METHODOLOGICAL ASPECTS OF CREATING MOBILE MEDICAL TEAMS AT RUSSIAN EMERCOM FOR MITIGATING CONSEQUENCES OF EMERGENCY SITUATIONS

S. S. Aleksanin, V. Yu. Rybnikov, V. I. Evdokimov, Yu. V. Gudz, O. A. Bashinskii

The Nikiforov Russian Center of Emergency and Radiation Medicine, EMERCOM of Russia, Saint Petersburg, Russia

Rescue teams of the Emercom of Russia include medical professionals as well but their number is insufficient for providing emergency specialist medical care to victims in emergency situations (ES). The goal is to determine the structural and dynamic indicators of emergencies in Russia during 2002­2016 and, on the basis of the data obtained, to develop the methodological foundations for creating mobile medical teams for mitigating medical and sanitary (health) ES consequences. The data on ESs presented in state reports “On the state of protection of the population and territories of the Russian Federation from natural and man­made emergency situations” have been analyzed. Over the past 15 years, 7,388 ESs have been registered in Russia, in which 13,868 people died. Local ESs accounted for 50.1 %, municipal ones ­ 34.5 %, intermunicipal ­ 11.6 %, regional ­ 3.3 %, interregional ­ 0.25 % and federal ­ 0.25 % among all the ESs. Traffic accidents, including trains, ships and aircrafts, as well explosions in industrial, residential and other buildings caused the most significant damage. The risk of exposure to 1 ES in Russia is (0.34 ± 0.03) per 100,000 people per year, to die in 1 ES ­ (1.97 ± 0.12) persons per year, the individual risk of death from one ES ­ (0.64 ± 0.06) per 100 thousand people per year.

Due to social significance of ESs in Russia, the following mobile medical teams can be created at the Emercom of Russia: surgery (in case of explosions in industrial, residential and social buildings and major terrorist acts); traumatology (road accidents with serious consequences, accidents with freight and passenger trains, ships, aircrafts and subway trains); medical treatment (floods); basic treatment (earthquake, collapse of industrial, residential and other buildings, structures and rocks, large­scale fires); toxicology (accidents with actual or presumed release of chemically hazardous substances); radiology (accidents with actual or presumed release of radioactive substances). Upon arrival in ES area, the mobile medical team is included in the forces and means of the Emercom intended for elimination of ES consequences.

**Keywords:** emergency situation, man­caused disaster, flood, fire, traffic accident, mobile medical team.

OPERATION OF EVIDENCE­BASED PRINCIPLES IN ASSESSMENT OF CAUSAL LINK BETWEEN HEALTH CONDITION AND ENVIRONMENTAL HAZARDOUS SUBSTANCE EXPOSURE

1S. A. Gorbanev, 1­3,5V. P. Chashchin, 1K. B.Fridman, 3­5A. B. Gudkov

1North­West Public Health Research Center, Saint­Petersburg
2North­Western State Medical University named after I. Mechnikov, Saint­Petersburg
3Institute of Natural Resource Economics and Environmental Policy, National Research University ­
Higher School of Economics, Moscow; 4Northern State Medical University, Arkhangelsk
5Northern (Arctic) Federal University named after M. V. Lomonosov, Arkhangelsk, Russia

A systematic review of the 22 published data available in both national and international scientific indexing systems, including the results of 2 our own researches showed that the common practice of establishing a causal link between the environmental hazardous substance exposure and public health condition often did not met the modern concepts of its evidence­based criteria. Current methodological, organizational and technical problems inhibitive proper collection and evidence interpretation of environmental pollution harmful effect on health condition were discussed, as well as noncritical use of a linear summation principle of adverse effects incidence of unidirectionally functioning actual substance in any level effect. The limitations and conditions under which such summation can be used if content of harmful substances in environmental objects is lower than corresponding MAC were given. Needs for further development of the approach of aggregated assessment of pollution negative effect on health were also specified. It is shown that the model can’t be considered as evidence­based one if it is unable to provide reliable prediction of injury when risk environment is represented by a combination of different factors and conditions that do not meet stability criterion and association coherence.

**Keywords:** environmental pollution, methodology of pollution hazard effect, evidence­based principles

THE RISK OF IMPACT ON THE HEALTH OF THE POPULATION OF PRIMORYE TERRITORY CONTAMINANT CHEMICAL IN FOOD

P. F. Kiku, \*V. Yu. Anan’ev, \*L. V. Kislitsina, V. G. Moreva, K. V. Kondratyev,
K. M. Sabirova, V. D. Bogdanova

Far East Federal University, \*Center of Hygiene and Epidemiology in the Primorsky Territory, Vladivostok, Russia

The evaluation of laboratory studies of food in Primorsky Krai on the content of chemical contaminant according to the program of social­hygienic monitoring with the purpose of the calculation of risk likely their impact on the health of the population of Primorye territory. We used the methodology for exposure and risk assessment of exposure to chemical contaminants of food foods on a population. Estimates of the loads of contaminants (lead, arsenic, cadmium, mercury) contained in the major foods consumed by the population of Primorsky territory for the years 2013­2014. We determined the level of risk of exposure to toxic substances (cadmium, arsenic, lead, mercury) coming from food. Found that arsenic, lead, cadmium are priority pollutants of food products consumed by the population of Primorsky Krai. It is revealed that the high values of hazard ratio is not carcinogenic risk associated with dietary exposure of arsenic noted in fish products and beverages, as the adult and child population. It is shown that at the exposure level of arsenic in food the expected probable number of cases of malignancies for the coming life will be 89.5 cases per 10.000 adults and 27.5 per 10.000 children.

**Keywords:** health, population, exposure, food, chemicals, carcinogenic and non­carcinogenic risks

THE INFLUENCE OF ANTHROPOGENOUS AND GEOCHEMICAL ENVIRONMENTAL FACTORS ON THE ELEMENTARY STATUS OF CHILDREN OF CHELYABINSK REGION

1S. V. Notova, 2G. N. Kireeva, 3E. V. Zhukovskaya, 4A. R. Grabeklis, 1E. V. Kiyaeva,
1, 5A. V. Skalny, 6L. E. Deryagina

1Orenburg State University, Orenburg; 2Chelyabinsk Regional Children’s Hospital, Chelyabinsk; 3Dmitry Rogachyov Federal Scientific Cinical Children’s Center of Hematology, Oncology and Immunology, Moscow;
4P. G. Demidov Yaroslavl State University, Yaroslavl; 5Peoples’ Friendship University of Russia, Moscow;
6Kikot Moscow University of the Ministry of the Interior of Russia, Moscow, Russia

The purpose of the work is to study the peculiarities of the elementary status of the children of Chelyabinsk region, living in the settlements similar in geochemical features, but various in the level of anthropogenic load and determine a major factor of mineral metabolism provision. The results of the study of hair trace elements content in 235 pupils of secondary school aged from 7 till 18 years are presented. All of them lived in the towns: Varna, Karabash and Tomino (Chelyabinsk region), located near the copper­porphyry ores, where commercial development of minerals was carrying out for a long time. The elementary status (40 chemical elements) was estimated by methods ICP­AS and ICP­MS in the Center of Biotic medicine (Moscow). Statistical processing of the results was carried using a program STATISTICA 8.0. It was established that irrespective of the place of residence for the examined children the deficiency of Se, Co, Cr was revealed, that was probably bounded to geochemical features of the territory of accommodation. The greatest impact on the elementary status was exerted by the level of anthropogenic loading. Children from Karabash had considerable excess of the recommended As and Pb values content in the hair; also they had the maximal, in comparison with other settlements, hair Cd, Be, Tl, Ba, Ag, Ni, Sn and Sb content. Children from this settlement had low Ca, Mg, P, B, Sr (the main osteotropic chemical elements) content in hair. Larger accumulation of Cu and Ni in hair of children from Karabash was connected with the ecological situation in the settlement and caused by emissions of Karabash copper­smelting plant.

**Keywords:** ecology, elementary status, trace elements, adaptation, children

RISK OF CIRCULATORY DISEASES DEVELOPMENT AMONG THE OPEN­PIT MINE WORKERS IN THE NORTH­WESTERN PHOSPHOROUS COMPANY IN THE ARCTIC

v. R. Bykov, L. V. Talykova, V. S. Mikhaleva

Kola Research Laboratory for Occupational Health, Kirovsk, Russia

It is known that a person suffers from tension in many organism systems under the influence adverse factors in the Arctic region. First of all, the work of cardiorespiratory system changes under the influence of cold followed by changes in thermoexchange, thermoregulation and water exchange. The article presents the results of risk estimation of circulatory diseases development among workers engaged in basic and auxiliary professions in an open­pit mine and processing complex in the North­Western Phosphorous Company (NWPC).The results are based on data analysis of periodic medical examination (PME) in the period 2013­2015. Real prevalence in circulatory diseases has been also studied among the workers engaged in mining industry in an open­pit mine according PME results. It has been stated that the low level of occupational risk does not allow to bind the origin of circulatory diseases with the workplace and profession. The higher indexes of circulatory diseases prevalence in the investigated group are more likely to be related with recruiting to NWPC the inhabitants mainly from the other regions of the Russian Federation. These indexes can also be explained by the age­related features, socio­economic and climate and geographical conditions of labour activity and residence. The detailed collection of professional anamnesis is necessary for more profound analysis of PME.

**Keywords:** the Arctic, professional diseases, occupational diseases, circulatory diseases, labour conditions, tension of labour process

EXPOSURE TO TOXIC METALS DURING PREGNANCY AND OVERALL WEIGHT­GROWTH CHARACTERISTICS OF THE NEWBORN: SURVEY RESULTS IN MOSCOW REGION

I. N. Ilchenko, T. V. Boyarskaya, \*S. M. Lyapunov, \*O. I. Okina

I. M. Sechenov First Moscow State Medical University of the Russian Ministry of Health, Moscow

\*Geological Institute of the Russian Academy of Sciences, Moscow, Russia

A human biomonitoring survey of 120 women in birth from six maternity hospitals of Moscow region was carried out on a standard methodology of the World Health Organization. Prenatal exposure to lead, cadmium, mercury and arsenic was characterized by low levels: the geometric mean for mercury in maternal hair was 0.21 µg/g; for mercury in umbilical cord blood ­ 0.89 µg/l; for mercury in maternal urine ­ 0.27 µg/l, which correspond approximately to the levels in European countries with a relatively low consumption of fish. The average content of lead in cord blood was equal to 7.96 µg/L, and the total arsenic and cadmium in concentrations in the urine ­ 0.20 µg/L and 21.9 µg/L respectively. Of all toxic metals were established direct and significant associations between lead in cord blood and newborn’s weight and height, and negative ­ between lead in cord blood and cephalization index. Weight and growth characteristics of newborns were also significantly influenced by gestational age, body weight gain of the mother during pregnancy, by newborn’s gender. Cephalization index, along with weight and height characteristics of newborns, is an informative indicator that can be used to analyze the relationship between prenatal exposure to heavy metals and neonatal development.

**Keywords:** mercury, cadmium, lead, arsenic, prenatal exposure, human biomonitoring, hair, urine, umbilical cord blood

FOSTER FAMILY AS A NEW NURCING TECHNOLOGY IN THE POLICY
OF AGEING IN THE REMOTE NORTHERN AREAS

Е. Yu. Golubeva, L. G. Khabarova, А. G. Soloviev

1Northern (Arctic) Federal University named after M. V. Lomonosov, Arkhangelsk

2Ministry of Labour, Employmentand Social Development of Arkhangelsk Region

3Northern State Medical University, Arkhangelsk, Russia

The aim of the study was to summarize theoretical and empirical material on the improvement of the new social technology ­ foster family (FF) for the elderly in rural and remote areas of the European North of Russia, identifying the key factors of socio­psychological interaction between its members and the social service support. The factors influencing the quality of life of the older age group in rural areas are presented, the relationship between the quality of life and the characteristics of care in the elderly population living in remote northern territories is examined. Socio­psychological factors influencing to the implementation of FF technology in interaction of its key components: an elderly person, an assistant in a FF and the center of social services were identified and discussed. It is shown that FF for the elderly person is a factor of increasing the availability of social help and a form of satisfying the most vital and socialization needs in the family microenvironment in remote rural areas, which is indicated in Russian and foreign documents of aging policy.

**Кeywords:** elderly person, foster family as a technology of social care, social service, quality of life, remote northern territories

PSYCHOLOGICAL CHARACTERISTICS OF CHILDREN WITH TUBERCULOSIS

E. V. Alexandrova, T. V. Kapustina, R. V. Kadyrov, D. S. Lyukshina

Pacific State Medical University, Vladivostok, Russia

The aim of the present study was to describe the psychological characteristics of the alienation experience in children with Tuberculosis (TB). In this study, the alienation is viewed as a cognitive construct consisting of 4 components: cognitive, socio­psychological, emotional­evaluative and behavioral. The experimental group of the empirical study consisted of 60 children aged 13­14 years with TB, a control group was represented by 60 healthy children aged 13­14 years. The following methods were used: The Cattell test, The Differential Loneliness Scale of E. N. Osin, The Associative test of Orekhova O. A., The «House­Tree­Person» test. The study revealed that children with TB realized their loneliness (U = 1 108, α = 0,0001) (cognitive component of alienation), had negative emotions to the communication (φ = 1,9, p ≤ 0,023) (emotional­evaluative component), experienced a lack of connections with other people (φ = 2,80, p ≤ 0,001) (social component) and had negative emotions to the learning (φ = 2,84, p ≤ 0,001) (behavioral component of alienation). The results obtained are the basis for the development of programs for the socio­psychological rehabilitation of children with TB.

**Keywords:** tuberculosis, alienation, psychological characteristics, psychosocial rehabilitation

COMPREHENSIVE ASSESSMENT OF BIOMEDICAL RISK FACTORS FOR CONNECTIVE TISSUE DYSPLASIA DEVELOPMENT AMONG THE students of Ivanovo universities

I. S. Sesorova, E. V. Shnitkova, T. V. Lazorenko, \*N. V. Yakovenko

Ivanovo State Medical Academy of the Ministry of Health of the Russian Federation, Ivanovo

\*Voronezh State University of the Ministry of Education of the Russian Federation, Voronezh, Russia

The article is concerned with topical biomedical issue ­ study of the concentration among the population genetically deterministic morphofunctional diseases of a connective tissue (connective tissue dysplasia ­ CTD) that leads to the chronic illnesses’ formation, lowers living standards and affects the population health in general. Research methods ­ screening diagnostic with the use of adapted questionnaire, made on the ground of the national recommendations, coordinated international diagnostics criteria and data of the score table of T. I. Kadurina, L. N. Abakumova. Type of the research ­ cohort research held by means of survey of the students of Ivanovo universities. Results of the research. The score of the risk factors of CTD progression was held on the ground of screening diagnostic among the students. Morbidity of CTD on the ground of phenotypic character analysis among the population of Ivanovo region at the age of 21 ± 2 comprised 22,6 %. In this age group gender is not an essential risk factor for development of CTD. The most common reportable symptoms of CTD ­ Pathology of Skeletal System (47,0 %). Where the leading positions belong to scoliosis (59,0 %) and flatfoot (43,7 %). Body weight excess or deficiency can be a trigger of CTD. 23,0 % of students with frank CTD extent have chronic illnesses of digestive system that can both arise from CTD and increase CTD development. Conclusion. High frequency of CTD symptoms occurrencing indicates concentration of gene­mutation of biogenesis of a connective tissue among the students of Ivanovo universities. For this reason the problem of carrying out of measures of early CTD detection and its preventive measures becomes a topical issue.

**Keywords:** connective tissue dysplasia, the prevalence, risk factors

ASSESSMENT OF HEALTH CARE QUALITY BY POPULATION OF ALMATY:
A CROSS­SECTIONAL STUDY

1B. S. Turdaliyeva, 1V. Y. Baysugurova, 1G. T. Kashafutdinova, 1G. E. Aimbetova,
1M. A. Ramazanova, 1N. A. Talkimbayeva, 2L. S. Ermukhanova, 3A. A. Baymagambetova,
3G. S. Kayupova, 1Z. M. Meyrmanova, 1M. T. Baykazakova, 4S. V. Ivanov, 5­8A. M. Grjibovski

1Kazakh Stater National Medical University, Almaty, Kazakhstan; 2East Kazakhstan State Medical University, Aktobe, Kazakhstan; 3Karaganda State Medical University, Karaganda, Kazakhstan; 4First Medical University n. a. I. P. Pavlov, Saint Petersburg, Russia; 5National Institute of Public Health, Oslo, Norway; 6Northern State Medical University, Arkhangelsk, Russia; 7North­Eastern Federal University, Yakutsk, Russia; 8International Kazakh­Turkish University, Turkestan, Kazakhstan

A survey of 1 194 respondents aged 45+ living in Almaty (Kazakhstan) to assess satisfaction with the quality of medical care was conducted. Specially trained interviewers visited respondents at home and filled questionnaires, which included questions on socio­demographic characteristics, the characteristics of medical care during the past year, bad habits, self­assessment of health, trust to doctors and the respondent’s opinion on quality of health care.

Binary logistic regression was used to analyze the data. Adjustment was performed for socio­demographic characteristics of respondents and the peculiarities of medical care. Altogether, 55.7 % (95 % CI 52.9; 58.5) of respondents were not satisfied with the quality of medical care. In multivariable analysis dissatisfaction with the quality of health care was associated with education, income, and self­, but the most influential factor was distrust of doctors (OR = 19, 95 % CI 12; 30). Thus, measures aimed at increasing the trust in doctors, especially the development of personalized medicine, have a potential increase the degree of satisfaction of the population with the quality of medical care. This study can serve as a start point for a panel study to monitor population’s satisfaction with the quality of health care.

**Keywords:** quality of health care, survey, questionnaire, Almaty, Kazakhstan