institutions, population health statistics	Individual surveys, national surveys	Registers of institutions, focus groups, maps	Observations, available data, surveys
Examples	National health surveys, health expenditure surveys	Community health planning, community environmental assessment	Census, social statistics	Asset-based community development	Rapid diagnosis and response
What is diagnosed	One can assess the normative, expressed and relative needs	One can assess normative and relative needs	One can assess the normative needs, perceived needs are determined directly	Conscious needs, conscious benefits	Normative and conscious needs
Advantages	The results are statistically sound, they can be summarized	The results are administratively substantiated; focusing on the components	Statistically sound; provides information on the factors of health problems	Identifies available resources	Quickly executes and provides basic information
Disadvantages	Lack of information about perceived needs; may not record or describe local variations	Relies on other data sources; does not identify perceived needs directly	Does not directly determine the severity of health problems	Does not determine the severity of health problems	Does not determine the severity of health problems; may not notice problems or causes

Table 1. Approaches to diagnosing local community health

The **EPIDEMIOLOGICAL MODEL** focuses on the quantification of health problems, the use of national databases, and the application of epidemiological methods and statistics. This model seeks to answer epidemiological questions, such as "What is the scale of the problem?", "What disease trends are obvious?", "What patterns are manifested in the distribution of the problem?", "Can the problem be prevented?". Thus, epidemiological models often include an emphasis

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on identifying hazards, risks, and predictors of health problems.
The epidemiological model uses tools such as disease and death registries and national surveys. The advantage of epidemiological models is that they provide data to determine the severity, importance, and prevalence of a health problem. However, these models do not provide much data, which may also be key to prioritizing health problems [6].

The **PUBLIC HEALTH MODEL** focuses on quantifying health problems in order to prioritize them because resources are limited. This model seeks to answer the following questions: "What is the severity of the problem?", "What factors contribute to its occurrence?", "What resources are available to solve the problem?".
The public health approach usually relies on available epidemiological data, using specific tools or models. The public health approach and the epidemiological approach have much in common. Although these models are quite comprehensive, they have a limited ability to consider sociocultural aspects of health [5].

The **SOCIAL MODEL** focuses on quantitative characteristics that provide the socio-cultural, economic, and political context of the impact on human health. This approach addresses questions that address the socio-environmental determinants of health, such as: "What is the relationship between health problems and social characteristics?", "What social trends are manifested in health care behaviour?", "What is the relationship between the problem and the use of social and medical resources?", "How have social and health policies affected the scale, distribution or trends of the problem?". The main feature of the social approach is the focus on collecting data on social characteristics, such as income, other specific social and economic characteristics.
In the field of health care, planning based solely on social indicators is considered incomplete. Without health indicators, the assessment of community needs is incomplete. However, assessments that include socio-environmental data do provide important information that can help identify predictors or conditions that lead to health problems [7].

The **ASSET MODEL** focuses on existing strengths, assets, social capital, capabilities, and resources, rather than on the needs, shortages, shortcomings and differences between the healthy and the sick. It is designed to answer the following questions: "What social and medical resources does a community with health problems have?", "What do community members consider to be the strengths and resources of their community?", "To what extent are resources mobilized or can be mobilized for solving health problems?".
Taking into account the social context for assessing health problems stems from an earlier view of health, in which the environment was seen as one of the four forces that promote health or lead to disease: the environment, genetics, the health care system and lifestyle, and opinions that both risk factors and risk minimization factors should be taken into account. The asset model also includes the concept of community competence, i.e. the process by which a community can identify problems and take action to address them. Greater community competence is associated with both improving community health and greater social capital. The community asset valuation model aims to identify and then develop opportunities for the community to address health issues. However, collecting data on assets can be a difficult task, as there is no generally accepted set of asset indicators, and information on assets is rarely available at the time of valuation, making data collection necessary. Therefore, asset models are used less frequently and are poorly integrated into more widely used needs assessment models.

RAPID DIAGNOSIS uses many methods – such as focus groups, available data, surveys, and mapping – to rapidly develop the community and implement the necessary medical interventions, as speed is sometimes needed or desired in the assessment. The rapid assessment aims to answer the key question: "What are the most pressing needs with available resources?". As follows from this question, the focus is on rapid response rather than on providing depth or breadth of assessment.

A **COMMUNITY HEALTH** assessment is used to determine the extent of certain health problems in a particular community, district, or other designated locality considering community strengths and resources, and to prioritize health issues. The community health assessment covers all aspects of community life, examines resources and assets in the field of health and services, as well as health issues and other community weaknesses. This assessment aims to answer the question: "What are the main health problems and what resources are available to solve them?". In this sense, community health assessment encompasses and integrates all the previously described assessment models.

The **WORKFORCE ASSESSMENT** is not usually considered part of the community health assessment. However, at the infrastructural level of the public health pyramid, labor assessments are particularly relevant. The workforce assessment seeks to answer the question: "What human resources of what skill level are there to meet health care needs?". This assessment examines the current competencies of the workforce, trends and change factors related to its quantity

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and quality, and builds scenarios to understand the potential size of the gaps between projected needs and projected available labour.

Scientists' assessments of the workforce in all medical professions have revealed a dire health situation. There is a shortage of nurses, occupational health, environmental, medical and public health professionals in the near future [3]. These projections require a local assessment before any public health measures are developed to identify the current and future workforce that will be used to support the envisaged measures. After all, it doesn't make sense to develop great measures on paper if it is impossible to hire health professionals with the skills needed to successfully implement activities in the real world.

There is no one-size-fits-all way to assess a community's health. However, all approaches to assessing community health have some major ***milestones***. The first stage is to *involve community members* in the development and evaluation. The next step is to *determine the community or population for evaluation*, and then decide *what data to collect* about the nature of the health problem: the scale of the problem, the predictors of the health problem, and the demographic and behavioral characteristics. The next step is to *collect this data* using a variety of sources and approaches. Once the data has been collected, the evaluation and planning team should *analyse the data* using statistical procedures to obtain statistical reports on community health issues. The last stage is aimed at *developing a generalized statement* of need or problem based on these data and statistics obtained from their analysis.

Ideally, planners will take the time to develop a community engagement strategy to assess the health of the community. The participation of community members strengthens both their ability to assist in the evaluation and their ownership of the data collected and the results of the evaluation. This involvement applies to all stages of health program planning and evaluation. From a practical point of view, the involvement of those who may be affected by the assessment has immediate and direct implications for how the community health assessment will take place; the involvement of community members may even influence the issues raised in the needs assessment.

There is no best way to engage community members, but many strategies are needed that evolve as community health is assessed. In addition to strategies to directly reduce barriers to community participation, other strategies may include obtaining lists of key names, providing nutrition as an incentive, conducting non-formal learning, identifying specific tasks for community members, and scheduling dates and times for regular meetings.

Sometimes community involvement may be unwise when there are strict time or fiscal constraints on health assessments, when high commitment can affect the quality of community interactions, or when leadership skills are lacking to initiate and support community participation.

Determining the population to be assessed is an important early stage in assessing community health. It can be determined geographically, by a specific area, place of work, residence, or study. The state health department can target the entire population, while a small local non-profit agency is likely to focus only on potential customers. The use of very specific parameters to determine the population makes the assessment more focused and detailed, allows very specific adaptation of health measures.

The term *target audience* refers to a part of the population at risk, i.e. people who have a certain social, physical or other status, which increases the likelihood of adverse health effects.

When assessing community health, the boundaries of the target audience may change during data collection and analysis. For example, when a community health assessment begins, an entire neighbourhood or area is considered a target audience. Analysis and interpretation of epidemiological data may reveal that only working mothers are at high risk for health problems that the organization can address. This refinement of the target audience can occur because of a community health assessment. —

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#06

PALLIATIVE CARE IN UKRAINE IN THE CONDITIONS OF MEDICAL REFORM

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OBJECTIVE. To analyze the organization of palliative and hospice care at different levels of medical care at the current stage of health care reform in Ukraine and at regional levels.

MATERIALS AND METHODS. The scientific work uses current regulations and guidelines of the Ministry of Health of Ukraine on the organization of palliative and hospice care in the health care system of Ukraine. Scientific methods used for data processing include the following: analytical, bibliosemantic and systematic approach.

RESULTS. Palliative care, as a separate type of care, has been legally enshrined in Ukraine since 2011. But before the introduction of the program of medical guarantees and the signing of contracts with the National Health Service of Ukraine for packages of medical services in palliative and hospice care, such assistance was provided by only a few dozen medical institutions in our country. The introduction of a separate package in the Medical Guarantee Program has provided an impetus to the development of a palliative care facilities network.

CONCLUSIONS. Development and improvement of palliative care in accordance with international standards is one of the priorities of the health care and public health systems of Ukraine, because palliative and hospice care is a set of medical, social, psychological measures aimed at improving the quality of life of patients with incurable diseases and limited life expectancy. To create a highly effective palliative care system in Ukraine, it is also necessary to overcome the barriers identified by the WHO experts. The main tasks of palliative and hospice care should be to minimize pain, physical and mental suffering, eliminate or reduce disorders and other serious illnesses, provide professional care, psychological, social and spiritual support for patients and their families.

KEY WORDS. Palliative and hospice care, medical guarantees program, medical services, medical reform.

INTRODUCTION. Creation and development of the system of palliative and hospice care (PHC) in Ukraine [4, 2] at the level of world standards [20, 21, 23, 24] is one of the important medical and social tasks of our society and, given the significant experience in the development of palliative and hospice care of European countries [14, 16] and developed countries of other continents of the world [24], the need and importance of this task is beyond doubt.

Global trends in population aging, accompanied by increased spread of serious diseases and their complications, which are usually associated with the age of the disease, lead to an increasing need for high-quality PHC worldwide [1]. According to scientists, by 2040 the world's demand for PHC will increase by 25–47% [9].

WHO experts claim [16, 23, 24] that PHC is required for adults with severe, life-threatening incurable diseases. Diseases, that often require PHC in the terminal stage, include chronic diseases of the circulatory system (38.5%), cancer (34.0%), chronic respiratory diseases (10.3%), HIV/AIDS 5.7%), diabetes mellitus (4.6%) and others [1, 10].

There are many patients who also need PHC in severe and terminal stages of such diseases, which are accompanied by the development of chronic renal and hepatic failure, rheumatoid arthritis, some neurological diseases, including dementia, multiple sclerosis and other demyelinating diseases. Sometimes PHC is extremely necessary for patients after injuries, in severe chemoresistant forms of tuberculosis, etc. (WHO, 2018) [16, 23, 24].

Globally, this problem has also not yet been resolved, as today more than 25.5 million people worldwide die from severe incurable diseases each year, and another 35 million people live with terminal stages of these diseases. Unfortunately, significant numbers of such patients suffer from excruciating pain, severe dysfunction of vital organs and body systems, dementia, depression, causing a significant reduction in their quality of life (WHO, 2014, 2018) [16, 23, 24]. WHO experts estimate that approximately 40 million people need palliative care each year, 78% of whom live in low- and middle-income countries. As for children, 98% of those in need of palliative care live in low- and middle-income countries [15, 16, 22, 23, 24].

The above allows to claim that this problem is becoming increasingly important, and the reason for this is many objective and subjective factors: socio-economic, political, demographic, medical, moral, and ethical [1, 15].

The issue is topical also since one of the main priorities of the state is to reform the health care system [2]. International tendencies of modernization of the system of medical institutions are introduced through a new model of financing of medical institutions. At the state level, there is a rethinking of the real availability of medical care for every citizen. This fully applies to such type of medical care, as palliative and hospice care.

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OBJECTIVE. To analyze the organization of palliative and hospice care at different levels of medical care at the current stage of health care reform in Ukraine and at regional levels.

MATERIALS AND METHODS. The scientific work uses current regulations and guidelines of the Ministry of Health of Ukraine on the organization of palliative and hospice care in the health care system of Ukraine. Scientific methods used for data processing include the following: analytical, bibliosemantic and systematic approach.

RESULTS AND DISCUSSION. Traditional medicine is known to always aim at a patient's recovery or, if complete recovery is not possible, achieving sustainable remission, while PHC aims to minimize the suffering of terminally ill patients and improve the quality of life of these patients and their families. The right to PHC and equal access to PHC facilities and services must be guaranteed to the population of Ukraine and other countries. It should also be made available financially [1, 2].

Research shows that family members of a patient in need of PHC often need support and psychological help, as a serious incurable disease of a loved one can significantly reduce the quality of life of the whole family, cause mental issues etc.

A separate category of PHC includes children with cancer, genetic, haematological, orphan diseases, congenital malformations and other chronic incurable diseases that threaten life or limit quality of life [10, 15].

Palliative care, as a separate type of care, has been legally enshrined in Ukraine since 2011. But before the introduction of the program of medical guarantees and the signing of contracts with the National Health Service of Ukraine (NHSU) for packages of medical services in palliative and hospice care, such assistance was provided by only a few dozen medical institutions in our country [5]. The introduction of a separate package in the Medical Guarantee Program has provided impetus to the development of a palliative care facilities network.

The high cost of treatment is a big problem for people with poor health. After all, in addition to the fact that Ukrainians contribute to medicine about 3 billion UAH. annually due to taxes, 640 thousand Ukrainian families suffer financially when faced with an illness due to the need to pay for expensive treatment [2]. Respondents who have chronic diseases more often than others cited the high cost of treatment as a reason for refusing to see a doctor: 31% compared to 15.1% among those who do not have chronic diseases. The same problem was reported by 34% of people with disabilities who did not want to see a doctor. Interestingly, only 9% of people with disabilities cited waiting lists as such a reason. But at the same time, for people with better health, reasons such as long waiting lines for a doctor and distrust in doctors' qualifications were important [1]. These and many other factors lead to negative consequences for the health of the population, poor financial protection for patients and low level of access to some medical services [9]. Therefore, to improve the situation in the medical sector in Ukraine over the past decades, the parliament adopted the Law "On State Financial Guarantees of Popular Medical Care" on October 19, 2017, which came into force on January 1, 2018.

This law introduced in Ukraine the Program of state guarantees of medical care (program of medical guarantees) as a list of medical services and medicines financed from the state budget based on unified national tariffs.

Implementing a health guarantee program in Ukraine will help to improve the health of the population, protect patients from significant health care costs, ensure a fair distribution of resources, make the health care system more transparent, and focus resources on the most effective and necessary services [9].

In international practice, the established term for state guarantees for the provision of medical care is "state guaranteed package". The National Health Insurance Fund and the Ministry of Health have proposed to combine medical guarantees into medical service packages, which are the average between broad categories of medical care and individual medical services. Thus, a package of medical services or a group of medical services is a list of medical services and medicines needed to provide such services, within a certain type of medical care [6].

First, changes in funding took place at the primary care level. Since 2020, the Health Guarantee Program has been operating at the secondary and tertiary levels of health care [6]. The National Health Service of Ukraine continues to work systematically on the transformation of the health care financing system considering the interests of patients and health professionals [5].

Thus, one of the indicators of a civilized state is the level and effectiveness of palliative and hospice care.

Palliative care is a comprehensive approach aimed at ensuring the highest possible quality of life for palliative patients and their families, by preventing and alleviating suffering through early detection and accurate diagnosis of symptoms of pain and disorders, adequate treatment, symptomatic (adjuvant) therapy and care, provision of psychological, social, spiritual and moral support, regardless of illness, age, social status, nationality, religious and political beliefs, place of residence, etc. Palliative care is based on a comprehensive interdisciplinary assessment of the patient's physical condition, the degree of pain and dysfunction, psycho-emotional, cognitive and cultural characteristics, the com-

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prehensive consideration of the needs and wishes of the patient and his family, prognosis and life expectancy. Palliative care begins from the moment of diagnosis of incurable progressive disease and limited life expectancy and continues as long as the family grieves [8, 12, 15].

Palliative patients – patients of all ages who suffer from malignant neoplasms in stage III-IV, HIV/AIDS, congenital malformations, cardiovascular, neurological, respiratory, atrophic-degenerative, and other progressive diseases and post-traumatic conditions that cannot be cured by modern and affordable methods and means, and are accompanied by pain symptoms, severe disorders of life, require qualified medical care, psychological, social, spiritual and moral support in the terminal stage of the disease or with limited prognosis of improvement or full recovery of vital functions [8].

In Ukraine, according to the Ukrainian Center for Public Data, more than 320,000 patients need palliative care. Members of their families also need support [11].

As for oncological diseases, according to the head of the Ministry of Health of Ukraine M.V. Stepanov "Cancer is in second place in the list of causes of death in Ukraine. There are currently approximately 1 million cancer patients registered within health facilities. Every year, cancer kills up to 80,000 people. To control cancer morbidity and mortality, it is necessary to use a strategic systemic approach at all levels" [10].

By world standards, palliative care should focus on the patient and his family, not the disease itself. Ukraine has made international commitments to provide palliative and hospice care. The Ministry of Health of Ukraine is creating a European model of palliative care, which includes three stages: "family doctor – mobile service – inpatient care (hospice)".

According to the Order of the Ministry of Health of Ukraine 504 of 19.03.2018 "On approval of the Procedure for primary care" family doctor, therapist or paediatrician who provides primary care, shall also provide certain palliative care services to patients of all ages, including: regular assessment of the condition of a seriously ill patient and his needs; assessment of the degree of pain and treatment of pain; prescribing narcotic drugs and psychotropic substances in accordance with the law, including making prescriptions for the treatment of pain; prescribing treatment to overcome the accompanying symptoms (constipation, nausea, shortness of breath, etc.); counselling and training of persons caring for the patient; coordination to meet the medical, psychological, etc. needs of the patient. They shall also according to medical indications, refer patients to provide them with palliative care in an amount beyond the first aid [3].

On June 4, 2020, the Order of the Ministry of Health of Ukraine No 1308 "On Improving the Organization of Palliative Care in Ukraine" was adopted [4]. It is aimed at creating a modern system of palliative care for adults and children.

The basis of palliative care is a multidisciplinary approach, which involves a multidisciplinary team, the composition of which may be different and is determined depending on the patient's condition, the amount of care needed, the size of the service area.

The main components of palliative care are medical (symptomatic therapy, prevention and treatment of chronic pain, drug therapy, effective analgesia), social (including the provision of social palliative care services), spiritual and psychological support to the patient and his family, and other people caring for the patient.

The main principles of palliative care include accessibility, planning and continuity for 7 days a week. The patient shall be given a choice of place of treatment and death with the provision of curative treatment together with palliative care, considering the ethical and humane treatment of both the patient and his family members.

The palliative care facility draws up a patient monitoring plan, which should be reviewed on a regular basis, depending on the patient's clinical condition or wishes.

Palliative care is provided to the patient according to the criteria for determining the patient in need of palliative care. The criteria for determining the patient in need of palliative care and the observation plan are clearly defined and constitute separate annexes to the order [4].

Effective palliative care is a whole range of medical, psychological and social services needed not only by a patient with a palliative diagnosis, but also by the family members.

The program of medical guarantees for the current year includes two packages of services "Mobile palliative care for adults and children" and "Inpatient palliative care for adults and children".

In formulating the requirements, the NHSU relies on national regulations and international practices and approaches, in particular, on the recommendation of the WHO, reports to the WHO and the standards of the National Institute for Health and Care Excellence in the United Kingdom (NICE). The best experts in this type of medical care, as well as representatives of public and patient organizations were involved in the formation of requirements for 2021. NHSU funds the medical component of palliative care.

The patient should receive the following services in the hospital or at home free of charge: treatment of symptoms, effective analgesia, respiratory (breathing) and nutritional support, psychological care, as well as training of family and caregivers, prevention of possible complications and compliance with recommendations.

Patients with limited life expectancy do not necessarily need to be hospitalized, they have the opportunity to receive

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palliative care at home or elsewhere. A hospital is needed, in most cases, when maintenance therapy needs to be adjusted. This can happen within 7–14 days. After that, the patient can return home under the supervision and patronage of a family doctor and, if necessary, a mobile palliative care service [1].

In 2020, the National Health Insurance Fund signed contracts with 485 medical institutions for palliative care. In particular, 431 medical institutions provide palliative care in inpatient settings and 203 medical institutions provide PHC on the terms of mobile palliative care teams.

As of January 4, 2021, the National Health Insurance Fund has signed contracts for the provision of palliative care to adults and children in hospital with 428 medical institutions and with 202 health care institutions on palliative mobile teams [19].

In general, one can note some positive changes in terms of developing a network of medical institutions that provide palliative and hospice care. The structure of the network of health care institutions that have signed contracts for palliative care includes multidisciplinary hospitals, infectious diseases hospitals, tuberculosis facilities, children's hospitals, oncology centers, HIV/AIDS treatment centers, outpatient associations, hospitals, monoprofile hospices [13, 19].

The largest number of medical institutions providing palliative care among all regions of Ukraine is in Lviv region – 41, Dnipropetrovsk region – 33 and Kharkiv region – 25 [7].

Examining the WHO recommendations for countries around the world to create a highly effective palliative care system [16, 21, 23, 24], we found that WHO experts identify the following barriers that need to be overcome:

- national health policies and systems often do not include palliative care at all;
- palliative care training for health professionals is often limited or non-existent;
- public access to opioid analgesia is insufficient and does not comply with international conventions on access to essential medicines;
- lack of awareness among politicians, health professionals and the public about what palliative care is and the benefits it can offer to patients and healthcare systems;
- cultural and social barriers;
- misconceptions about palliative care, for example, that it only applies to cancer patients or the last weeks of life [18];
- misconceptions that improving access to opioid analgesia will lead to increased drug abuse.

In our opinion, the further improvement of palliative care in Ukraine should include overcoming these barriers, using the experience of other countries [16, 17, 20].

Today, one of the most important tasks is the development of national standards for palliative and hospice care in Ukraine, clinical protocols, guidelines and instructions for professionals who provide such assistance in health and social care facilities and at home.

CONCLUSIONS. One of the priorities of the health care and public health system of Ukraine is to develop and improve the quality of palliative care in accordance with international standards, because palliative and hospice care is a set of medical, social, psychological measures aimed at improving the quality of life of patients with incurable diseases and limited life expectancy. To create a highly effective palliative care system in Ukraine, it is also necessary to overcome the barriers identified by the WHO experts. The main tasks of palliative and hospice care should be to minimize pain, physical and mental suffering, eliminate or reduce life disorders and other serious diseases, provide professional care, psychological, social, and spiritual support for patients and their families.

PROSPECTS FOR FURTHER RESEARCH are related to studying the activities of the public health system to develop and improve the quality of palliative care in Ukraine in accordance with international standards and the creation of national protocols for the provision of highly qualified palliative care to the population in the country.—

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The UKRAINE Network

The German-Ukrainian Academic Society (Die Deutsch-Ukrainische Akademische Gesellschaft, DUAG, web: ukrainet.eu; LinkedIn group: https://www.linkedin.com/ groups/8473594/) was founded in Berlin on 11 July 2016 and subsequently registered in Berlin on 15 February 2017 as a not-for-profit non-governmental organization (in Germany: eingetragener Verein, e.V.). The goals of the Society align with the overarching goals of the UKRainian Academic International NETwork (UKRAINET for short) specifically in the context of the German-Ukrainian academic cooperation:

– Fostering academic cooperation with Ukraine;
– Improving knowledge about Ukraine abroad and vice versa;
– Increasing visibility of Ukrainian scientists and their achievements;
– Supporting career development of its members and early-career researchers in Ukraine;
– Supporting reforms in science in Ukraine.

One of the key tasks of the Society is the establishment of a dialogue and co-operation platform aimed at facilitation of networking, best practice exchanges, and providing support to those researchers in Germany and Ukraine, who are interested in bi-lateral and multi-lateral cooperation in higher education and science. Thus, we aim to foster the internationalization of the Ukrainian science and higher education system, enable knowledge transfer and contribute to capacity building. As of 1 July 2021, the Society unites 68 members from diverse research areas, including 17 professors, 4 research group leaders, 30 PhD-level researchers and science professionals employed at or affiliated with HEIs or research institutes, and 12 PhD students. We are delighted to count among our members Leopoldina-member Prof. Dr. Yuri Gleba (Nomad Bioscience GmbH), Chair of Entangled History of Ukraine Prof. Dr. Andrii Portnov (Viadrina, Frankfurt/ Oder), ERC grant-holders Dr. Tatjana Tschumatschenko (MPI for Brain Research, Frankfurt), Prof. Dr. Andriy Luzhetskyy (U. Saarland) and Dr. Denys Makarov (HZDR), to name just a few. In a recent DUAG-supported project initiated by the Union of Ukrainian Students in Germany (Bund Ukrainischer Studenten in Deutschland e.V. BUSD e.V./ CYCH) "Education Inside Out Germany-Ukraine" some DUAG members gave video-interviews describing their career pathways and sharing insights in education and research cultures in Germany and Ukraine (https://ukrainet.eu/2021/06/26/education-inside-out-de-ua/).

#07

ORGANIZATION OF BLOOD DONATION AND MEETING THE DEMANDS OF PUBLIC HEALTH CARE OF UKRAINE FOR DONATED BLOOD, BLOOD COMPONENTS, AND PREPARATIONS

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ABSTRACT. The aim. To analyze the organization of blood donation in Ukraine in view of meeting the demands of public health care of the Ukrainian population for donated blood, blood components, and preparations; to specify issues of concern and to propose the methods of solution.

Materials and methods. During the conduct of this study, we used the analysis of documents, peer-reviewed papers, open-access databases, statistical documents, normative legal documents, and original sources. The multi-dimensional approach to sources selection was chosen for the objective assessment of modern principles of blood donation organization in Ukraine. We emphasized the problem of lack of donor human resources and absence of state organizational line for their rapid involvement, under the conditions of armed conflict and pandemics of Covid-19.

Results. The analysis of state policy and modern condition of the sphere of blood and blood components donation in Ukraine showed that, notwithstanding the obligations, assumed by Ukraine on the adaptation of national laws to European Union legislature concerning quality and safety of human-derived substances, in particular, human blood, tissues, and cells, in Ukraine the unified nation-level policy and proper organization of blood and blood components donation are absent, particularly the state- level support of the development of voluntary free blood donation is not available. This, in its turn, negatively effects the provision of the population with quality, safe and efficient blood preparations and components in sufficient quantity. We reviewed the principal recommendations and requirements of the European Union, World Health Organization, and International Red Cross and Red Crescent Federation for reaching hundred-percent voluntary blood donation.

CONCLUSIONS. We determined the principal noncompliances and problematic issues of lack of donor human resources, which affects the provision of the needs of the health care system for donated blood, its components, and blood preparations. We generalized the principal solutions, which, in our opinion, could be effective to move Ukraine nearer to a hundred-percent voluntary blood donation. We determined that the principal elements of a successful and reliable program of voluntary blood donation mean the development of strategies of effective communications with donors, which should include all the spheres and foresee the communication of information and education of donors, propaganda, and establishing ties with all interested participants.

KEY WORDS. state regulation, blood donation, infectious safety of donated blood, donors

INTRODUCTION. Modern transfusion medicine is the vital element of public health system, facilitating the saving of millions lives each year both under normal and emergency circumstances, giving the possibility to perform more complicated medical interventions, and increasing life expectancy and life quality of patients with various acute and chronic conditions [1]. At the same time, many patients continue to die or suffer excessively because they do not have access to safe blood transfusions. Thus, in many developing countries and countries with transitional economy, there is a considerable gap between the need for blood and blood delivery [1].

According to the recommendations of the World Health Organization (WHO), the aim of blood banking of any state is to comply effectively and adequately with the needs of the Health Care System (HCS) of a country in respect of provision of health care institutions and organizations with blood and blood products, which should be maximally safe, cost-effective and compliant with patients needs [2].

At the same time, in Ukraine, the lack of donor human resources is noted virtually on the entire Ukrainian territory, which leads to the decrease to critical level of blood and blood components storage that does not meet the medical needs [3].

Blood donation went beyond the boundaries of narrow medical problems and became a social problem, which reflected social relations and depended directly on the country's economical condition and its population morale [4].

Some of the principal causes of this phenomenon are the low social standard of living, deterioration of social-demographical and epidemiological situation in the country, liquidation of the former planned system of blood donations organization, as well as the decrease of active propaganda of blood donation in mass media, etc. Blood donation should be regarded as a civic duty and moral obligation of healthy persons regarding sick people [4].

Simultaneously, the level of HIV-infected persons, carriers of hepatitis B, C, and syphilis among the population has reached the threatening character, especially among increased risk groups, who expressed a desire to become donors [5].

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In addition, the absence of a single informational space of blood banking and the National registry of blood and components donors, as well as the persons, prohibited from donating blood affects considerably the provision of infectious safety of donated blood in Ukraine. The absence of centralized management and unified control in this sphere renders it impossible to manage the transfusion stock.

Considering the above mentioned, today it is extremely important to arrange the effective management of blood and blood components donations; popularize the voluntary and free blood and components donation; secure the safety of life and health of donors and recipients.

The problem of inadequate meeting the requirements of the health care system for donated blood, blood components, and blood preparations is aggravated by the fact that in Eastern Ukraine the armed conflict continues, and starting from 12.03.2020 on the entire Ukrainian territory the quarantine is established for more than one year according to the Article 29 of the Law of Ukraine «On protection of the population from infectious diseases» and aiming at prevention of spreading of acute respiratory disease COVID-19, caused by coronavirus SARS-CoV-2 (COVID-19).

Considering the above said, aiming at meeting the Ukrainian population needs for sufficient quantity of quality and safe donated blood and blood components, the appropriate organization, and development of voluntary free donation of blood and blood components is considered to be one of the principal directions of the state policy in the sphere of blood and blood components donation.

THE AIM. To analyze the organization of blood donation in Ukraine in respect of meeting the needs of the health care system of Ukraine for donated blood, blood components, and preparations, to specify the problematic issues and to propose the ways of their solution.

MATERIALS AND METHODS. During the conduct of this study, we used the analysis of documents, peer-reviewed papers, open-access databases, statistical documents, normative legal documents, and original sources. The multi-dimensional approach to sources selection was chosen for the objective assessment of modern principles of blood donation organization in Ukraine. Additionally, we emphasized the problem of lack of donor human resources and absence of state organizational line for their rapid involvement, under the conditions of armed conflict and pandemics of Covid-19.

For each document, an official governmental source was obtained (legal act, normative-legal document, statistical document, official report, etc.). As an additional information database, we used the data from international agencies, mass media, and peer-reviewed articles.

Our research included the following stages:

- analysis of current structure of blood banking in Ukraine and statistical results of activity of blood banking institutions;
- processing of principal recommendations and requirements of the European Union (EU), the WHO, and public organizations, recognized in the sphere of blood donation and support for voluntary free blood donation, public organizations concerned with organization of effective involvement of blood donors and reaching hundred-percent voluntary blood donation;
- determination of the principal directions of improvement of blood donation organization in Ukraine.

RESULTS. The national blood banking system, as an integral part of the public health system, has strategic importance for the state in general and is a form of organization of cooperation between state organs, subjects of blood banking system, and the subjects rendering services on blood and/or blood components transfusion [6], which at the national level should provide for the circulation of donated blood components, namely: organization of donation, provision, processing, testing, storage, use, disposal, distribution, realization, transportation, import on Ukrainian territory, export from Ukrainian territory, transit trough Ukrainian territory, and proper use of donated blood components for treatment [7].

The principal aim of public policy in this sphere is to provide equal access of Ukrainian population to quality and safe donated blood components in the necessary quantity, to organize the circulation of donated blood and its components, to secure the safety and good health of donors of blood and its components, as well as their recipients, to protect their rights and legal interests [6].

According to the provisions of the Law of Ukraine "On safety and quality of donated blood and blood components", put into execution from 25.01.2021, the principal directions of public policy in this sphere are, in particular: proper organization and development of blood and its components donation, aimed at self-provision of Ukrainian population needs with sufficient quantity of donated blood and blood components; encouragement and popularization of voluntary free donation of blood and its components; provision of equal and timely access to quality and safe donated blood components for all patients, who have the appropriate medical indications; implementations of measures, aimed at provision of safety, quality and effectiveness of medical use of blood components; prevention of infectious

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diseases spread due to medicinal use of blood and/or blood components and blood preparations; self-procurement of HCS of Ukraine with donated blood, blood components and blood preparations [6].

A donor of blood and/or blood components may by any voting citizen of Ukraine, a foreigner or a person without citizenship, who has a certificate for permanent residence in Ukraine, and who passed appropriate medical examinations according to the procedure established by a central executive body, which creates and implements state policy for HCS. By the results of such examination, the absence should be confirmed of indications to permanent or temporary banning from donating blood according to the list of indications, approved by the central executive body, which creates and implements the state policy for HCS. With such a person a discussion before the donation should be held, where he or she receives the comprehensive information on donation and gives written consent for donating blood and/or blood components, and, if necessary, the consent to apply auxiliary medical technologies according to the form, established by central executive organ, which creates and implements state policy for HCS [6].

Donating blood and blood components is considered a voluntary human act, which includes the donation of blood and/or blood components for their further use in transfusion, manufacture of medicinal products, medical devices, or for use in scientific research [6].

Nevertheless, in Ukraine the appropriate organization of blood and its components donation is absent; there are no procedures for planning of donor number and donor official classification; there is no encouragement and popularization of voluntary free donation of blood and blood components. Individual issues of interaction and cooperation with executive organs and scientific organizations (National Academy of Medical Sciences, Ministry of Internal Affairs, Ministry of Defense) are not regulated, aimed at provision with blood components in case of emergencies (natural and technogenic catastrophes), or during special periods [7].

In Ukraine, the provisions of the abovementioned Law are not in force or fully implemented, because the appropriate statutory instruments and the proper structure of blood banking and controlling bodies are absent. Therefore, the blood banking system remains chaotic and disordered. Blood banking system is decentralized by its institutional and territorial characteristics and is characterized by a permanent lacking of such important resources, as finances, material support, and human assets.

As a result, a range of issues emerges, which has a critical effect on the proper functioning of blood banking system elements and requires urgent resolution [7], namely:

- improper organizational structure of blood banking with yearly tendency towards decrease in the number of Blood Donor Centers (BDC) and Transfusion Medicine Departments of Medical Institutions (TMDMI): as for January 1, 2019, in Ukraine there were 42 BDC (including 24 regional, 17 communal centers and 1 institutional center – of the Ministry of Defense of Ukraine) and 303 TMDMI [3, p.3].
  By comparison, in 2014 there were 62 BDC (including 1 republican, 24 regional, and 30 communal centers and 7 institutional centers: 3 – of the Ministry of Defense, 4 – of Ukrainian Railways) and 394 TMDMI [8].
- unsatisfactory financing of blood banking institutions during the last decades led to wearing out of principal funds and, as a result
- to absence of modern technologies for provision of donated blood and blood components, their processing, testing, storage, and distribution.
- infectious and immunological safety of donated blood components does not meet the basic international standards and requires urgent changes [7]. As of January 1, 2019, only 2 centers of blood banking and 3 TMDMI of the Ministry of Health of Ukraine (MoH of Ukraine) had PCR laboratories [3, p.18–19].

Considering the above said and taking into account the difficult social- economical conditions in the country, deterioration of demographic parameters, absence of blood donation propaganda, and active organization of blood donation, now in Ukraine we feel acute deficit of donors and serious social problem of blood donation. Each year the total number of donors decreases virtually in all Ukrainian regions [3, p.3].

In Figure 1 the summarized data on the total number of donors during the last 7 years suggest the decrease of the number of donors in Ukraine by more than 1.5 times. Thus, in 2018 the decrease of donors' number was noted nearly in all Ukrainian regions, except Volyn, Donetsk, Odesa, Poltava, Rivne, Kharkiv, Kherson, Cherkasy Regions, and Kyiv City [3].

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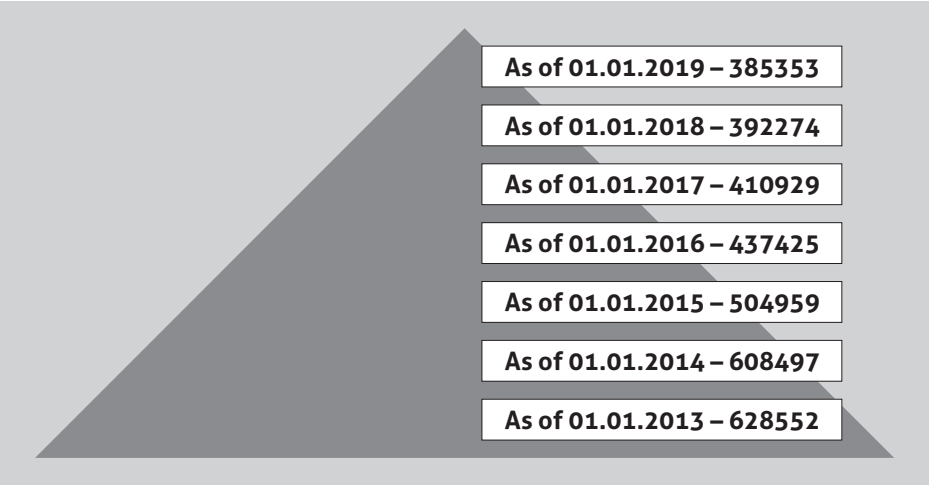

Figure 1 Summarized data on the number of donors, 2012–2018 [3,8–11]

According to the Directives of the European Parliament and the Council, to provide a state with blood and blood components 40-60 donors per 1000 persons are needed, or 4.0 – 6.0% [12]. Meanwhile, in Ukraine, this parameter in 2018 was only 9 – 10 donors per 1 thous. persons. [3, p.20]

Interesting is the fact, that from 1998 the WHO and the EU distinguish three groups of donors: voluntary free donors; relatives/substitution donors, and paid donors. According to donations periodicity, the donors are classified into primary, repeated, and regular. Meantime, due to statistical differences in Ukraine and EU only the shares of primary donors may be compared – thus, in 2018 in Ukraine, there were 41.16% primary donors. As per statistics of MoH of Ukraine, the share of active donors (virtually, paid donors), was 13%, reserve donors (relatives/substitution donors) – was 87% [3]. Voluntary free donors are not registered in our statistical records, which is one of the proofs of absent national policy on voluntary blood donation [13].

It is worth noting that the global need for donated plasma is, on average, 20 mln. liters per year [5]. Each year 118.4 mln. donations are collected worldwide, including 40% in high-income countries, where 16% of global population lives [2] (for comparison, in the USA there are 16 million blood donations per year [14]). The number of donations depends directly on a courtly income level. In addition, between the low-income and high-income countries, there are significant differences in access to safe donated blood [2]. Thus, the parameter of whole blood donation is an indicator for general blood availability in a country [2]. In 2018 in Ukraine, the number of donations of blood, blood plasma, and blood cells was 563030 (which was by 274318 less, than in 2013), including blood donations – 461164, plasma donations – 88553, blood cell donations – 13313. Totally, in 2018, 208946.2 liters of whole donated blood were procured, which were by 100998.5 liters less than in 2013 [3,8].

Average percentage of donors against general population number in 2018 was 0.92 % (in 2013 – 1.34 %) [3,8]. As a comparison, this parameter in Bulgaria is – 1.9%, in Poland – 2.3%, in Great Britain – 2.6%, in Czech Republic – 3.5%, in Greece – 3.9%, in Denmark- 4.6%, while the WHO recommended parameter for self- procurement with blood products is – 2% [13]. As per Ukrainian regions, the parameter above average was recorded in Volyn (1.86), Dnipropetrovsk (1.23), Zaporizhzhia (1.44), Mykolaiv (1.20), Poltava (0.99), Khmelnytsk (1.89), Cherkasy (1.01), and Chernigiv (0.94) regions. The lowest parameter was registered in Donetsk (0.34), Lugansk (0.48), and Chernivtsi (0.68) regions [3].

According to the WHO data, the average donation level (the parameter, which reflects the country's population provision with blood) in high-income countries is 31.5 thous. donations per 1 thous. persons, in countries with income level above average – 15.9, in countries with income level below average – 6.8, and countries with low income level – 5 [2]. In 2018 in Ukraine, the number of donations per 1000 persons was 12.75, including blood donations – 10.4, plasma donations – 2.09, blood cell donations – 0.26. While comparing the statistics for the last 5 years it is notable, that in Ukraine this parameter constantly decreases (see Fig. 2) [3,8].

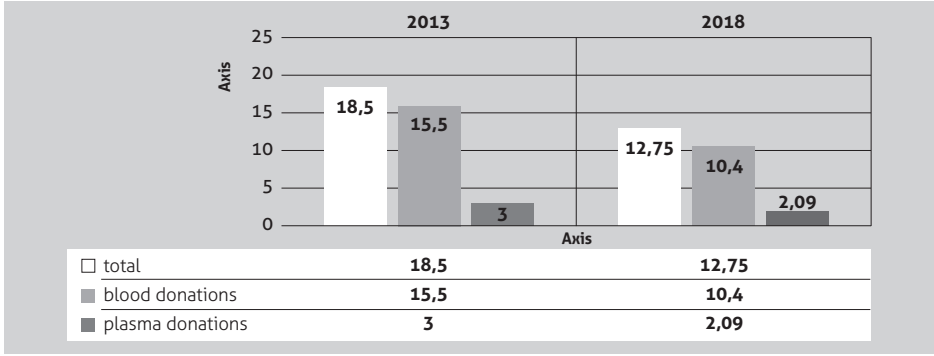

Figure 2 Average data of blood and plasma donations per 1000 persons in Ukraine [3,8]

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Apart from provision of a sufficient quantity of blood and blood components according to the population's needs, blood banking institutions should secure the blood's proper quality and safety for patients. Thus, according to the WHO information in high-income countries, 99.8% of donations are checked by basic procedures of quality testing, comparing to 99.9% in countries with income level above average, 82% in countries with income level below average, and 80.3% in low-income countries. The prevalence of transfusion-transmitted infections in donated blood is significantly lower in high-income countries, comparing to the countries with average and low income (see Table 1). These differences reflect the rate of transfusion-transmitted infection among the population, the availability of voluntary free blood donors, and the effectiveness of the system for donor education and selection [2].

According to official statistics, in 2018 in Ukraine 27692 donors were rejected (7.2% of the general number of donors), due to the following reasons: ALT – 8914, bilirubin – 345, hematological parameters – 2247, and due to the presence of surface antigen of hepatitis B virus – 2502, antibodies to hepatitis C virus – 3789, antibodies to HIV ½ – 1087, antibodies to Treponema pallidum – 2308, and due to other reasons – 6500. In Fig. 3 summarized statistical data are presented on donors' rejections during 2012–2018 (see Fig. 3) [3,8-11]. High defective indices are noted for preserved donated blood and stored plasma. Such considerable defective index for preserved blood (1.11 %, which was 2828 liters in 2018) was caused by the presence of antibodies to hepatitis C virus – 296.9 l (0.12 %), surface antigen for hepatitis B virus – 187.6 l (0.07 %), Treponema pallidum – 146.4 l (0.06 %); antibodies to HIV ½ were discovered in 80.2 l (0.03 %), and increased ALT in 558.8 l (0.22 %). Concerning the stored blood plasma: in 2018 6293.9 liters (3.9 % of all stored plasma) were found unusable. The most of rejected plasma was due to antibodies to hepatitis C virus – 15.1 % (949.1 l), surface antigen to hepatitis B virus – 9.7 % (611.7 l), antibodies to Treponema pallidum – 8.5 % (535.5 l), antibodies to HIV ½ – 4.9 % (311.2 l); high ALT was found in 21.2 % (1333.0 l), and high bilirubin – in 0.8 % (50.5 l) [3].

Blood plasma quarantine took place in all blood banking institutions in Ukraine. 152370.7 l (95.5 %) of all stored plasma were designated for quarantine. After quarantine, 1250.7 l (0.8 %) were rejected due to the discovery on surface antigen to hepatitis B virus (10.0 %), antibodies to hepatitis C virus (9.6 %), antibodies to Treponema pallidum (4.9 %), HIV ½ (4.6 %), and high ALT (3.7 %) [3]. The above-mentioned results of blood banking activity in Ukraine render it impossible to provide the necessary

Prevalence of transfusion-transmitted infections at blood donations (average, interquartile range (IQR)) by income [2]

	HIV	Hepatitis B virus	Hepatitis C virus	Syphilis
High income countries	0.001% (0% – 0.01%)	0.01% (0.003% – 0.13%)	0.06% (0.002% – 0.05%)	0.01% (0.002% –0.11%)
Countries with income above average	0.10% (0.03% – 0.23%)	0.29% (0.15% – 0.62%)	0.18% (0.06% – 0.35%)	0.34% (0.11% –1.08%)
Countries with income below average	0.19% (0.03% – 0.77%)	1.96% (0.76% – 5.54%)	0.38% (0.03% –0.80%)	0.69% (0.16% – 1.25%)
Low income countries	0.70% (0.33% – 1.66%)	2.81% (2.00% – 4.50%)	1.00% (0.50% – 2.23%)	0.92% (0.60% – 1.81%)

Table 1

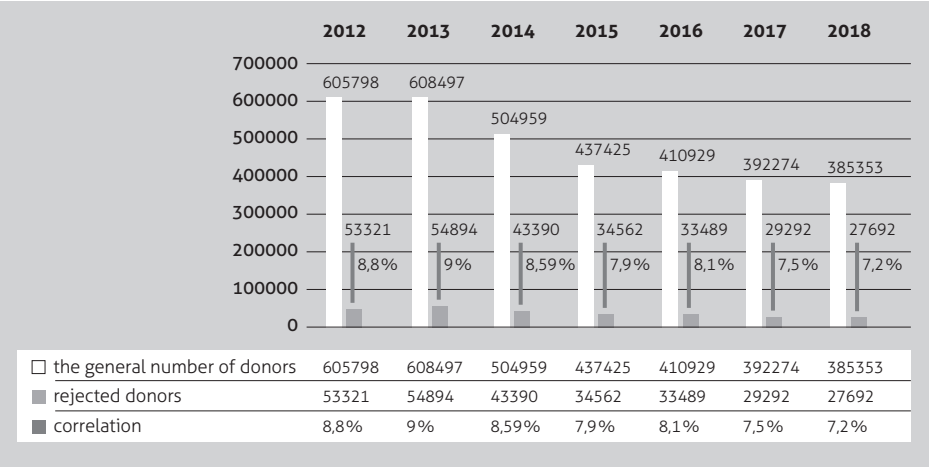

Figure 3 Rejected donors, 2012–2018 [3,8–11]

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amounts of donated blood, blood components, and blood preparations, appropriate for the healthcare needs [3, p.68-70]. At the same time, due to the absence in Ukraine of state programs of voluntary blood donation; proper communication activities for popularization of blood donation on a moral basis; low level of mass media involvement in the present problems of blood donation, disengagement of voluntary organizations, lack of educational programs to create the basis for future blood donation in schools and colleges curriculum, all cause the impossibility of rapid reaction of blood banking system and timely involvement of donors. On the other hand, the absence of a unified informational space and single competent supervisory (control) body makes it impossible to manage the stocks of transfusion materials and causes irregular distribution of stored donated plasma in Ukrainian regions. The above mentioned does not comply with the system needs and increases considerably the volumes of rejection and disposal of a large part of unused plasma and its components after their shelf life expiry [15,16].

As a result, during the last decades in Ukraine, the decrease of provision of blood and blood components to a critical level is noted [7]. It is especially deeply felt due to restrictions, introduced in Ukraine after the spread of acute respiratory disease COVID-19. Even active donors refuse to make planned donations. As a result, blood donation in Ukraine, as a rule, became a problem for patients, their relatives, and doctors, but not a public policy [17].

Generally, according to the WHO recommendations, an adequate and reliable stock of safe blood can be guaranteed by stable base of voluntary free blood donors. Such donors are also the safest donor group, as the rate of blood-borne infections is the lowest in this group. The Resolution of World Health Assembly WHA63.12 urges all participating countries to develop national blood banking systems based on voluntary free donations and work on achieving self-sustainability [2].

HCS and blood banking services, based on voluntary blood donation, generally are capable to support the proper stocks of blood components under the circumstances of growing clinical needs, increasingly strict parameters for donor selection, and loss of elderly donors, who become non-eligible for blood donations [4]. Besides, voluntary and free blood donation is a factor that may promote high standards of blood and blood components safety, and, respectively, human health care [18]. This is related to the fact that voluntary blood donors, especially regular donors, have altruistic motivation and the desire to help other people, and a sense of moral obligation and social responsibility. Voluntary donors do not have reasons to hide information on their lifestyle or health, which may be a cause of their rejection from donation; they are not under the pressure of neither hospital staff, nor family members, or other members of society. Such donors are sure that their blood will be used as intended, not for individual patients. This, in its turn, causes more careful use of donated blood, including the decrease of all related costs due to decrease of blood doses, subject to disposal due to positive test results for transfusion-transmitted infections [1].

DISCUSSION. Complex strategy of the development of blood banking system is necessary for proper organization of its functioning, foreseeing centralized management and proper financing at state level, provision of blood and blood components from voluntary free donors, introduction of modern technologies of blood provision, processing into components, testing, storage and distribution, introduction of quality management systems and hematological supervision, as well as preparation and education of medical personnel, which would prevent the spread of transfusion- transmitted infections and provide the population with necessary transfusiology assistance, using quality and safe donated blood components [7].

Thus, the existing problems of lack of donors and impossibility to provide the needs of the health care system with donated blood, blood components, and blood preparations require approximation of Ukrainian laws and political decisions in the sphere of blood and blood components donation to the European Union legislature, creation of the proper structure of blood banking system, providing it with appropriate financing and taking all necessary measures to encourage voluntary and free donations through appropriate measures and initiatives, as well as through giving donors more public esteem, which together would increase the country self-sustainment [18].

Therefore, integration of Ukrainian blood banking service to European space, introduction of European standards and recommendations, securing state-level support of organization of blood and its components donation, encouragement, and popularization of voluntary free blood donation should create a basis of reforms success and approaching our country to international community.

CONCLUSIONS. Considering the performed analysis of the policies and modern condition of blood and blood components donations in Ukraine, a conclusion can be made that in Ukraine the unified nationwide policy and proper organization of blood and blood components donation are absent, basing on the lack of active organizational structure of blood banking with defined authorized controlling organs, absence of current bylaws and deficit of proper financing and nation-level support of the development of voluntary free blood donations, as a reliable recourse for se-

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curing stable independent stock of safe blood and blood components under the circumstances of growing clinical needs. Favoring and support by the government of effective national program on blood donations is vital for achieving hundred-percent voluntary donations. Without acknowledging blood banking service as an integral part of HCS, we doubt that appropriate infrastructure, human and financial recourses would be provided, which are necessary for access and provision of safe blood and blood components in the sufficient amount, corresponding to the country's needs [4].

Therefore, taking into account the principles of modern transfusiology practice, considering the recommendations of the EU, the WHO [1,2], and international public organizations of donors, to provide timely access to safe and sufficient stock of blood and blood products for all the patients, it is necessary to implement in Ukraine the following:

- create operative and effective organizational structure of blood banking with well-organized and coordinated services, effective evidence-based and ethical national blood policy. Define its tasks and obligations at all levels, create the mechanism for planning, coordination, monitoring, and assessment of communications, informing, education, and involvement of donors, donors selection and consulting, blood collection and help for donors after consultations and further control of donors condition, preserving and repeated involvement of donors;
- create and implement national program of blood donation, based on principles of voluntary blood donation, with obligatory support at the state level;
- develop and/or introduce changes into current legal and regulatory system to achieve hundred-percent voluntary blood donation;
- perform the proper selection and training for blood banking institutions personnel of respective qualification, determining the adequate number of personnel with special skills and work experience in the sphere of PR, communications and marketing, consulting, and help for donors, which are necessary for successful informing, education and motivation of donors. Develop national standards, educational programs for training/additional training of personnel of blood banking institutions;
- provide and implement the proper quality system in blood banking institutions to secure optimal safety of donors and donated blood;
- create national donors database with appropriate confidentiality of information;
- perform quality screening of all donated blood for transfusion-transmitted infections, including HIV, hepatitis B, hepatitis C, and syphilis, perform confirmatory tests, blood group determination, and testing for compatibility;
- enable rational blood and blood preparations use to decrease the unnecessary blood transfusions and minimize the risks, associated with blood transfusions, implement the proper clinical practices;
- perform real cost calculation for all elements of the program of blood donation as a basis for budgetary planning;
- establish cooperation and partnership with all potentially interested parties (executive bodies, interested participants, professional associations, public persons, etc.), financial donors and key figures at the local, national and international levels in order to implement the program of voluntary blood donations;
- create national system of safety control of blood transfusions in the aspect of monitoring, reporting, and examination of cases of adverse reactions in donors.—

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#08

APPLYING THE PRINCIPLES OF BEHAVIORAL ECONOMICS IN PUBLIC HEALTH

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PURPOSE. To highlight the basic principles of behavioral economics, in particular, the incentive factors, the importance of information, its context and presentation, social factors that cause certain behavior in people and coverage of their implementation results in practical medicine.

MATERIALS AND METHODS. The structure of the study analysis included: a description of the primary information, identification of factors and patterns, a summary of the findings in study conclusions, and development of the prospects for further research, based on the findings.

RESULTS. Behavioral economics proves that people are not fully rational and predictable in their behavior, particularly in health issues, as standard economic theory suggests. The vast majority of people in society are "behavioral," meaning that they may suffer from biases that complicate the attainment of one or the other behavior that may be preferred. Regardless of whether the person is rational or prone to behavioral bias, there are certain factors that influence the optimal decision making and lead to deliberate failure to follow certain medical recommendations, refusal of vaccination, malnutrition, etc. Accordingly, this requires additional intervention on minds of people who are not always able to comprehensively assess future benefits, overcoming the current discomfort. Identifying and understanding these factors can successfully influence people's behavior and health decisions.

CONCLUSIONS. In order to achieve positive outcomes in public health, principles based on behavioral responses must be studied, considered and applied in health policies. The introduction of behavioral economics principles into the healthcare industry will help to encourage patients to keep healthy lifestyle with systematic adherence to medical guidelines.

KEY WORDS. behavioral economics; behavioral responses; public health.

Ukrainian health care system recently undergoes significant changes aimed at limiting costs while maintaining and improving the quality of medical care. Based on the fact of health-care institutions seeking to reduce costs and improve quality, the inclusion of behavioral economics has potential prospects for improving the effectiveness in many public health programs. The standard economic theory is based on the assumption that people, due to their rationality, are able to foresee and calculate the future course of their affairs in absolute number of cases. This approach at one time allowed economists to predict economic events, using simple and linear models. However, scientific psychological researches have shown that most representatives of society regularly deviate from the forecasts of standard economic theories. Thus, behavioral economics is an area where economic and psychological sciences collide.
It aims to explain the behavior of people who act vice versa to economic forecasts in some cases, and then introduces this knowledge to build economic models that are based on behavior.

THE AIM OF WORK. to highlight the basic principles of behavioral economics, in particular, incentive factors, importance of information, its context and presentation, social factors that determine certain behavior in people, as well as results of their introduction into practical medicine with demonstration of examples of certain social behavioral characteristics influence on health policy.

MATERIALS AND METHODS. The introduction of behavioral and economic models in the field of public health will provide an opportunity to predict and develop policies that will lead to better results more accurately.

RESULTS AND DISCUSSIONS. According to standard economic theory, all citizens are considered to be rational and predictable. If a rational person does not take doctor-prescribed drugs, this decision, in his opinion, is undoubtedly correct, since he weighed up everything and judged the decision that costs and disadvantages (for example, the cost of purchasing drugs, side effects) prevail over potential benefits (for example, a lower risk of cardiovascular disease).
Given that all citizens and potential patients in need of care would usually act "rationally," from an economic point of view, it is worth predicting at least two ways of developing the situation. Firstly, if a certain rational patient wants to make a right choice (for example, buy prescribed drugs), but cannot afford it due to certain external circumstances (high price), then the state should foresee such problem and minimize it (for example, decreasing the price of the drug, providing a loan, reimbursing). Secondly, it must be clear, that decision of a rational patient can create certain external effects. External effects are indirect effects on the other members of society, which person does not take into account even for a bit when making decisions. For example, when a patient in a previous case cannot afford to pay a certain price to prevent cardiovascular

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diseases and, accordingly, does not take prescribed medicines, he forces society, government and taxpayers to cover significantly larger costs at the state level; therefore, his decision directly concerns people around him. The fact people ignore their own treatment tends to lead to socially ineffective outcomes. External factors are key justification for the need for behavioral economics intervention in public health sphere, since in most of cases preventive medicine may be significantly more beneficial and visible effective than practical one.

Behavioral economics proves that people are not fully rational and predictable in their behavior (as is assumed by standard economic theory), particularly in health matters. Most people in society are "behavioral" – they may suffer from biases that make it difficult to achieve a particular behavior that is desirable to have. Based on this, there is another way to develop the situation: targeting people to a rational and effective decision, that is better for health, with parallel achieving of a desired behavior.

Quite common is human strategy, called "it is better now than once after." This type of behavior can lead to conscious violation or failure to comply with medical recommendations for a certain time, refusal to vaccinate, breaking the diet regimen, etc. Accordingly, it is important to take people out of the state "postponing for tomorrow," since people's consciousness is not always able to comprehensively assess future benefits, overcoming the current discomfort without additional outer intervention.

One of the most studied and researched principles of behavioral economics, which affects lifestyle, is the principle of reward. According to the standard economic model, people tend to value money; therefore, standard economic system is directed to manage people's behavior by providing them with financial rewards. However, researches in behavioral economics have shown that, firstly, rewards should not be at the same level all the time as people begin to tend to bigger rewards every next time. Secondly, people are not always interested in material encouragement; and especially when health issues are concerned, money can initiate the opposite effect.

There are many branches in medicine, where using of standard patient reward methods has been quite successful in changing behavior. Patients who were controlling or losing weight and received monetary reward were to visit gym more often. Studies have proved that financially motivated people were more responsible and trained more often [3]. Another experiment, which aimed to detect changes in health indicators of certain groups of patients, proved that people who received financial reward after training had decreased percentage of obesity indexes, a lower body mass index and improvement in other health indicators [2].

The results of research suggest that these patients may have developed a habit of training in a certain mode. However, in practice, monetary reward and habit formation do not always lead to a healthy lifestyle in future, since there is one common disadvantage in such experiments related to financial rewards – they have only temporary effect. After removal of financial reward, people, participating in the experiment, started returned to a previous lifestyle again, and health indicators went back to the initial level quickly.

Researches have also shown that financial rewards have another negative effect – quite often, they may reduce the initiative, instead of increasing it. This phenomenon can be conventionally called "displacing of internal motivation," since the monetary reward replaces the internal motivation of person to do what was planned [5, 6]. If we consider monetary rewards in the field of medical donation, it was proved that such a feedback for blood donors can reduce the amount of blood received [13]. It`s interesting to add, that displacement in these cases occurs only when rewards are given only in money equivalent. In addition, level of donation may increase up to the control one, when money is given to the charity instead [8–10]. Another drawback of financial intervention in the health sphere is that it is considered unethical in most of highly developed countries. However, one may assume that this problem can be solved by making rewards non-monetary [11].

Therefore, monetary reward cannot lead to the stable changes in behavior, but this issue requires further detailed study in Ukraine for better understanding the formation of habits in people, exactly concerning the field of public health.

The next of the basic principles of behavioral economics is the importance to obtain necessary information in an adequate amount. The assumption, made by standard economic theory, is that people are unlimited in their ability to make decisions, weighing circumstances and deciding the next course of action. However, there is a large number of factors, which bound human rationality and can affect the final decision subconsciously. The effect of bounded rationality can be corrected by constant certain reminding person about important things that are needed to be done, by limiting distractions, forcing the brain to think stressfully, respectively to the situation, avoiding its properties to simplify information and making it to make informed decisions. Bounded rationality can affect personality behavior in several ways.

Firstly, this can be manifested by forgetfulness (bounded memory); secondly, by inattention to oneself; and thirdly, by making a decision without collecting and analyzing all the information available (imperfect information). We have conducted a survey on the awareness of patients with arterial hypertension,

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registered with a general practitioner (family medicine), about the course of their disease, possible risks and regularity of following the doctor's recommendations [1]. The study involved 2019 patients (men – 29.17±2.02%), (women – 70.83±2.02%). The part of the audit group among the total number of dispensary group subjects equaled 18.30%. To process questionnaires, the license package of the OSQ program (processing of sociological questionnaires), a computer program for analyzing primary sociological information, was used.

Conclusions, based on the results of monitoring state of patients with arterial hypertension, were following:

1) 98.42 ±1.21% of respondents have their own pressure gauge to measure blood pressure;
2) 37.09±2.16% of respondents take blood pressure control irregularly;
3) 8.27±1.22% did not measure blood pressure at all during the current year;
4) 52.30±2.22% of respondents take medicines irregularly, every fifth does not take drugs at all;
5) 97.18±0.74% are aware of prevention, course of disease and the consequences of arterial hypertension (information based on their own words);
6) 32±2.08% of respondents did not visit a doctor to prevent cardio-vascular problems;
7) 48.34±2.22% of patients indicate the main reason of irregular medication and pressure control as "forgetting";
8) Almost all respondents noted that they were prescribed free medicines (antihypertensive drugs); but 37.24±2.08% of them did not use these prescriptions for their intended purpose. The main reason indicated by 66.66 ±2.10% of respondents was explained as "I forget".

Thus, according to statistics, the main reason of irregular or absence of medication taking is forgetfulness.

According to the audit results, the idea of an information technological reminder for dispensary patients was developed and implemented. We used SMS messages reminding people to measure blood pressure and take medicines. A year later, a re-audit to verify the effectiveness of the implemented proposal, was conducted. The analysis showed that the number of patients with targeted pressure increased from 14.04 to 38.55%, the number of hypertensive crises decreased by 17.82%, the number of patients who began to measure blood pressure regularly increased by 31%, the number of patients who began to take drugs systematically increased by 17.70%. The number of emergency calls in these patients decreased from 5.00 to 2.04%, and calls to GPs – from 12.03 to 3.8%. Laboratory and tool tests` results were significantly improved.

Thereby, such active reminders have a number of advantages, as they can be automated and sent at a certain time; they are also relatively inexpensive, since alternative reminders, such as personal telephone calls, often require considerable loss of time and substantial commitments from medical professionals.

The value of certain information, or aspect through which it is provided, compared to other information, can also significantly affect person's decision-making. If information is not particularly important, it can be ignored or easily forgotten. This can be explained within the example of two patients who need to take certain medication. The first patient suffers from toothache, which increases severely when he forgets to drink medicine in time. The second patient has elevated cholesterol level in blood and does not experience any discomfort from untimely medication. Since pain from untimely medication taking is more pronounced in person with dental pain, so he is more likely to remember the necessary drug and to take it in time rather than patient with high cholesterol. This example clearly proves that the severity of certain circumstances can significantly affect a person's attitude to the situation and decisions upon it.

Whether a person is rational or prone to behavioral biases, information is the most important factor in an optimal decision-making. Accordingly, decisions may change when person has more information available. For example, a woman may not undergo a mammographic examination on time for many reasons, such as she forgot to; she has information from certain sources that this procedure is of high-cost; she is not informed of the breast cancer risk; she has a tendency to postpone this procedure frequently in order to make it another time. It means that it is difficult to create a system of interventions in human behavior that will be based on all possible types of cognitive perception and behavioral biases, making it difficult to determine which intervention will be most effective. Identifying and understanding the underlying cause can successfully influence people's behavior and their decisions on health issues.

According to the standard economics theory, a rational person always makes the optimal choice from many options available, regardless of external factors that he or she encounters, and of how exactly the choices are presented. However, from the point of behavioral economics` point, any person is acting by being influenced with certain factors that radically change his/her behavior and choice, among which context and the way of bringing the information are of a great importance. People demon-

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strate a strong tendency to act by inertia, since their behavior is based mainly on the brain features to act standardly in most of cases. Thus, actions of people are inertial, designed by the brain`s default system most of the time. The features of the default system show up especially when person finds himself in an unfamiliar situation that provokes to choose the way out, common for the surrounding society. For example, organ donation from the deceased in the United States requires express agreement of potential donor (for example, pre-registration in the state list). A number of other countries, mainly in the EU, adhere to the rule that all people are automatically considered donors if they do not decide to withdraw from the donor register in advance. The difference between these countries in donors` number is about 60% [7].

Hence, it can be concluded that decisions based on the actions of the default system can affect not only individuals, but also nation as a whole. The situation with anti-influenza vaccination is also a brilliant example. This vaccination is not compulsory in Ukraine, according to the current vaccination calendar; but not vaccinated people can feel the negative effect not only in themselves. They also endanger other members of society, from an epidemiological point of view. Respectively, the development of administrative intervention, in which person has to decline vaccination in writing, can significantly increase the overall vaccination rate. It has also been proved that people's brains are highly perceptive to the visual effects. There are a large number of studies describing how visual factors can influence people's choices and provoke them to show certain behaviors. It should also be noted, that people's decisions depend on how possible option is presented. Understanding how much the final solution varies from certain conditions is critical for understanding individual behavior and for effective planning of behavioral interventions.

So, the main task of medicine and the economics of the future, knowing about the effect of the default system, tendency to fall under the influence of visual information and depending on ways of presenting, is to create methods of influencing the behavior of people to aim them making the right decisions, abandoning biases. It is important to add that too much persistence and pressure on the patient may have the opposite effect. A significantly better effect can be received by allowing the patient to make his own choice after providing certain information in the amount and context required.

Generally, using the principles of behavioral economics in public health can have the positive effect of helping patients make the right choice, while feeling their autonomy in decision-making. People are greatly influenced by the society and are dependent on the environment.

The peculiarities of human behavior give reason to predict the following:

1) While looking at the environment, people try to correspond to the behavior of the other society members. The tendency to imitate the behavior of others is also clear in matters related to health. People are easily affected by the environment, e.g., when it comes to alcohol and tobacco consuming, because most people do so. This is supported by studies in which students were interviewed about tend to drink alcohol. The results proved that most people consume alcoholic drinks because they observe such behavior among others (colleagues, relatives), and it was also found that junior students consume alcohol, trying to imitate the behavior of the senior ones [12]. Similar studies among students were also conducted on tobacco smoking, where a similar correlation has been detected [4];
2) People's actions are more deliberate and responsible if they understand that others are watching them;
3) people are more inclined to do things that are not typical for them when they are asked to do so. Social factors have a significant influence on the behavior of people in many areas, including public health sphere, in which they, in turn, have a number of certain characteristics. Firstly, using forces of social influence is a much cheaper method compared to financial reward. Secondly, today there are no studies, which could enable testing the long-term effectiveness of social impact methods, using long-term research period. This is a reason to believe that social influence can create sustainable habits of healthy behavior and disease prevention, again compared to monetary reward, which has a relatively short effect that remains only during the period of getting the reward. Thus, more researches are needed to prove the sustainability of this influence, alongside with further introduction of these principles into the public health sphere.

CONCLUSIONS. In order to achieve visible and positive public health effects, principles based on behavioral responses need to be taken into account and applied, since behavioral economics can offer strategies to significantly improve the effectiveness of many public health programs. Introducing the principles of behavioral economics into the medical industry will help to encourage patients for keeping a healthy lifestyle with systematic following the medical recommendations.

PROSPECTS FOR FURTHER RESEARCH. The main prospective issue is studying and creation of behavioral economics-based methods of influencing the behavior of people (with their further systematic using in health system) who seek to be healthy, but cannot achieve results themselves for some reason.—

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#09

CHARACTERISTICS OF OCCUPATIONAL SAFETY AND WORK HYGIENE AMIDST THE PANDEMIC

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For more than a year now, the humankind has been dealing with a huge challenge that is global pandemic of COVID-19. Many of not only small enterprises but also large companies were forced to downsize or even close whole projects as they found themselves on the verge of bankruptcy. Many people started working from home, especially with the lockdowns, which has caused and is still causing plethora of issues. How can one consider the experience gained and ensure safety of workers amidst the pandemic? The answer to this question was given to those interested during World Day for Safety and Health at Work 2021 entitled "Anticipate, prepare and respond to crises" and focused on involving governments, employers, and employees into establishing healthy and safe working conditions with the main priority on anticipating and preventing crises.

The issue of organizing and managing labour relations amidst the pandemic has been of great scientific interest. Researchers have been particularly interested in working conditions of medical workers since they are at the forefront of the fight with coronavirus infection [1–3]. For instance, Yavorovskyi [2] notes, "The risk of contracting SARS CoV 2 in healthcare was 3.8 times higher than among the general population at the beginning of October. Healthcare workers are 1.5 times more likely to die from COVID-19 than the rest of the population". Sliusarevskyi et al. [4], as well as Maksymenko et al. [5] researched the psychological aspects of staff health in quarantine, basics of psychological care, as well as the results of psychological research during the pandemic. According to the authors [4], "It is scientific psychology that should be used in the future to overcome certain real threats to people and groups, individuals and society". The legal basis for the organization and conduct of economic activity in the context of the COVID-19 pandemic has been the subject of research by scientists Duravkina, for example. According to the authors [7], "The primary task of the state should be the modernization of the economy and respective legislation to minimize risks and losses of domestic producers and protect both the population of the state and national producers of goods and services". However, despite the significant interest of researchers in this problem, it is not sufficiently covered by research, especially in matters related to occupational safety and health in the pandemic caused by COVID-19.

To provide quality advice to employers willing to protect their employees and continue to effectively manage businesses and organizations, ISO occupational safety professionals have developed a new international standard ISO/PAS 45005: 2020 "Occupational health and safety management – General guidelines for safe working during the COVID-19 pandemic". This document can be useful for both small businesses, which employ only a few people, and large corporations. This standard is mandatory in addition to such international labor protection documents as ISO 45001, OHSAS 18001, and ILO-OSH Guidelines of the International Labor Organization, various National Standards, International Labor Standards and ILO conventions. For example, according to the order of the Ministry of Health of Ukraine of 25.02.2020 No 521 "On amendments to the List of extremely dangerous, dangerous infectious and parasitic human diseases and carriers of pathogens of these diseases" [8], coronavirus SARS-CoV-2 is recognized as an extremely dangerous disease.

The standard concerned summarizes best international practices on occupational safety and health during the COVID-19 pandemic and is intended to complement any relevant national guidelines and regulations. The new international standard ISO/PAS 45005: 2020 is a response to the COVID-19 pandemic and the increased risk that the disease poses to human health, safety, and well-being of different groups, including those working from home, as well as workers who managed to stay in traditional offline working environment.

According to [9], "Governments, regulators and other professional organizations around the world have published guidelines for safe work during the COVID-19 pandemic".

> The new standard contains a single general set of guidelines that complements the information being disseminated by national governments and supports the principles, namely:
> – "reasonable risks management measures arising from COVID-19 are applied or will be applied to protect the health and safety of workers;
> – workers should not be required to work if these measures have not been implemented".

Obviously, to understand individual needs, the organization should encourage discussion and interaction with employees or persons representing their interests.

Excessive influence of the informational environment, working from home, the risk of disease, physical isolation, constant use of protective equipment all lead to stress, which negatively affects safety and health of workers amidst the pandemic.

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CONCLUSIONS AND RECOMMENDATIONS. To ensure proper functioning of economic entities amidst the pandemic, namely the creation of safe and healthy working conditions and reducing the risks arising from COVID-19, employers should in the organization of work be guided by the new international standard ISO/PAS 45005: 2020 "Occupational health and safety management – General guidelines for safe working during the COVID-19 pandemic".

Particular attention should be paid to mental health of employees and their emotional recovery, as well as to rational regime of work and rest.—

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#10

CLINICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF COVID-19 ACCORDING TO THE DATA OF THE MUNICIPAL NON-PROFIT ENTERPRISE "LVIV CLINICAL EMERGENCY CARE HOSPITAL" (UKRAINE)

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The COVID-19 pandemic has led to numerous problems and systemic challenges in all areas of medicine. Traditional organizational, diagnostic, and therapeutic approaches to infectious diseases are not always effective when applied to new nosology. Analysis and generalization of the results of COVID-19 treatment is important for further optimization of the tactical program for this disease.

INTRODUCTION. The paper presents data on the features of treatment of patients with COVID-19 in the Lviv Clinical Emergency Care Hospital (Ukraine) for the period of 01.04.2020–01.06.2021. It also analyses the organizational, diagnostic and treatment aspects of patients for whom COVID-19 was an independent nosology or combined with other pathologies.

COVID-19: ORGANIZATIONAL PROBLEMS AND EPIDEMIOLOGY. The COVID-19 pandemic has created various challenges for world medicine, one of which is significant change in the organization of hospitals, departments, creation of new structural units to differentiate patients and to avoid nosocomial spread of the coronavirus infection [1]. In order to maintain the proper functioning of hospitals in a pandemic, each clinic has created its own clear algorithm of action, which speeds up the process of diagnosis, treatment and determination of further tactics in the management of the patient [2]. Relevant changes took place in the Municipal Non-Profit Enterprise "Lviv Clinical Emergency Care Hospital" as well. The organizational structure of the Municipal Non-Commercial Enterprise "Lviv Clinical Emergency Care Hospital" consists of administrative, economic and medical units of 1280 beds. Taking into consideration the global coronavirus pandemic and in accordance with legislative and regulatory documents [3,4,5] in order to optimize measures for preventing the spread of cases caused by the new coronavirus in Ukraine the Ministry of Health of Ukraine has approved an Order [6], which regulates the Standard of emergency medical care "Coronavirus disease (COVID-19)" and Standards of medical care "Coronavirus disease (COVID-19)". This Order was introduced into the work of our hospital by Order No 78 of 01.04.2020, which regulates the organization of inpatient treatment and provision of anti-epidemic measures and medical care in case of admission of patients with suspected COVID-19. Since July 2020, the Lviv Clinical Emergency Care Hospital has been included in the List of medical care providers designated to provide inpatient care to patients with COVID-19 under a contract with the National Health Service of Ukraine. To provide qualificated medical care to patients and considering the clinical routes of patients with suspected or already diagnosed COVID-19, the hospital has created an additional separate unit initially for 350 and now for 720 COVID-specialized beds and 35 medical teams to help patients with COVID-19.

Including:

1) Therapy centre – 350 beds;
2) Department of Anaesthesiology and Intensive Care – 100 beds;
3) Department of Vascular and Minimally Invasive Neurosurgery and Neurology of the Neurosurgery and Neurology Centre – 90 beds;
4) Department of Cardiology and Reperfusion Therapy of the Cardiovascular Centre – 90 beds;
5) Structural subdivisions of the surgical profile (Surgery Centre, urology department, traumatology and orthopaedics department, gynaecology and pregnancy pathology department) – 90 beds.

	2020	January 2021	February 2021	March 2021	April 2021	May 2021	Total for 5 months of 2021
Total number of COVID-19 patients treated in the hospital	**1665**	333	192	586	1036	403	**2550**
Among them – in the department of anesthesiology and intensive care	452 (27,1%)	86	53	126	298	65	628 (24,6%)
On mechanical ventilation	197 (11,8%)	39	23	82	103	31	278 (10,9%)
Total number of deaths from COVID-19 in the hospital	**384 (23%)**	78	45	108	204	62	**497 (19,4 %)**

Table 1. The structure of patients with COVID-19 who received inpatient care in the Lviv Clinical Emergency Care Hospital within the period from April 2020 to May 2021

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At the time of the maximum increase of COVID-19 morbidity the following changes took place in the hospital:
- suspension of planned hospitalization of patients and restriction of visits to inpatients, prohibition of visits with children;
- strict observance of sanitary and anti-epidemic rules by visitors of inpatients with obligatory wearing of medical masks and carrying out remote thermometry;
- non-admission to work of medical workers with signs of acute respiratory viral infection;
- prohibition on staying in the hospital until the end of quarantine measures for medical students;
- providing medical workers with personal protective equipment that meets the requirements (insulating gown, disposable gloves, medical masks, goggles, respirators of protection class not lower than FFP2, bio protection suits);
- placement of hand hygiene stations and wall dispensers with antiseptics for hands in lobbies, corridors, at the entrance to the floor, at the entrance to the department.

In addition, medical staff strictly adhered of to the algorithms of actions regarding patients with suspected COVID-19 and biosafety rules: use of personal protective equipment, compliance with enhanced disinfection and anti-epidemic mode in hospital by carrying out wet cleaning with use of disinfectants, airing of rooms every hour for 15–20 minutes etc.

Moreover, there were two isolators created for the reception of contaminated patients in two shifts with a 30-minute break for wet cleaning 2–3 times per shift, ventilation, ultraviolet radiation.

During the pandemic, 326 people became ill among the medical staff, including 161 doctors and 99 nurses, 65 junior nurses and technicians. The fact of the relationship between the disease and professional activity was established in 2 cases.

COVID-19 AND URGENT NEUROLOGICAL PATHOLOGY. Patients with COVID-19 infection have a high risk of stroke, especially patients with multiple organ failure. Studies show that more than 35% of patients with COVID-19 develop neurological symptoms. For some patients with COVID-19, neurological symptoms may be the primary manifestations of the disease [7]. The prevalence of neurological signs and symptoms is higher for patients with severe COVID-19 infection, which may be a result of cerebral hypoxia due to respiratory failure [8]. The risk of stroke is higher for elderly patients with cerebrovascular disease (risk factors: hypertension and diabetes) [9]. The reason behind strokes as an effect of coronavirus disease is hypercoagulation. Conversely, hypercoagulopathy reduces the effectiveness of standard treatment of ischemic stroke by thrombolysis for patients with COVID-19 [10]. Large vascular occlusion is twice as common in COVID-19-associated stroke as in non-coronavirus-related strokes and remains high in all age groups. COVID-19 infection increases morbidity, mortality, or severe disability and carries a higher risk of bleeding among patients with ischemic stroke who have been diagnosed with leucocytosis, elevated C-reactive protein, and D-dimer, and who have received intravenous thrombolysis [11].

The progression of the pandemic has necessitated the creation and subsequent expansion of COVID-locations, increasing the number of beds. This need was due to the peculiarities of the third wave of the pandemic, which began in Lviv region in early March, with a peak on April 1–20 and subsiding over the next 6 weeks. In organizational terms, the Lviv Clinical Emergency Care Hospital was ready for such conditions, which was achieved through careful analysis of the experience of other countries, as well as close monitoring of the pandemic and fight against it in our hospital. It should be noted that during more detailed monitoring (every ten days) we noted two peaks of the third wave, when in addition to the main, first peak, there was a second, less significant activity during the 2nd decade of May, which led to a two-phase morbidity curve in our hospital.

A separate COVID-location has been operating in the isolation zone of the Department of Vascular and Minimally Invasive Neurosurgery and Neurology from 27.06.2020 to organize the hospitalization of patients with suspected or confirmed COVID-19, the number of beds ranged from 15 to 90. In 2020 for 9 months 95 patients were diagnosed with COVID-19 and stroke, and 154 patients – in 5 months of 2021. Since April 1, 2020, (the coming into force of medical guarantees and almost simultaneously – the announcement of a pandemic) 1,213 patients have been treated of stroke non-COVID-19-related, and 821 patients in 2021.

The 3rd wave of COVID-19 significantly affected the structure of patients. In 2020 (1st and 2nd waves), an average of 10.6 cases of stroke were diagnosed per month in combination with COVID-19, and in 2021 (3rd wave) – 19 patients per month.

82 patients (1.9%) with a clear association between COVID-19 and neurological complications were selected using prospective analysis from 4,215 coronavirus patients treated at the Lviv Clinical Emergency Care Hospital. Among them: 55 men (67.1%) and 27 women (32.9%).

#10
CLINICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF COVID-19 ACCORDING TO THE DATA OF THE MUNICIPAL NON-PROFIT ENTERPRISE "LVIV CLINICAL EMERGENCY CARE HOSPITAL" (UKRAINE)

The neurological complications included the following:
- Cerebral infarction – 59.8% (49 patients)
- Generalized epilepsy and epileptic syndromes – 28.0% (23 patients)
- Encephalopathy unspecified – 7.3% (6 patients).
- Inflammatory polyneuropathy (with tetraparesis) – 4.9% (4 patients).

The average time of start of neurological complications is 20.4 ± 2.5 days from the onset of symptoms of viral infection. Our data correlate with the latest findings of the American Academy of Neurology [12], which indicate that in the treatment of patients with COVID 19 the proportion of patients who develop a stroke is quite high (1.8%). Hospital mortality is also extremely high (34.0%).

COVID-19 AND URGENT SURGICAL PATHOLOGY. The pathogenesis of COVID-19 is accompanied by the launch of systemic issues that complicate its course not only as the underlying disease, but also comorbidities. In particular, the mechanisms of the blood coagulation system and immune regulation are violated [13]. This situation creates risks for patients with urgent visceral surgical pathology and forces to optimize the diagnostic and treatment program.

In the Lviv Clinical Emergency Care Hospital from 1.04.20 to 1.06.20, 45 patients with urgent surgical pathology in combination with COVID-19 were treated. Literature data indicates COVID-19-specific surgical complications: bleeding from the gastrointestinal tract [14,15], hematomas [16], abdominal ischemia [17], thrombosis of blood vessels of the extremities [18]. Our data are consistent with the information provided in the literature (Table 2). The identified complications of COVID-19 in combination with the presented pathology forced to adjust the treatment tactics when formulating indications for surgical treatment, determining preoperative preparation and choosing surgery.

Preliminary analysis allows us to focus on specific problems in the treatment of urgent surgical pathology in combination with COVID-19.
- A significant proportion of patients sought surgical care later than needed; fear of hospitalization amidst pandemic was observed.
- Diagnostics was complicated by the manifestation of multiorgan dysfunction, which masked local symptoms and limited the effectiveness of treatment.
- Patients with gastrointestinal bleeding, hematomas, abdominal ischemia, thrombosis of the vessels of the extremities and perforations of the hollow organs dominated.
- Accurate and timely diagnostics of surgical complications required well-established interdisciplinary cooperation with various specialists, considering the specifics of pathogenetic treatment of COVID-19, the components of which were often incompatible with the treatment of combined surgical pathology.

Complications	Surgical diseases
Bleeding from the gastrointestinal tract (12)	– Chronic ulcers of the stomach and duodenum (4) – Acute gastric ulcers (5) – Varicose veins of the oesophagus (3)
Hematomas (5)	– Hematomas of the abdominal wall (3) – Hematomas of retroperitoneal space (2)
Abdominal ischemia (6)	– Mesenteric thrombosis with necrosis of the small and large intestine (6)
Perforation of hollow organs (6)	– Gastric ulcers (2) – Diverticula of the sigmoid colon (4)
Thrombosis of vessels of extremities (5)	– Thrombosis of vessels of lower extremities (4) – Thrombosis of vessels of the upper extremity (1)
Sepsis, multiorgan dysfunction (11)	– Purulent soft tissue diseases (6) – Clamped hernias of the anterior abdominal wall (3) – Liver abscess (1) – Gangrenous cholecystitis (1)
Total – 45	

Table 2. COVID-19 and surgical pathology.

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#11

ANALYSIS OF THE EFFECTIVENESS OF HIV PREVENTION PROGRAMS AMONG MEN WHO HAVE SEX WITH MEN AND AMONG PEOPLE WHO USE DRUGS

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INTRODUCTION. Ukraine has the second largest HIV epidemic in Eastern Europe and Central Asia. HIV infection remains one of the most important public health problems in Ukraine, particularly in Lviv Oblast. In particular, there are effective prevention programs in the region, which are implemented with the participation of non-governmental HIV service organizations (NGOs). Considerable attention is paid to the early detection of HIV infection among vulnerable groups and the provision of antiretroviral therapy (ART) with high adherence and indeterminate viral load (less than 20 copies of RNA/ml). A multidisciplinary approach and the provision of integrated care are important in achieving this strategy. At the same time, it is very important to adhere to the principles of confidentiality, considering the individual approach to each patient. The combination of these components contributes to the implementation of programs for the prevention and treatment of HIV infection with high efficiency.

At present, one of the priorities in overcoming the HIV epidemic is the early appointment of ART among vulnerable groups, in particular among men who have sex with men (MSM) and among people who inject drugs (PWID) [1–4].

MSM is a fairly closed group, so close cooperation with NGOs contributes to its better coverage of counselling and testing services for HIV, syphilis, hepatitis B and C, followed by accompaniment of HIV-positive people to specialists with subsequent ART. Work with PWID also involves the provision of integrated care, as often for HIV-positive patients, in addition to ART, it is advisable to participate in the program of substitution maintenance therapy (SMT) with Methadone hydrochloride or buprenorphine.

The **AIM OF THE WORK** is to evaluate and compare the effectiveness of prevention programs among people living with HIV (PLHIV), in particular for MSM and PWID.

MATERIALS AND METHODS OF RESEARCH. The object of the study was MSM and PWID patients living in Lviv region. Among the research methods used in the work are clinical and anamnestic, questionnaires, statistical methods. The forms of primary accounting documentation No 502–1/o "Registration card of an HIV-infected person" and No502–2/o "Notification of changes in the registration card of an HIV-infected person", reporting forms No1-HIV/AIDS, Report on Persons with Conditions and Diseases Caused by Human Immunodeficiency Virus (HIV) for _Quarter of 20_ "(quarterly) and No 2-HIV/AIDS Report on Persons with Diseases Caused by Human Immunodeficiency Virus (HIV) by 20_ year" (annual), approved by the order of the Ministry of Health of Ukraine of 05.03.2013 No 180 "On approval of forms of primary accounting documentation and reporting on monitoring of the HIV epidemic situation and instructions for their completion", as well as data of the Medical Information System (MIS) "HIV infection in Ukraine" [5] were analysed.

RESEARCH RESULTS AND THEIR DISCUSSION. The new UNAIDS Global Strategy to Fight AIDS 2021–2026 "Ending Inequality, Ending AIDS" is a bold approach that uses the inequality perspective to fill gaps that hinder progress in tackling AIDS. According to the Public Health Center of the Ministry of Health of Ukraine, the strategy envisages the creation and operation of effective, innovative, flexible systems for providing quality and affordable services for HIV prevention, diagnosis, treatment and care and support for PLHIV.

The implementation of the State Strategy until 2030 will help cover 90% of people from high-risk groups with comprehensive prevention services, achieve 90% of PLHIV awareness of their own HIV status; cover ART and achieve viral suppression in 95%, which will reduce the mortality rate from AIDS-related diseases by 90%. The epidemiological situation in the MSM group in Lviv region is relatively stable.

MSM is the most stigmatized and difficult to access among the main HIV-vulnerable groups. For most MSM, medical services are available at the place of residence. Often, MSM do not inform a doctor of their orientation. HIV-positive status is still perceived as a stigma, which is why HIV-positive people in certain situations hide this information from health professionals. However, knowing their HIV status, MSM have access to treatment programs, including free ART. Many MSM care about their health, they are aware of sexually transmitted infections (STIs) and visit doctors, most often dermatovenerologists and urologists. After ART, HIV-positive MSM are more likely to have a high adherence to treatment, clearly follow the doctor's recommendations in contrast to the PWID group, where there is a much lower percentage of adherence to ART. This requires coordinated and effective work of health facilities and NGOs. In Lviv oblast, there is an adequate system for providing condoms, lubricants, express HIV and STI tests, as well as informational and educational materials for PWID and MSM within the framework of pre-

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vention programs implemented at the expense of donors. This issue has been studied in detail in previous years and significant efforts have been made to address this issue [6].

To assess the effectiveness of these measures, the data on the HIV testing of MSM and PWID for 2016–2020 and the identification of HIV-positive among them were analyzed. The results obtained are presented in table 1.

	2016	2017	2018	2019	2020
Injecting drug users	6279	10425	7215	5586	11652
HIV-positive (abs.)	64	56	25	50	58
HIV-positive (%)	1,0	0,5	0,3	0,9	0,5
Men who have sex with men	10100	10100	9900	9900	9900
HIV-positive (abs.)	12	7	4	23	21
HIV-positive (%)	0,1	0,07	0,04	0,2	0,2

Table 1. Dynamics of testing of MSM and PWID for HIV and detection of HIV-positive for 2016–2020

As can be seen from table. 1, every year more and more PWID are tested for HIV (from 6279 in 2016 to 11652 in 2020), but the percentage of identified HIV-positive people among them is declining (from 1.0% in 2016 to 0.5% in 2020). This proves the high efficiency of prevention programs among the representatives of this vulnerable group in Lviv region, including due to effective cooperation with NGOs. At the same time, on the contrary, the number of people tested for HIV among MSM decreased slightly from 2016 to 2020 (from 10,100 in 2016 to 9,900 in 2020), but the percentage of HIV-positive among them increased from 0.1% to 0.2 %. This indicates the need for even greater coverage of this group with HIV prevention counselling and testing programs.

At the same time, more and more MSM are revealing their sexual orientation to health workers who are counselling and testing them for HIV. This indicates an increase in public tolerance to MSM and a reduction in stigma and discrimination among this group, which is a great merit of the joint coordinated work of the Lviv Regional Information and Analytical Center for Medical Statistics with HIV service NGOs, including the CF "Avante" and "Tochka opory".

An analysis has been carried out of the coverage of newly diagnosed HIV-positive persons with medical surveillance in the "Lviv Regional Information and Analytical Center for Medical Statistics" for 2016–2020, in particular among PWID and MSM. The results obtained are presented in table 2.

	2016	2017	2018	2019	2020
Taken under observation	490	460	518	475	320
Sexual transmission (abs.)	267	275	324	286	184
Sexual transmission (%)	54,5	59,8	57,8	60,2	57,5
Sexual heterosexual transmission (abs.)	229	255	287	262	154
Sexual heterosexual transmission (%.)	85,8	92,7	88,6	91,6	83,7
Sexual homosexual transmission (abs.)	38	20	37	24	30
Sexual homosexual transmission (%)	14,2	7,3	11,4	8,4	16,3
Parenteral transmission (abs.)	146	112	126	120	74
Parenteral transmission (%)	29,8	24,3	22,4	25,3	23,1

Table 2. Dynamics of observation of HIV-infected persons with different ways of HIV transmission in 2016–2019

As can be seen from Table 2, over the last 5 years, from 2016 to 2020, the number of PWID taken under observation decreased from 146 to 74 people (from 29.8% to 23.1%). The percentage of MSM monitored from 2016 to 2020 increased from 14.2% in 2016 to 16.3% in 2020, although in absolute numbers the number of people decreased from 38 in 2016 to 30 in 2020. In general, the number of PLHIV registered in 2020 has decreased significantly (from 475 in 2019 to 320 in 2020), which is largely due to the impact of the COVID-19 pandemic in the world and in Ukraine. At first glance, it may seem unclear why

	2016	2017	2018	2019	2020
On the "D" record, total	3263	3573	3827	3946	3919
Sexual transmission (abs.),	1608	1844	2080	2208	2265
including homosexual	98	114	145	162	184
Sexual transmission (%)	49,3	51,6	54,4	56,0	57,8
Including homosexual (%)	6,1	6,2	7,0	7,3	8,1
Parenteral transmission (abs.)	1396	1439	1486	1462	1382
Parenteral transmission (%)	42,8	40,3	38,8	37,1	35,3

Table 3. Dynamics of the total number of patients under medical supervision among HIV-positive people with different ways of HIV transmission in 2016–2020

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more HIV-positive patients were placed under medical supervision than those who were diagnosed with HIV-positive status in that year (see Table 1). In fact, this indicates that patients who were examined in previous years were also taken under medical supervision, but for some reason have not yet been taken under observation at the Lviv Regional Information and Analytical Center for Medical Statistics.

At the same time, as can be seen from Table 3, the percentage of people with sexual transmission of HIV in Lviv region tends to increase (from 49.3% in 2016 to 57.8% in 2019). The homosexual way of HIV transmission in Lviv Oblast also tends to increase slightly and in 2020 accounted for 8.1% of the total number of people with sexual transmission of HIV.

Table 4 presents the results of a study of the dynamics of patients on ART in the Lviv region. The table shows that the number of patients on ART has increased significantly in recent years (from 1443 in 2017 to 2401 in 2020), including among patients with AIDS (from 790 patients in 2017 to 1416 patients in 2020). Also in recent years, the number of patients with a viral load of less than 20 copies of RNA/ml has increased significantly (from 35.2% in 2017 to 72.6%). This trend is positive, although it is clear that in the framework of integrated assistance it is advisable to increase this figure to 95%. The percentage of people with sexual transmission of HIV with a viral load of less than 20 copies of RNA/ml from 2017 to 2020 increased from 46.7% to 54.3%. At the same time, the percentage of persons with homosexual transmission decreased slightly (from 15.2% in 2017 to 11.2% in 2020). The percentage of people with an indeterminate level of viral load also increased from 18.9% in 2017 to 22.7% in 2020.

	2017	2018	2019	2020
The total number of patients on ART	1443	1944	2163	2401
Including in the AIDS stage	790	1089	1349	1416
Number of people on ART with a viral load of less than 20 copies of RNA/ml (abs.)	508	1147	1619	1743
Number of people on ART with a viral load of less than 20 copies of RNA/ml (%)	35,2	59,0	74,8	72,6
Including sexual transmission (abs.)	237	612	857	947
Including sexual transmission (%)	46,7	53,4	52,9	54,3
Including homosexual (abs.)	36	80	100	106
Including homosexual (%)	15,2	13,1	11,7	11,2
Including parenteral (abs.)	96	202	377	395
Including parenteral (%)	18,9	17,6	23,3	22,7

Table 4. Dynamics of the total number of patients on ART for 2016–2020

CONCLUSIONS. The provision of services for PLHIV in Lviv region as of January 1, 2021, has been analysed. It has been established that the number of PWID tested for HIV has increased over the last 5 years, but the percentage of HIV+ detection among them has slightly decreased. At the same time, the number of screenings for MSM decreased slightly, but the percentage of HIV+ detected among them increased slightly, which indicates the need for further effective preventive measures. In terms of registration, in 2020 this percentage decreased for all groups due to the impact of the COVID-19 pandemic. At the same time, the total number of HIV+ patients under surveillance, including those with sexual, including homosexual transmission, has increased in the Lviv region over the last 5 years. This indicates a good working environment with NGOs, which has improved these indicators. At the same time, the total number of people with parenteral HIV transmission has decreased slightly over the last 5 years. Regarding adherence to ART and the number of people with a viral load less than 20 copies of RNA/ml, their percentage increased from 35.2% in 2017 to 72.6% in 2020. This trend is positive, but these indicators need to be further improved.

PROSPECTS FOR FURTHER RESEARCH. Further effective cooperation is planned between the Lviv Regional Information and Analytical Center and HIV service non-governmental organizations in order to achieve the strategic targets "95-95–95" in 2025.—

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#12

MONITORING THE INCIDENCE AND PREVALENCE OF DISEASES IN UKRAINE, REGISTERS OF INFECTIOUS AND NON-INFECTIOUS DISEASES

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KEY WORDS: monitoring, accounting and registration of infectious diseases, reporting on monitoring results.

The effectiveness of the public health system and its development depend on the information obtained from monitoring the health of the population, the incidence and prevalence of diseases among the population at all levels, from national to local. Monitoring is also critical to examining health problems, hazards and risks.

The effectiveness of the public health system depends to a large extent on the existing reporting systems for infectious and non-infectious diseases, injuries, risk factors, health resources, resource use and special registers of diseases such as cancer, birth defects and many others.

Information technologies and computerization of public health facilities and treatment and prevention facilities of the National Health Service of Ukraine of the Ministry of Health of Ukraine provide collection of important information for epidemiological and economic analysis in order to develop public health policies and identify priorities, and also allow the exchange and dissemination of information between data systems and use them to assess the impact of various factors on public health.

This position is also reflected in the European Action Plan for for Strengthening Public Health Capacities and Services (EAP), a document adopted in 2012 by the WHO Regional Committee for Europe, which has become a kind of "roadmap" for public health systems in the European countries [1].

When defining epidemiological surveillance and assessment of public health and well-being as the first operational function of public health, the document notes [1] that in order to adequately assess public health problems and develop national health strategies, countries need to have data collection systems, surveillance systems and monitor trends in health indicators, behavioral aspects of health, mortality, injury and violence rates, and the incidence and prevalence of infectious and non-communicable diseases, including mental health disorders.

Given such WHO directives, today in Ukraine there is a dynamic transformation of both surveillance in general and the monitoring of morbidity and prevalence of diseases. Given the historical aspects, it would be unfair to talk about establishing this monitoring system in our country, as it has existed for decades, but it has been closely implemented in the structure of sanitary and epidemiological surveillance, the State Sanitary and Epidemiological Service of Ukraine (SSES), wchich provided regular data collection on infectious diseases for more than half a hundred nosological units. The processes of liquidation of DSES, creation of laboratory centers and public health centers, reform of the health care system with the choice of the European vector of development, as well as the pandemic of coronavirus COVID-19 contributed to the priority in setting and solving this problem.

On the positive side, within the period of 2020–2021, the Ministry of Health of Ukraine has been purposefully working on strategic issues related to the construction of quality epidemiological surveillance in Ukraine, monitoring of infectious diseases and the public health system in general, however, changes in the monitoring of noncommunicable diseases are somewhat slower.

Unfortunately, today the country does not have a single system for monitoring the incidence and prevalence of diseases. Potentially useful information from different parts of the public health and health care system as a whole is not publicly available. A significant amount of information is missing due to insufficient compliance with reporting procedures, in particular by private medical institutions. In addition, financial constraints hinder data collection.

The Ministry of Health of Ukraine actually ensures the formation of state policy on monitoring of infectious diseases, which is reflected in Article 35 of the Law of Ukraine "On protection of the population from infectious diseases" from 23.05.2020, and is entitled "Accounting and registration of infectious diseases", namely the Law states that "Accounting for infectious diseases is based on the system of mandatory registration of each case, regardless of the place and circumstances of detection and prompt (emergency) notification of health care facilities identified by the central executive body that ensures the formation of state policy in the field of health care for the implementation of anti-epidemic measures" (Part one of Article 35 as amended by Laws No 5460–VI of 16.10.2012, No 555–IX of 13.04.2020). Part two of Article 35, as amended in accordance with Law No 5460–VI of 16.10.2012, regulates [2]: "Health care institutions and facilities, regardless of ownership, business entities engaged in medical practice, shall conduct registration and accounting of infectious diseases and submit relevant statistical reports. The list of infectious diseases subject to registration, the procedure for their accounting and reporting shall be established by the central body of

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executive power, which ensures the formation of state policy in the field of health care".

An extremely important moment in the transformation of infectious disease monitoring was the order of the Ministry of Health of Ukraine dated 30.07.2020 No 1726 "On approval of the Procedure for accounting, reporting and epidemiological surveillance of infectious diseases and the List of infectious diseases subject to registration", which came into force on 15.01.2021 [3]. According to this order, monitoring and assessment of the epidemic situation, forecasting the development of the epidemic process, monitoring and evaluation of preventive and anti-epidemic program measures for their rational adjustment are among the main tasks of epidemiological surveillance (observation).

Accounting, reporting and epidemiological surveillance (observation) is carried out for the following purposes:
- study, assessment and forecast of the sanitary-epidemic situation;
- identification of causal links between the state of health of the population and the impact of environmental factors on it;
- development of scientifically sound recommendations for effective management decisions in the field of public health.

In particular, the order stipulates that epidemiological surveillance (observation) and accounting should cover:
- List of infectious diseases subject to registration;
- List of biological pathogens.

The document defines how primary care providers, emergency medicine units, medical workers of educational, social protection and health care institutions participate in epidemiological surveys of isolated cases of infectious diseases and in the investigation of outbreaks. And how providers of secondary (specialized) and tertiary (highly specialized) care participate in epidemiological surveys of infectious diseases and in the investigation of outbreaks on proposals provided by public health institutions.

The terms ***"monitoring"*** and ***"accounting and registration of infectious diseases"*** should be differentiated.

MONITORING is the observation of epidemiological surveillance (observation), which takes place through the collection and analysis of information at certain intervals, in accordance with predefined indicators.

ACCOUNTING AND REGISTRATION OF INFECTIOUS DISEASES is the recording of each case of infectious diseases that are subject to registration by entering data into the electronic health care system in accordance with applicable law. This order also regulates the terms "monitoring" and "accounting and registration of infectious diseases" [3], namely "monitoring" is defined as "monitoring of epidemiological surveillance (observation), implemented through the collection and analysis of information at certain intervals, according to pre-defined indicators", and "accounting and registration of infectious diseases" – as "fixation of each case of infectious diseases subject to registration by entering data into the electronic health care system in accordance with applicable law".

It is very important that this order [3] regulates the work of all health care institutions, public health institutions, natural persons engaged in medical practice or other institutions and establishments that in the course of their activities receive information on the state of health, well-being of the population and indicators of the living environment, i.e., forms the monitoring system as fully and clearly as possible.

According to the charter of the state institution "Public Health Center of the Ministry of Health of Ukraine" (PHC) [4], PHC is the main health care institution responsible for maintaining and strengthening the health of the population, social and hygienic monitoring of diseases, epidemiological surveillance and biological safety, group and population morbidity prevention, epidemic control and strategic management in the field of public health. Thus, the main role in the process of monitoring the incidence and prevalence of diseases and registration of infectious and non-infectious diseases belongs to the PHC.

The normative and legal document "On Approval of the Procedure for Keeping Records, Reporting and Epidemiological Surveillance (Observation) of Infectious Diseases and the List of Infectious Diseases Subject to Registration" assignes the following functions to the PHC:
- coordination and organizational and methodological management of the network of epidemiological surveillance (observation) on accounting, registration of infectious diseases and epidemiological surveillance (observation) of infectious diseases;
- conducting and/or participating in epidemiological investigations of outbreaks (epidemics) of infectious diseases, in order to establish the causes of their occurrence, factors of infection transmission, determining the boundaries of foci of infectious diseases and the extent of the epidemic or outbreak, taking measures to localize and eliminate them;
- accounting, registration, epidemiological surveillance (observation) and monitoring of

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infectious diseases, study of the population's immunity to infectious diseases, controlled by immunoprophylaxis;
– development and implementation of national epidemiological surveillance programs in order to minimize the consequences of the epidemic spread of infectious diseases, registration and notification of infectious diseases in accordance with the List of Infectious Diseases;
– conducting regular assessments of epidemiological surveillance systems for infectious diseases;

Thus, in 2021, the Public Health Center of Ukraine began active work on the development of national legislation on the implementation of the monitoring system of syndromic diseases within the project "Support to the Public Health Center of the Ministry of Health of Ukraine to to strengthen and build the capacity of the health system to better monitor, epidemiologically observe, respond to and prevent disease outbreaks".
It is worth mentioning the draft law "On the public health system" [5], which was adopted on 04.02.2021 in the first reading, taking into account the proposals of the Committee on National Health, Medical Care and Health Insurance, according to which a number of new powers has been granted to the Public Health Center of Ukraine and strengthened by its network of regional centers for disease control and prevention.

The draft law defines the legal, organizational, economic, and social principles of the functioning of the public health system in Ukraine, inter alia:
– introduces at the legislative level the concept of "public health" as a field of knowledge and organized activities of actors in the public health system to promote health, prevent diseases and increase life expectancy;
– identifies the subjects of legal relations in the public health system;
– defines the operational functions of public health, i.e., the main activities carried out in the state to ensure the highest possible level of health and well-being of the population, as well as the fullest observance of the principle of equity in health;
– determines the basic principles of the operational function of epidemiological surveillance, including the formation of the public health information fund as a state information resource containing data on health, welfare and environmental indicators;
– determines the basic principles of the operational function of monitoring, preparedness and response to hazards and emergencies in the field of public health, including provisions for compliance with International Health Regulations and timeliness of response to localize and eliminate such threats, etc.

Epidemiological surveillance and monitoring of indicators is planned in the following areas:
1) birth and death rate;
2) infectious diseases;
3) non-communicable diseases;
4) social and mental health;
5) maternal and child health, reproductive health;
6) the impact of the state of the environment on public health;
7) occupational diseases and labor protection;
8) injuries and violence;
9) infections transmitted during the provision of medical care;
10) antimicrobial resistance;
11) immunoprophylaxis;
12) other areas determined by the procedure for carrying out epidemiological surveillance.

It is extremely important to form a public health information fund in these areas of monitoring indicators.
According to this draft, components of the public health information fund also include data from environmental monitoring systems, food safety and quality, non-food products and health promotion measures.

The Public Health Information Fund is an open information database, which is placed on the official website of the authorized body in the field of public health and is used for:
– identification of dangerous factors and assessment of risks to public health;
– forecasting the state of health of the population and the environment of human life;
– development of urgent and long-term measures to prevent and eliminate the impact of dangerous factors on the health of the population;
– preparation of proposals for improving the activities of executive bodies and local governments in the field of public health and ensuring sanitary and epidemiological well-being.

Open access to information that may contain health secrets is provided after depersonalization.
The organization and conduct of epidemiological surveillance and monitoring of non-communicable diseases at the level of world standards is in its infancy in Ukraine. According to the PHC, non-communicable diseases in Ukraine are the cause of more than 80% of lost years of potential life due to premature mortality and disability, as well as about 90% of all deaths with high premature mortality, especially from cardiovascular

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disease. In Ukraine, according to statistical reports, the share of diseases of the circulatory system is 67.3%, malignant neoplasms – 13.1%, diseases of the gastrointestinal tract – 4% and diseases of the respiratory system – 4% [6].

The State Statistics Service of Ukraine, one of the areas of which is Demographic and Social Statistics, plays an important role in monitoring and reporting in some areas. Relevant methodological provisions are posted on the official website of this service, in particular:
- Methodological provisions of the state statistical observation on injuries at work, approved by the order of the State Statistics Committee of 16.06.2020 No 176;
- Methodological provisions on health and safety at work statistics, approved by the order of the State Statistics Committee dated 29.09.2014 No 272 with changes approved by the order of the State Statistics Committee dated 05.02.2019 No 45;
- Methodological recommendations for the compilation of National Health Accounts in Ukraine, approved by the order of the State Statistics Committee of 10.05.2007 No 137.

"Methodological provisions on health and safety at work statistics" contain the basic concepts of health and safety at work statistics, determine the procedure for organizing and methodology for conducting state statistical monitoring of occupational injuries, data sources for the preparation and publication of generalized information on health care.
Administrative data of the Ministry of Health of Ukraine are used in the information and publication work to prepare generalized information on health care issues. The Ministry, in accordance with the legislation and in order to perform the administrative duties and tasks within its competence, monitors the network of treatment and prevention facilities and morbidity of the population.
The bodies of state statistics of Ukraine use the data of the established reporting forms of the Ministry of Health of Ukraine for the preparation of generalized information on health care.
Data from the state statistical survey on occupational injuries are presented in statistical publications, such as the statistical bulletin "Injuries at work"; comprehensive statistical collection of the State Statistics Service of Ukraine – "Statistical Yearbook of Ukraine", etc.
The problem of high prevalence of noncommunicable diseases is dominant not only in Ukraine, as non-communicable diseases are the main causes of death in all economically developed countries and many developing countries. A large share in the structure of mortality are diseases of the circulatory system, malignant neoplasms, diseases of the gastrointestinal tract, respiratory system, and diabetes. Recently, non-communicable diseases have been in the spotlight of scientists and practitioners around the world.
The development of most non-communicable diseases is based on the following risk factors: sedentary lifestyle, smoking, alcohol consumption, overweight and others, the effects of which can be prevented in the early stages of human development.
At the same time, Ukraine still does not have nationally representative data on the main risk factors for non-communicable diseases, which is an obstacle to making scientifically sound decisions to improve the situation.
The situation began to change after Ukraine signed at the WHO European Ministerial Conference on Prevention and Control of Noncommunicable Diseases in the Context of Health Policy 2020 in Ashgabat, Turkmenistan on December 4, 2013, the Ashgabat Declaration on Prevention and Control of Noncommunicable Diseases in the Context of Health Policy 2020, which stated that health promotion and non-communicable disease prevention are critical to ensuring the long-term sustainability of health systems and enabling people to live productive lives, enabling them to meet economic and social challenges. Accordingly, the signatories have pledged to strengthen national information systems that will improve the monitoring of the outcomes and consequences of noncommunicable diseases, the risk factors underlying social determinants, and priority interventions in this area, based on indicators of the Integrated Global monitoring systems in the field of non-communicable diseases and indicators of Health 2020 policy [7].
The next important step was the approval by the Cabinet of Ministers of Ukraine by the order of July 26, 2018 No 530-r of the National Action Plan on Noncommunicable Diseases to achieve the global goals of sustainable development.

This plan provides for the following steps:
- Formation and improvement of existing databases on diseases, providing information and scientific support of non-communicable diseases in particular by: 1) optimization of existing, creation of new and constant updating of integrated complex databases (registers) on key indicators of non-communicable diseases (primary morbidity, prevalence, mortality) , prevalence of risk factors; 2) ensuring the revision of nosologies that are registered within the departmental statistical reporting of the Ministry of Health and will be included in a single information and analytical system of medical information;

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determination of personal responsibility for the accuracy of data submitted to statistical reports; conducting regular monitoring and quality control of statistical data input. Examples of such national comprehensive databases (registers) are: All-Ukrainian register of patients with life-threatening heart disease, National Cancer Register of Ukraine and others. Work in this direction continues, in particular, the Ministry of Health of Ukraine is currently developing a mecha nism for creating an all-Ukrainian register of patients with rare (orphan) diseases and plans to adopt a Concept for the development of care for citizens suffering from rare (orphan) diseases for 2020–2025.

- Monitoring the consumption of tobacco products (conducting research on the prevalence of tobacco consumption among different age groups; assessing the impact of secondary tobacco smoke (passive smoking) in the workplace; ensuring the determination of morbidity, mortality and disability caused by diseases caused by exposure to tobacco products).
- Monitoring the consumption of alcohol and low-alcohol beverages (conducting research on the amount of alcohol consumption per capita and the share of the population that does not consume alcohol; conducting research on the consumption of alcoholic and low-alcohol beverages by different groups (persons under 18, pregnant women and breastfeeding women)).
- Monitoring the nutritional status of the population (conducting representative studies of the actual nutrition of the population depending on age and sex, as well as assessing the dependence of nutritional quality on education, income, place of residence and occupation; risk factors for non-communicable diseases (high cholesterol, glucose, etc.); studies on the implementation of WHO recommendations for breastfeeding infants).
- Assessment of the level of physical activity of the population (assessment of the level of physical activity of different groups of the population; monitoring the availability and assessment of the quality of facilities for physical culture and sports in urban and rural areas).
- Monitoring road safety (ensuring the establishment of a national traffic surveillance system, registration of road accidents, deaths and injuries; ensuring the organization of regular collection of objective and reliable data on key road safety violations (speeding), non-use/improper use of seat belts, child seats, helmets, the influence of distractions from driving); ensuring the review of indicators of monitoring of road safety violations at the national and regional levels for the current assessment of road safety).
- Monitoring adverse environmental factors (ensuring the establishment of a system for monitoring the effects of air pollution and other adverse environmental factors indoors and outdoors; monitoring the effectiveness of measures to reduce the harmful effects of hazardous atmospheric pollutants).
- Monitoring the observance of safe lifestyles and learning conditions of children (monitoring the lifestyle of children (physical activity, time spent in front of the TV screen and personal computer monitor, duration of sleep, being outdoors, bad habits, etc.); monitoring safe educational workload of children, monitoring conditions and organization of children's education in educational institutions)[8].

That is why, for the first time in 2019, a national representative STEPS study was organized in Ukraine, which provided objective information on the spread of risk factors for noncommunicable diseases. The STEPS study was organized by the Ministry of Health of Ukraine and the World Health Organization in the framework of a joint project of the Ministry of Health of Ukraine and the World Bank "Improving health care at the service of people". The research was carried out by the Center for Public Health of the Ministry of Health of Ukraine and the Oleksandr Yaremenko Ukrainian Institute for Social Research. It took place in all regions of Ukraine. The sample of the study included the adult population of Ukraine (urban and rural) with a total number of potential participants of 7,700 p eople. Data were collected from June 2019, and the first results were ready in December 2019.

In addition to the standard block, according to the STEPS methodology, the Ministry of Health of Ukraine decided to integrate additional topics related to public health:

1) mental health (depression and suicide);
2) violence and injuries;
3) cervical cancer (screening and follow-up).

The studies data allows to monitor the Health Sustainable Development Goals,

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as well as national, regional and global action plans and commitments for the prevention and control of noncommunicable diseases and their risk factors [9, 10].
It can be argued that the availability of reliable data on the distribution of the main risks of noncommunicable diseases at the population level contributes to the development of relevant policies for effective interventions to prevent and control the spread of noncommunicable diseases in Ukraine.
Today, information technologies and communication technologies used in the treatment and prevention facilities of the National Health Service of Ukraine and in public health facilities play a significant role in establishing high-quality and comprehensive monitoring of the incidence and prevalence of diseases. These institutions are constantly working on the introduction of new and improvement of existing information and communication technologies. Starting in 2019, most medical institutions have registered in the Electronic Health Care System of Ukraine (EHCS) eHealth, which is an all-Ukrainian telecommunications system that provides automation of medical records and management of medical information in electronic form. All medical records are primarily entered by medical staff into the medical information system (MIS) "UkrMedSoft", which is one of 20 other licensed MIS, which serve as a platform for data transfer to the EHCS and automate all major processes related to the work of general and narrow medical institutions specialization. Automated medical information systems allow you to set up electronic document management quickly and efficiently, flexibly build work with patients, keep operational records of administrative staff, control all organizational and financial issues.
The opening of Call Centers in many medical facilities will also improve the communication of medical staff with patients and contribute to more effective disease monitoring.
Regular medical staff has the opportunity to take online training on the ePlatform of the Academy of NHS of Ukraine. In particular, among the available courses for health professionals are: "Conducting electronic medical records while providing medical rehabilitation services to adults and children in hospital", "Maintaining electronic medical records", "Clinical coding of diseases and interventions in the Ukrainian system of diagnostic-related groups", "Medical opinion on birth", etc.
For medical staff of treatment and treatment-and-prophylactic institutions there is an opportunity to lead patients and work in EHCS through medical information systems, of which there are about twenty officially registered in Ukraine, in particular, such as Helsi, EMSIMED®, Dr. Eleks, MEDSTAR, MedAir, MC Plus, Askep.net, Health24, ASMART, MIS "Kashtan", SimplexMed, UkrMedSoft.

When monitoring the prevalence of infectious and non-infectious diseases, reporting on its results plays an important role. The coverage of reporting can be both comprehensive and relate to a specific area. As for the target audience, it can be the Cabinet of Ministers of Ukraine, the Ministry of Health of Ukraine, regional and local governments, etc., bodies and individuals who make certain decisions in the field of public health, or the general public. This data should be accompanied by analysis, involving basic concepts and calculations of certain indicators. The results of monitoring require high-quality presentation, analysis, and interpretation of data, as well as a comprehensive approach to reporting, which provides information in a promising strategic perspective, including time trends and social context. In addition, a multisectoral approach is important, namely the integration of information from different fields (public health, medical care, medical clinical research, sociology, etc.).
In Ukraine, health reports are traditionally issued in printed forms, and are posted on the websites of the Ministry of Health of Ukraine, the Central Statistical Office of Ukraine and the State Statistics Service of Ukraine [11, 12]. An important role in this process is played by the Public Health Centre of Ukraine, in particular, it is entrusted with the function of forecasting the epidemic situation in the country, preparing analytical information letters (bulletins) on the dynamics of infectious diseases, circulation and variability of pathogens, the quality of diagnosis, etc.
That is why the breadth of coverage, the focus on clear time periods and an integrated approach are important elements in ensuring the effectiveness of reporting on monitoring results. Other important conditions for effective disease reporting and prevalence are a conceptual, forward-looking approach and high-quality data, as on this depends the ability to make sound strategic decisions in the field of public health.—

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#13

TUBERCULOSIS STIGMA IN UKRAINE AND POSSIBLE ROLE OF ACADEMIA IN ITS OVERCOMING

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Tuberculosis (TB) is not only one of the deadliest infectious diseases all over the world which causes physical suffering. It also affects social life of the patients and has extremely negative impact on psychological wellbeing of infected people and their families. Stigmatization of TB patients in the society is still one of the factors negatively contributing to treatment success. To overcome this problem, strong collaboration and constant interaction between healthcare system, academia and science, NGOs and civil society is needed.

INTRODUCTION. Ukraine now is among 5 countries with the highest TB incidence rate in Europe according to WHO (WHO, 2021 [online]). TB is a significant challenge for the Ukrainian health system. As TB considered being a social disease, the social attitude to TB-infected persons traditionally is cautious. The transition from "old fashioned" TB treatment in Ukraine with isolation of patients and long-term hospital stay to a modern European approach without isolation, recommended express diagnostics and use of new effective drugs results in certain social reactions and changes in public perception of reform itself and TB patients in general.

Resolution of the Cabinet of Ministers of Ukraine from 27.11.2019 No 1414-p submits a Strategy of anti-TB medical care. The adoption of this resolution intends to ensure that all parties (medical administration staff, doctors, patients, and public) are informed about the goals of changes and new rules for medical staff and patients as well as implies public discussion to raise awareness about TB, TB early diagnostics, treatment and TB patient socialization.

It was anticipated by medical experts that curtail changes in TB patient care at the level at the first line of medical aid will not be accepted positively by the public. According to Natalia Litvinenko, MD, SDr, the head of the department of chemoresistant TB F.G. Yanovsky National institute of phthisiology and pulmonology, NAMS of Ukraine (NAMS of Ukraine, 2020 [online]) new national clinical protocols of TB treatment are focused mostly on long-term treatment and do not describe short-term one with new drugs, that raise concerns in doctors and patients. At the same time, the successful practices of Odessa Regional Center for Socially Significant Diseases in treatment of TB/HIV co-infection at a hospital cannot be used to good advantage in other Ukrainian regions as far as distant treatment of TB implemented in other regions has shown high efficiency. Local practitioners of the first line are not ready to provide medical care for TB patients and what is more do not provide information about the absence of TB epidemiological risks in case of earlier ambulation and outpatient care.

Mainly this attitude of family doctors and distant approach to TB care generate doubts in the public being fed with lack of information about TB related risks, treatment protocols along with circulation of traditional TB stigma.

The social determinants of health refer to the institutional, community, and interpersonal factors that affect health outside of the ease with which an individual can access medical services (WHO, 2008 [online]). TB is often associated with poverty and homelessness, a history of the prison and refugee status. During the last decades, this list of factors was widened with HIV, drug and alcohol misuse. Social isolation of TB infected people is not the only social reaction to this diagnosis – entire families of TB patients are avoided. Stigma arises not only on the ground of social antagonism. It is also a result of insufficient confidence in state institutions (healthcare system, failure of state support of patients, low income). People with TB symptoms fear discrimination and delay seeking help.

So, we decided to analyse TB stigma in a pilot survey to get a preliminary view into the dissemination of this phenomenon in different regions of Ukraine and to evaluate the possible ways of contribution of academic institutions to its overcoming.

METHODS AND RESULTS. The survey was conducted during 2020–2021. The online questionnaire consisted of 23 questions. The first block of questions covered age, gender, region, social group. The second one – questions on vaccination status and regular medical check-ups. The third – group of questions on TB, TB care and the attitude to TB infected people.

320 respondents from 18 regions of Ukraine were involved – 210 women and 110 men (fig. 1). Most participants represented Zhytomyr (27,5%), Odessa (21,6%), Vinnytsia (20,3%) and Kyiv (8,4%) regions.

Most respondents (254 people) do X-ray screening every year, surprisingly, 13 people reported that they have never been screened by chest X-ray. More than a half – 7 people in this group were students. About 5% were not vaccinated with BCG (predominantly young people at the age of >18-35). 80,7% of interviewed persons had lung diseases rarely (or never).

14,1% of participants reported that they know people with TB. 2,2% of respondents consider tuberculosis an uncurable fatal disease, most participants (94,1%) pointed out that TB can be successfully treated with timely seeking

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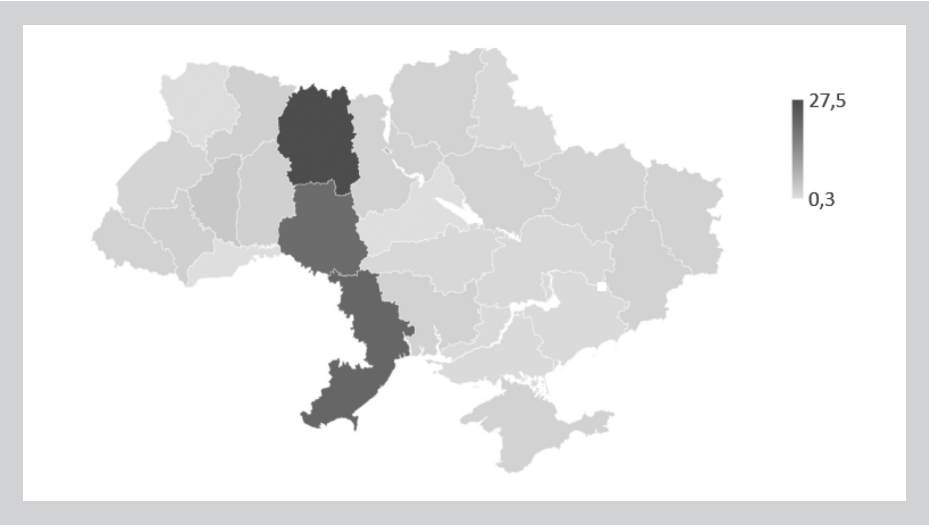

Figure 1. Geography of survey (scale shows % of representatives from each region)

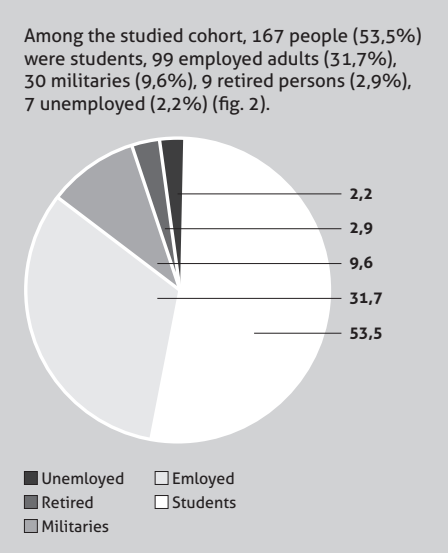

Figure 2. Social status of respondents

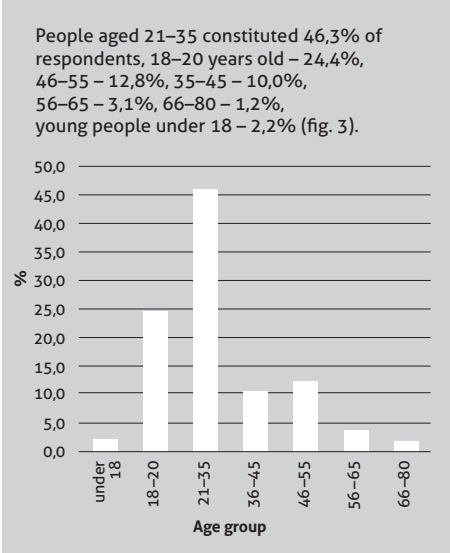

Figure 3. Age of participants

medical assistance. 12 respondents (3,7%) could not answer the question.

92,2% of participants are certain that access to public clinics must be restricted for TB patients – they can receive medical care only in specialized hospitals. 79,7% think that TB patients can work in a team after the successful treatment, 3,1% – during the treatment, 5,3% are certain that TB infected people or patients after treatment should not be allowed to work with the others, for 11,9% it was hard to answer.

81,9% of respondents pointed out that TB diagnosis could not change their attitude toward a person. 9,4% would stop their communication with such person and 8,8% would tell mutual friends about one's TB diagnosis. There was no correlation between age and social group and the most aggressive answers what reflects that stigmatization of tuberculosis is the systemic problem of the society and demands increased awareness at all levels of communication. Anyway, it`s worthy of note that the share of young people among negatively reacting participants was quite significant.

5,9% would not mind if their child contacted in the kindergarten with a child from the family with TB patient, 35% were more likely to agree with that, 44,4% – more likely to disagree with that. 14,7% (47 people) reported that they would demand from the kindergarten leadership to prohibit the child from the family with TB history to go to kindergarten. Vast majority of this group – 29 people were students and teenagers under 18 y. o. In general, about 60% of respondents were inclined to stigmatize children from families with TB patients.

54,1% feel sorry for people with TB, 33,8% would like to help, 19,4% are neutral. At the same time, 16,9% are afraid of TB infected people, 33,4% feel anxious, and about 9% feel disgusted.

Most respondents are aware that TB can be transmitted from a sick to a healthy person. 35% consider it possible to catch TB using the same hygienic supplies with TB patients, 31,9% – through sharing the kitchenware, 10,3% – while drinking raw milk and 3,1% after tuberculin probe. 56,3% fear that they can catch TB in public transport. 77,5% as main risk factors indicated smoking, 67,2% – malnutrition, 54,7% – drug addiction, 37,2% – alcohol abuse, 32,2% – sleeping violation. At the same time, only 4,1% and 1,9% are aware that regular sunburns and over-training in the gym (respectively) can dramatically decrease immune resistance raising the additional risk for TB infection.

71,9% think that anyone can be affected by TB. 39,1% and 30,6% respectively consider socially unprotected segments of the population and HIV-infected people the most vulnerable to TB. About 90% could indicate possible symptoms of tuberculosis and prophylaxis means.

DISCUSSION. The survey results clearly demonstrate that despite efforts made TB stigma continues to be a significant obstacle in successful tuberculosis management. Aggressive reactions towards people diagnosed with TB are still quite a common phenomenon in Ukrainian society, and the saddest part is the fact that stigma can affect not only directly a sick person but also family members including children. Data analysis show that certain myths about tuberculosis are highly resilient, in particular, the idea about TB as a marker of social deprivation. There is also some contradiction in perception of tuberculosis – on the one hand, survey results demonstrate quite empathic attitude to TB patients, on the other hand – the society still supports the idea of their social exclusion.

Fear of stigmatization often leads to untimely seeking medical aid by people with tuberculosis and, therefore, affects treatment success. Moreover, social stigmatization of TB patients acts as a psych traumatic factor causing psychological disorders of varying severity what also has a negative impact on disease prognosis and demands involvement of additional specialists and institutions to the treatment process (Novozhilova, 2018).

In general, survey results showed that most participants are well informed regarding TB symptoms and prophylaxis means that is indicative of successful education campaigns undertaken by Ukrainian healthcare system.

At the same time, high prevalence of negative reactions towards TB patients among students and teenagers is evidence of significant gap in anti-stigma education. One more aspect is that Ukraine now shows the highest level of HIV/TB co-infection mostly in a group of injection drug users. This can also affect public reaction in the most vulnerable group of young people. In this case, academic institutions should play exclusive role. Odessa I.I. Mechnikov University is one of the participants of international project INNOVA4TB which aims, among others, to educate different types of audience about tuberculosis issues (INNOVA4TB, 2019). Together with the colleagues from Spain and Chile we held few meetings with schoolchildren and organized a conference at gymnasium in 2019. About 190 participants were involved in these events. In 2020 global pandemic closed many ways of communication but also suggested the new ones. Thus, in 2021 an online information campaign including stigma problems was organized by coordinator of the project and followed by all the partners. At ONU, we used banners, developed by Communication and Dissemination team of the project in online lectures what allowed to draw the attention of students to TB stigma and raise discussion about it. It was revealed that many young people have no idea about the problem of social stigmatization as well as the possible consequences of privacy policy violation in case of TB patients. Based on the answers of many respondents intending to disclose personal information of TB patients a significant part of the society does not feel responsibility for possible negative influence of their actions on someone's life. It reflects the urgent need in elements of legal education in any information events concerning tuberculosis management. We see the perspectives of such surveys both in revealing tense points in accepting TB infected people and highlighting aspects that should be delivered to public in more transparent and clear way. So, the next survey should include well-defined questions about the risk assessment, co-infection for further preparation of teaching and informational materials.—

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#14

PUBLIC HEALTH AS A COMPONENT OF NATIONAL SECURITY OF UKRAINE

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In modern science, the concept of "security" is used quite widely and is used in relation to various processes, both natural and social. The following terms are common in research: "security", "national security", "state security", "international security", "global security", "human security" "ecological security", and even "food security" etc. The famous Merriam Webster dictionary defines security as the quality or state of being secure as in free from danger, fear, or anxiety [1]. As to national security, in reality in which Ukraine finds itself today, in reality of the ongoing conflict with Russia, the concept of "national security" is firmly associated primarily with inviolability of state borders, prevention of and counteraction to armed conflicts, in short, with every possible effort to ensure peace in our country. This state of affairs is logical and entirely due to objective reasons, but no less important are other components of this concept, neglect of which can lead to negative, even tragic, consequences [2]. Public health, in turn, is the science of protecting and improving the health of people and their communities. This work is achieved by promoting healthy lifestyles, researching disease and injury prevention, and detecting, preventing, and responding to infectious diseases. Overall, public health is concerned with protecting the health of entire populations. These populations can be as small as a local neighborhood, or as big as an entire country or region of the world [3]. As to the relation between public health and national security, a systematic analysis of the information materials of the Ministry of Health and scientific researches shows that the level of health of the population of Ukraine today is classified as unsatisfactory. For instance, in our country over the past decades there has been an increase in overall mortality of 6%. According to the World Bank, death rate in Ukraine increased from 9 per 1,000 people in 1971 to 14.7 per 1,000 people in 2019 growing at an average annual rate of 1.07%. While in the EU, the crude death rate, which is the number of deaths per 1 000 persons, was estimated at 10.4 in 2019, with Germany staying at 11.3 [4]. The average life expectancy in Ukraine is 5-10 years less than in economically developed European countries [5]. During this period, the overall natural population growth is negative and ranges from -5.8 to -7.8 per 1000, the total population decreased by 7,7% [6], which probably threatens national security of the state at this point. Based on the abovemention, we can state that the health of citizens of Ukraine and the national health care sector is a clear reflection of the level of economic development of the country, the direction of its national policy, and in particular – the attention paid to social issues and formation of the so called "human capital". Being a qualitative characteristic of the economically active population, the state of health of the nation directly determines the level of labor productivity in society and significantly affects the prospects of its socio-economic development. However, the absence in Ukrainian society of the ideology of health and the conscious attitude of citizens to the need to preserve and strengthen it indicates the inflation of health in our country. And for Ukraine, which is currently in the process of transforming the entire system of public administration, the process of implementing changes in the health care system is significantly complicated, effective management of which is an important contribution to achieving proper living standards and defense capabilities [7]. Well-known Ukrainian experts in the field of public administration N. Nyzhnyk, H. Sytnyk and V. Bilous consider national security as a set of interconnected elements, heterogeneous in functional areas, important components of which include political, economic, environmental, technological, military and information security [8]. In the National Institute for Strategic Studies, human (or demographic) security is included in the above-mentioned list of components of national security. After all, only a healthy nation, on the one hand, is able to ensure the appropriate level of political, economic, environmental, technological, military and information security, and, on the other hand, a sick nation cannot reproduce itself in healthy generations. Thus, it is urgent to define public health as a component of Ukraine's national security. The Law of Ukraine "On Fundamentals of National Security of Ukraine" of 19.06.2003 defines the concept of national security as "protection of vital interests of man and citizen, society and the state, which ensures sustainable development of society, timely detection, prevention and neutralization of real and potential threats to national interests in the areas of law enforcement, anti-corruption, border defense, migration policy, health care...". At the same time, according to the abovementioned law, national interests are "vital material, intellectual and spiritual values of the Ukrainian people as the bearer of sovereignty and the only source of power in Ukraine, determining the needs of society and the state, the realization of which guarantees Ukraine's state sovereignty and progressive development". Article 6 of the same law refers the strengthening of the physical health of the nation, the creation of conditions for the expanded reproduction of the population to the priorities of the national interests of Ukraine [9]. Thus, the sphere of health care has been recognized as one of the national interests, a vital value of the Ukrainian people. However, the abovementioned law has been replaced with a new one

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in 2018. And the Law of Ukraine "On national security" [10] does not mention public health topic whatsoever. Approximately the same we can find in the text of the Constitution of Ukraine. For example, turn to Part 2 of Art. 34 of the Constitution of Ukraine: "The exercise of these rights may be limited in the interests of national security, territorial integrity or public order in order to prevent riots or crimes, to protect public health" [11]. That is, the health of the population is in fact determined by law as a component of national security. In a special law, which actually defines the "legal, organizational, economic and social principles of health care in Ukraine", and regulates public relations in this area, namely in the "Fundamentals of Ukrainian legislation on health care", it is noted only that society and the state "ensure the priority of health care in the activities of the state" [12]. This wording seems somewhat superficial and does not reveal the real essence and significance of public health. It is worth noting that today the state is not fully fulfilling its obligation to protect public health. Over the past 10 years, more than 50 national programs and 10 comprehensive government-approved measures have been adopted to improve the public health. But there was a very insufficient resource supply for the effective implementation of the declared programs, as 4% of them were not funded at all, 6% were one third funded, 10% almost half funded, and 26% of programs were partially funded [7]. The result was extremely low efficiency of the implementation of state target programs, the purpose of which was to significantly improve the health of the Ukrainian people.

A huge part of national security narrative is identifying possible threats. So the following threats to the vital security of the country are identified:

- insufficient level of financial support for the health care sector and the associated threat of loss of scientific, human and intellectual capital of the country in general and the health care sector in particular;
- decline in the production of innovative products and the associated threat of increasing dependence on imports of medical devices, medical equipment and science-intensive products;
- increase in the level of shadowing in the healthcare sector and related economic and financial losses from non-payment of taxes, lack of reinvestment in the activities of healthcare facilities.
- problems in the pharmaceutical market associated with increased circulation of counterfeit medicines etc.
- low level of efficiency of public administration and regulation in the field of health care.

In my opinion, in order to strengthen public health and therefore national security, the protection and improvement of public health must be managed at the state level. Appropriate programs are needed to take preventive measures to reduce the negative impact of socio-psychological and environmental and biological factors and to ensure the security of its citizens throughout life, from a healthy birth to the most distant moment of death. This should be implemented, first of all, through adopting appropriate national legislation which should cover the issue of public health as an important aspect of national security. And based on that legislation further steps can be taken provided that the government ensures appropriate funding.

To crown it all, the new modern paradigm of state policy of Ukraine in the field of health care should be based on the understanding that human health is a socio-economic value, and the implementation of coordinated actions aimed at improving the health of the nation is a strategic priority of the state. —

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#About the organizations

Ivan Horbachevsky Ternopil National Medical University, Ternopil, Ukraine

Founded in 1957, Ivan Horbachevsky Temopil National Medical University of the Ministry of Health of Ukraine (TNMU) is a center of biomedical research and provides high quality professional medical training to domestic and international students. It has provided training to 7.000 students from 63 countries in Medicine, Dentistry, Pharmacy, Nursing, Public Health, and Postgraduate Education. Master of Public Health programme has been offered since September 2019. TNMU is a member of many international networks and cooperates with 82 educational and medical institutions around the world. It has participated in Erasmus+ KAI and KA2 programs, an Erasmus Mundus Medea program, and International Student Exchange Programs.

Lutsk National Technical University, Lutsk, Ukraine

Lutsk National Technical University is a Ukrainian university of the IV accreditation level. Lutsk NTU was founded in 1966 by Nikolai Romanyuk, a former director of the Lutsk Automobile Plant. As of 2018, the university includes 7 faculties, 3 centres, 3 colleges and 30 departments. It was featured 7th on the list of the Best Technical Universities in Ukraine. At the beginning of 2020, the higher education institution cooperated with more than 80 foreign partners in 25 countries.

Lviv Clinical Emergency Care Hospital, Lviv, Ukraine

КЛІНІЧНА ЛІКАРНЯ
ШВИДКОЇ МЕДИЧНОЇ ДОПОМОГИ

Communal non-profit enterprise "Lviv Clinical Municipal Communal Emergency Hospital" was founded in 1999. Lviv Clinical Municipal Communal Emergency Hospital works 24/7 and is designed to provide day-and-night emergency inpatient medical care for population on the prehospital stage of acute diseases, traumas, accidents, poisonings and during the treatment, diagnostic processes for patients and victims. The Hospital is the biggest medical institution in Western part of Ukraine which is lodged for 1280 beds. There are 8 centers and 25 departments on the basis of Lviv Clinical Municipal Communal Emergency Hospital.

Lviv Regional Information and Analytical Center for Medical Statistics, Lviv, Ukraine

In 2002, a department dealing with HIV was established at the Lviv Regional Infectious Diseases Clinical Hospital. On July 1, 2005, a separate institution was established in the Lviv region – Lviv Regional Center for AIDS Prevention and Control. On December 7, 2017, this institution was re-registered as the Lviv Regional Public Health Center. The facility also included an outpatient department, which continued to diagnose and treat HIV. On June 30, 2021, the Lviv Regional Public Health Center was re-registered as the Lviv Regional Information and Analytical Center for Medical Statistics. It still includes an outpatient department that diagnoses and treats HIV infection in the Lviv region of Ukraine.

National Academy for Public Administration under the President of Ukraine

The National Academy for Public Administration under the President of Ukraine is the main public institution of higher education in the system of training, in-service training and advance training of public servants and local self-government officials in Ukraine. The Ukrainian Academy for Public Administration under the President of Ukraine was created by the Decree of the President of Ukraine of 30 May 1995. The mission of the National Academy is to form a professional democratic administrative elite of Ukrainian society based on modern scientific achievements and knowledge transfer technologies concerning the implementation of effective public administration. National Academy offers Master's training in the specialty "Public Management and Administration".

Sumy State University, Sumy, Ukraine

Sumy State University is a higher education institution in Sumy, Ukraine. It has about 12,000 students studying prebachelor, bachelor, specialist and master degrees in 55 majors and 23 fields. About 1,900 foreign students represent almost 50 countries worldwide. Institutes: Medical Institute, Academic and Research Institute of Finance, Economics and Management, Academic and Research Institute of Business Technologies, Academic and Research Institute of Law, Konotop and Shostka Institutes, Chemical and Technological College of Shostka Institute. There are more than 3000 employees in the university, including Corresponding Members of the National Academy of Science of Ukraine, about 150 Doctors of Sciences, Professors, Associate Professors represent academic staff of the University.

Taras Shevchenko National University of Kyiv

The Institute of International Relations of Taras Shevchenko National University of Kyiv is a branched modern educational and research centre with a flexible academic process system, with 11 specialized departments and all-Institute Department of Foreign Languages; it offers training in six specialities: International Relations, International Law, International Economic Relations, International Information, International Business and Country Studies.

Odessa I. I. Mechnikov National University (ONU), Ukraine

Odessa I. I. Mechnikov National University (ONU) is one of the oldest and largest universities in Ukraine, with 450 PhD students. ONU staff is ~3100 persons, 150 professors, and many members of the National Academy of Science of Ukraine. ONU is collaborating with ~100 world universities through different international programs (KNOW-HOW, CRDF, NATO, DAAD, Horizon 2020, Erasmus+, British Council, UNDP et al.) and bilateral projects. ONU is well equipped for studies on marine microbiology, molecular biology and biomedicine. At the Dept. of Microbiology, Virology and Biotechnology all staff are involved in research projects and actively participates in internationalization activities. Young researchers are involved in international scientific cooperation, mastering their professional skills at European research centres, bringing best European practices into ONU research and teaching. The Dept. of Microbiology, Virology and Biotechnology is participating in Horizon 2020 project on TB. During the last years, ONU has launched several Master programs in English. Our university is one of the first in Ukraine to become a member of the European University Association, the World Association of Universities, Member of the Supervisory Board of Magna Charta, is a member of the Black Sea Universities Network, the Danube Rectors Conference and other international organizations. Today the University supports the bilateral contractual relationship with 165 scientific and academic institutions from 39 countries. Every year hundreds of students, graduate students, researchers and lecturers of ONU go abroad for studying, training, teaching, joint scientific research and participation in international conferences. At the same time every year, ONU is visited by numerous foreign guests, including outstanding scientists, Ministers of Culture and Foreign Affairs, Ambassadors from dozens of countries. Today institutes and faculties of the University train hundreds of students from 27 countries.

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