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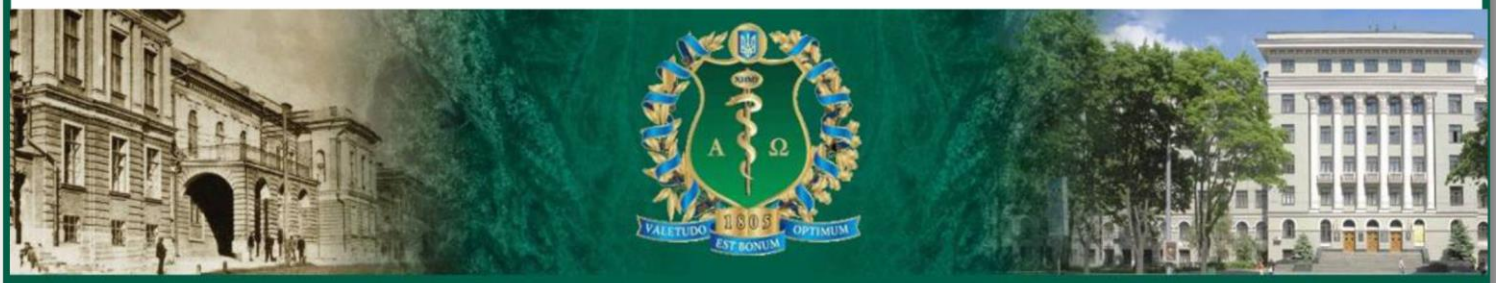

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DEVOTED TO 210-YEARS ANNIVERSARY

OF KHARKIV NATIONAL MEDICAL UNIVERSITY

PLENARY LECTURE IN HISTORY OF MEDICINE

Robak I.Yu.

VALUE OF KHARKIV NATIONAL MEDICAL UNIVERSITY IN FORMATION AND DEVELOPMENT OF UKRAINIAN HIGHER MEDICAL EDUCATION: HISTORICAL AND LEGAL ASPECT

Kharkiv National Medical University, Ukraine

Time flies and the 210-th anniversary of Kharkiv University foundation with its medical faculty passed into history. The community is always highly interested in the history of anniversaries because of the “milestones”. Issues of their origin and roots are particularly interesting. The same situation occurred this time. In addition, Kharkiv University Consortium was created last year and our university became its part. Naturally, each member of the consortium tends to define its historical place in a single university space established in the city. In today's Kharkiv university atmosphere it is widely believed that V.N. Karazin Kharkiv National University is the only heir and successor to Imperial Kharkiv University. A modern Medical Faculty of V.N. Karazin Kharkiv National University is a successor of the correspondent Faculty of IKhU.

It is said that the existence of Kharkiv higher medical school can be counted from the foundation of Kharkiv University, but the history of KhNMU did not start from the Medical Faculty of Imperial Kharkiv University, because Medical Faculty of IKhU was not a legal entity. Its successor, Kharkiv Medical Academy, acquired the right of the legal entity only in 1920 and then transferred it to Kharkiv Medical Institute. Let us try to provide insight into this issue.

During the events of 1917 Imperial Kharkiv University somehow “lost” the word “imperial” in its name, although nobody changed its name officially. During 1918-1919 it hardly existed in the fires of revolutionary events. The Soviet authority was ultimately established in Kharkiv in December 1919. One of the primary steps of the Bolshevism dictatorship in the educational sector was the abolition of “bourgeois” university

education. In 1920 the only Kharkiv University lost its legal status and was broken up (Figure 1).

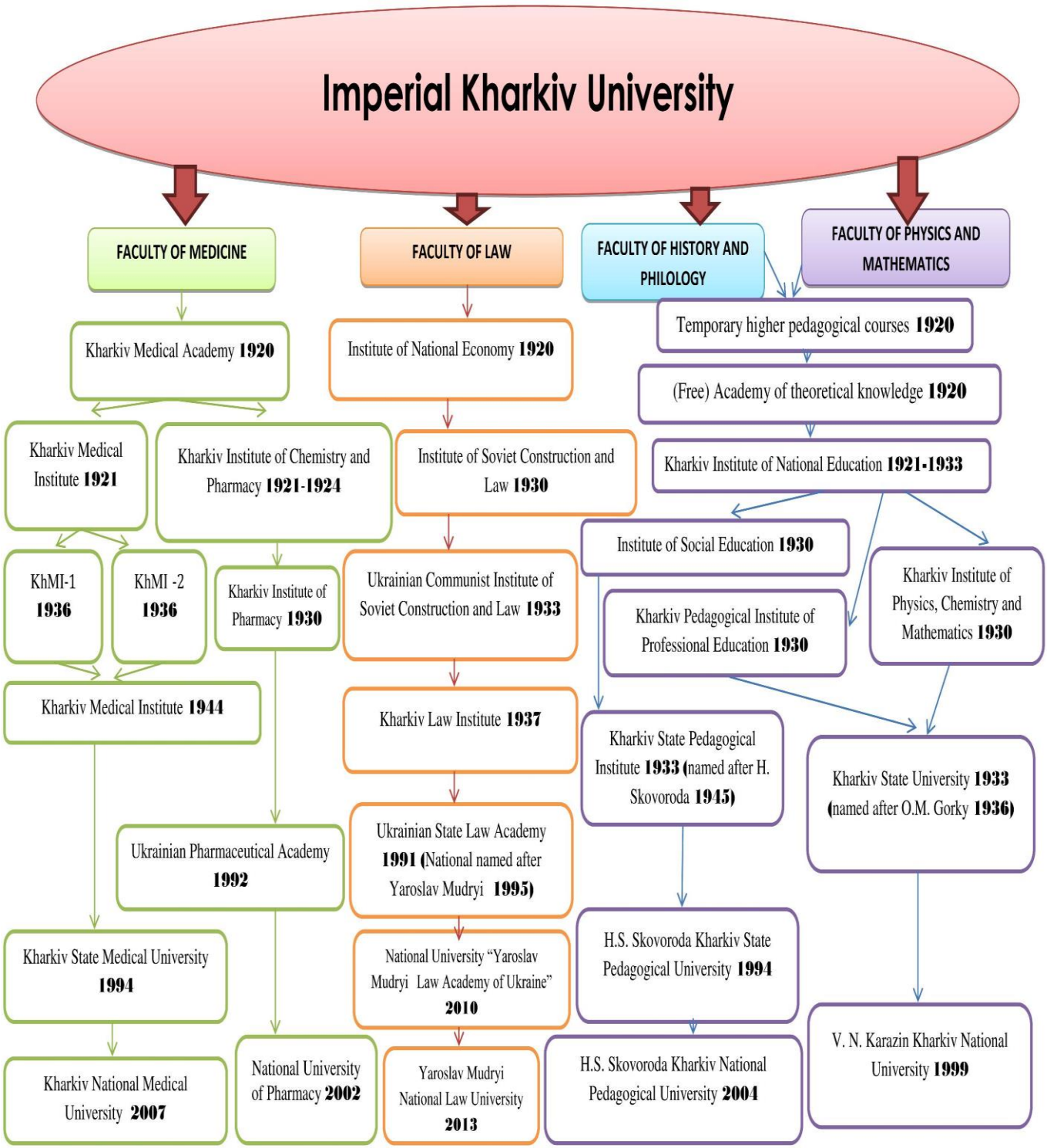


Figure 1. Flow diagram of Imperial Kharkiv University breaking up

Its fragments, e.g. Kharkiv Medical Academy (Kharkiv Medical Institute since 1921), Institute of National Economy, Higher pedagogical courses (Academy of theoretical knowledge since July 1920) acquired the status of legal entities. Further transformation of University pieces continued for 13 years, when in 1933 Soviet Kharkiv State University was created by uniting Kharkiv Pedagogical Institute of Professional Education and Kharkiv Institute of Physics, Chemistry and Mathematics. It had no medical or legal faculty. That is, it was founded in the same way as our University was, i.e. it was founded on the ruins of pre-Soviet University. It did not happen in 1920, it was founded only after series of reforms and reorganizations of these "pieces", only in 1933 (Higher pedagogical courses, Academy of theoretical knowledge, Kharkiv Institute of National Education, Kharkiv Pedagogical Institute of Professional Education, Kharkiv Institute of Physics, Chemistry and Mathematics). It is so complicated that it is difficult to find the roots. So, why Kharkiv State University is considered to be the successor of IKhU, and at the same time, we are not considered to be the one? Is that because the main building on Universytetska Street, University Library and the monument to V.N. Karazin passes into its possession? But we also got all the facilities of the Medical Faculty of IKhU and it happened even earlier, in 1920. It may be the name itself – the "University". At that time Bolsheviks named all single-industry universities as institutes. We certainly do not wish to discredit the close relationship of Kharkiv modern classical university with its pre-Soviet predecessor but we have the same, if not bigger, reason to consider us as its successor.

Heredity and succession of the University institutions can be considered from two perspectives: legally and actually. In terms of the law we have to divide the terms "succession" and "legal succession". In law there is a term of "legal succession of states", which occurs in the event of termination of states and applies, particularly, to public property. So, in the event of termination of existence of the Russian state by the Bolsheviks in 1917, the succession of States did not occur. The Soviet authorities rejected it both in Russia (Russian Socialist Federative Soviet Republic) and in Ukraine (since 1919 Ukrainian Socialist Soviet Republic - a sovereign state before foundation of to the USSR). Kharkiv University was nationalized by the Bolsheviks, but it lost its

succession of IKhU as an object of state ownership, like all its state institutions did throughout the sovereign Soviet republics. In 1920 it, as we have already mentioned, was divided into several universities. Faculty of Medicine was joined with the Women's Medical Institute KhMT to form Kharkiv Medical Academy. And (it is very important to recognize the succession) Medical Faculty fixed the assets (buildings, structures (including the faculty building at the corner of Kharytonenkovska and Sumska streets (now Pravdy ave.), e.g. Anatomy building, 4th clinical hospital of "Clinical campus"), equipment, etc.) and the main teaching staff became part of the Academy.

After that we can talk not only about the succession, but also about the legal succession. Thus, on the basis of regulations of Ukrainian SSR, Kharkiv Medical Institute, created in 1921, became a legal successor of Kharkiv Medical Academy. In modern independent Ukraine Kharkiv Medical Institute became the legal successor of KhMI of Soviet times, according to the Law "On Succession of Ukraine" dated 12 September 1991, according to which Ukraine became a successor of all objects of state property, including our Institute due to the demise of the Soviet Union. Subsequently KhSMU became a legal successor of KhMI, and KhNMU became a successor of KhSMU.

This is the legal side of this issue.

Indeed, scientific schools are successive. According to this point of view, the university tradition has not been interrupted in some faculties of the present V.N. Karazin KhNU, Law University, University of Pharmacy and our university. Modern V.N. Karazin University has received the greatest scientific heritage, taking into account the number of inherited schools. So, we can recognize it as the main heir in schools succession. However, it did not inherit our research schools. The following scientific schools were established in the Faculty of Medicine of IKhU: anatomical, histological, biochemical, physiological, pathophysiological, surgical, obstetrical and gynaecological, paediatric, therapeutic, hygienic, psychiatric and microbiological. These schools reached their peak in the next period, the period of Kharkiv Medical Institute and Medical University, but not in the Faculty of Medicine of V.N. Karazin University.

So, Kharkiv National Medical University is the actual direct heir and successor of the Faculty of Medicine of Imperial Kharkiv University from the very beginning of IKhU; it is also a successor of Kharkiv Medical Academy, Kharkiv Medical (State Medical) Institute, Kharkiv State Medical University since 2007.

The relationship with Imperial Kharkiv University is declared by several modern Kharkiv universities. Let us see whether it is justified.

Yaroslav Mudryi National Law University (Figure 2).

Figure 2. The logo of Yaroslav Mudryi National Law University

It is fully justifiable according to our point of view (Figure 3).

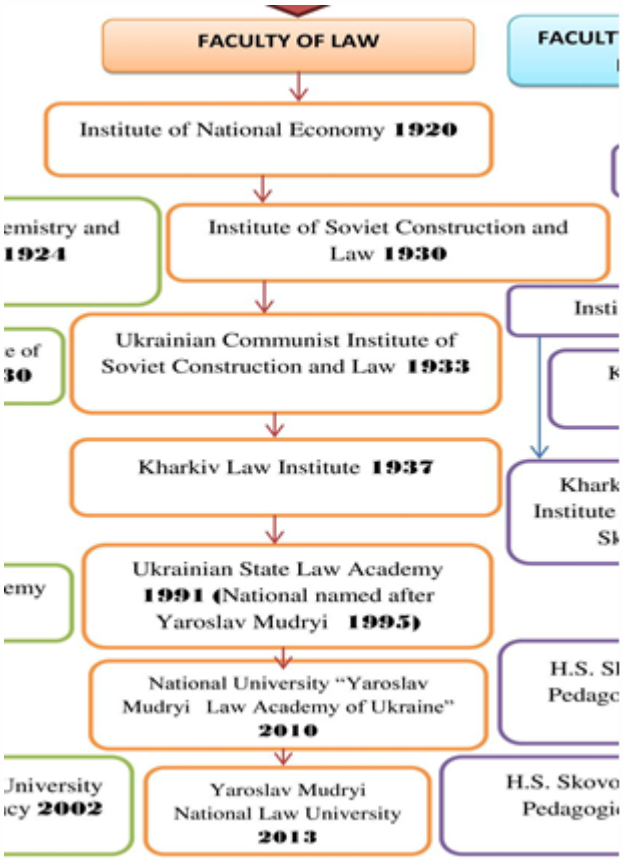


Figure 3. Yaroslav Mudryi National Law University foundation and development

The Institute of National Economy was founded on the basis of the Faculty of Law of the University in 1920, having united with the Commercial Institute. Teachers came to the newly established university; Kharkiv university schools of law continued their development and did not stop it either in the Institute of Soviet Construction and Law established in 1930 or in Ukrainian Communist Institute of Soviet Construction and Law (1933-1937), or in Kharkiv Law Institute (1937-1991), or in Ukrainian State (National since 1995) Law Academy (1991-2010), with the present Yaroslav Mudryi National Law University which became its legal successor. Continuous relationship and development of the university tradition are evident.

The National University of Pharmacy (Figure 4).

Figure 4. The logo of the National University of Pharmacy

The official website states that it "was founded in 1805 as a part of Kharkiv Imperial University". It is worth mentioning that during the years the Faculty of Medicine of this University included pharmaceutical laboratory; Department of Materia Medica, Pharmacy and Medical Literature; Department of Pharmacy and Pharmacognosy; Department of Pharmacology.

Pharmaceutical laboratory, founded in 1812, was its oldest structural unit. The logo includes 1805! And they came from the depths of the Faculty of Medicine (Fig. 5).

But it became an independent establishment, i.e. an institute, in 1921. Moreover, there was a college only, but not an institute, from 1924 to 1930. Who are we if they are the successors of Imperial University?

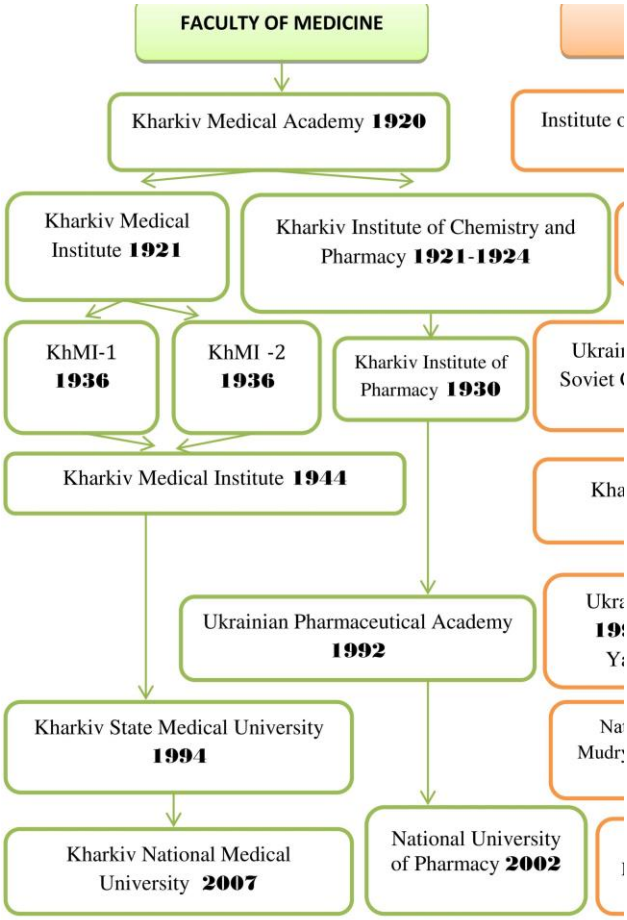


Figure 5. National University of Pharmacy foundation and development

Kharkiv State Zooveterinary Academy (Figure 6).

Figure 6. Kharkiv State Zooveterinary Academy foundation and development

The official website mentions the origins of their educational institution at the opening of the Department of cattle treatment within the Department of medical and health sciences of Kharkiv University in 1805. However, they only say “origins”, and the logo of the institution does not include that year.

Kharkiv National Pedagogical University (Figure 7). They trace their history from 1804. Indeed, according to the first Charter of Kharkiv Imperial University in 1804 it assumed to be Teachers' or Pedagogical Institute.

Figure 7. The logo of H.S. Skovoroda Kharkiv National Pedagogical University

So, it was established. However, it happened later, in 1811. It existed until 1858, when it was replaced by pedagogical courses. By 1863 only three students finished those courses at Kharkiv University. The Charters of the Imperial University of 1863 and the last pre-Soviet of 1884 did not provide any pedagogical departments at the universities. That is, in 1863 university history of Kharkiv pedagogical education stopped. After that the Imperial University did not have a pedagogical institute, or pedagogical courses, or a relevant faculty or even a department.

That is why no further Kharkiv pedagogical scientific schools can be considered as successors of pre-Soviet University (Figure 8).

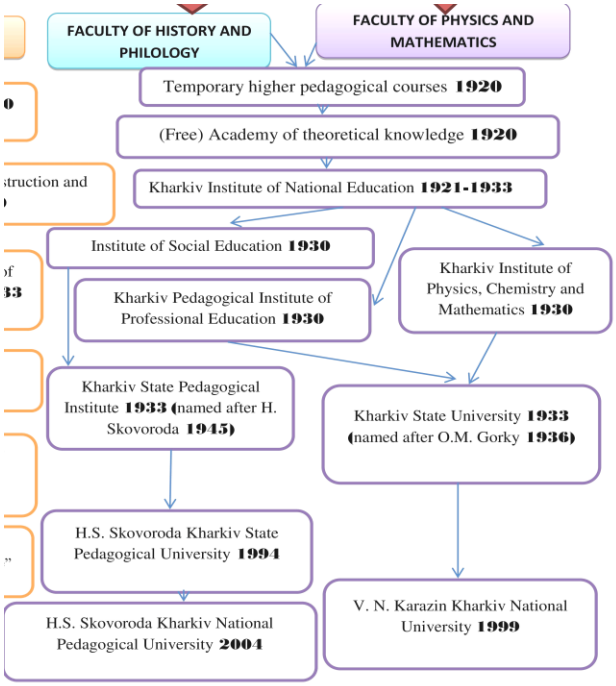


Figure 8. H.S. Skovoroda Kharkiv National Pedagogical University foundation and development

The succession can be observed with Soviet Universities, namely Kharkiv Institute of National Education, Kharkiv Institute of Social Education, Kharkiv Pedagogical Institute. Kharkiv Pedagogical University is a legal successor of the last one.

Consequently, we consider that our University along with Yaroslav Mudryi National Law University are the direct successors of pre-Soviet Kharkiv

University, as these universities were founded directly on the basis of its departments in 1920. However, in Kharkiv university history we are older than the law school, as the Faculty of Medicine (according to the first Charter "Department or Faculty of Medical, of Healthcare Sciences") was founded along with the University but the Faculty of Law was established only in 1835, when the second Charter came into effect.

You have seen different dates on the logos. For clarity, we also demonstrate the logo of V.N. Karazin Kharkiv National University and the logo of our University (Figure 9). We can see the number "1804" on the logo of V.N. Karazin Kharkiv National University and the number "1805" on our logo.

Figure 9. The logos of Kharkiv National Medical University and V. N. Karazin Kharkiv National University

So what is the actual, historically grounded date of the establishment of Imperial Kharkiv University?

In fact, this issue is simulated and is of scholastic nature only.

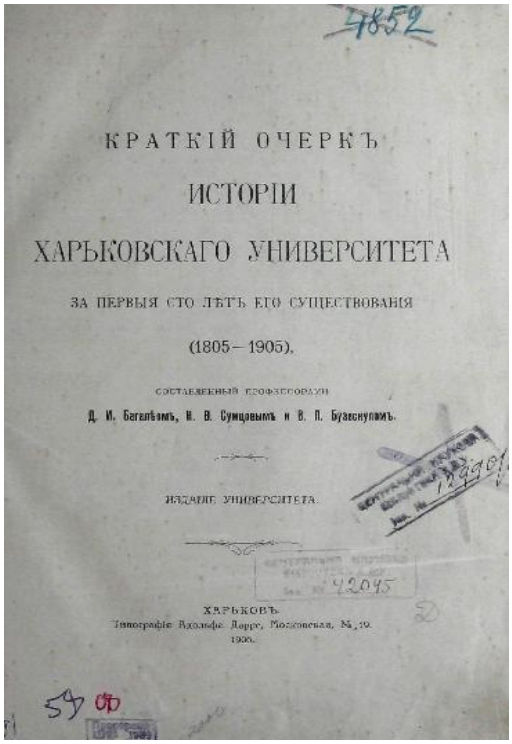
Let us refer to the historical facts. On the 5th (17th according to the Gregorian calendar) of November 1804 the Emperor of Russia Alexander I signed the constituent document on the establishment of Kharkiv University and approved its Charter. So is it logical to consider the year 1804 as the year of the establishment of Kharkiv University? Undoubtedly, it is. However, the University was not opened yet. It was officially opened on the 17th (29th according to the Gregorian calendar) of January 1805 (Figure 10).

Figure 10. The first meeting of the Academic Board of Kharkiv Imperial University

On that day a solemn prayer, sacred procession, the first lectures and the first meeting of the Academic Board were held. Can we consider that the history of the University started at its official opening? We surely can.

People have argued and “crossed their swords” for over 150 years since the 50th anniversary of IKhU.

There is a concept of "citation of authorities" in historical science. So, in the early twentieth century three recognized authorities, three coryphaeus of history: one of them, Mykola Fedorovych Sumtsov was a member of the Imperial St. Petersburg Academy of Sciences, and two others – Dmytro Ivanovych Bahaliy and Vladyslav Petrovych Buzeskul bacame academics in the nearest future and issued the monograph "Brief Essay on the history of Kharkiv University for the first hundred years of its existence (1805-1905)" (Figure 11).


КРАТКІЙ ОЧЕРКЪ

ИСТОРІИ

ХАРЬКОВСКАГО УНИВЕРСИТЕТА

ЗА ПЕРВЫЯ СТО ЛѢТЪ ЕГО СУЩЕСТВОВАНІЯ

(1805–1905).

составленный профессорами

Д. И. Багалѣемъ, Н. В. Сумцовымъ и В. П. Бузескуломъ.

ИЗДАНІЕ УНИВЕРСИТЕТА.

ХАРЬКОВЪ

Figure 11. "Brief history of Kharkiv University for the first hundred years of its existence (1805-1905)"


МЕДИЦИНСКІЙ ФАКУЛЬТЕТЪ

ХАРЬКОВСКАГО УНИВЕРСИТЕТА

за первыя 100 лѣтъ его существованія

(1805–1905).

I. Исторія факультета.

II. Историческіе очерки каѳедръ.

III. Біографическій словарь профессоровъ и преподавателей.

ПОДЪ РЕДАКЦІЕЙ

проф. И. П. Скворцова и Д. И. Багалѣя.

Изданіе Университета.

ХАРЬКОВЪ

Figure 12. "Faculty of Medicine of Kharkiv University for the first hundred years of its existence (1805-1905)"

They clearly identified (see the title) the year of the establishment of the University, which is 1805, in the monograph. Dmytro Ivanovych Bahaliy was the greatest authority on the history of Kharkiv, the future mayor of the city and the rector of Kharkiv University together with a famous professor hygienist Irynarkh Polikhroniyovych Skvortsov issued the book "Faculty of Medicine of Kharkiv University for the first hundred years of its existence (1805-1905)" in 1906 (Figure 12).

Since that time Kharkiv University started to count its age, since 1805. Nobody had any doubts, even Bolsheviks, who usually did not recognize the representatives of non-Marxist historical schools. Therefore, established in 1933 Kharkiv State University celebrated its 150th anniversary in 1955. It issued a confirming book (Figure 13).

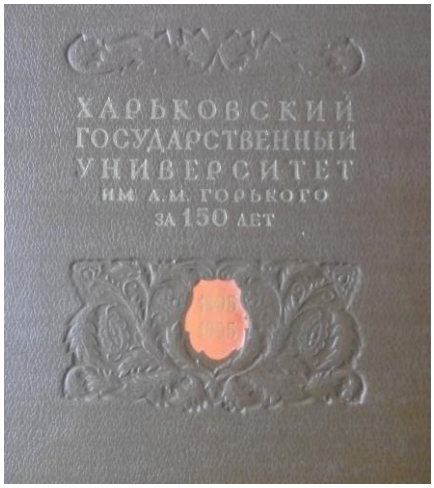
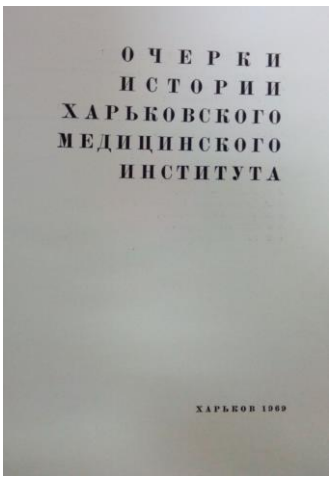


Figure 13. Anniversary edition for the 150th anniversary of the establishment of Kharkiv University

Consequently, the 175th anniversary was in January 1980. Then, 36 years on, Volodymyr Mykolayovych Lisovy and I were present on the ceremony. We received these books as a gift (Figure 14).

The year of the establishment of Kharkiv University is clearly identified on the cover in large numbers. Our Medical Institute has always been based on the year 1805 in its history. This is confirmed by the monograph "Brief history of Kharkiv Medical Institute", edited by the rector Borys Yakymovych Zadorozhniy in 1969 (Figure 15).

Figure 14. Anniversary edition for the 175th anniversary of the establishment of Kharkiv University



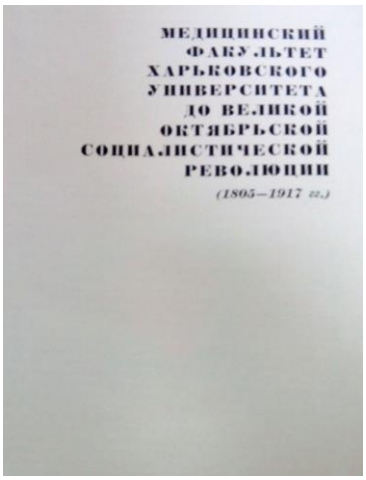


Figure 15. "Brief history of Kharkiv Medical Institute"

So, preparing for the 200th anniversary, our Scientific Board confirmed the logo and well-known publication of the anniversary monograph; and figure “1805” was everywhere (Figure 16).

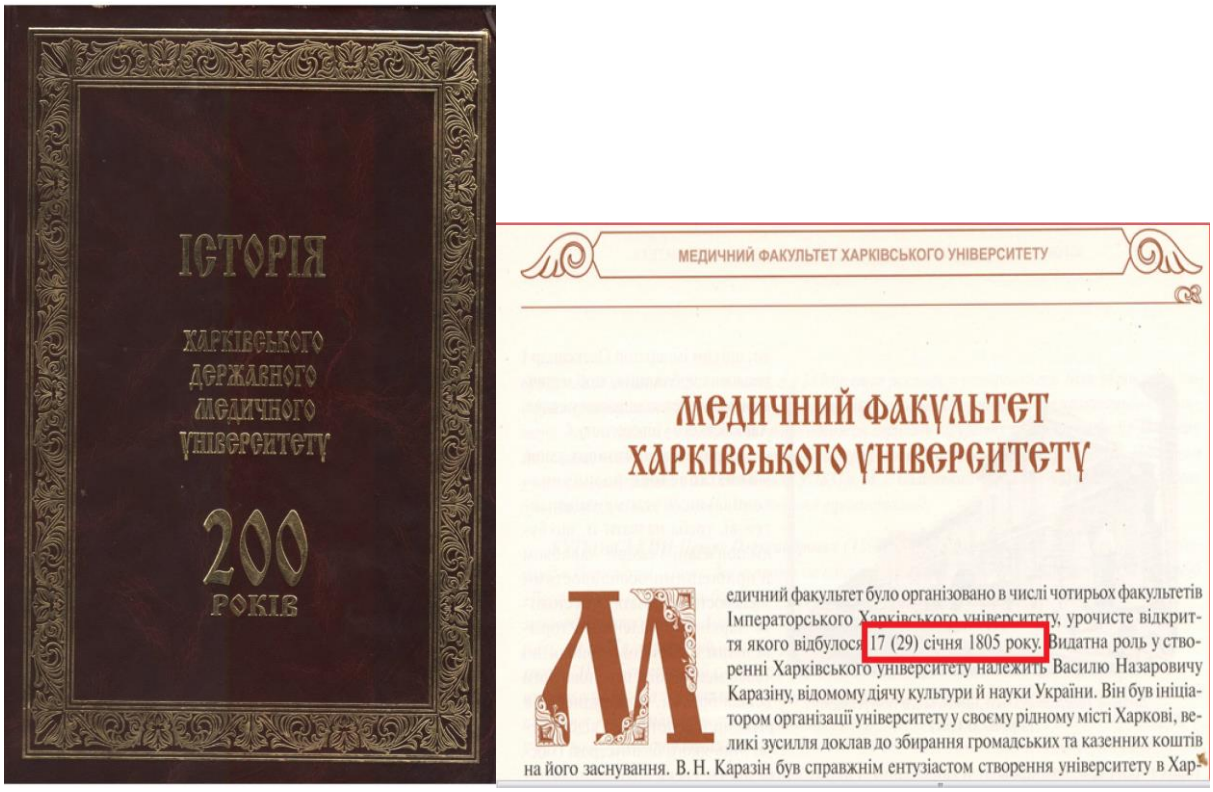


Figure 16. Anniversary monograph, issued for the 200th anniversary of KhSMU

In this respect we acted completely in accordance with the university tradition. It happened through no fault of ours that someone has decided to change it. Both the logo of V.N. Karazin Kharkiv National University and KhNPU (earlier) have included the figure “1804”.

The fact that two terms “establishment” and “opening” are replaced by the term “creation”. If we consider the “establishment”, it is 1804. And 1805 is the year of opening. As for “creation”, both points of view are possible. But for all institutions, which consider themselves as the successors, a single date shall be adopted. Mosaic is unacceptable because it causes the inequality of the successors and it recognizes inferiority of one compared to the others. This is a question of image and prestige. But we cannot get them round to this way of thinking. We cannot force them to change their logos, so does it mean we should change ours?

Finally, we are going to consider the seniority of Ukrainian higher medical schools. It is worth mentioning that Saint Volodymyr University of Kiev with its Faculty of Medicine was established in 1834; and the seniority of Kharkiv higher medical school in Russian Ukraine has never caused any doubts. However, Danylo Halytsky Lviv National Medical University considers its history beginning in 1784, when the University was opened in Lviv according to the Decree of the Austrian Emperor Joseph II; it involved the Faculty of Medicine in accordance with its Charter (Figure 17).

Figure 17. The logo of Danylo Halytsky Lviv National Medical University

They also claim that a lecture on medicine was held on the day of the University opening (but this fact should be checked). However, the Faculty of Medicine of Lviv University was officially opened only on 9 September 1894 and the first physicians graduated in 1900, while the Faculty of Medicine of Kharkiv University started to function immediately after the opening of the University in 1805 and the first physicians graduated in 1816. Thus, feel the difference, ladies and gentlemen! Consequently, historical facts prove that our Kharkiv higher medical school is the oldest in Ukraine.

To sum up, Imperial Kharkiv University and all scientific schools (medical, law, pharmaceutical, etc.) originated from it. In 1920 Bolsheviks broke it up. In 1921-1933 restructuring continued. Kharkiv State University appeared in 1933, and V.N. Karazin Kharkiv National University became its legal successor. Soviet KhSU had no Faculty of Medicine of Faculty of Law. *Functioning nowadays Faculty of Medicine and Faculty of Law of V.N. Karazin Kharkiv National University cannot be considered as the successors of Faculty of Medicine and Faculty of Law of IKhU, because they were established in 80-90 years after its breaking up, although university tradition and development of scientific schools during their absence were not terminated.* University flags were picked up and Kharkiv Medical and Law Institutes provided the further development of schools. Kharkiv National Medical University and Yaroslav Mudryi

National Law University continue this affair. Their scientific and pedagogical achievements increased the heritage of pre-Soviet University. But modern “Karazin” Faculties of Medicine and Law began their history from “scratch”, and they have to gain people's love and respect. We have already earned our reputation over more than 200-years history, both in our country and around the world; and now we strengthen it for the benefit of Ukrainian nation! So Glory to our alma mater and glory to Ukraine!

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PLENARY LECTURE IN THEORETICAL MEDICINE

Korobchanskiy V.O.

MEDICINE OF BORDERLINE CONDITIONS IN RETRIEVAL OF NEW HEALTH CARE PARADIGM

Kharkiviv National Medical University, Ukraine

In the methodology of science, the term refers to the paradigm accepted by all scientific advances that allow the scientific community for some time to have a model of statement and solution of problems.

Medicine is no exception.

The essence of the health care paradigm is taken in the whole set of knowledge and methodological approaches to the solution of health problems which are approved by society and the professional medical community. At the same time the ways to achieve this goal have changed over the centuries, spanning the entire spectrum of approaches – from empiric to systematic analysis.

Public health strategy was repeatedly revised in the developed countries in the 20th century.

The struggle against epidemic infections lay in its base up to the 1960s, and later to ensure protection against chronic diseases of infectious nature.

Today the focus is transferred not only to the patient or a person at risk group, but also to the reproduction of a healthy population, the care of the birth of a healthy baby.

Developed countries have recently started to consider the interdisciplinary nature of public health protection at the national level. Nowadays the functional health care paradigm formed within these strategies, and the factors and conditions that led to its crisis formed at the same time.

Summarizing the effects of numerous factors contributing to the change of the current health paradigm and hence the need for its reform we should allocate such directions:

I. Changes in medical, biological and demographic factors, habitat and human mentality.

II. Enhancing the role of socio-economic factors and well-being in forming of public health.

III. The growth of health care costs, the excess of the health funding needs over the possibilities of the state.

IV. Changing the role of health care in the system of public health.

V. Formation of legal and evidence-based medicine, standardization of medical practice.

Formation of a new health care paradigm occurs not only in Ukraine, or in post-socialist countries. This is typical for all countries in the world.

Formation of the new paradigm is always in the framework of the old paradigm. This is due to the emergence of new alternative theories and ideas, when previous consensus on the old paradigm is broken and new factors of external and internal environment necessitate a new paradigm.

We refer methodology of medicine of borderline conditions for such a new alternative theory.

This idea was formulated at our university in 2013 (Medicine of borderline conditions: theory and practice of prenosological diagnosis / V.M. Lesoviy, V.A. Kapustnik, V.O. Korobchansky // Scientific journal of Ministry of Health of Ukraine, 2013. - № 2. (3), p.49 -60). It was founded on the concept of prenozological, which was formulated in the early 1980s by the representatives of the Leningrad scientific medical school.

The idea got creative development in the works of such Ukrainian specialists as A.M. Serdyuk, I.M. Trachtenberg, V.G. Bardov, I.V. Sergeta, N.E. Bacherikov, M.P Vorontsov. and others.

The basis of this theory is the concept of preclinical diagnosis, which is a system of thought and actions aimed at establishing and correction of borderline states in the context of their occurrence under the influence of environmental and inherited risk factors.

Over the past 20 years, the idea took shape to the theory. It has been confirmed by numerous laboratory and field experiments, which held in KhNMU on the base of interdepartmental integration (Department of Interior and Occupational Diseases, Department of biochemistry, Department of hygiene and ecology No.1 and No.2, Research Institute of Occupational Hygiene and Occupational Diseases, Central Scientific Research Laboratory). Five subjects were carried out in this direction with the priority funding of the Ministry of Health of Ukraine.

Scientific product obtained as a result of all these innovative researches allowed to come to a new understanding of the laws of pathogenesis and to evaluate health and disease as a critical manifestation of the same process, i.e. sanogenesis with a broad area of prenosological states in between.

To determinate the whole complex of diagnostic, preventive and corrective measures aimed to reduce the risk and prevent diseases of different etiology, we have introduced an essentially new term, namely **medicine of borderline conditions**.

Ensuing in connection with this radical change in our ideas about the formation of health inevitably led to a revision of the existing paradigm of health care. Change of its concept one.

The traditional model of health care based on a clear leaving no alternative understanding of categories "health" and a "disease", which implies an abrupt transition from one state to another: from physiological to pathological state (figure 1). But, as experience shows, this is not so. The development of clinical forms of the disease is preceded by a whole range of functional disorders that occur on the background of quite specific, measurable environmental and organismic complex of risk factors.

Traditional methodology has led to unnecessary separation of medicine in the preventive and clinical fields. This, in turn formalized and castrated the term "health care facility" (making them actually “clinics”), and led to the reform of sanitary-epidemiological service (through the actual elimination). Ultimately, we traditionally do not treat the patient but the disease. Nosological unit by the stereotyped protocols.

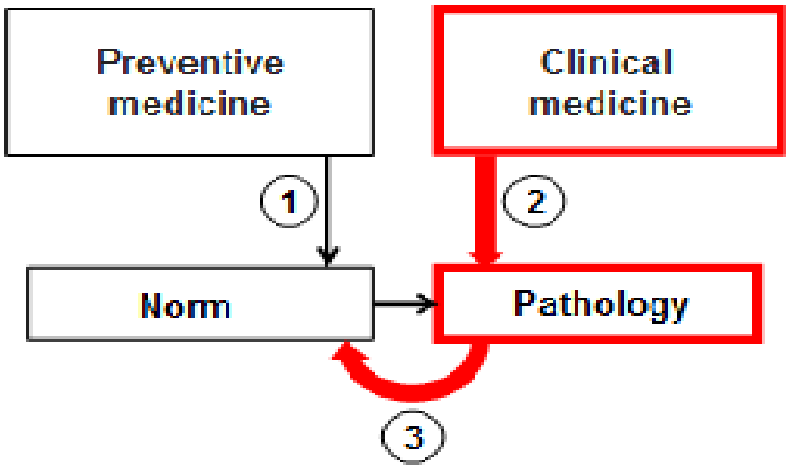


Fig.1 The existing paradigm of health care
(1 - Detection and elimination of risk factors; 2 - Clinical diagnostics, treatment and rehabilitation; 3 - Health restoration)

The new health care paradigm, based on the theory of medicine of borderline states, states that the development of the clinical forms of somatic and mental illnesses is preceded well-defined functional disorders of prenosological character. These deviations can be measured, evaluated and systematized.

This timely detection of borderline conditions, identification and elimination of risk factors for their occurrence and their medical correction contribute to the preservation and strengthening of health. And the cost of prenosological diagnosis is incomparably less than the entire range of therapeutic, diagnostic and rehabilitation measures in the case of illness development.

This is a new paradigm of medicine that provides a displacement of emphasis from the concepts of “norm” and “pathology” to the concept “prenosology” (figure 2).

The implementation of the proposed concept provides the realization of a number of mandatory common requirements: 1) the mass health examination of the population, 2) monitoring of health at the individual, population and state levels, 3) holding the address (if indicated) preventive measures. All this is in full compliance with European model of health care and with the principles of insurance medicine.

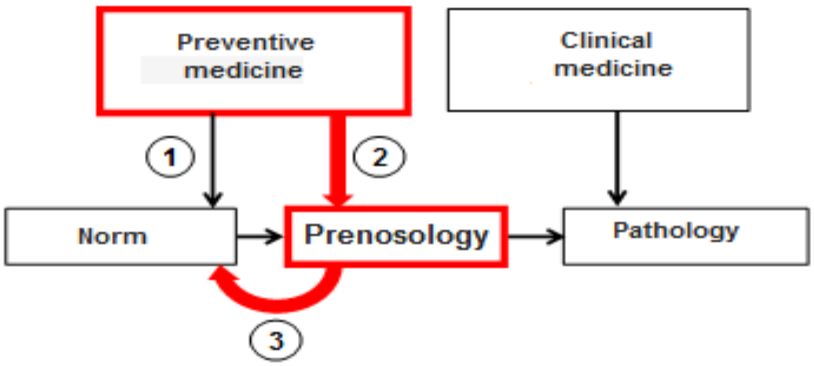


Fig.1 The new paradigm of health care
(1 - Detection and elimination of risk factors; 2 - Prenosological diagnostics and correction of functional state; 3 - Health restoration)

Most importantly, the proposed new paradigm of health care is focused not on the patient but on a healthy person, and thus fills the real meaning of the term "health care".

Thus, today medicine of borderline conditions is the most progressive and perspective health management model. A fundamentally new concept, i.e. targeted prevention based on diagnostics and correction of prepathological states lies in its basis.

To date, the materials directly related to these issues have been published in more than 200 published works, being included in monographs, textbooks, issued in

the form of newsletters and methodical guidelines; protected by patents for inventions. Dissertations on this subject are being written or are planned to be written. Our views are shared by our scientific partners, representatives of medical schools from various educational and research institutions of Lugansk, Kiev, Vinnitsa, Lodz, Frankfurt and other cities and countries.

At the same time active promotion of the new ideas in the national and global professional community is the primary method of changing the outdated paradigm of health.

In this connection, we consider it expedient:

1) to propose the Ministry of Health of Ukraine the concept of medicine of borderline conditions developed in KhnNMU as the methodological basis of the reform of the national health care;

2) to develop organizational and methodical mechanisms for the implementation of the principles of medicine of borderline conditions in public health practice (Kharkiv City Department of Health and the Regional State Administration, Department of Social Medicine, Organization and Health Care Economics).

3) to continue the elaboration of theoretical foundations of medicine of borderline conditions and practical application of prenosological diagnosis methods in health care practice (theoretical and clinical departments of KhNMU).

Received: 17.12.2015 *Accepted: 28.12.2015*

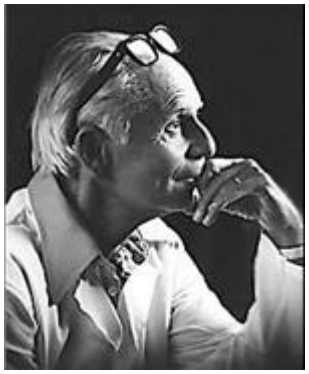
PLENARY LECTURE IN HYGIENE

Zavgorodnii I.V.

CLINICAL ENVIRONMENTAL MEDICINE

Kharkiv National Medical University, Ukraine

As the epigraph for our report we would like to take a statement of the scientist, who was born in Vienna, got his education at the University of Prague, later continued his studies in Rome and Paris. From 1931 he worked at John Hopkins University (USA), later at McGill University (Canada); this is a Rockefeller Fellow Hans Selye.



“In science, there are no small, limited areas - there are only small, limited scientists. In nature, each area merges with the neighboring ones, and it depends only upon you - and to a large extent upon your ability to read - where exactly the borders of your interests will be”.

Hans Selye

First of all, a question arises: why have we chosen medical and environmental problems as the subject of our report? And, moreover, in the context of clinical medicine of the environment? In addition, what are the features of the current state of the environment?

First of all, we would like to cite the data published by the World Wildlife Fund report, which provides an update on the Living Planet Index (LPI), calculated by scientists.

Data of 2010 report show that 30% of the planet's biological system has been lost over the past 40 years.

The annual 2014 LPI edition already describes the state of more than 10,000 representatives of populations of mammals, reptiles, amphibians and birds. It turns out that since 1970 their number has decreased by 52% (39% of the terrestrial, 39%

of maritime and 76% of limnetic animals), as the leading experts explain. That is, the planet lost 22 per cent of the biosystem during 4 years. The pace is impressive ... But the humans go on living.

That is why the time has come when the issues of the role of environmental factors in the genesis of diseases are regarded by the scientific world with special attention.

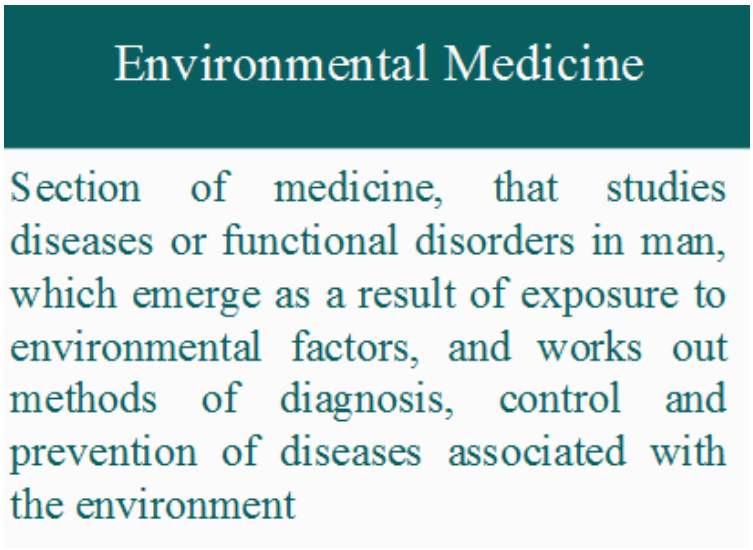
One of the first scientists who systematically studied these problems was a physician, allergist from University of Michigan (USA) Theron Randolph (1906-1995). He studied food allergies, chemical sensitivity and preventive measures. Randolph is the author of four books, including the first textbook “Human ecology and susceptibility to the chemical environment” (1962) and more than 300 medical articles; he is considered by rights as “the father of clinical ecology”.

One of the first scientists who systematically studied these problems was a physician, allergist from University of Michigan (USA) Theron Randolph. He studied food allergies, chemical sensitivity and preventive measures. Randolph is the author of four books, including the first textbook “Human ecology and susceptibility to the chemical environment” (1962) and more than 300 medical articles; he is considered by rights as “the father of clinical ecology”.

In the modern interpretation, we talk about environmental medicine that studies diseases or functional disorders in man, which emerge as a result of exposure to environmental factors, and works out methods of diagnosis, control and prevention of diseases associated with the environment.

Understanding the particular urgency of this research direction, a few years ago our university concluded a contract with the Institute of Occupational Medicine and Hygiene of Otto-von-Guericke Magdeburg University.

Therefore, today we make public the view of our integrated team on these problems.



By this moment we have performed 4 environmental projects: "With teacher's profession to be healthy and motivated until retirement: ways of prophylaxis and development of personality", "Study of loads and intensity in the banking area employees",

"Study of psychological stress among emergency workers". The total amount of the researches is more than 800 respondents by 10 European questionnaires. The processing was carried out in Germany with use of the Vienna Test systems. Since we used European questionnaires, the data are consistent with international ones and can be published in their journals of scientometric databases. Thus, the results of a survey of Kharkiv teachers show that 3.1% of respondents have symptoms of burnout, thereby confirming the results of Dr. Seibt's research group (Germany). Their works describe similar results, namely, approximately 3% of teachers in Germany are at risk of "burnout".

All in all 9.2% of the surveyed workers of Kharkiv ambulance service had a risk of burnout. The employees of the banking sector did not show any signs of burnout.

Now a few words about the technological effectiveness of international scientific communications.

We have received a new project proposal:

- Industry 4.0 (the fourth industrial revolution and industrial internet);
- digitalization of the working world;
- CPS - integration of cyber-physical systems into production processes.

New information projects, study of labour intensity when these new means of labour (from a small workshop to a giant - Volkswagen) are used. Our colleagues from

Magdeburg work now with that enterprise. Over 20 years 47% of jobs will be automated, and a million workers will lose their work. We talk about the formation of rational systems and anthropo-infrastructure of production.

The urgency of studying the influence of environmental factors on the human body is confirmed by the fact that in 2006 European universities introduced the interdisciplinary subject "Clinical Environmental Medicine". The teaching is carried out by experts of specialized departments and divisions. Thus, this problem is known to our colleagues and we were supported by the outcomes of our report in Berlin on the forum dedicated to cooperation between the two countries on issues of medical education (November, 2014).

Next, the talk about the problem of clinical aspects of environmental medicine can be either from the position of characteristics of the operating factors or from the discipline positions. The latter seemed to us more correct.

MENTAL DISEASES

The prevalence of mental illnesses in 15 most economically developed countries within the period from 1900 to 1993 increased by 10 times and now is

303.7 per 1,000 populations (including: neuroses by 62 times, alcoholism by 58 times, oligophrenia by 30 times).

CLASSIFICATION OF THE FACTORS LEADING TO THE DEVELOPMENT OF MENTAL DISEASES

(by O.K. Napreenko, K.N. Loganovsky):

physical factors: radiation, noise and vibration, infra- and ultrasound, climatic conditions, temperature, atmospheric pressure, accelerations and gravity, electrical currents and discharges;

chemical factors: intoxication with drug substances, substances of non-pharmacological nature (metals, inorganic and organic compounds, pesticides, chemical weapons);

biological factors: poisoning with seafood, mushrooms, berries, contacts with venomous animals, bio-substances for medical use, biological weapons;

poisons that affect the nervous system: psychotropic proper, indirectly psychotropic.

DISEASES OF THE BLOOD SYSTEM AND HAEMATOPOIETIC ORGANS

As far as the blood system and haematopoietic organs are concerned, small doses of radiation, benzene and cytostatics provoke the development of leukaemia. High nitrate amounts increase the level of methaemoglobin (MetHb) that in 60-70% of cases in infants is fatal. Lead exposure is accompanied by the development of lead-induced anaemia. The immunosuppressive effect of dioxins is known. The blood is also affected by the substances that cause oxidative stress: aniline, arsines (organic arsenic compounds: warfare agents - lewisite, Adam site).

Hemotoxic agents are classified as physical agents (ionizing radiation, electromagnetic fields) and chemical ones (aromatic nitro and amino compounds, benzene, halogenated hydrocarbons, pesticides, herbicides, dioxins, carbon

monoxide, nitrates/nitrites, lead, arsenic, vinyl chloride, isocyanates, leukotropic RNA-viruses, smoking).

ECOLOGICAL AND TOXIC EFFECT ON THE HEART AND VESSELS

The following chemical substances cause ecological and toxic effects on the heart and blood vessels: carbon disulfide as a raw material in the production of viscose fiber (up to 80% of produced carbon disulphide are used in the production of viscose - a raw material for the production of viscose fiber {rayon}), this is made of wood cellulose, and carbon disulphide makes up 30-50% of its weight (an increased risk of death); aliphatic nitrates - pharmaceutical production and explosives (coronary systemic reactions); solvents (effects on myocardial conduction and contractility); arsenic (damage of peripheral arteries); carbon monoxide - cardiomyopathy and violation of impulse formation; thallium - an insecticide and agent for pest control (poisoning). Thallium poisoning - when eating grain treated with thallium (thallium as an insecticide and agent for pest control).

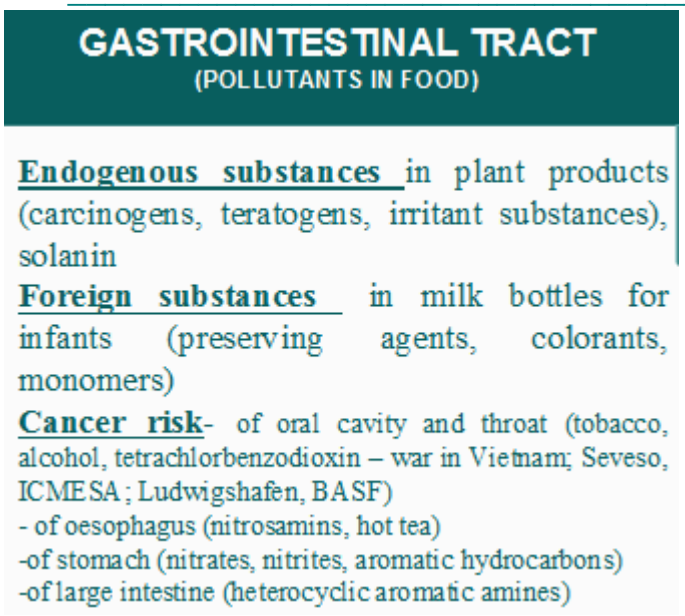
A direct relationship between population mortality from cardiovascular diseases and cadmium content in the atmosphere of large cities is established (cadmium-nickel accumulators, anti-corrosive coating, inorganic mineral paints, cadmium sulphide when laser printers are used). Bone lesions (osteomalacia), hypotension, anaemia, renal failure. These symptoms are known in itai-itai disease.

Cobalt chloride as a foaming additive, which is now forbidden (at least, it is illegitimate), provokes the development of cardiomyopathy.

Heavy metals cause kidney damage and renal hypertension – “illegally distilled homebrew-whiskey”. Such factors as traffic noise and passive smoking are important.

GASTROINTESTINAL TRACT

Ecological influence is often targeted at the gastrointestinal tract (GIT). Common are allergic gastrointestinal diseases: childhood allergies (cow's milk, chicken eggs, wheat, soy, peanuts), grass pollen allergy (birch, often combined with apple – cross-allergy), hazelnuts and other large fruits; tarragon and celery (cross-allergy), carrots, spices. Oncological gastrointestinal diseases are possible.



Here is a short list of major accidents with environmental release of dioxin-like compounds (these include 75 dioxins, 135 different furans and 209 polychlorinated biphenyls): defoliants (were used by the American army in Vietnam, Agent Orange); a disaster in Seveso (Northern Italy), when 3 tons of toxic substances settled on the area of 15 hectares (75 thousand poisoned animals were slaughtered, 79 people became ill with chloracne); Ludwigshafen (Germany) – at a BASF factory 75 people were involved when the factory area was contaminated with dioxins. The effect of dioxins is polysystemic and therefore they will be mentioned in this report again and again.

HEPATOTOXIC EFFECTS

In 1968, a massive outbreak of poisoning occurred in the southwest of Japan (Yusho village) after eating commercial rice oil, which was accidentally contaminated with PCBs and PCDF. 1,786 people were involved. The episode was called “Yusho disease”, or “oil disease”.

Toxic oil syndrome - Spain (1981), an outbreak of the disease, named toxic oil syndrome (TOS). As a result, this outbreak killed several hundred people, and the total number of victims exceeded 20,000 people. From the standpoint of toxin getting into the oil, the problem lied in the process of refinement of the suspected oil.

Hexachlorobenzene is a fungicide used especially for treatment of seeds.

Intoxication with pyrrolizidine alkaloids: data on medicinal herbs indicate the need for their very cautious use, especially in the conditions of promotion of non-traditional methods of treatment and putting into practice a tremendous number of their various combinations.

Pyrrolizidine alkaloids are present in many herbs belonging to the families of Asteraceae, Leguminosae and Boraginaceae. The alkaloid of pyrrolizidine is contained, but in smaller quantities, in such widely known and used herbs as medicinal comfrey and coltsfoot. Hydrazine is a component of rocket fuel. Its sulphate is used in pharmacotherapy for certain types of tumours.

HEPATOTOXINS

- Iron, copper, phosphorus, arsenic, selenium, beryllium, mercury, cadmium
- Hydrazine
- Halogenated hydrocarbons (vinyl chloride, trichloroethylene, solvents, detergents)
- Dioxins, dibenzofurans
- Resin hardeners
- Fungus hepatotoxins (aflatoxicosis)
- Bacterial hepatotoxins

Polyvinyl chloride: its decomposition or exposure to temperature results in release of a monomer, i.e. vinyl chloride (linoleum, plastic packages, toys). The monomer migrates into water, air, foodstuffs. Interestingly, since January 1, 2016 the French Ministry of Ecology has prohibited using of any plastic bags in department stores and supermarkets of their country.

Aflatoxins cause acute toxicosis in children when peanut flour is used for their feeding (patients with kwashiorkor in Senegal, India). The products of high attention are as follows: peanuts, oilseeds, cereals, legumes, coffee.

NEPHROTOXIC EFFECTS

TOXIC NEPHROPATHY

Manifestations	Trigger agent
Acute renal failure	Heavy metals (Hg-salts, lead, bismuth) Aminoglycosides
	Antibiotics Penicillins Cephalosporins Rifampicin
Chronic renal failure	Analgesics Cadmium, lead Cyclosporins
Nephrotic syndrome / renal failure	Mercury, gold, bismuth, Penicillamine, Penicillin G, Captopril, Sulphanilamides

Nephrotoxic effects manifest themselves under the influence of pharmaceutical products (analgesics – acetaminophen, NSAIDs; antibiotics – aminoglycosides, cephalosporins, vancomycin, amphotericin B; cytostatics – cisplatin, methotrexate; immunosuppressors – cyclosporine; iodinated radiographic contrast agents).

Ethylene glycol is a component of solvents for paints, plastics, antifreezes, windshield washer fluids, brake fluids, defrosters (antidote for poisoning - ethanol, as ADH affinity for it is higher and the time of ethylene glycol metabolism increases with a slower formation of products of its metabolism – glycolic, glyoxylic and oxalic acids).

Trigger agents of toxic nephropathy are as follows: heavy metals (Hg salts, lead, bismuth), aminoglycosides and antibiotics (penicillins, cephalosporins, rifampicin), which are manifested by acute renal failure; analgesics, cadmium, lead, and cyclosporins result in chronic renal failure; mercury, gold, bismuth, penicillamine, penicillin G, captopril and sulphanilamides cause nephrotic syndrome or renal failure.

REPRODUCTIVE TOXICOLOGY

Reproductive toxicology explores toxic effects that occur before and after birth. Thalidomide (opiate) provokes severe malformations of limbs; about 7,000 people were affected from 1959 to 1962. Extremely vulnerable is the human reproductive system; so much that we can talk about isolation of a separate field of research, namely, reproductive toxicology and toxicity.

This anticonvulsant and sedative drug was developed in Germany in 1954. It was recommended for pregnant and lactating women (in order to get rid of insomnia, anxiety and morning nausea). One of the employees of this pharmaceutical company took thalidomide, which had not yet been delivered officially, brought it home and gave to his wife. Their baby was born without ears. The teratogenic effect. Also awful is the fact that these physical deformities can be inheritable.

Dibromochloropropane (a nematocidal drug) causes disruption of spermatogenesis. Workers of banana plantations developed testicular damage, infertility. This is a classic example of occupational hazards for the male reproductive

system. Also a negative effect on spermatogenesis is produced by: alcohol, tobacco, narcotic drugs; pesticides, herbicides; heavy metals, solvents, cooling fluids; flame retardants, plasticizers; disinfectants; synthetic estrogens; heat, ionizing radiation, electromagnetic fields; cytostatic agents, antiepileptic drugs, sulphanylamides; diuretics, imidazoles, glucocorticoids; steroid hormones, etc.

COMBINED ACTION

So far, we have characterized effects of an isolated action of the above factors, but in real life it occurs very seldom. Most commonly we come across a combination of the factors. In particular, chemical factors are combined with physical ones. And in this scientific field we got some interesting data on the part of the reproductive system (figure 1).

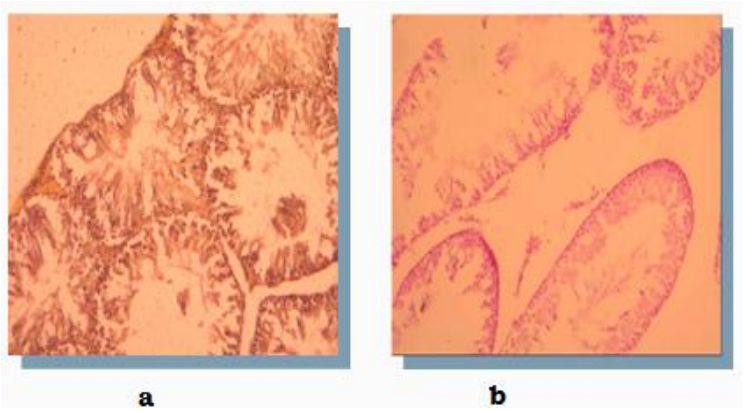


Fig.1 Micrograph of rat testes *(a – thinning of the seminiferous epithelium, a reduced amount of dividing spermatids; b – tubules with total emptying and uncovering of PAS-positive basal membrane)*

Left - an isolated effect of a chemical factor: thinning of the seminiferous epithelium, a reduced amount of dividing spermatids. This is the result of nitrobenzene action. Right - its combination with positive low temperatures (from +2°C to 4°C). That is, the animal is under conditions of cold stress. The total emptying of the tubules is clear. Cold has been the hardest stress factor throughout the whole evolution. The above facts made it possible for us to substantiate the term "cryotoxicology" with a report at a congress of toxicologists of Ukraine.

Imagine that instead of nitrobenzene there is a pharmaceutical drug and the effect of its action is intensified in conditions of cold stress. The above suggests the rationale for the scientific term “cryopharmacology”.

TERATOGENIC EFFECT

The teratogenic effect, caused by the action of dioxins, is manifested by the split spine, spina bifida, an open spinal cord; this is observed in Vietnamese and descendants of the American veterans of the Vietnam War.

Large doses of vitamin A must not be administered at the early stages of pregnancy and even six months before pregnancy.

Ethyl alcohol belongs to the group of the strongest chemical teratogens. Violation of the molecular structure of the cells (including germinal ones) is caused by alcohol and its metabolites, particularly acetaldehyde. The so-called fetal alcohol syndrome can cause abnormalities of fetal development: face deformities, visual and hearing impairments, retarded physical development, mental deficiency and mental retardation, behavioral problems (low self-control, attention deficit and hyperactivity), small head circumference and brain size (microcephaly), defects of the cardiovascular system, poor coordination of movements, poor learning ability. Other damaging mechanisms include: lack of vitamins and microelements in the mother's diet, violation of the transplacental transport of essential amino acids, fetal hypoglycemia, reduced placental blood flow and fetal hypoxia.

In the prenatal period, appearance of PCB in food develops Yusho disease and functional changes in the central nervous system; ACE inhibitors are dangerous during pregnancy; methylmercury causes Minamata disease, spastic cerebral palsy and behavioral changes.

During the postnatal period: effects of nuclear weapons result in mental deficiency and a higher risk of tumours; fluoroquinolones - gyrase inhibitors - cause cartilage lesions; diethylstilbestrols lead to vaginal cancer; dichlorodiphenyltrichloroethane insecticides affect the CNS; polychlorinated dibenso-p-dioxins and dibenzofurans develop polyneuropathy.

OCULOTOXIC SUBSTANCES

In 1900 there was a mass poisoning with beer in Manchester; the poison was contained in artificial yeast and malt. The global scale of contamination with arsenic (underground waters, arsenic ores) resulted in retinopathies and optic neuropathies. The effect of mercury in Japan in 1956 (Minamata disease) developed an atrophy in the optic cortex area, narrowing of the visual field, blindness.

The visual organs are damaged under the effects of: thallium (retrobulbar neuritis or optic neuropathy with paresis of the eye muscle); ethanol (nystagmus, diplopia, transient blindness, visual disturbances, moderate reduction of contrast sensitivity, visual field defects, optic neuropathy); methanol (amblyopia, spots in front of the eyes, blindness).

NEUROTOXIC EFFECTS

- Pesticides (foodstuffs and agricultural lands);
- insecticides (developed on the base of chemical poisonous substances in order to affect the nervous system);
- industrial products (solvents and cleansing agents, paints);
- fuel on the base of carbon-containing materials and combustion products (incomplete combustion products, e.g. carbon oxide);
- petrol (mixed with lead);
- dentistry (mercury restorations);
- formaldehyde (glues for chipboards, fibreboards and plywood; in textile industry);

“Chinese restaurant syndrome” – sodium glutamate (E621, a flavour intensifier in foodstuffs) (paresthesiae on the face, neck and trunk).

CHRONIC EFFECT OF METALS AND METALLOIDS

Clinical manifestations of the chronic effect of metals, metalloids and their compounds are as follows:

- chromium – dermatitis (chromium holes – ulceration of the finger skin), ulceration and perforation of the nasal septum;

- phosphorus – periostitis, necrosis of the jaw ("phossy jaw"), hepatitis, dermatitis;
- cadmium – lesions of bones (osteomalacia, osteoporosis, spontaneous fractures), pulmonary lesions (emphysema, obstructive syndrome, diffuse interstitial fibrosis), renal lesions;
- tin – stannosis (deposition of tin oxide in the lungs, lymph nodes, liver and spleen);
- manganese – encephalopathy (akinetic-rigid syndrome of parkinsomism), asthenia, adynamia, muscle pains, paresthesiae, speech disturbances, chronic bronchitis, pneumonias;
- arsenic – obliterating endarteritis ("black foot disease" - Taiwan), Raynaud's syndrome, myocardial infarction.

ECOLOGICAL PATHOLOGY

ECOLOGIC PATHOLOGY

Disease	Etiology, routes of entry	Region	Lesions of systems	Fell sick/ died
Minamata (1953)	Methylmercury Food (fish)	Kyushu island, Minamata town	Cardiovascular, nervous system, kidneys	10000/2325
Yokkaichi asthma(1960)	Sulfur dioxide Air	Yokaichi town	Lungs, stomach, thyroid gland	1200/300
Itai-itai (1967)	Cadmium Air	Iitsu river	Osteoarticular	117/85
Yusho (1968)	Polychlorinated phenyls Food, rice oil	Kiushu district	Lungs, skin	1788/112

There are many syndromes and conditions, which have already received their nominative names; thus, for example, the world already knows a group of "Japanese" ecological diseases, caused by methylmercury (Minamata disease) and sulphur dioxide (Yokkaichi asthma).

By the way, sulphur dioxide is also a preserving agent, E220, whose negative effect consists in the fact that this chemical compound simultaneously destroys vitamin B1 and disulphide bridges in proteins. After their treatment with sulphur dioxide the foodstuffs inevitably get a strong smell. Therefore, sulphur dioxide is mainly used in the foodstuffs, which will be reprocessed. The orange colour of dried pitted apricots and raisins results from addition of sulphur dioxide (E220). Besides fruits, E220 is also used for treatment of alcoholic drinks, beer, potato products and soft drinks. Cadmium compounds cause itai-itai disease, polychlorinated phenyls cause Yusho disease.

Unfortunately, the number of such patients often exceeds several hundreds, sometimes even thousands.

We would like to end this report with the following words: “Only *alma mater* is worthy of scientific discoveries… thanks to its teachers and with a hope for its students”.

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PLENARY LECTURE IN PEDIATRICS

Riga O., Gonchar M.

NEW SCIENTIFIC TRENDS IN PEDIATRICS

Kharkiv National Medical University, Ukraine
Department of Pediatrics №1and Neonatology

The training program in pediatrics stipulates the topic concerning the development of the child. However, “Developmental Pediatrics” is a new branch that has emerged relatively recently and deals with the problems of children with disabilities, without affecting the nosological structure of children's diseases, and is based on the core of 5th developmental domains (cognitive, motor, social-emotional, speech and language, and self-help skills (adaptive) (figure 1).

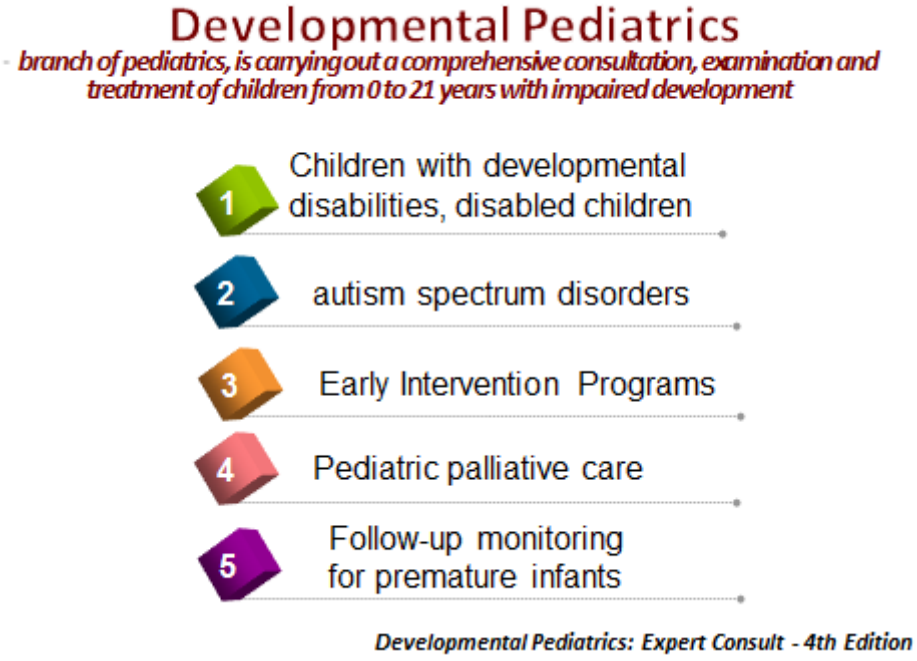


Figure 1. Developmental Paediatrics’ Domains

There are 130 million children with disabilities (http://www.who.int/ru/) in the world, 20 million have an incurable disease each year and require palliative care. There are 167 000 disabled children and more than 90 thousand orphans in Ukraine. According

to the WHO (2012), of 135 million births per year 15 million children are born prematurely, constituting the main source of the human capital loss and triggering future disability (figure 2).

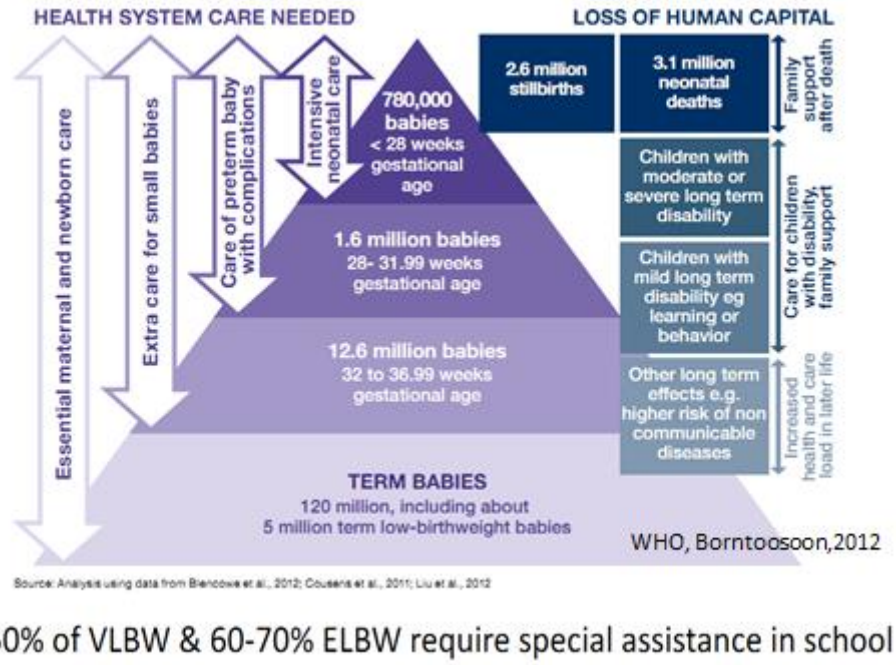


Figure 2. Future disability

One of the stunning new pieces of information is Heckman's assessment of when investments in human development have the greatest return on competence and coping skills. This chart from his recent paper shows quite clearly that investment in the early years of life before the formal school system, gives the greatest return. We now understand how the social environment affects health, learning, and behaviour throughout the life cycle. Given this knowledge, and the need for innovative knowledge-based economy it is clear that we have to better integrate the knowledge from the natural sciences and the social sciences if we are to have higher quality populations and a more stable world during this century (Heckman&Carneiro. 2003, Human Capital Policy) (figure 3).

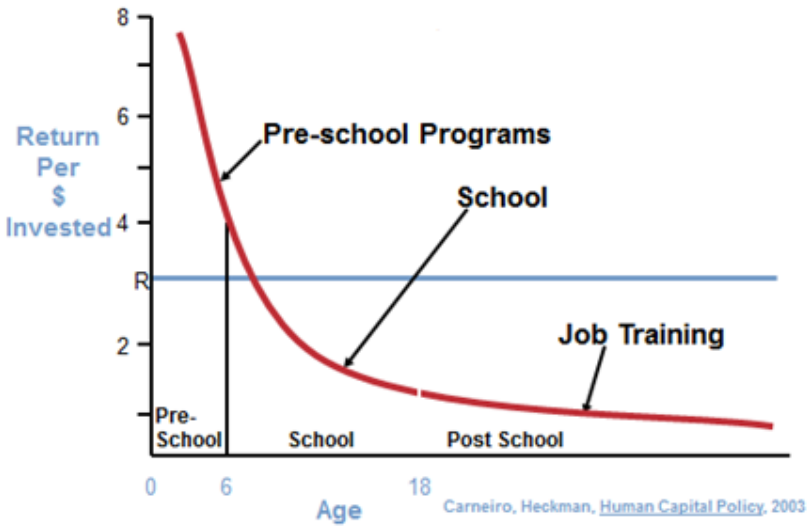


Figure 3. Rates of return to Human development investment across all ages

Cochrane database contains research on the high level of evidence. In 2012, the results of a meta-analysis demonstrated the effectiveness of early intervention in premature infants to improve their cognitive and motor function compared with usual medical follow-up (figure 4).

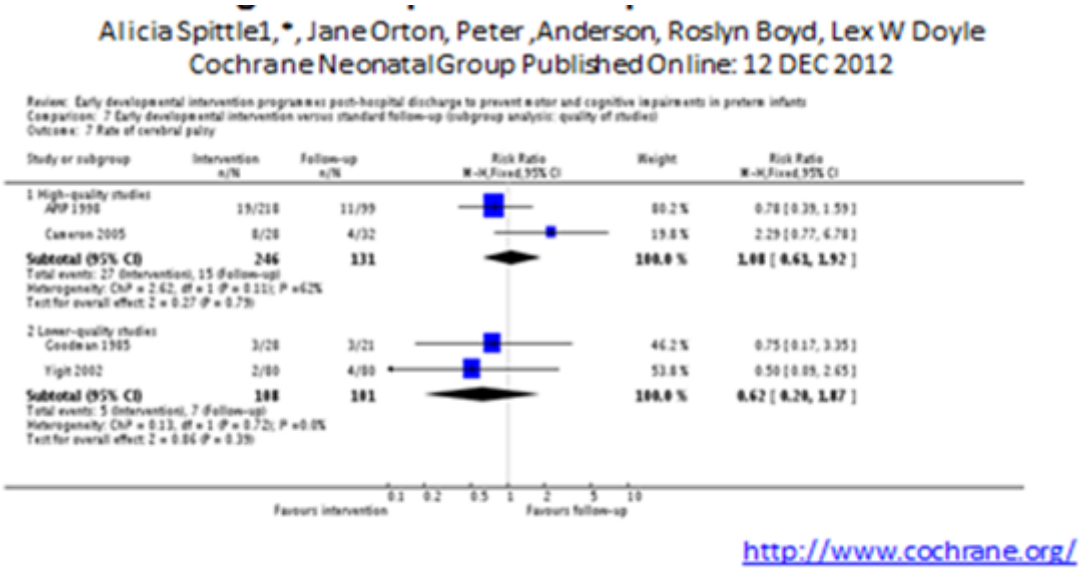


Figure 4. Early intervention programs for the prevention of motor and cognitive impairments in preterm infants

The intensive development of the field “Developmental Pediatrics” suggests a large amount of publications for the last 9 years in the journal “Pediatrics” by American Academy of Pediatrics (figure 5).

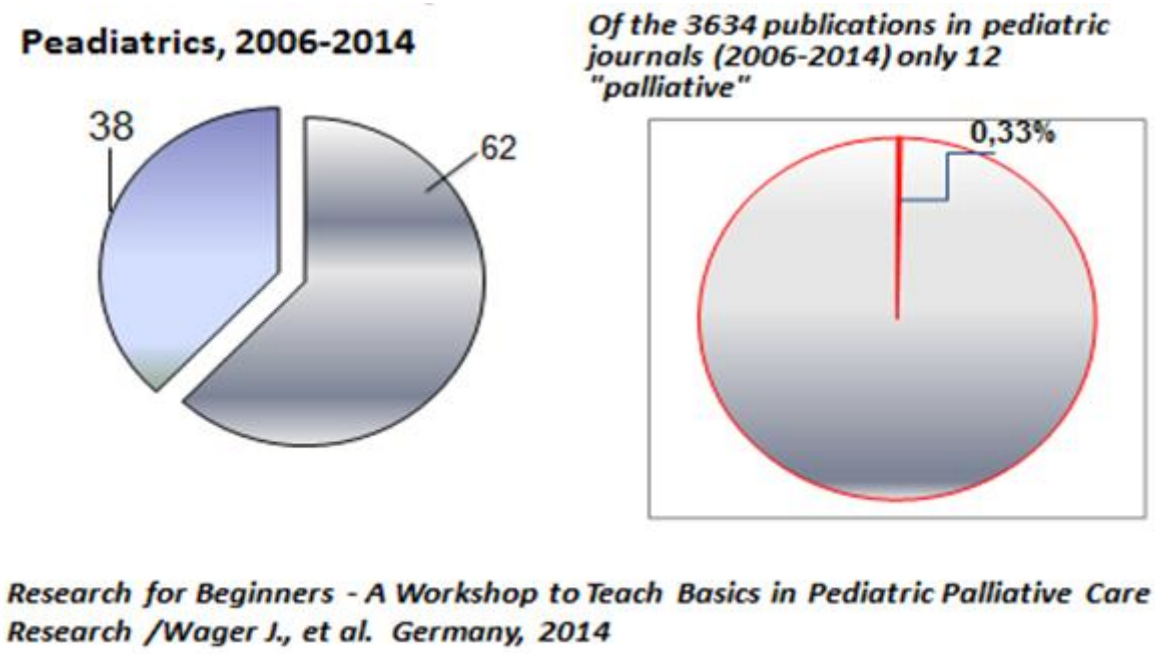


Figure 5. Analysis of scientific publications on the Developmental Pediatrics

At the same time, our German colleagues analyzed the proportion of publications for the same period relating to the pediatric palliative care. They proved to less than 1% (Research for Beginners - A Workshop to Teach Basics in Pediatric Palliative Care Research /Wager J., et al. Germany, 2014).

That's why one of the provisions of the 2nd Congress on Pediatric Palliative Care, which took place in of Rome (Italy) in 2014, was: It is important to identify strategic research programs in accordance with the changing practices of children's palliative care.

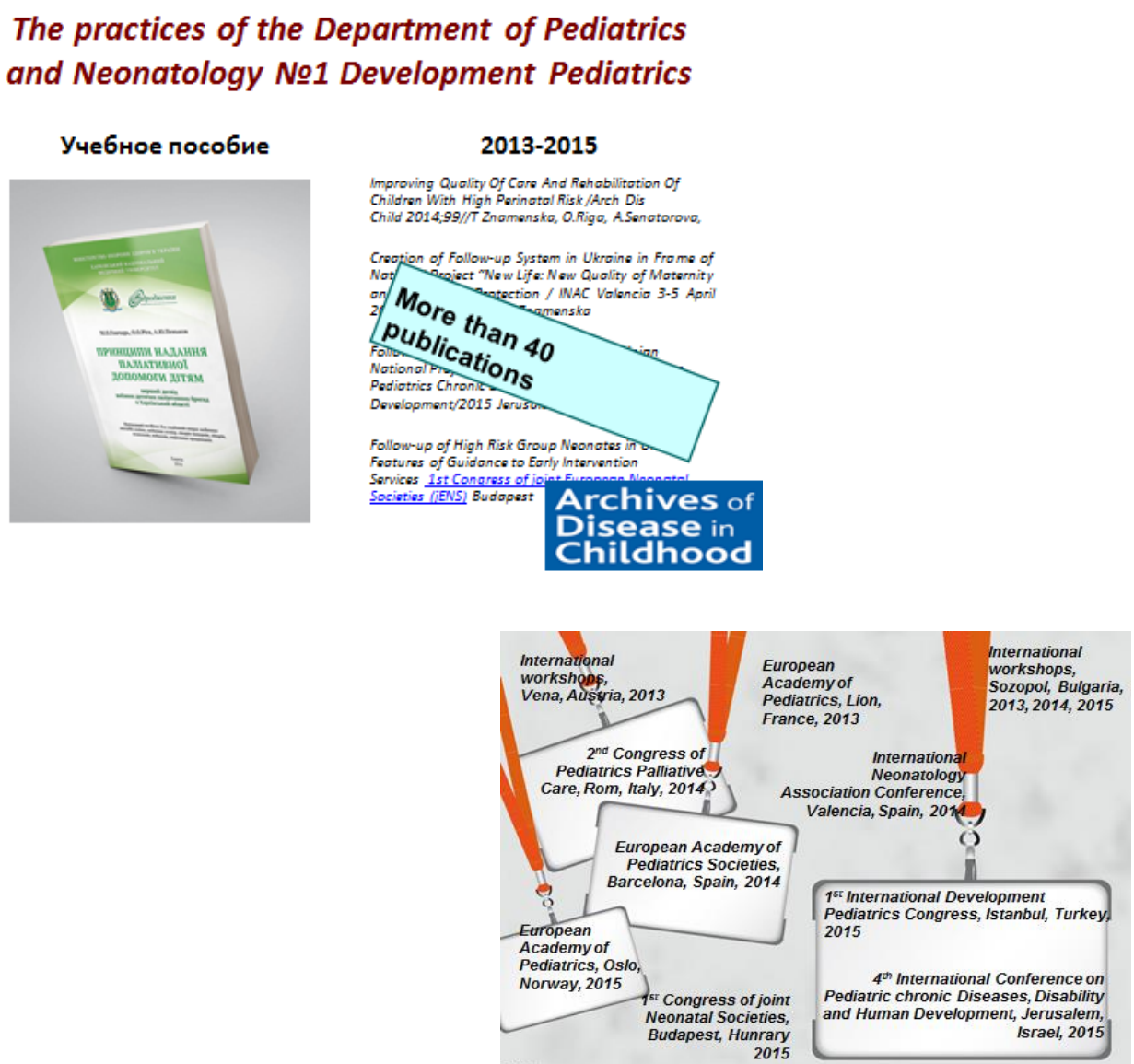
Such representative global organizations as the WHO, UNICEF identified a strategic priority of the program "Early Childhood Development» in the 2015-2020. Proper health care quality improvement occurs when the demand is supported by the political component. So in December 2015 the President of Ukraine published the order №818 / 2015 on working group for deinstitualisation in Ukraine. And another political event, which took place two days ago, namely the First Lady of Germany Daniela Schadt's (the wife of German President Joachim Gauck) visit to Kharkov, in particular to the clinical center of the Department of Pediatrics and Neonatology No.1 Kharkiv regional specialized orphanage No.1 (Head doctor R. Marabyan). This gives a hope for closer cooperation with Germany and UNICEF in the field of Developmental Pediatrics.

We found support from KNMU management, and in close cooperation with the Ukrainian-German Medical Association and the Association of neonatologists of Ukraine, we have developed projects in line with the orders issued by the Ministry of Health of Ukraine for palliative care for children and follow-up for high risk newborns. In 2015 many faculty members became fellows of the International Children's Palliative Care Network (ICPCN). Moreover, together with the Executive Director of the International Children's Network of palliative care, professor Joan

Marston, we prepared a joint report on the 2nd National Congress of Palliative Care (Kiev, 2015), which for the first time ever included Pediatrics.

Apart from the main scientific themes of teamwork, which is focused on pediatric cardiology, we found it useful to plan and to continue thesis research in the field of pediatrics (4 master's theses), participated in 21 national conferences and congresses, implemented 3 training seminars in cooperation with the Association of neonatologists of Ukraine in Chernivtsi, Ternopil, Kiev.

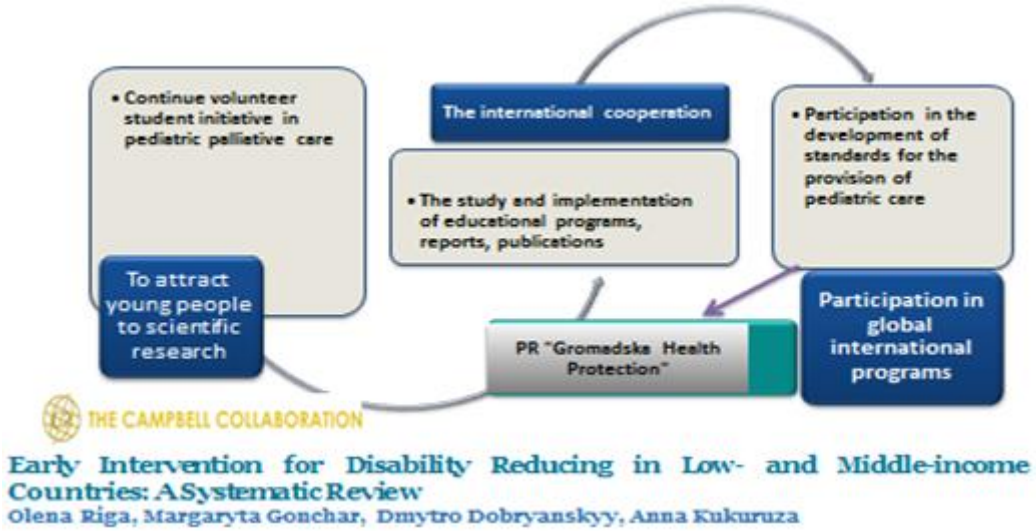
Employees of the department wrote a textbook "Principles of palliative care for children" and published more than 40 scientific articles and over the 2-year period we took part in 12 international conferences and congresses.



Exchange of best practices in research and education programs took place in hospitals and organizations: Lumos, London, UK 2013 (http://www.wearelumos.org/), St. Sophya Hospital, Rotterdam, the Netherlands, 2014 (http: // www. erasmusmc.nl), Alyn Rehabilitation Center, Israel, 2015 (http://www.alyn.org.il/ar/). It is planned in 2016 visiting Rainbows Children's Hospice, United Kingdom (http://www.rainbows.co.uk).

As a result, the state of reflection on development prospects in Pediatrics, we are convinced that textbooks and monographs should be presented only in English-speaking countries.

Therefore, putting forward an initiative and participating in the elaboration of a national Pediatrics textbook is one of our forward-looking statements. We also plan to launch thematic courses for professional development in pediatric palliative care and to continue to cooperate with the Turkish pediatricians.



The ultimate goal of everything that we have done, are doing and will do is to improve the quality of life of our young patients.

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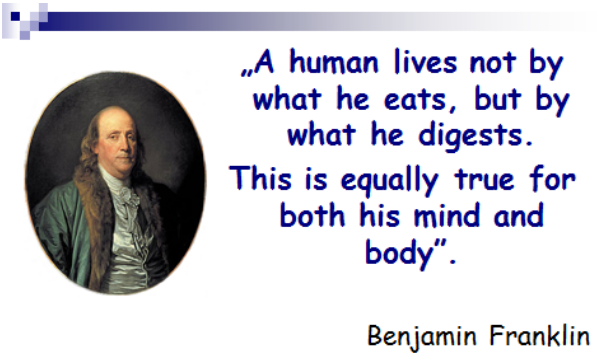
Klymenko V.

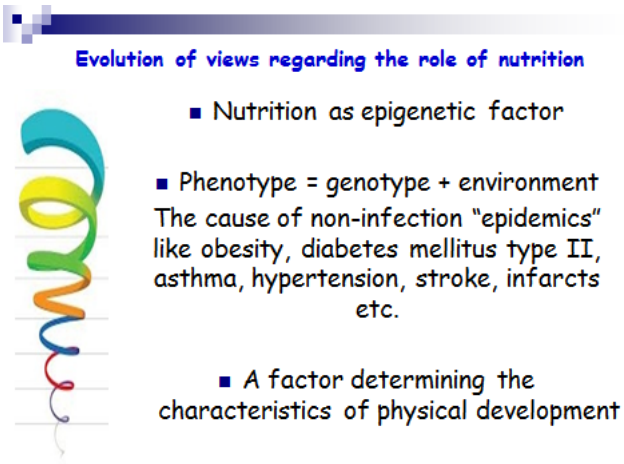
NUTRITION OF YOUNG CHILDREN AS A FACTOR OF HEALTHY NATION FORMATION

Kharkiv National Medical University, Ukraine
Head of Department of Fundamentals of Pediatrics №2



The formation of the "mind" is a highly complex and sometimes unpredictable process and we as university pedagogues are well aware of that. The formation of the "body" is a simpler goal which may be achieved based on the knowledge of physical development principles. One of the main factors determining the physical wellbeing is nutrition.

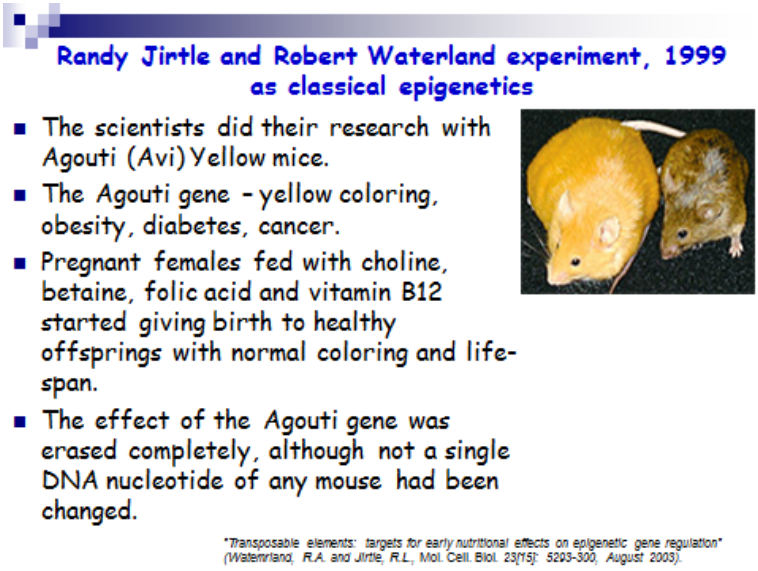
Over the recent years our perception of the role of nutrition in a person's health and wellbeing have underwent significant changes. Common people know the correlation between the parameters of physical development (body weight, waist and thighs circumference) and the quality and quantity of food.



Starting from the second half of the XX century, after the elimination of numerous infectious diseases such as the plague, smallpox, poliomyelitis and others one may observe a rapid spread of non-infectious diseases: obesity, type 2 diabetes, asthma, cardiovascular diseases, strokes, heart attacks etc. According to WHO data,

over 36 million people die from those illnesses annually. Scientific findings show that nutrition is one of the factors responsible for the pandemic of those diseases. The slogan "phenotype equals genotype plus environment (including nutrition)" is most often used to describe the pathogenesis of the said diseases.

The beginning of the XXI century brought a new understanding of the role of nutrition, which today is seen as an "epigenetic factor".



The experiment of Professor Randy Jirtleand AND his postdoc Robert Waterland from the Duke University (USA) serves as a scientific proof of the epigenetic role of nutrition. They bred transgenic Agouti mice named after the homonymous gene integrated into their genome. The said gene determined not only their yellow coloring and excessive body weight, but also their aptitude for cancer and diabetes. In normal conditions these rodents throw similar offsprings: yellow, obese and sickly. However, the scientists managed to get a healthy breed with normal coloring and lifespan. The Agouti gene effect was fully erased, although not a single DNA nucleotide of the mouse was altered. This happened only due to the fact that before the birth of the new breed the diet composition of females had been changed – they received food enriched with methyl group elements (choline, betaine, folic acid and vitamin B12). These elements can be found in fruits and vegetables, inter alia onions, garlic and beet.

This is how Randy Jirtle commented his findings in his article "DNA is not destiny" for "Discovery" journal:

DNA Is Not Destiny:
The New Science of Epigenetics
Discoveries in epigenetics are rewriting the rules of disease, heredity and identity

"We commonly accept the notion that through our DNA we are destined to have particular body shapes, personalities, and diseases. Some scholars even contend that the genetic code predetermines intelligence and is the root cause of many social ills, including poverty, crime, and violence. "Gene as fate" has become conventional wisdom. Through the study of epigenetics, that notion at last may be proved outdated. Suddenly, for better or worse, we appear to have a measure of control over our genetic legacy. Epigenetics is proving we have some responsibility for the integrity of our genome. Before, genes predetermined outcomes. Now everything we do - everything we eat or smoke - can affect our gene expression and that of future generations. Epigenetics introduces the concept of free will into our idea of genetics."

The epigenetic role of nutrition is particularly significant prior to birth and in the first years after childbirth.

Scientific data on the epigenetic role of nutrition served as prerequisite for establishing the International program "1,000 Days Partnership" which was opened in September, 2010 with the support of US Secretary of State Hillary Clinton, the Minister for Foreign Affairs of Ireland and the community of world leaders.

The program supports all aspects of scientific, economic and public activity which increase the awareness regarding the importance of proper nutrition of pregnant women and infants and are aimed at combating famine. As of now over 80 organizations are taking part in the program.

Project «Early Life Nutrition» in Ukraine

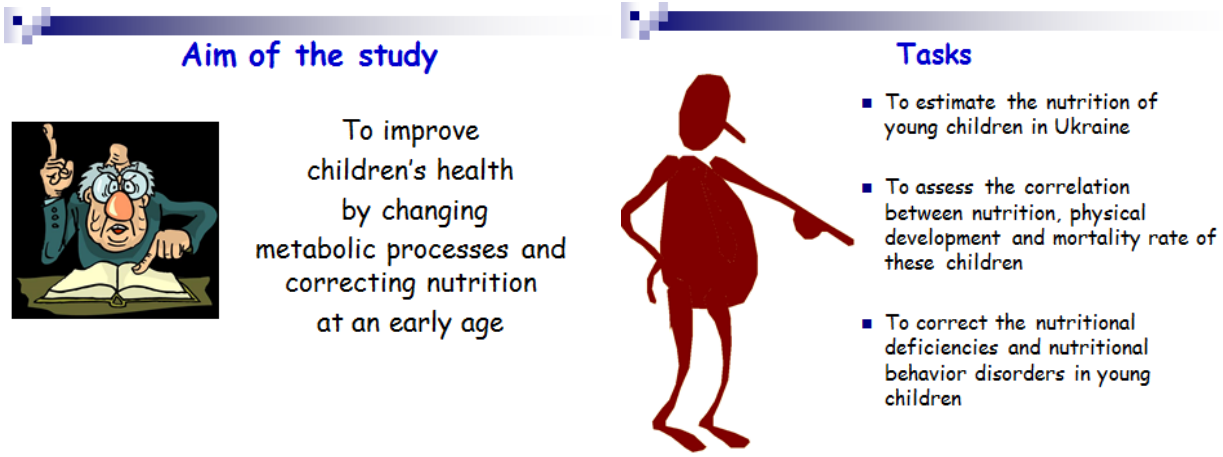
NUTRITIONAL DEFICIENCIES IN CHILDREN UNDER THE AGE OF 3 IN UKRAINE

Lviv National Medical University - prof. Nyankovskyy S.L.
Institute of Pediatrics, Obstetrics and Gynecology of National Academy of Medical Science of Ukraine - prof. Shadrin O.G.
Kharkiv National Medical University - doc. Klymenko V.A.,

A major project "Early Life Nutrition" was launched in February, 2012. The participants include researchers from 36 institutions situated in 15

countries in Europe, the USA and Australia. The project is aimed at studying the effects of nutrition programming in a person's life. The project is coordinated by Doctor of Sciences, member of the ESPGHAN (The European Society for Paediatrics Gastroenterology Hepatology and Nutrition) committee on the issues of nutrition, Professor B. Koletzko.

In 2013-2014 Ukraine proceeded to implement the program "Early Life Nutrition". In particular, a research on evaluating the nutrition of young children was conducted with the participation of the State "Institute of Pediatrics, Obstetrics and Gynecology of National Academy of Medical Science of Ukraine", Kharkiv National Medical University and Lviv National Medical University.



The diet of 350 children aged from 9 months to 3 years in different regions of Ukraine (center – Kyiv, west – Lviv, east – Kharkiv) was studied. In Kharkiv 116 children were examined. Parents of every observed patient kept a diary indicating three daily nutritional rations (2 workdays and 1 off-day). Every family received electronic scales and parents precisely measured and documented the weight and name of consumed product. If a mother fed the child with a self-prepared dish such as borsch, the accurate weight of the ingredients was indicated and then the exact weight of one portion of the product was calculated.

Thenutritionalvalueofthedietwasdeterminedaccordingtothespecialprogram "Dietplan 6" (Great Britain), which takes into account the content of all the basic nutrients in the products. The Recommendations of the Committee of Medical Aspects of Food Policy (1991) were taken as a norm.

Materials and methods

- The nutritional value of the diet was determined according to the special program "Dietplan 6" (Great Britain)
- The following parameters were calculated:
  - daily amount of calories
  - amount of the proteins, fats and carbohydrates
  - macronutrients (calcium, phosphorus, potassium, magnesium)
  - essential micronutrients (iron, zinc, iodine, fluorine, copper, selenium, chromium, molybdenum, cobalt and manganese)
  - vitamins (A, D, E, B1, B2, B6, B12, C, folates)

- The reference values of consuming nutrients and calories of nutritional products were interpreted pursuant to the recommendations of the Committee of Medical Aspects of Food Policy (1991)
- Blood was drawn from **105 children** to determine the level of
  - ferritin
  - transferrin
  - erythrocytes
  - hemoglobin
  - hematocrit
- The analysis was performed on analyzer "Cobas 6000" with test-system Roche Diagnostics (Switzerland) in laboratory «Sinevo»
- Statistical methods

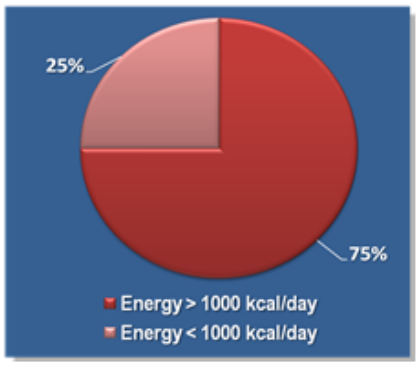
Results

Quantitative analysis of the main nutrients

- Exceed the norms
  - Proteins
  - Carbohydrates
  - Energy (kcal)
- Meet the norms
  - Fats

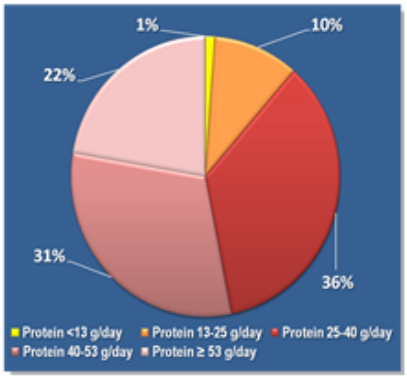
Results
Energy

- Average energy intake per day - 1165,67 [290,67 - 4951,33] kcal
  - Norms of WHO, EU, the USA ≈ 1000 kcal/day

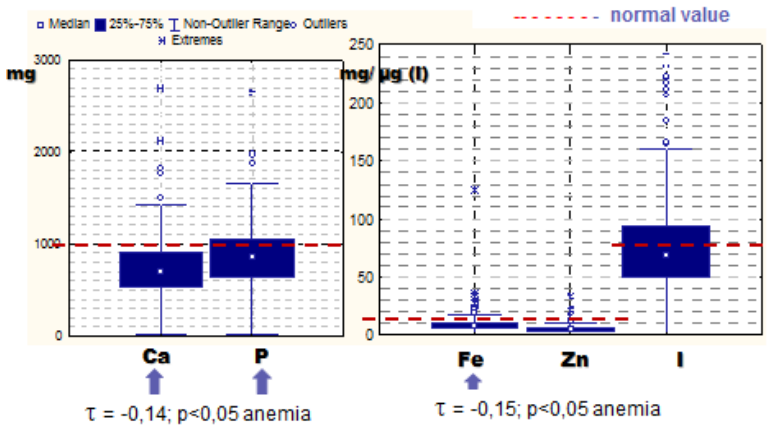


Results
Consumption of protein

- Average consumption per day 40,53 g [0,63 - 230,37]
  - Norms of WHO, EU, the USA ≈ 13 r
  - Ukrainian norms- 53 r



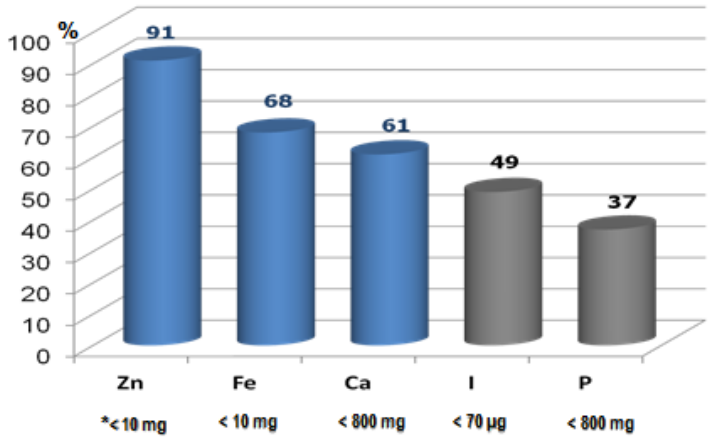
Results
Macro- and microelement consumption



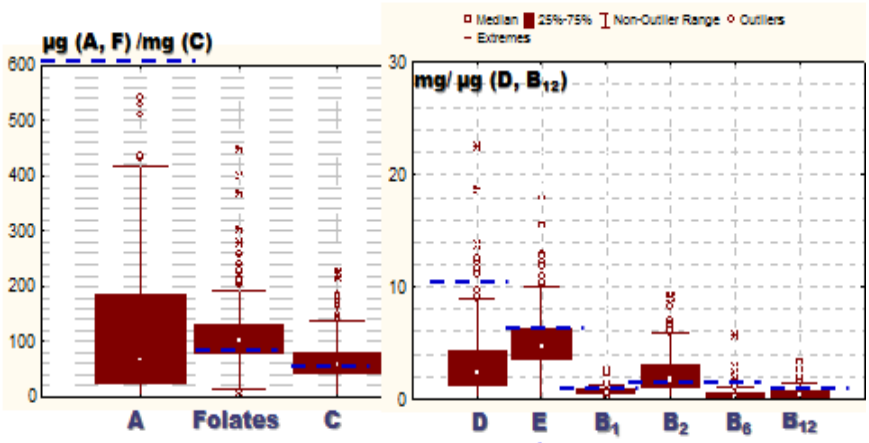
τ = -0,14; p<0,05 anemia

τ = -0,15; p<0,05 anemia

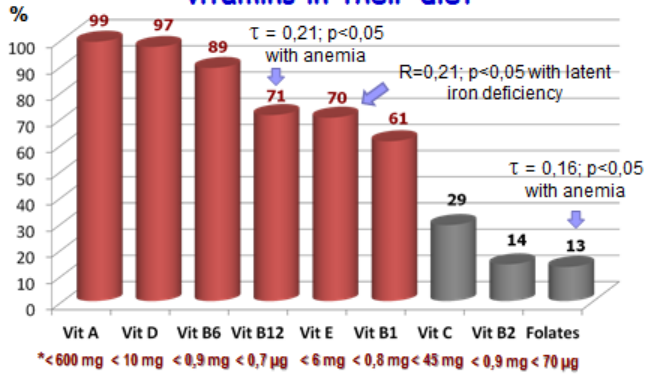
Results
Percentage of children with deficiencies in basic minerals in their diet



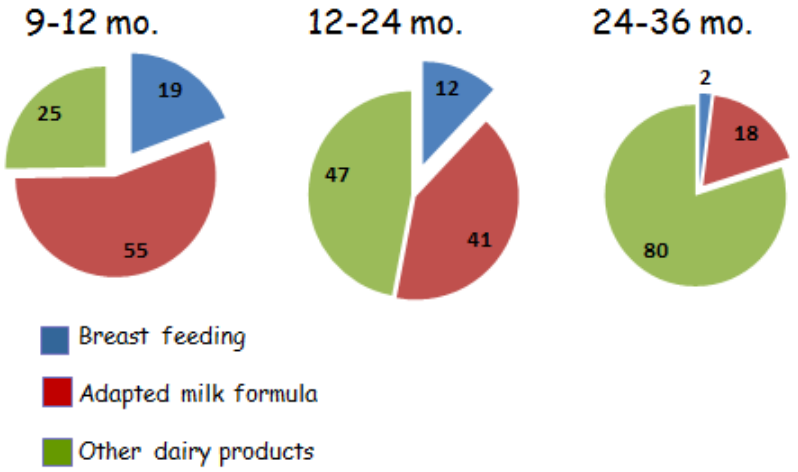
Results
Vitamins consumption



Results
Percentage of children with deficiencies in vitamins in their diet



Comparative frequency of breastfeeding, formula nutrition and other dairy products (cow milk, yoghurt) when participating in the research depending on the age of a child



Nutrition quality

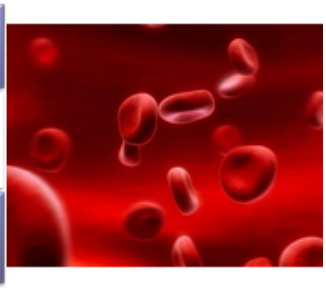
Use of some products in children's nutrition (in %)

Non - adapted cow's milk - 60 % of infants under 1 yr. old
Children under 3 yr. old
- Sausage - 33,73 %
- Salami - 15,18 %
- Semi-finished food products - 5,07 %
- Mayonnaise - 4,14 %
- Ketchup - 3,86 %
- Mushrooms - 3,54 %
- Sweet fizzy drinks - 3,26 %
- Popcorn - 2,37 %
- Potato chips - 1 child

Results

Iron consumption and iron-deficiency anemia

- Iron-deficiency anemia – 4,8% (95% CI 2,07-10,76%)
- Latent iron deficiency – 47,12% (95% CI 37,8-56,64%)
- Low iron consumption – 68,29% (95% CI 63,23-72,94%)



Country	Iron-deficiency anemia (%)	Iron deficiency
USA (12-35 month)	2,1	9,2
Russia	23-43	80-90

Results

Physical development of young children in Ukraine

- Low body mass index - **17 (5,09%)**
- High body mass index - **62 (17,71%)**
- **256 (73,14%)** children weight more than the established average for their age

The stable correlation between nutritional mineral/vitamin deficiency and childhood diseases

Disease	Nutritional deficiency	Spearman's rank correlation coefficient (R)	p (R)	Correlation coefficient γ	p (γ)
Respiratory infections	Vitamin D Zink Vitamin B_6 Vitamin C	0,14 0,14 - -	0,009 0,008 - -	0,74 0,44 0,28 0,19	0,0003 0,0002 0,008 0,008
Gastrointestinal infections*	Iron Vitamin B_1 Zink Vitamin B_6	0,14 0,11 - -	0,01 0,03 - -	0,53 0,39 0,58 0,65	0,0001 5 0,002 0,04 0,015
Allergic diseases	Vitamin B_6	-	-	0,26	0,04

* - the quantity of infection outbreaks in the anamnesis

Conclusions

- The contemporary diet of young children in Ukraine is unbalanced, contains a surplus of energy and proteins, but nonetheless provides insufficient amounts of numerous minerals and vitamins. Such insufficient diet may result in physical development disorders (primarily overweight) and an increase in mortality rate due to infections.
- Zinc, iron, calcium, vitamins A, D, E, B_6, B_{12} and B_1 deficiencies turned out to be the most significant.
- Statistically meaningful associations were established between nutritional deficiencies, iron-deficiency anemia and children mortality rate.

The results were published:

2 articles in the journal "The child health" (Ukraine)

The results were published:

- «Pediatria Polska» journal

Available online at
www.sciencedirect.com

Journal homepage:
www.elsevier.com/locate/pepo

http://dx.doi.org/10.1016/j.pepo.2014.08.003
0031-3939/© 2014 Polish Pediatric Society.
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48th Annual Congress ESPGHAN Poster #1183

Practical Implementation

Practice without theory
is blind,

but theory without practice
is dead.

Alexander Vasilyevich Suvorov

Methodical recommendations regarding nutrition of young children

In collaboration with:

Institution of Hygiene and Medical Ecology named J.M. Marzeev of National Academy of Medical Science of Ukraine
Laboratory of Food Hygiene

Kharkiv Medical Academy of Postgraduate Education

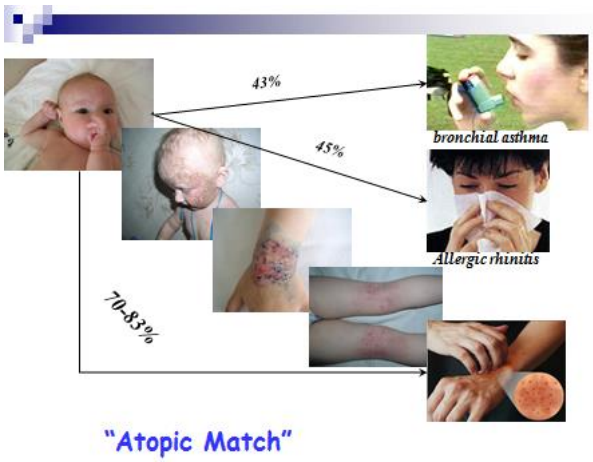
Department of Children Gastroenterology and Nutriciology (Prof. Belousova O.Ju.)

Practical implementation: drafting of "Methodical recommendations regarding nutrition of young children"

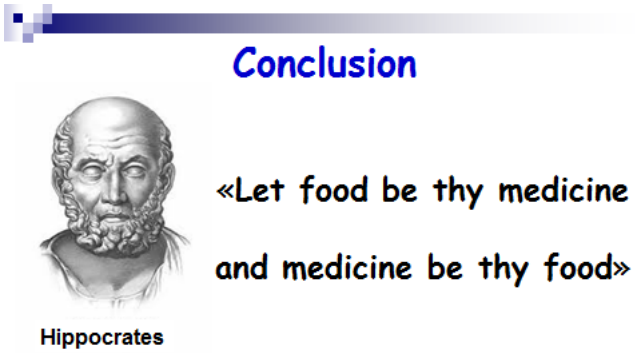
Perspectives

- 2014 – the establishment of the Expert Council "Nutrition for a new life"
- Meetings of the Council:
  - Eastern Region – Truskavets, 14.06.2014
  - Western Region – Dnepropetrovsk, 20.06.2014

The heads of pediatric departments of the majority of medical universities of Ukraine participated in the expert council meeting. Every participant with regard to the clinical basis and resources of the department outlined the further perspectives of participating in the "Nutrition for a new life" program (a Ukrainian variant of "Early Life Nutrition").



The relevance of the chosen line of research is determined not only by prevalence of cow's milk protein allergy but also by the scientifically proved possibility if not to seize but at least to modify the formidable atopic march.



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