

گزارش از یک مرکز تحقیقات طب نظامی در چکسلواکی

معمولاً تدوین شرح وظایف، مراکز و سازمانها، امری تخصصی و در عین حال دشوار بنظر میرسد. اینکه صحت و سوی پژوهش و محورهای تحقیقاتی چه باشد به استراتژی تحقیق در کشور، توان علمی مراکز تحقیقاتی، سرسیردگی محققین محترم به سربلندی و افتدار کشور و بسیاری از عوامل دیگر بستگی دارد. بکسی از منابعی که می توان از آن طریق بصورت غیرمستقیم عموماً تحقیقاتی برخی مراکز را روشن نمود فعالیتهای تحقیقاتی در مراکز علمی مشابه در سایر کشورهای است. در این راستا دست اندرکاران عجله طب نظامی و طبه خود می دانند تا بطور توده ای مراکز طب نظامی در دنیا را به نحو خلاصه به حضورتان معرّف نماید تا ضمن اطلاع همکاران از وسعت فعالیت چین مراکز، بنشر فعالیتهای تحقیقی مدرن را فراهم آورده باشد. این شماره حاوی گزارش سالانه (۱۹۹۹) یک مرکز نظامی در چکسلواکی است که نسخه اصلی آن حدود ۸۰ صفحه بود و برای اینکه از حوصله همکاران خارج نشود اسامی محققین آنها در بخشهای متعدد و سایر جزئیات آماری را حذف نموده و چکیده آن تقدّم می شود. فرصت را مغتنم شمرده و اعلام می دارد که هرگونه گزارش علمی سالانه از مراکز داخلی مورد استقبال ما قرار خواهد گرفت.

تألیف کننده: دکتر حبیبعلی مهران، دکتر علیرضا عسگری

ACADEMY ANNUAL REPORT

THE 7th ISSUE OF THE PURKYNE MILITARY MEDICAL HRADEC KRALOVE, THE CZECH REPUBLIC, 1999

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INTRODUCTION

This document includes the principal research and educational activities of the School so that it may act as a basis for external evaluation. If you have any suggestions or comments regarding our activities, please contact us at the address shown in this Report. Appointees are as follows:

Col. Assoc. Prof. Svatopluk BMA, MD., PhD.: appointed to the position of Rector-Commandant by the Personnel Order of the President of the Czech;

Col. Prof. Josef FUSEK, MD.,DrSc., d.h.c. appointed to the position of Vice-Rector of Research; Maj. Assoc. Prof. Roman PRYMULA, MD., PhD. appointed to the position of Vice-Rector of Studies.

The objectives of the work as specified in particular parts of the publication are of long-term effect. The staffing of the leading positions of the Academy is a guarantee of their continuous implementation.

Our credo for this and future years is to educate military doctors, pharmacists and paramedical personnel to a highly specialized, professional standard in military and medical disciplines for service in peacetime and wartime. We plan to develop specific military and medical disciplines and to focus on the main problems of the Military Medical Service, which are represented by such fields as field surgery, field internal medicine, military toxicology, military radiobiology, military hygiene, military epidemiology and immunology, military pharmacy, disaster medicine and military medical management in peacetime and during emergency situations.

HISTORY

The Military Medical Academy was founded in Hradec Krollove in 1951, its students' hall of residence was built between 1972 and 1975, and the new campus was completed in 1981. The Academy is a self-governing institution, a military school of University Status in compliance with the Act Nr. 172/1990 of the Statute on Universities. In its educational and scientific activities it works in close collaboration with the Medical and Pharmaceutical Faculties of Charles University in Hradec Krollove. These Faculties provide the education of the Academy's students in medical and pharmaceutical subjects. At the graduation ceremony, our students are awarded the degree of Charles University and the Purkyne Military Medical Academy certificate (the name of the distinguished Czech physiologist and anatomist Jan Evangelista Purkyne -Purkinje was chosen to honour the Academy).

Its academic education aims at training physicians, pharmacists, dentists and administrators in specialist military medical fields in the Czech Army.

THE MAIN AIMS OF THE ACADEMY IN 1999

1. Education: to provide University-level studies in the subjects of general medicine (6 years), stomatology, pharmacy (5 years), administration and management study (3 years); to organize and provide specialist studies, postgraduate study for PhD in accredited disciplines:

- Toxicology
- Medical Microbiology
- Epidemiology
- Field Surgery
- Military Hygiene
- Military Radiobiology
- Field Internal Medicine

In 1999, the Governmental Accreditation Commission did the evaluation and accreditation of the study programs at the PMMA. The Department of Education granted the PMMA magisterial study program accreditation in General Medicine (its military-medical part) for a period of 12 years. In the year 2000 accreditation of the bachelor and doctoral study programs will continue. Moreover the Department of Education has recently granted the PMMA permission to do professorial or second doctorate procedures in the fields of surgery, internal medicine, toxicology, preventive medicine, hygiene and epidemiology and further to do second doctorate procedures in the fields of medical microbiology and radiobiology.

2. Scientific and Research work

3. Therapeutic activities
4. The scientific and educational information services
5. International cooperation

A. DEPARTMENT OF MILITARY MEDICAL SERVICE ORGANIZATION

Educational and Research Staff: 12 people. The Department of Military Medical Service Organization provides military and professional training for military doctors, pharmacists, undergraduates, health providers and postgraduates of the Department of Military Medical Service Organization. It organizes continuous education for military doctors, pharmacists and health providers on advanced courses and the training of reserve health providers. It offers specialised training in the field of military health service administration and management.

The Department provides students with the necessary education and training for the execution of medical assignments and duties in their planned positions in the field in war-time. The subject - Organization and Tactics of Military Medical Service in War-Time - familiarizes the students with the activities of the Medical Service in combat conditions, with assignments and principals of medical support to the troops, the organizational structure of the military health service in combat, with the operation of particular medical establishments and the principles of human rights, in particular those defined by the Geneva Convention. The Department carries out training in planning medical support, in working with a map, triage of wounded, deployment of field medical facilities, calculation of medical casualties and Military Medical Service management. Other subjects provide students with knowledge in tactical, logistic, communications, military engineering, topography, and protection from weapons of mass destruction. All these subjects are a part of the general military education of the Czech Army professionals and are prerequisites of mastering the subject of military medicine. The Department teaches disaster medicine, mainly focused on planning, administration, management and evacuation.

RESEARCH PROJECTS

1. Optimization of manpower and resources of the military medical service in the combined field and territorial system.
2. The Czech Army Medical Evacuation System after Joining NATO, Medical Evacuation Organization and Medical Support Planning.

B. DEPARTMENT OF TOXICOLOGY

Educational and Research Staff: 28 personnel. The Department was established in 1951. Since then, as an integral part of the Purkyne Military Medical Academy, it has been involved in education and scientific research work on chemical warfare agents for defensive and protective purposes only. It comprises two laboratory groups – a biochemical (biochemical laboratory, laboratory of organic synthesis, analytical laboratory, decontamination laboratory) and an experimental therapy group (toxicological laboratory, pharmacological laboratory, Neurophysiological laboratory, behavioral laboratory, genotoxicological laboratory). This structure allows for a complex study of highly toxic substances including chemical warfare agents, which aims to determine their action on biochemical, behavioral, histochemical, pharmacological and neurophysiological level, to study and develop antidotes, to analyse all types of samples with respect to the presence of known chemical warfare agents, and to test the decontamination effectiveness of field decontamination kits and decontamination kits under development. The present scientific research projects are focused on therapeutic, prophylactic and protective measures against the most toxic chemical warfare agents. Special attention has been paid to the most recent and most dangerous nerve agents. Its main educational activity is to

give lectures for undergraduate and post-graduate studies dealing with biological effects of real and potential chemical warfare agents, possible means of protection against them, and approaches to medical care of persons intoxicated with chemical warfare agents, especially nerve agents. The Department also participates in the teaching of toxicology in disaster medicine.

RESEARCH PROJECTS

1. The study of the long-term effects of low doses of sarin on an organism of mammals.
2. Biological effects of selected mycotoxins and their combinations.
3. Seasonal dietary antioxidant levels in relation to human health; a molecular epidemiological study.
4. Development of new methods and means for diagnosis and prophylaxis of poisonings with nerve agents.
5. Biochemical effects of exposure to low concentrations of soman.
6. Drug dependence and stress – the mechanism of their inception and the possibility of their influencing.
7. Mechanisms of genotoxic effects and prospects to the evaluation of individual susceptibility to styrene exposure.
8. Verification of the genotoxicity of sarin, soman and oxime HI-6, and their possible influence on the effect of mutagenic and carcinogenic compounds.
9. Toxins as potentially misused chemical and biological warfare agents.

C. INSTITUTE OF RADIOBIOLOGY AND IMMUNOLOGY

Educational and Research Staff :32 personnel. 1999 was the first year of existence of the Institute after the combining the Department of Radiobiology with the Institute of Immunology. This combining enabled the Purkyne Military Medical Academy to establish a scientific, educational and training center for the solution of problems related to N- and B-agent protection. For this reason two new projects were suggested for completion with the financial support of the Ministry of Defense. The first one will cover the field of detection and identification of B-agent and the second one will follow up on molecular markers of ionizing radiation injury and will cover the field of biodosimetry. Moreover, during the year 1999 the members of the Institute established official contacts with NATO working groups LG7/WG2, MAS NBC/Med, NATO HFMP TG005, and NATO HFMP TG006 to provide more information to the Czech Army, to carry out standard scientific cooperation with the research centers of national armies (members of NATO) and to ensure the objectivity of evaluation of scientific projects and their results.

RESEARCH PROJECTS

1. Local response of the host to trans-dermal infection with intracellular bacterial pathogen *Francisella tularensis*.
2. Mechanisms of innate resistance to infection with intracellular bacterial pathogens: Bcg/Lsh /Ity (Nramp1 gene) locus and *Francisella tularensis* infection.
3. Characterization of new genes and proteins involved in early steps of carcinogenesis; a joint venture of Austrian molecular biologists and Czech clinical studies.
4. The Influence of Pentoxiphylline on the histological expression of radiation pneumonitis with evaluation of the results by image analysis and mathematical gnostics.
5. The biological detection of microbial agent *Francisella tularensis*.
6. Early diagnosis of preneoplastic and neoplastic conditions of the colon mucosa.
7. Radioprotection of the skin with topical WR-2721.
8. Development of radon diagnostic measurement in military radon risk buildings to protect persons against natural radioactivity.

9. Tasks and activities of the medical service in connection with the use of nuclear weapons and radiation events.
10. The effect of cytokines on the radiosensitivity of the hematopoietic stem and progenitor cells (CD34+/AC133+).
11. Vaccines against intracellular bacterial pathogens – the Francisella tularensis infection model.

D. DEPARTMENT OF MILITARY HYGIENE

Educational and Research Staff: 19 personnel. In its educational activity the Department continued to compose lectures for undergraduate studies with emphasis on military aspects and experience from contact with the NATO armies. Military field teaching was provided in Vyskov. The results of its own research and to a greater extent of knowledge gained from the NATO armies in the area of hygiene support to the troops both in peacetime and field conditions were included in the teaching. The Department paid more attention to topical problems in preventive medicine in training for the state examination and in post-graduate training.

RESEARCH PROJECTS

1. Evaluation of ergonomic conditions during work in protective suits.
2. The evaluation of the state of health of Fire Service personnel.
3. Salutoprotective components of the lifestyle.
4. Simulation of the factors influencing the training of subjects using a simulator.
5. Multidisciplinary treatment of polytraumas.
6. Foams as carriers of chemical substances with disinfectant effect.
7. Comparison of accessible functional testing methods of the cardiovascular system and their exploitation in primary prevention in the Czech Army.

E. DEPARTMENT OF EPIDEMIOLOGY

Educational and Research Staff: 30 people. The Department of Epidemiology is divided into two groups: the group of epidemiology and the group of microbiology, disinfection, disinsection and rodent control. The researchers of the microbiology group have also solved questions concerning prevention of endogenous and exogenous infections of immunocompromised patients. They have also joined the European study group on nosocomial infections.

RESEARCH PROJECTS:

1. Flu project.
2. Lyme project. (Another project, focused on European lyme disease vaccine started in the second half of 1999).
4. Combined vaccine against hepatitis A and typhoid fever (HEPATYRIX TM)
5. New vaccination schedule of a combined vaccine against viral hepatitis A and B Twinrix in children.
6. Vaccination against Tick-borne encephalitis (TBE).
7. Disinfection agents based on active chlorine, the individual treatment of drinking water.
8. Topical problems of disinfection and antiseptics in the Czech Army.
9. Occurrence of airborne contamination in the intensive care unit.
10. Examination of preparation based on chlorhexidine and cetrime on biodegradable polymeric microparticles.
11. Express diagnosis of hazardous infections with emphasis on hantaviruses.

12. European study on nosocomial infections.

F. DEPARTMENT OF FIELD SURGERY

Educational and Research Staff: 10 personnel.

RESEARCH PROJECTS:

1. Autologous vein covered stent graft for endovascular treatment of peripheral arterial aneurysms.
2. Topical agents with the antimicrobial characteristics for surgical use – comparison of effects in wound experimental model.

G. DEPARTMENT OF FIELD INTERNAL MEDICINE

Educational and Research Staff: 20 people. The Department of Field Internal Medicine focuses systematically on the specialized postgraduation level of medical studies in the branch of field internal medicine. This discipline deals with specific military problems, in particular with the problem of saving the lives of patients suffering from serious and life-threatening conditions of non-surgical character. Such injuries generally occur during mass disasters both in wartime and in peacetime.

In the Department of Field Internal Medicine the development of military internal medicine follows three basic directions or areas: therapy and prevention, pedagogical and educational methods, and scientific research.

In the year 1999 the research in the Department continued in the four basic fields:
 Diagnosis and therapy of hypercoagulable states – the monitoring of anticoagulant therapy.
 Haematology - growth of stem cells - preparation for bone marrow transplantation.
 Nutrition in intensive metabolic care.
 Biochemical monitoring of acute coronary syndromes.

RESEARCH PROJECTS

1. Cooperation with civilian writers in the field of diagnosis and therapy of hypercoagulable states has continued.
2. Investigation of the influence of interleukines on asthma bronchiale and how they are affected by interferon administration.
3. A study in the application of enteral nutrition in intensive metabolic care has continued.
4. Projects have been carried out in the field of determination and analysis of monoclonal immunoglobulins in the urine of patients with multiple myeloma by the method of two-dimensional electrophoresis.
5. A study of the functions of membrane and metabolic processes in blood platelets has continued.
6. Haematopoietic stem cell transplantation. A role of cytokines in transplantation. Transplant-related complications and supportive care.
7. The cooperation with the Hygienic Station in Hradec Krolave in the study "The Level of Ochratoxin A in Blood Serum of Adults in the Czech Republic in Patients with Chronic Renal Insufficiency" has continued.
8. The study of Wolff-Parkinson-White syndrome - electrophysiologic investigation and therapy including radiofrequency ablation has continued.
9. Beginning of the study of the long-term effects of low doses of sarin on experimental animals with the Department of Toxicology.

H. DEPARTMENT OF GENERAL MEDICINE

Educational and Research Staff: 25 personnel. The Department of General Medicine consists of three main units: the General Medicine Unit, the English Language Unit and the Subdivision of Emergency Medicine in the Central Military Hospital, Prague. In the General Medicine Unit we offer undergraduate courses in peacetime military medicine and social health care. We also offer vocational training for specialization in general medicine. Teachers of this Unit are in charge of the physical training of all Academy officers and students and take part in organising military sports competitions.

The Department of General Medicine is in charge of the special military training of students at our Academy in every division of the subject of peacetime organization of military health care and participates in the supplementary training of Czech Army military health personnel in the subjects of health care organization and management and of social medicine. It is also involved in the undergraduate courses in those subjects and in instruction in the rudiments of some branches of medicine. The Department secures special military training for reserve commanders in the subject of peacetime organization of military health care and prepares them for peacetime army functions. Moreover, it organizes and co-ordinates other courses for military doctors employed mainly in army health units, such as courses in myoskeletal medicine, acupuncture, physical therapy, and emergency medicine, as well as first aid courses for military police, special units, and others.

RESEARCH PROJECTS:

1. Filing, compilation and analysis of medical service data for military medical service use. (Archives).
2. Health problems resulting in disablement among the applicants to military academies.
3. ACLS (advanced cardiac life support) at primary care in the Czech Army Medical Service.

I. DEPARTMENT OF MANAGEMENT AND MILITARY PHARMACY

Educational and Research Staff: 11 personnel. The Department of Management and Military Pharmacy (DMMP) is historically the youngest Department at the Academy because of its formal establishment in 1998. The Department consists of three principle groups: the health care management group, the group of public health and the group of military pharmacy. DMMP provides the undergraduate program in military health management and newly developed Ph.D. program in public health, too. Teaching activities are one of its main tasks. Teachers run various courses and training programs in health care management, health care systems, operational and strategic management, informatics, economics and law. A broad spectrum of research activities is based to a wide extent on both full time and part-time workers with the support of many co-workers from various institutions.

RESEARCH PROJECTS:

1. Network of educational centres in health care management (1997-1999).
2. Pharmacoeconomic efficacy of implementation of different immunisation strategies in the Czech Republic and in the Czech Army—mathematical modelling (1997-1999).
3. The analysis of capillary bed of terminal placental villus in normal state and during diabetes in combination with confocal microscopy, 3-dimensional reconstruction and stereology.

J. INSTITUTE FOR INFORMATION

Educational and Research Staff: 29 people. The Institute for Information is responsible for the administration of the scientific information resources in both the pedagogical and executive branches of the Czech Army Medical Service. We provide the teaching and research staff of the Purkyne Military Medical Academy in all fields with information retrieval, processing and presentation, and we provide comprehensive knowledge support to enable military doctors to deliver a quality health service.

The main information services are provided by a library and reading room, a bibliographic department and an editorial and teaching department. These provide access to journals and books, carry out the documentation and editing of textbooks and printed lectures, and ensure the support and updating of the educational process. Desktop publishing and a simple computer graphics service are available here as well. The Institute is the site of the oldest Czech military medical journal "Vojenske zdravotnicke listy". For the presentation of scientific work and the results of scientific conferences, this military medical journal "Vojenske zdravotnicke listy" was enlarged by "Supplements" in English which are sent to partner institutions. All the publishing requirements of the Academy are satisfied by the printing and photography centre.

MAIN WORKSHOPS, COURSES, RESIDENCIES at the Academy in 1999

Toxicology

Prevention of social and pathological phenomena, 15-18, 22-25 March, 12-15 April

General Medicine

A specialty residency in the military hospital before the 1st career postgraduate degree in general medicine, 25 October – 17 December; A specialty course before the 1st career postgraduate degree in general medicine, 4 January - 12 February; Refresher schooling before the 1st career postgraduate degree in all specialty fields, 20-24 September; Refresher schooling before the 2nd career postgraduate degree in all specialty fields and extension career postgraduate degrees, 15-19 February; Schooling in acute medicine – continuous training, 11-14 January, 8-11 February, 8-11 March, 12-15 April, 10-13 May; Schooling in acute medicine – divided training, 11-12, 18-19 January, 8-9, 15-16 March, 12-13, 19-20 April, 10-11, 17-18 May, A course in medical rudiments for the military police, 1-5 March, 24-28 May, 27 September - 1 October, 1-5 November; First aid course, 15-19 March; First aid course for the civil defence units, 25-29 January, 26-30 April, 15-19 November; Refresher specialty schooling for the nurses, 1-3 February, 7-9 April, 14-16 June; Advanced trauma life support - a practical training of rescue team, 4 May Battlefield advanced trauma life support, 18-19, 20-21 October.

Military Medical Service Organization

A specialty course before extension career postgraduate degree in military medical service organization and management, 4 January - 2 July; Refresher military professional schooling before the 2nd career postgraduate degree, 8-26 February, 13 September - 1 October; Application course, 24 May – 2 July; Refresher course for warrant officers - number of military occupational specialty 860, 7-18 June.

Military Pharmacy

A course in the rudiments of military pharmacy, 18-22 October

Refresher schooling of persons handling extra dangerous poisons and opiate psychotropic drugs, 14-17 September; Basic retraining course – number of military occupational specialty 852, 11-22 January.

Field Surgery

A residency before the 2nd career postgraduate degree in surgery, 4 January - 25 June
Field Internal Medicine: A specialty residency of doctor for the 2nd degree specialization in the field of internal medicine, 1 October - 31 December.

Military Hygiene

A specialty course before extention career postgraduate degree in the field of labour hygiene and occupational diseases, 3 May - 4 June; Schooling in a preventive and common hygienic supervision for the garrison medical officers, 22-26 February; Schooling in the evaluation of the nutritional state of organism 29 March - 2 April, 12-16 April.

Military Epidemiology

A specialty course before the 1st career postgraduate degree in medical microbiology, 18 October - 26 November; A course in epidemiology of zoonoses, 8-11 February
A course in testing the efficacy of disinfectants, 18-21 January.

Computing

Schooling in PC operation rudiments and application software for general practitioners and stomatologists, 21-25 June; The rudiments of windows and microsoft word, 11-15, 18-22 January, 8-12 March, 24-28 May, 13-17 September, 27 September - 1 October, 11-15 October, 8-12 November; Internet, 15-16, 18-19 March, 8-10 September, 25-27 October, 20-22 December; The rudiments of statistics and MS excel program, 22-26 March, 19-23, 26-30 April, 4-8 October; Power point and internet, 6-9 April, 1-5, 22-26 November

International Cooperation

Cooperation at the level of military medical facilities

Bulgaria - Military Medical Academy
France - Military Medical Academy, Lyon - Bron
Germany - Medical Academy of Bundeswehr, Munich
Germany/USA- USAMMCE Pirmasens, US Army CHPPM Landstuhl
Great Britain - Royal Defence Medical College, Millbank
Italy - Military Medical Academy, Florence
Poland - Military Medical Academy, L d
Sweden - FOA-National Defence Research Establishment, Umea

Cooperation in the field of disaster medicine (on the basis of international organization with participation of military medical services):

Austria, Bulgaria, Germany, Hungary, IMSO, NATO School (SHAPE), Poland

Scientific cooperation with civilian institutions abroad (on the basis of individual agreements and joint projects):

Belgium - SmithKline Beecham Biologicals, Rixensart
Canada - McGill University, Montreal
Great Britain
- HSMC University of Birmingham
- King's Fund College, London

- Rowett Research Institute, Aberdeen
 - Poland - Institute of Hygiene and Epidemiology, Warsaw
 - Slovakia - Comenius Univ., Dept. of Epidemiology, Bratislava
 - Switzerland - Basel Institute for Immunology, Basel
 - The Netherlands
 - Dijkzigt Hospital, Rotterdam
 - TNO, Rijswijk
 - USA
 - University of Nevada – Medical School
 - AIHA (American Int.Health Alliance)
 - AUPHA (Association of University Programs in Health Administration)
- Participation in international projects and networks (on the basis of agreement):
- EuroTransMed - a satellite network (G.B.)
 - ECC PHARE - E.C. Development and Education Program
 - NAMIC - Database of Exchange Network of European Universities Professors (Sweden)

Publication

More than 200 full papers in prestigious international journals within the last 2 years. Please refer to the site for the details.