

SUBSTANTIATION OF THE INFORMATION SUPPORT SYSTEM FOR COMPUTER TECHNOLOGIES IN ACCOUNTING AND ANALYSIS OF OCCUPATIONAL PATHOLOGY

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Introduction. Occupational diseases in Ukraine is an important medical, social and economic problem. In recent years there has been a steady decline in the level of occupational diseases, pointing, however, to the lack of detection. New socio-economic relations in the country, especially against the background of the health reform, and Ukraine's desire to implementation of modern European standards on medical care of the population, dictate the need to search for modern ways of obtaining the objective information on the state of occupational morbidity of workers.

Purpose of the study – scientific substantiation and creation of the information system on accounting and analysis of occupational pathology, using the developed methodology on the basis of the concept of the State Register of persons who have been established an occupational disease.

Materials and methods of the investigation. Generalization and analysis of scientific publications, normative legal acts, statistical paper and electronic forms of documents, related to accounting and registration of occupational diseases.

Results. The analysis of materials concerning the implementation of the state policy in the field of occupational hygiene on creation of the State Register of persons diagnosed with occupational disease (poisoning) has been analyzed.

Conclusions. 1. The quality of preparation of the statistical data on health indicators in workers needs to be improved. First of all, this is due to the lack of the sectoral electronic information resource in Ukraine – a modern system of accounting, registration and analysis of occupational diseases – State Register. 2. Within the framework of the Concept on creation of the State Register of Occupational Diseases, the structure and principles of the functioning of the State Register of Individuals who were diagnosed with occupational disease were grounded, and there were examined materials for developing the regulatory bases for the Register of occupational diseases and principles for building a task for the software of the Register as well as principles for building and the content of the technical task for the software of an automated workplace (AWP) of a doctor-occupational pathologist and a statistician. 3. The formation of the State Register on the basis of innovative information and communication technologies is especially important in the period of reforming the health care system, which will allow obtaining objective data on health indicators of employees and adopt them on the bases of appropriate management decisions with due account of the need in legislative regulation, appropriate software and hardware for the Register and training specialists in the field of medical informatics. 4. Realization of this task is impossible without approval of the relevant legal documents. First of all, this concerns the Regulations on the establishment and operation of the State Register of Ukraine for persons who have diagnosed occupational diseases, the Procedure on recording and accounting incidences, acute and chronic occupational diseases and accidents at work, the Procedure on conducting medical examinations of selected categories of employees, Regulation on occupational service of Ukraine, etc.

Key words: Register, occupational diseases, normative-legal provision, prevention

Introduction

The global informatization of all spheres of human activity has led to the fact that information technologies have become an integral part of modern medicine and are widely used for making decisions, providing medical care, conducting scientific research, etc. Information technologies are widely used in many countries of the world – USA, Europe, Japan, Canada, Australia for creating patients' registries and databases, providing telemedicine services, distance training and make it possible to quickly obtain tar-

geted, and long-term information, meeting different needs of the society [1–7]. At the same time, modern information systems (IS) of the developed countries – National Health Information Infrastructure – NHII, National Health Information Network (NHIN) are complex systemic grouping based on the business logics. They differ in structure and provide for the use of modern medical standards and informational technologies. Unfortunately, the quality of statistical information on health indicators in the population needs to be improved. For this purpose, reputable

international organizations (WHO, ILO) are implementing relevant projects. For example, the WHO has implemented the European Health Initiative (EHI), a networking association engaged in improving the quality of information, being the basis of the health policy in the European Region.

The main tasks of the EHI include: collecting and analyzing information, with emphasis on health indicators, increasing accessibility and wider dissemination of information, strengthening health information networks, supporting the development of health information strategies, etc. In addition, European organizations and commissions on information technology have developed a European Union-wide single-program e-Health program and implemented a unified electronic health record card (EHR) in medical practice throughout the European Union. e-Health covers a wide range of activities and standards involving the use of electronic means for providing information, resources and services in the field of health and social assistance, which will allow developing common approaches to addressing current medical problems.

e-Health is based on improving the quality of health information, strengthening the national health systems, and ensuring the availability of high-quality health care for all. Examples of e-Health – access to medical information online or from mobile devices; booking meetings for medical consultations via the Internet; treatment of patients at a distance; creation and reforming national information systems of health care; use of advanced analytical methods for monitoring public health and the impact of policy measures in the field of health care, etc [4, 8–17]. Today, e-Health is also being implemented in Ukraine, which aims at ensuring the electronic supply of the health care, combining medical electronic systems and protecting the rights of doctors and patients. e-Health in Ukraine is an electronic system for registering and maintaining doctor and patient relationship, which consists of the Central Component and Medical Information Systems (MIS). The central component is the state component, which is the only register of medical institutions, doctors, patients, and declarations, with which MIS work for data communication. MIS are already existing systems that provide software for administering medical facilities in electronic mode [16].

With regard to computerization of medicine, it should be noted that Ukraine is significantly behind the developed countries of the world. In particular,

the automated information system (AIS) «Occupational Diseases» is outdated and is not used for accounting and registration of occupational diseases. The analysis of indicators of occupational morbidity is being made according to the data of the Social Insurance Fund of Ukraine, where the insurance cases are registered [1, 2, 9, 13, 17–22]. Both in occupational health and at the national level, there is a need in introduction of a personalized collection of primary health information through creation of sectoral medical registers and organization of the common information environment for the health sector, its integration into European information space [18, 21].

In the context of reforming the health care sector, aimed at increasing the availability of medical care to the population and integrating into the world medical space, it is extremely important to carry out a permanent and up-to-date monitoring of the health of workers, including the working population. Taking into account new socio-economic relations in Ukraine, radical changes in the field of health care, in particular, the reform of the state supervision in the field of occupational health, there is a need in the careful study and analysis of modern medical, organizational and legal conditions and development of the scientifically grounded information support in creation of an automated system of accounting and analysis of occupational pathology.

The purpose of the research is the scientific substantiation and creation of the information system on accounting and analysis of occupational pathology, using the developed methodology on the basis of the concept of the State Register of persons with the established occupational disease.

Materials and methods of the study

The generalization and analysis of scientific publications, normative and legal acts, statistical documents related to accounting and registration of occupational diseases – statistical forms for accounting and registration of occupational diseases, electronic forms of «Cards for accounting occupational diseases and occupational poisonings» over 2007–2016, materials of periodical medical examinations, databases on occupational diseases of the Social Insurance Fund of Ukraine using domestic and foreign electronic resources and the databases of the WHO, ILO, PubMed.

Results of the study and discussion

For practical implementation of information technologies in medical practice, science and education there is a need in the corresponding legal base, training of medical workers, developing an infrastructure, a financial support [1–3, 8, 10, 13, 18]. As regards the information space in Ukraine it is necessary to mention that over the last decade there have been developed sufficient legal bases [8, 9, 13]. In particular, during this period a number of legislative acts were issued: the Law of Ukraine «On Protection of Information in Information and Telecommunication Systems» (1994), the Law of Ukraine «On the National Program of Informatization» (1998), the Decree of the President of Ukraine «On Measures for Development of the National Component of the Global Information Network in the Internet and ensuring a wide access to this network in Ukraine» (2000), Resolution of the Cabinet of Ministers of Ukraine – «On Approval of the Concept of Development and Functioning of the Information Regulation on the National Register of Electronic Information Resources» (2004), the CMU Resolution «On Approval of the Plan of Actions on Realization of the Concept of Creation and Functioning of the Information System of Electronic Information Resources» (2012), the CMU Resolution «On Approval of the Action Plan for Implementation of the Concept for the Establishment and Functioning of the Information System for Electronic Interaction of State Electronic Information Resources» (2013). In order to build an open society for all and aimed at the development of the country's information society the Verkhovna Rada of Ukraine adopted the Law «On the Basic Principles of the Information Society Development in Ukraine for 2007–2015» (2007) and adopted mechanisms of realization of the Law. In 2013, members of the Coordination Council of the MH of Ukraine on informatization of the healthcare system and Ukrainian civil professional association «Computed Medicine», aiming to follow the Law of Ukraine «On National Programme on Informatization», the order to form and execute the branch programme and the project on informatization, approved by the Decree of the CMU (2001) there was adopted a «Concept on informatization of the health system in Ukraine for 2013-2018». This concept was agreed by the State Agency for Science, Innovation and Informatization of Ukraine [8, 9, 13]. However,

the experience shows that the effectiveness of implementation of the legal base in Ukraine remains insufficient due to the lack of sub-legal acts, which should clearly regulate certain provisions of laws, mechanisms for their implementation, control and responsibility for their implementation [19, 20].

Today, on the nationwide scale, there is a need in introduction of IS, which will provide a personalized collection of primary health information on the health of workers. The scientific substantiation and implementation of the information support for creation and operation of the state system of registration and accounting of occupational diseases (OD) provides for solving the following tasks:

- Definition of structures involved in the field of occupational health and ensure the implementation of measures aimed at preventing OD developing;
- Distinguishing the basic legal acts necessary for creation of the system of the state accounting and registration of OD;
- Development of the draft Provision on establishment and functioning of the State Register of persons diagnosed with OD.

Definition of structures which are involved in occupational health and ensure the implementation of measures aimed at preventing of OD development. The system of the state supervision over occupational health has undergone significant changes in recent years. According to the Resolution of the Cabinet of Ministers of Ukraine (2015) «On Approval of Regulations on the State Service of Ukraine on Labor», which today is the central executive body, implementing the state policy in the field of work safety, occupational safety and health protection, and conducts a sanitary control of factors of the work environment and production operations, the presence of which can damage the health of workers; introduce measures to prevent the occurrence of OD, keeping to requirements to sanitary norms and regulations, conducting preventive measures in due time; availability of obligatory medical examinations of workers; providing sanitaryhygienic characteristics on work conditions and investigating circumstances and causes of occurrence of acute and chronic OD, poisonings (accidences) and promote formation of the State Register of OD [23]. The final transfer of functions to Derzhpratsi (State Organization on Labour) is determined by the Resolution of the Cabinet of Ministers No. 100 (2015) «On Establishment of

Territorial Bodies of the State Service on Labor and Recognition of Resolutions of the Cabinet of Ministers of Ukraine as such that lost their right». During the transition period (before the development and approval of new regulations), specialists of the State Organization on Labour have the right to use the procedures approved by the orders of the Ministry of Health, in particular those governing the issue of diagnosis and investigation of OD, preparation of sanitary and hygienic characteristics and monitoring of working conditions and health of workers, conduction of medical examinations [24].

Also, in accordance with the Order of the Ministry of Health No. 604 (2015) «On the establishment of a state institution» Center of Public Health of the Ministry of Health of Ukraine, a new State institution (Center) is formed. This is one of the main stages in implementation of a wide-scale reform in improvement and optimization of the public health system and a part of the implementation by Ukraine of the Agreement on Association between Ukraine, on the one hand, and the European Union, the European Atomic Energy Community and their member states, on the other. One of the tasks of this institution is «Conducting the state accounting of infectious diseases and non-infectious diseases, including occupational diseases and poisonings; development and maintenance of the automated system of scientific medical information, promoting creation of specialized problem-oriented systems on scientific medical information».

Development of the Draft of the Regulation on establishment and functioning of the State Register of persons, who are diagnosed of OD. According to the Draft of the Regulation on development and functioning the State Register of persons with established occupational disease (poisoning) (hereinafter referred to as the Register), taking into account the reformation of the supervisory functions in the field of occupational health and the structures of the occupational health service of Ukraine, the Register is the only multifunctional information system responsible for collection, registration, accumulation, storage, updating and use of information on persons with the diagnosed occupational disease (poisoning) and those who have received medical care. The register is an information resource of the Ministry of Health of Ukraine – SI «Public Health Center of the Ministry of Health of Ukraine», which is maintained using information technologies, electronic document circulation and electronic digital signature. The purpose of

development and operation of the Register is to increase the efficiency of the specialized medical care of employees, to ensure its provision in due time with significant information, and effective solution of medical and social security problems of individuals with OD (poisoning), which should be done through:

- Creation of an automated information system of personal records of persons who have been diagnosed with an occupational disease (poisoning) who live in Ukraine;
- Automated collection, storage and continuous updating of information on the health status of persons who have been diagnosed with an occupational disease (poisoning) obtained during the annual target medical examination (previous and / or periodic medical examinations of the workers) (according to the Order of the Ministry of Health of Ukraine «Procedure for carrying out medical examinations of workers of certain categories» of 21.05.2007 No 246), taking into account the sanitary and hygienic characteristics of their work conditions (in accordance with the Order of the Ministry of Health of Ukraine «Procedure for preparation and requirements to sanitary-hygienic characteristics of work conditions» of 13.12.2004 No 614);
- Operational and long-term surveillance of the health status of persons included in the Register. At the same time, the creation of the Register provides for the implementation of:
 - Assessment and prognostication of the health status of persons who have been diagnosed with an occupational disease (poisoning), based on the information accumulated in the Register;
 - Identification of significant cause-and-effect relationships between the indicators of health of workers and the harmful and dangerous factors of the working environment, the severity and intensity of the working process;
 - Conducting epidemiological, hygienic and medical-biological research.

Methodological principles in creation of the IS (Registry) are based on:

Principles of a systematic approach to designing the Register. When designing the Register, a systemic analysis was used both as objects that were taken for automation as well as processes for operating them. The analysis of the existing documentation turnout was made at the enterprises belonging to the National Academy of Medical Sciences and the Ministry of Health of Ukraine (Kyiv, Kryviy Rih, Lviv).

Principles of the first manager. The development of requirements for the system, as well as the creation and implementation of the Register are headed by managers of different levels of the relevant facility; main documents are developed that have been reviewed in scientific institutions. At the same time, it is envisaged that one person should be responsible for functioning of all parts of the system of the State Register.

The principle of the ongoing development of the system. The basic ideas for development and the structure of the Register are used in such way that it can be quite easily to set up the system to solve problems occurring, in operation of the Register due to connecting new areas of the controlling object, expansion and modernization of technical means of the system, its information and mathematical support, etc. The mathematical support of the Register is carried in such a way that, if necessary, it would be possible to easily change not only individual programs, but also the criteria according to which the management is conducted.

Principle of the unity of the information base: On the carriers of the Register there is accumulated (and constantly updated) the information, designed for solving one or more tasks. In this, the duplication of information in the main amounts of information is excluded that can inevitably occur if the primary information of data is created for each task separately. The register is built so that at the level of a health care institution the main mass data contains the detailed information on all elements on registration and dispensarization of patients with occupational diseases and on regulations of their care. The same information is passed to the top level of the Register.

The processing of primary documents in the Register is carried out once a year, and then, automatically or at the direction of the operator, the information is periodically distributed in the main masses and after the verification of information the state of readiness to provide any information on occupational diseases and health of persons with occupational diseases remains. If necessary, derivative masses of information, oriented on these or other tasks, are being formed from main masses.

Principles of typicality. When developing the draft of the Register it is stipulated that the technical complex, systemic mathematical support and work programs, and issued forms related to them and the composition of the information mass data are suitable for all health care institutions in Ukraine.

The structure of the Register, as an IS, can be considered as a set of subsystems, providing its work, and covers information, legal, organizational, mathematical and technical software.

The basis for the formation of the information database of the Register is «Cards for the registration of occupational diseases (poisonings)» in the form P-5, which are filled in according to developed or adapted classifiers: a list of territorial bodies of the State Service of Ukraine on labor issues, distribution of works by types (branches) of the economic activity in accordance with Classification of Types of Economic Activity (CTEA)-10, alphabetical index of professional titles of works; the list of harmful production factors that caused the occupational disease (poisoning); maximum permissible concentration (MAC) of harmful substances in the air of the working zone (main list); parameters of harmful production factors; circumstances of occurrence of an occupational disease (poisoning); the list of diagnoses of occupational diseases according to the codes of ICD-10.

According to the classifiers, the passport and registration data of persons who are diagnosed of OD, the results of annual target medical examinations of employees (preliminary and / or periodic medical examinations), information on all types of health care provided to workers within a year, the data on the sanitary and hygienic characteristics of work conditions, as well as the results of processing and analysis of the data in the «Card for Accounting Occupational Disease (Poisoning)» by the Form P-5 are included in the Register.

The operation of the Register is possible by making the following actions:

- The identification of persons subject to further registration in the Register is carried out by healthcare institutions where there are commissions for conducting preventive medical examinations as well as regional and city occupational pathologists of local bodies during medical examinations;
- Specialized Occupational pathological organs, where there are DEC (Doctor Expert Commission) and CDEC (Central Doctor Expert Commission), based on the results of studying the medical record and examination of patients with occupational diseases, fill in Form P-3 (Notification on occupational disease (poisoning));
- Forms of documents P-4 (Act for investigating the causes of occupational disease (poisoning)), P-5 (Card for the account of occupational disease (poi-

soning)) are filled when finding the causes and circumstances of the occurrence of occupational diseases in accordance with the Resolution of the Cabinet of Ministers of Ukraine No. 1232 (2011) «The procedure for investigation and recording of incidence, occupational diseases and accidents at work» and the Resolution of the Cabinet of Ministers of Ukraine No. 1662 (2000) «List of occupational diseases»;

- Filling in electronic registration cards of the established type (records of occupational diseases (poisoning), is laid on the territorial administrations of the State Service on Labor. The completed electronic registration cards are sent to the Registry (State Enterprise «Center of Public Health of the Ministry of Health of Ukraine») within 1 month after completion of the investigation on the case with OD; paper versions of the registration cards are sent annually until 01 February and 01 August.

The registration of persons who have been diagnosed of an occupational disease (poisoning) is carried out by enterprises, the Social Insurance Fund of Ukraine, the State Labor Inspection, health care institutions with commissions for conducting preventive medical examinations according to the adopted form.

Thus, it is clear that developing of the structure of the IC «Register» is based on the organizational principles of the existing Occupational Diseases Service of Ukraine, which is a part of the network of Institutions of Health Care (IHC), which are tasked with the prevention, diagnosis, treatment and rehabilitation of diseases caused by dangerous and harmful work conditions. The organizational structure of IS «Register» includes 4 levels of management:

Principle of typicalness. In development of the Register project it is provided that the technical complex, systemic mathematical support, work programs and related to this forms and the content of the information collection, are suitable for all health care institutions in Ukraine.

The structure of the Register as an IP can be considered as a set of subsystems that provide its work, and consists of information, legal, organizational, mathematical, technical and the software supply.

The basis for the formation of the data bank of the Register is «Cards for registration of an occupational disease (poisoning)» in the Form P-5, which are filled up according to the developed or adapted classifiers: list of territorial bodies of the State Service of Ukraine on Labor, distribution of works by types (branches) of

the economic activity in accordance with CTEA-2010 (Classification of types of economic activity), alphabetical index of occupational titles of works; list of harmful production factors that caused the occupational disease (poisoning); maximum permissible concentration (MAC) of harmful substances in the air of the working zone (the basic list); parameters of harmful production factors; the circumstances of occurrence of an occupational disease (poisoning); list of diagnoses of occupational diseases according to the codes of ICD-10.

According to the classifiers, the Registry includes the passport and registration data of the persons who are diagnosed with OD, the results of the annual targeted medical examinations of employees (preliminary and / or periodic medical examinations), information on all types of health care provided to workers within a year, the data on the sanitary and hygienic characteristics of working conditions, as well as the results of the processing and analysis of the data of the «Card for registration of an occupational disease (poisoning)» by the Form P-5.

The operation of the Register is possible with the following steps:

- Identification of persons, subject to further registration in the Register, is carried out by healthcare institutions with commissions for conducting preventive medical examinations, regional and city occupational specialists of local administrations, during medical examinations and dispensarizations;
- Specialized Health Care Institutions (HCI), where there are Medical Expert Commissions (MEC) and Central Medical Expert Commissions (CMEC) fill in Form P-3 (Notification on occupational disease), based on the results of studying medical records and examination of a patient in the case if he/she has an OD (poisoning);
- Forms of documents P-4 (Act to investigation of causes of an occupational disease (poisoning), P-5 (Card for accounting an occupational disease (poisoning)) are filled in during investigation of causes and circumstances of occurrence of occupational diseases in accordance with the Resolution of the Cabinet of Ministers of Ukraine No. 1232 (2011) «Procedure for investigation and record keeping of incidences, occupational diseases and accidents at work» and the Resolution of the Cabinet of Ministers of Ukraine No. 1662 (2000) «List of occupational diseases»;

– Filling in electronic registration cards of the adopted form (Card for recording an occupational disease (poisoning)), is put on the State Civil Service on labor. The completed electronic registration cards are sent to the Register (State Enterprise «Center of Public Health of the Ministry of Health of Ukraine») within 1 month after completing the investigation of the case with OD; paper filled versions of registration cards are sent annually until February 01 and August 1st.

The registration of persons who are diagnosed with an occupational disease (poisoning) is carried out by enterprises, the Social Insurance Fund of Ukraine, the State Service of Labor, health care institutions, which have commissions for carrying out preventive medical examinations according to the approved form.

Thus, it is clear that the design of the structure of the IC «Register» is based on organizational principles of the available Occupational Pathological Service of Ukraine as a network of Health Care Institutions (HCI), which are tasked with prevention, diagnosis, treatment and rehabilitation of diseases caused by dangerous and harmful working conditions. The organizational structure of IP «Register» includes 4 levels of management:

– State level (Scientific Center of the Register) – information from regional and city registry levels, specialized sub-registers is transmitted to the state level. At the state level, accumulation, expertise, comprehensive analysis, real-time exchange and long-term data storage, systematization of the information database on the health status of the working population and working conditions, creation and maintenance of separate databases for persons of high-risk groups, prognosing risks of occurrence and consequences of the effect of factors of the work environment on the health of workers; transfer of general conclusions and proposals to state institutions, research institutes and specialized health care institutions; personal account of persons at increased risk of occupational diseases, transfer of registration, medical and hygienic data; issuance of information from banks to users who have the right to access to information. The state level provides for storage of information and comprehensive scientific analysis of data, development of proposals for improving the Register and measures aimed at health promotion of workers and improving their working conditions;

– Regional level (interregional, regional centers of occupational pathology) – provides registration, accounting of persons who have suffered from occupational diseases, data on further monitoring of this contingent, transfer of information to the state level. The process of data accumulation for the first-time cases of OD is supplemented by the data on diagnostic and therapeutic technologies, results of treatment in interregional and regional occupational diseases centers;

– The oblast level (Institutions of the State Service of Labor, Medico-Social Expert Commission (MSEC) of all levels is directed its work on sending data on persons with OD to the state or regional level, including, also, information regarding the established disability group or re-certified disability cases;

– City (district) level (State Service Institutions of Labour) – registration and accounting of persons with OD, further monitoring of this contingent, and transfer of information to the state level.

At the city and oblast level, personal records of persons, who are diagnosed with occupational disease (poisoning), subject to registration in the Register at the place of registration of the enterprise, institution, establishment where a sick person works; accumulation and examination of the collected data on their health and working conditions, long-term storage and transfer of information in accordance with the approved forms; examination of the quality of the data of the target medical examinations, supplementing the data bank of the specialized health care institutions; data entry based on the results of investigating cases of OD by the Form P-5 «Cards for accounting an occupational disease (poisoning)». The hierarchy of interaction between separate structures and the Registry levels is presented in Figure.

The main functions that IS (Registry) has to perform in relation to accounting persons with OD is personal recording of patients with OD, including filling in and processing medical documents (Cards for registration of occupational diseases (poisonings); collection and processing of medical statistic data, including decoding of the data from registration forms into forms of the state statistical reporting; analysis of statistical data for reporting and making prognoses; support in decision-making at the administrative level on the basis of reports and prognoses; support of reference information and modern classifiers; support of information interaction between information systems of the Health Care Institutions, which have the

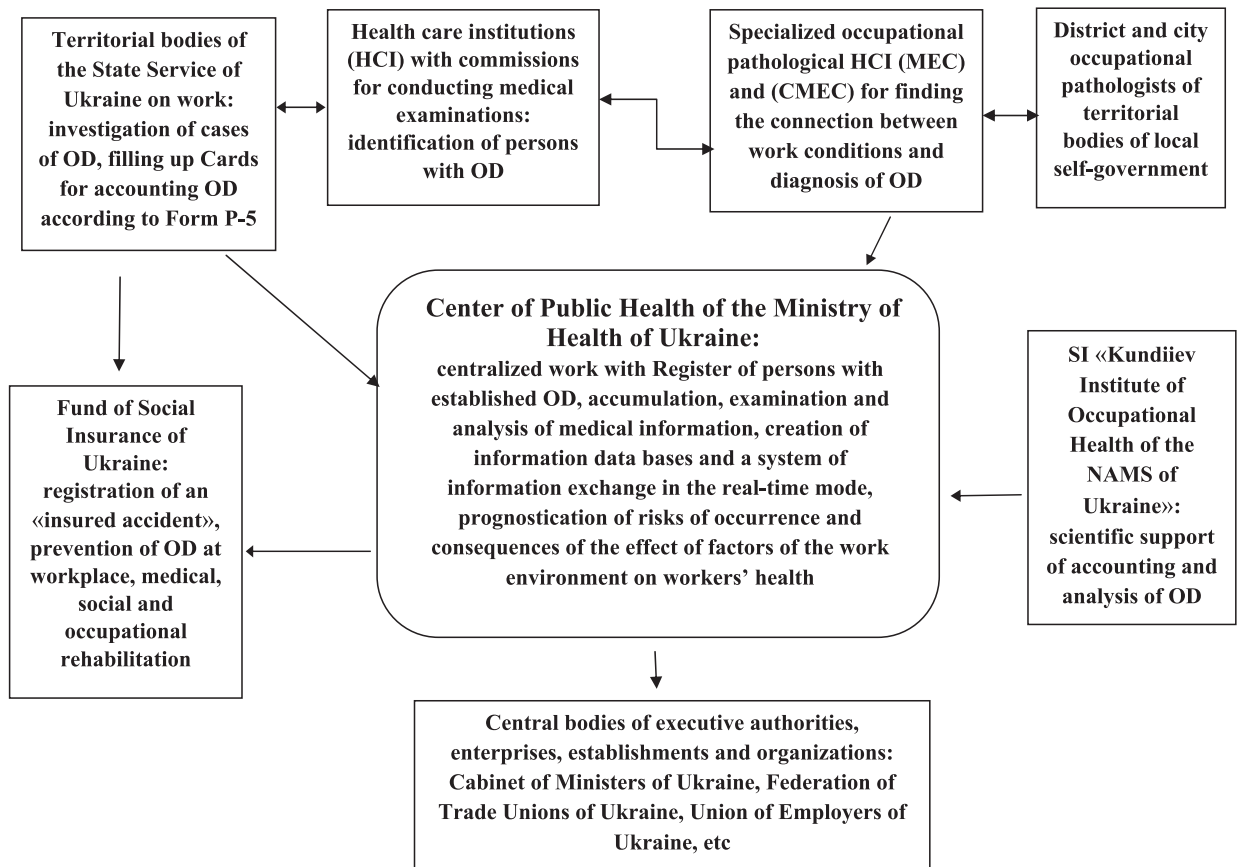


Figure. Hierarchy of interaction between structures responsible for development and operation of the Register

right to establish a diagnosis «occupational disease», as well as medical establishments of different levels of the hierarchy with the exchange between them, according to standard protocols and formats of exchange.

In the Regulation on the Establishment and Functioning of the Register there are included automated workplaces (AWPs) for the registrar of the reception department in the clinical division of occupational pathology, for a doctor-occupational pathologist, for medical statistics service with information about their functions on implementation of the above-mentioned tasks of the IS «Register».

Operation of the IS (Registry) is possible only with the adequate software that fully and quickly meets the needs of users in this or that information, a user-friendly interface for end users, possibilities to prepare reports and amendments of various types. At the same time, the software should be: reliable and resistant to improper operation of users; freelance use should not lead to unforeseen consequences; to be compatible with the system-wide software; modularly built.

When creating the IS «Register» certain requirements for a set of the hardware are provided, which should ensure: collection and transfer of information, its recording on carriers; information entering; processing and accumulation of information; control of information at all stages of its processing; qualitative preparation and issuance of textual and graphic information on paper carriers and datasets in the form of machine-grams or video-grams; possibility of organizing archival storage of information on magnetic carriers, optical disks, etc.

The basis of the set of technical means for the IS «Register», which is of two-level hierarchy, are local and global computer networks, which are built on the basis of the following principles: security of information transfer; support in transfer of different kinds of information: data, voice, video; reliability of functioning; manageability, versatility, modularity and scalability of the system. The software and the hardware of the Register, being a multi-level data bank, are based on the use of the unified specialized computer software and hardware, analysis and transfer of data on

the health of workers and their conditions of work, which are integrated with the help of means of telecommunication (computer networks).

Despite the fact that the health informatization is developing rapidly in the world, a general problem of national health systems in many countries, including Ukraine, is imperfection or absence of the state systems for accounting and registration of diseases, developed on the basis of modern medical information systems. In Ukraine, in today's conditions, the solution of the most pressing problems of practical medicine within the existing medical infrastructure and the limited funding is possible through the use of local projects on informatization of medicine. For the more global using, it is necessary to adhere to the unified requirements based on the use of the world standards on collection, storage, processing and exchange of electronic variants of medical information [2, 3, 10, 9, 12].

The implementation of measures on informatization of the healthcare sector will improve the organization of medical documentation both in paper and in electronic form, to increase the level of information and analytical support and coordination of activities of institutions, organizations, etc. on development and use of the specialized information resources [8, 20–22]. The use of the Register of persons with established occupational diseases will allow to reach a qualitatively new level of providing specialized medical care to workers through implementation of the full accounting and control of existing occupational diseases, follow-up and analysis of cause-effect relationship and formation of risk groups of main nosologic types. The results of the analysis of OD are necessary for adoption of managerial decisions of the Parliament, the Cabinet of Ministers, the Ministry of Health, the Ministry of Social Policy of Ukraine, heads of branch ministries and departments, the State Service of Ukraine on Labor, the Social Insurance Fund of Ukraine, the Federation of Employers, the Federation of Trade Unions, territorial self-government bodies, scientific institutions of hygienic type, medical institutes.

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Conclusions

1. The quality of preparation of statistic data on indicators of the health of workers needs to be improved. First of all, this is due to the lack of a branch electronic information resource in Ukraine – a modern system of accounting, registration and analysis of occupational diseases – the State Register.
2. Within the framework of the Concept on development of the State Register on Occupational Diseases, the structure and principles of functioning of the State Register of Persons with established OD were substantiated; and materials were considered for creation of the normative bases for the Register of Occupational Diseases, principles for building and the content of the task for the Register software and principles of building and the content of the technical task for the AWP software of a doctor-occupational pathologist and statistician.
3. The formation of the State Register on the basis of innovative information and communication technologies is especially relevant in the period of reforming the health care system, making it possible to obtain the objective data on health workers' indicators and adopting corresponding management decisions on their basis, providing the necessary legislative regulation, the corresponding software and hardware for the Register, training specialists in the field of medical informatics.
4. The realization of this task is impossible without approval of relevant regulatory documents. First of all, this applies to the Regulations on Developing and Functioning of the State Register of Ukraine of persons with established OD, the Procedure for Investigating and Accounting Incidences, Acute and Chronic Occupational Diseases and Accidents at Work, Procedure for conducting medical examinations of certain categories of workers, Regulation on Occupational-Pathological Service of Ukraine etc.

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ОБҐРУНТУВАННЯ СИСТЕМИ ІНФОРМАЦІЙНОГО ЗАБЕЗПЕЧЕННЯ КОМП'ЮТЕРНИХ ТЕХНОЛОГІЙ ОБЛІКУ ТА АНАЛІЗУ ПРОФЕСІЙНОЇ ПАТОЛОГІЇ

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Вступ. Професійні захворювання в Україні є важливою медико-соціальною та економічною проблемою. В останні роки спостерігається стійка тенденція щодо зниження рівня професійних захворювань, що свідчить про недостатнє їхнє виявлення. Нові соціально-економічні відносини в державі, особливо на тлі реформування галузі охорони

здоров'я та прагнення України щодо впровадження сучасних європейських стандартів надання медичної допомоги населенню, диктують необхідність пошуку сучасних шляхів щодо отримання об'єктивної інформації про стан професійної захворюваності працівників.

Мета дослідження – наукове обґрунтування та створення інформаційної системи обліку та аналізу професійної патології за допомогою розробленої методології на підставі використання концепції Державного реєстру осіб, яким встановлено професійне захворювання.

Матеріали та методи дослідження. Здійснено узагальнення та аналіз наукових публікацій, нормативно-правових актів, статистичних паперових та електронних форм документів, що стосуються обліку та реєстрації професійних захворювань.

Результати. Проведено аналіз матеріалів, що стосуються реалізації державної політики в сфері гігієни праці щодо створення Державного реєстру осіб, яким встановлено діагноз професійного захворювання (отруєння).

Висновки. 1. Якість підготовки статистичних даних, що стосуються показників здоров'я працівників, потребує вдосконалення. Перш за все, це обумовлено відсутністю в Україні галузевого електронного інформаційного ресурсу – сучасної системи обліку, реєстрації та аналізу професійних захворювань – Державного реєстру. 2. У рамках Концепції створення Державного реєстру професійних захворювань було обґрунтовано структуру та принципи функціонування Державного реєстру осіб, яким встановлено діагноз професійного захворювання, та розглянуто матеріали до створення нормативних основ реєстру професійних захворювань, розроблено принципи побудови та зміст завдання для програмного забезпечення Реєстру та принципи побудови й зміст технічного завдання для програмного забезпечення АРМ лікаря-профпатолога та статистика. 3. Формування державного Реєстру на основі інноваційних інформаційно-комунікаційних технологій є особливо актуальним в період реформування системи охорони здоров'я, що дозволить при необхідному законодавчому врегулюванні, відповідному програмно-технічному забезпеченні Реєстру та підготовці спеціалістів у галузі медичної інформатики отримати об'єктивні дані щодо показників здоров'я працівників і прийняти на їхній основі відповідні управлінські рішення. 4. Реалізація цього завдання неможлива без затвердження відповідних нормативно-правових документів. Насамперед це стосується Положення про створення та функціонування Державного реєстру України осіб, яким встановлено діагноз професійного захворювання, Порядку розслідування та ведення обліку нещасних випадків, гострих і хронічних професійних захворювань та аварій на виробництві, Порядку проведення медичних оглядів працівників певних категорій, Положення про профпатологічну службу України тощо.

Ключові слова: реєстр, професійні захворювання, нормативно-правове забезпечення, профілактика

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ОБОСНОВАНИЕ СИСТЕМЫ ИНФОРМАЦИОННОГО ОБЕСПЕЧЕНИЯ КОМПЬЮТЕРНЫХ ТЕХНОЛОГИЙ УЧЕТА И АНАЛИЗА ПРОФЕССИОНАЛЬНОЙ ПАТОЛОГИИ

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Вступление. Профессиональные заболевания в Украине являются важной медико-социальной и экономической проблемой. В последние годы наблюдается устойчивая тенденция снижения уровня профессиональных заболеваний, свидетельствующая о недостаточном их выявлении. Новые социально-экономические отношения в государстве, особенно на фоне реформирования здравоохранения, и стремление Украины по внедрению современных европейских стандартов оказания медицинской помощи населению, диктуют необходимость поиска современных путей получения объективной информации о состоянии профессиональной заболеваемости работников.

Цель исследования – научное обоснование и создание информационной системы учета и анализа профессиональной патологии с помощью разработанной методологии на основе использования концепции Государственного регистра лиц, которым установлено профессиональное заболевание.

Материалы и методы исследования. Проведено обобщение и анализ научных публикаций, нормативно-правовых актов, статистических бумажных и электронных форм документов, касающихся учета и регистрации профессиональных заболеваний.

Результаты. Проведен анализ материалов, касающихся реализации государственной политики в сфере гигиены труда по созданию Государственного регистра лиц, которым установлен диагноз профессионального заболевания (отравления).

Выводы. 1. Качество подготовки статистических данных, касающихся показателей здоровья работников, нуждается в совершенствовании. Прежде всего, это обусловлено отсутствием в Украине отраслевого электронного информационного ресурса современной системы учета, регистрации и анализа профессиональных заболеваний – Государственного Регистра. 2. В рамках Концепции создания Государственного регистра профессиональных заболеваний

были обоснованы структура и принципы функционирования Государственного регистра лиц, которым установлен диагноз профессионального заболевания, и рассмотрены материалы для создания нормативных основ регистра профессиональных заболеваний, разработаны принципы построения и содержание задания для программного обеспечения Регистра и принципы построения и содержание технического задания для программного обеспечения АРМ врача-профпатолога и статистика. 3. Формирование государственного регистра на основе инновационных информационно-коммуникационных технологий особенно актуально в период реформирования системы здравоохранения, что позволит при необходимом законодательном урегулировании, соответствующем программно-техническому обеспечении Регистра и подготовке специалистов в области медицинской информатики получить объективные данные о показателях здоровья работников и принять на их основе соответствующие управленческие решения. 4. Реализация этой задачи невозможна без утверждения соответствующих нормативно-правовых документов. Прежде всего, это касается Положения о создании и функционировании Государственного регистра Украины лиц, которым поставлен диагноз профессионального заболевания, Порядка расследования и ведения учета несчастных случаев, острых и хронических профессиональных заболеваний и аварий на производстве, Порядка проведения медицинских осмотров работников определенных категорий, Положения о профпатологической службе Украины и т. п.

Ключевые слова: регистр, профессиональные заболевания, нормативно-правовое обеспечение, профилактика

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