

**MEDICAL INFORMATICS IN OCCUPATIONAL
AND ENVIRONMENTAL HEALTH OF RUSSIA:
Need of Reforms**

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Summary

Occupational and environmental health (OEH) is one of the most socially important fields of public health in majority of industrially developed countries. Unfortunately, currently in Russia (as previously in The Soviet Union) little societal attention is paid to OEH issues, while it was estimated that the economical burden only due to occupational health disorders in Russia was not less than 10% of national GDP (N. F. Izmerov, E. I. Denisov, 2000).

To substantiate the most optimal managerial decisions in public health, the system of medical informatics is used, providing collection, analysis and distribution of healthcare information. Unfortunately, medical informatics in Russian OEH is less developed, compared to other countries (including some former socialist countries).

Our investigation has demonstrated that main problems of Russian medical informatics in OEH were connected not with analysis of information, but with collection of primary data and the use of analyzed information at societal level. The collection and the distribution of information (mainly outside the healthcare system) are very important to make the available information reliable and useful for the society.

Some changes in Russian OEH medical informatics system are proposed:

- 1) The existing communication possibility of regional Centers for Occupational Pathology in Russia should be used to provide distant telemedical consultations, to provide better availability of occupational health for workers of distant areas of Russia and, therefore, higher rate of occupational cases.
- 2) The National Register of Occupational Patients should be established in Russia in the nearest future; to provide full and reliable registration of occupational cases.
- 3) Special epidemiological investigations should be performed in Russia, to collect reliable information on real occupational morbidity in the country.
- 4) The reliable information on occupational and environmental health in Russia must be available not only to medical and social insurance specialists, but also to public and mass media.
- 5) The existing system of Social and Hygienic Monitoring (SHM) in Russia is a very promising tool to analyze the factors influencing the population health; still it lacks a subsystem modeling the results of possible response actions of the society, therefore such a subsystem should be created.
- 6) Calculation of occupational and environmental risks should be used to create the economic stimuli for the society to improve the environment (including work environment) and, therefore, decrease adverse health effects for the population.

The proposed changes could be relatively easily implemented within the existing Russian healthcare system. Their implementation would help collecting more reliable OEH data, as well as distributing the analyzed information within the society and making effective political and managerial decisions aimed at population health preservation.

Introduction

Occupational and environmental health is the branch of public health that has the strongest association with important societal obstacles (work safety issues and environment pollution respectively). Therefore, the collection and the distribution of reliable information on occupational and environmental health are essential to provide proper managerial and political decisions in this socially important sphere.

The necessary data flow should be provided using medical informatics system. According to WHO definition, “medical informatics is the field of information science concerned with the collection, analysis and dissemination of medical data through the application of computers to various aspects of health care and medicine”. Unfortunately, the state of Russian medical informatics system in occupational and environmental health appears to be not sufficiently developed – the relative number of publications in this sphere per 1000 physicians in Russia was approximately 2 times less than in Ukraine, 8 times less than in the USA and 15 times less than in Finland.

Currently the system of Social and Hygienic Monitoring (SHM) is introduced in Russian environmental and occupational health. SHM system is supposed to be “the state system of surveillance, analysis, estimation and prognosis of state of population health and human environment” (“The statement on Social and Hygienic Monitoring”, approved by RF government on June 1, 2000). The existing SHM system provides collection and analysis of environmental, health, social and, partially, occupational data throughout the country – from district centers for sanitary and epidemiological control to Federal Center in Moscow. There are special computer programs that were developed especially to provide data flow within SHM system. A number of computerized systems were also developed in regional centers of Russia, to calculate occupational and environmental risks. Still there is belief that, despite of developed system for analyzing occupational and environmental data, there are problems in collecting the reliable primary data and use of received information for making effective managerial decisions.

Occupational health

The issues of occupational health are extremely important in all industrial countries, there are advanced systems providing compensations for workers in case of work-related injuries or illnesses in most of the countries. The estimated burden of occupational disorders is very high – up to \$170 billion annually in the USA, which is about 5 times higher than the US burden of AIDS (Leigh JP, Markowitz SB, Fahs M et al., 1997), and up to 10-20% of GDP in Russia (N. F. Izmerov, E. I. Denisov, 2000).

Despite of available pessimistic estimation for possible economical loss due to occupational disorders in Russia, little attention is currently paid to improvement of occupational data flow system in. The available official figures of occupational morbidity (2.24 new cases per 10,000 workers in 2001) are too low to be considered as reliable (the US and European figures are 20-50 times higher). One of probable reasons for occupational illnesses underreporting is little availability of occupational physicians' services for the workers of distant Russian areas.

No system for registration of occupational diseases is available in Russia yet, though the discussions on the topic have being led for many years. Now the information on different aspects of occupational health is collected in at least 4 different systems, having virtually no interconnections.

Though numerous systems of occupational risk assessment have been created in Russia, the obtained data must not be reliable, as the primary data are questionable. Even if the received information of occupational risks is fully reliable, there is no political or economical mechanism to transfer the obtained information into response action to provide necessary support for those groups of workers who suffer from occupational diseases more frequently. Unfortunately, the existing system of Social Insurance in Russia does not connect the employers' payments to Social Insurance Fund with occupational risk for the workers.

To make the medical information system in occupational health of Russia more effective, several changes should be made:

- 1) The existing communication possibility of regional Centers for Occupational Pathology in Russia should be used to provide distant telemedical consultations, to provide better availability of occupational health for workers of distant areas of Russia and, therefore, higher rate of occupational cases.
- 2) The National Register of Occupational Patients should be established in Russia in the nearest future; to provide full and reliable registration of occupational cases.
- 3) Special epidemiological investigations should be performed in several branches of Russian industry, to collect reliable information on real occupational morbidity in the country.
- 4) Calculation of occupational risks should be used to create the economic stimuli for the employers to improve the working conditions.
- 5) The reliable information on occupational health must be available not only to medical and social insurance specialists, but also to public and mass media.

Environmental health

WHO gave the following definition for environmental health (1993): "Environmental health comprises of those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social, and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially affect adversely the health of present and future generations". The problem of responsibility for health disorders due to environmental factors (especially, anthropogenic environment pollution) can be very important, especially now, when a great attention of the society is paid to environmental issues. There should always be a balance between interests of industry, producing e.g. hazardous pollutants, and interests of the population exposed to the pollutants.

The Social and Hygienic Monitoring system, introduced in Russia since 1990s, seems to be rather a powerful tool, able to provide the necessary analysis of information both on population health in specified regions and various hygienic and social factors in the same regions.. Unfortunately, currently the Russian SHM system is considered to be mainly an information system, not a system to propose some response action. To suggest

the healthcare managers and politicians some alternatives for action in sphere of public health, the system must provide also a kind of population health model. The model should be used to predict the consequences of possible actions, to maximize positive effects.

Numerous investigations were performed in Russia to estimate environmental risks for several population groups. Still there is an official statement now, that “the results of risk estimation are not used to adjust the payments to ecology funds or by State Control institutions to impose sanctions”. It obviously diminishes societal effectiveness of environmental risk assessment. Were there a mechanism, connecting calculated environmental risk with either payments to ecology funds or sanctions, the importance of risk assessment system (and also the whole SHM system) would be significantly higher.

Without such a mechanism the estimated environmental risk is mainly of academic interest, not a practical tool.

To increase the effectiveness of the existing system of Social and Hygienic Monitoring in Russia, several changes are suggested:

- 1) Within SHM system, a subsystem should be created, able to model the possible population health effects due to activity of healthcare system.
- 2) Calculation of environmental risks should be used to create the economic stimuli for the society to improve the environment and, therefore, decrease adverse health effects for the population.
- 3) The reliable information on environmental health risks in Russia must be available not only to medical and environmental specialists, but also to public and mass media.

Conclusions

Currently the Russian system of medical informatics in sphere of occupational and environmental health is probably less developed than that of industrially developed countries (European countries and the USA). Still there are the possibilities for reforms of the Russian system in the nearest future. The suggested directions of the reforms are not something absolutely new for Russia; they could easily be accepted by the professional community. Partial implementation of some suggested ideas started during 2002 (e.g. Registry of Occupational Diseases); this demonstrate the feasibility of our suggestions.

It is supposed that the implementation of suggested changes would help collecting more reliable data in occupational and environmental health, as well as distributing the analyzed information within the society and making effective political and managerial decisions aimed at population health preservation. This will result in decreasing the burden of occupational and environmental diseases for the Russian society.