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ANNUAL REPORT 2001



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INTRODUCTION BY THE MANAGING DIRECTOR



As in previous years, we are submitting herewith the annual performance review of Na Homolce Hospital. We hope you will find that, as has been traditionally the case hitherto, the results for 2001 are very satisfactory. The economic, performance and quality indicators all provide evidence of the stable environment within which we have traditionally been able to achieve our vision. A vision of a stable, efficient, first-class, customer-oriented institution matching the top European standards in those areas of medicine we have selected for overall development.

The results submitted in this report confirm that the milestones which we established were the right ones, just as the economic results prove that they were realistic. Na Homolce Hospital has again proved that, particularly in the areas of neurology and cardiovascular medicine, it is able to offer its clients, as well as the doctors who refer them to us, a wide range of the most up-to-date examination and treatment methods. Although the spectrum of patients we treat encompasses an ever greater proportion of complicated and challenging cases, our increased use of non-invasive or minimally invasive surgical methods has led to further improvement in our results and reductions in the treatment time required, thus enabling us to offer our services to a wider circle of patients.

This report also confirms that the management and organizational procedures, which have been established at the hospital over the long term, were well-founded. I should like in particular to highlight the fact that the individual hospital units enjoy a considerable level of independence, while all sharing a common goal. If the overall objectives of quality, globality and

cost effectiveness have been achieved, this means the institution is still managing to support and coordinate the interests and needs of its individual parts. Individual ideas, thoughts and even dreams, are tested for their compatibility with our general strategies and, if they comply, are accepted in full. This enables us to provide a space for new creative personalities, and to lay down fertile ground for the growth of creativity and competitiveness. Freedom of thought, which is today's most valuable potential, can be encouraged within the framework of the objectives we have set, where clear rules define precise boundaries. This situation brings us new surprises each year, and shows what new and unexpected results can be achieved in modern medicine.

During 2001 we had frequent opportunities to compare the quality of our work, whether with our partners from the University of Pittsburgh Medical Center in the USA, or with our colleagues in the European Union. We were delighted to note how they were repeatedly surprised by the standard of Czech medicine. The professional expertise of our staff coupled with our economic stability allows us great flexibility in acquiring experience from all over the world, and this represents the greatest contribution to our goal - to create a foundation on which to build a high standard of specialized medicine within the Czech environment.



Oldřich Šubrt, M.D., Ph.D.

Hospital Management and Statutory Bodies



Managing Director
Oldřich Šubrt, M.D., Ph.D.



Deputy Director for Treatment and Preventive Care
Milan Ročeň, M.D.



Deputy Director for Finance
Pavel Brůna, M.Sc.



Deputy Director for Internal Audit and Control
Iva Rečková, M.Sc.



Deputy Director for Hospital Operations
Jan Kapal, M.Sc.



Head Nurse
Libuše Budská

**Chairperson**

Milan Fafejta, M.Sc.

Vice-Chairperson

Assoc. Prof. Eliška Jelínková, M.S., Ph.D.

Members

Martin Kocourek, M.Sc.

Jan Polák, M.Sc. (Arch.)

Pavel Henyš, M.D.

Report by the supervisory board on management activities in 2001

The Supervisory Board carried out its tasks in accordance with the provisions of the Document on Establishment of the Supervisory Board, issued by the Ministry of Health of the Czech Republic. Its work focused on controlling the activities of the hospital management in ensuring proper management and high standards of health care, with emphasis on:

- detailed monitoring of income and cost levels,
- effective management of investments,
- recovery of overdue receivables,
- devising strategies for continual improvement in the standards of health care provided and for the expansion of services on offer,
- personnel policies and internal communication.

The Supervisory Board met on a total of 5 occasions in 2001 and was composed of the following individuals:

Milan Fafejta, M.Sc. – Chairperson

Assoc. Prof. Eliška Jelínková, M.D., Ph.D. – Vice-Chairperson

Oldřich Šubrt, M.D., Ph.D.

Martin Kocourek, M.Sc.

Jan Polák, M.Sc. (Arch.)

Pavel Henyš, M.D.

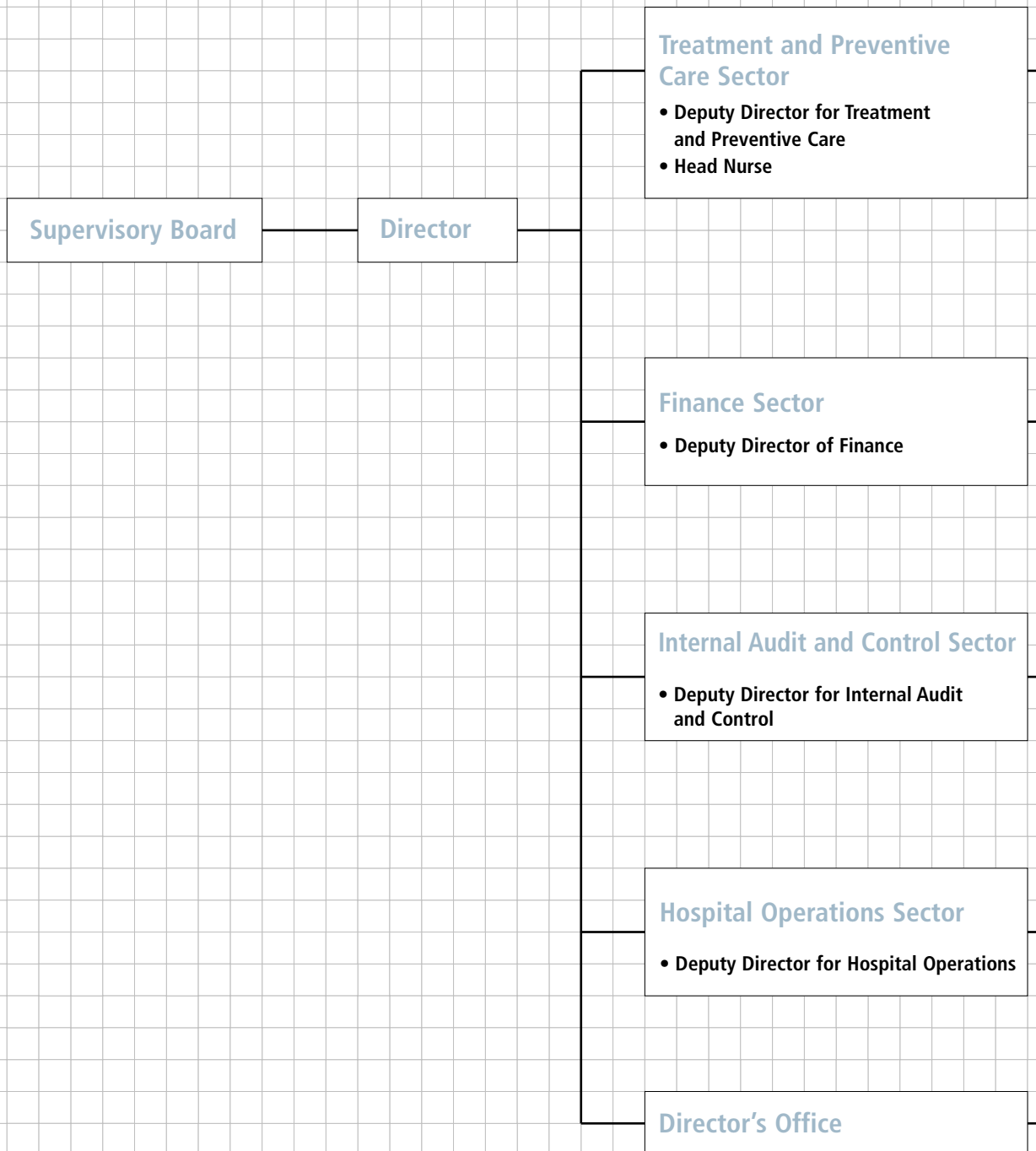
On the basis of its monitoring activities, the Supervisory Board has found no serious deficiencies and its evaluation of the activities of the hospital management, as well as its willingness to cooperate with the Supervisory Board, is positive.

The Supervisory Board expresses its appreciation and thanks to all employees of Na Homolce Hospital for their work during 2001.

Milan Fafejta, M.Sc.

Chairman of the Supervisory Board

Na Homolce Hospital Organizational Structure 2001



Hospital Wards

Neuroprogram

- neurology
- neurosurgery
- stereotactic and radiation neurosurgery

Cardiovascular Program

- cardiology
- cardiovascular surgery

General Medical Care Program

- internal medicine
- surgery
- gynecology
- ENT/head and neck
- anesthesiology + resuscitation
- cosmetic surgery

Outpatient Clinics

- neurology
- neurosurgery
- cardiology
- cardiovascular surgery
- internal medicine
- surgery
- gynecology
- ENT
- ophthalmology
- dermatology
- immunology
- allergology
- Center for hemodialysis + nephrology
- children and adolescents
- pediatric allergology
- physiotherapy + rheumatology
- psychiatry
- dentistry

Complementary Services

- radiodiagnostics
- nuclear medicine / PET
- clinical biochemistry, hematology, immunology
- clinical microbiology
- pathology
- central sterilization and hygiene

Hospital Pharmacy

Industrial Medicine

Departments

- economic
- accounting
- contracts and revisions
- health care economics
- controlling

Department of Performance Audit

Department of Internal Audit

Departments

- operational and economic management
- procurement and storage of non-medical supplies
- catering
- transportation
- automated transportation system
- energy and water management
- maintenance
- technical and inspection activities
- technical management of hospital operations
- medical technology
- accommodation

Human Resources

IT Department

- hardware
- software

Independent Units

- marketing
- health and safety
- fire department

Scientific and Technical Information Department



Na Homolce Hospital

A specialized health care center with nationwide coverage for cardiovascular and neurosurgical treatment

Neurology/Neurosurgery Program

A national program for patients from throughout the Czech Republic suffering from diseases of or injuries to the central and peripheral nervous system, as well as diseases of or injuries to the locomotory system. The three independent program centers provide a full range of care, from diagnostic services and therapy by conservative methods, through complex neurosurgical operations including radiosurgery and stereotactic surgery, to the latest methods of interventional neuroradiology. Part of the treatment process also covers related physiotherapy and long-term follow-up of patients.

Department of Neurology

Department of Neurosurgery

Department of Stereotactic and Radiation Neurosurgery

Cardiovascular Program

A national program for patients from throughout the Czech Republic suffering from diseases of the cardiovascular system (heart and blood vessels). The two independent program units focus on complex diagnostics and treatment by conservative methods, and also, in particular, on surgical treatment of vascular diseases – primarily stenosis or obliteration of the arteries as a result of arteriosclerosis – including interventional radiology. Medical care includes special physiotherapy for patients with diseases of the circulatory system.

Department of Cardiology

Department of Cardiovascular Surgery

Program of General Medical Care

This regional program for the City of Prague focuses on providing a complete range of general health care treatments, supported by a large outpatient department and related wards in the internal medical and surgical areas. Four independent hospital wards within this program offer patients from Prague and the surrounding area a complete range of diagnostic and therapeutic procedures for diseases related to internal medicine and general surgery. These are closely linked to the extensive services provided by the outpatient department with specialized clinics covering individual internal medical and surgical specializations.

Department of Internal Medicine

Department of Surgery

Department of Gynecology and Minimally Invasive Therapy

Department of ENT/Head and Neck Surgery

Basic data

	to 12. 31. 1999	to 12. 31. 2000	to 12. 31. 2001	growth
Staff	1,362	1,372	1,445	5 %
Beds	330	330	330	0 %
Number of patient admissions	13,208	14,026	14,968	6 %
Number of interventions	10,837	10,914	11,357	4 %
Number of outpatient examinations	639,804	669,100	716,319	7 %

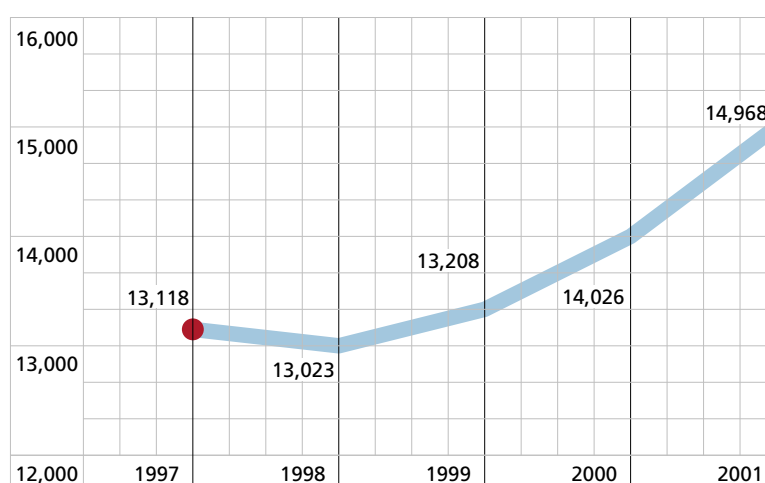
Number of admissions

	to 12. 31. 1999	to 12. 31. 2000	to 12. 31. 2001	growth
Neurology–Neurosurgery program	3,447	3,647	4,083	11 %
Cardiovascular program	5,375	5,674	5,780	2 %
General Medical Care program	4,978	5,319	5,794	8 %
Total	13,208	14,026	14,968	6 %

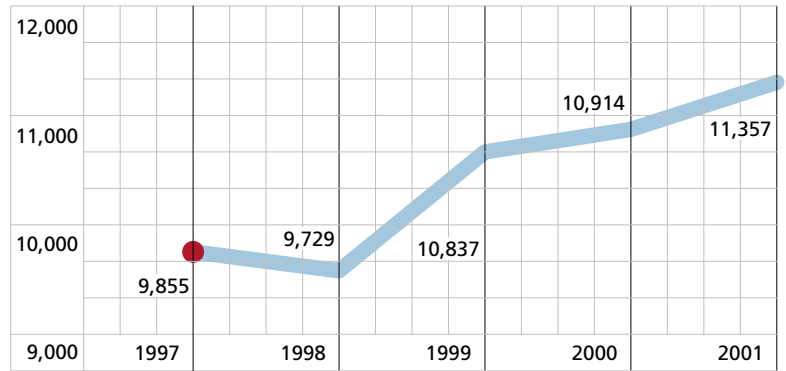
Number of beds to 12. 31. 2001

	beds	IC beds	total	%
Neurology–Neurosurgery program	80	25	105	32 %
Cardiovascular program	77	45	122	37 %
General Medical Care program	64	39	103	31 %
Total	221	109	330	100 %

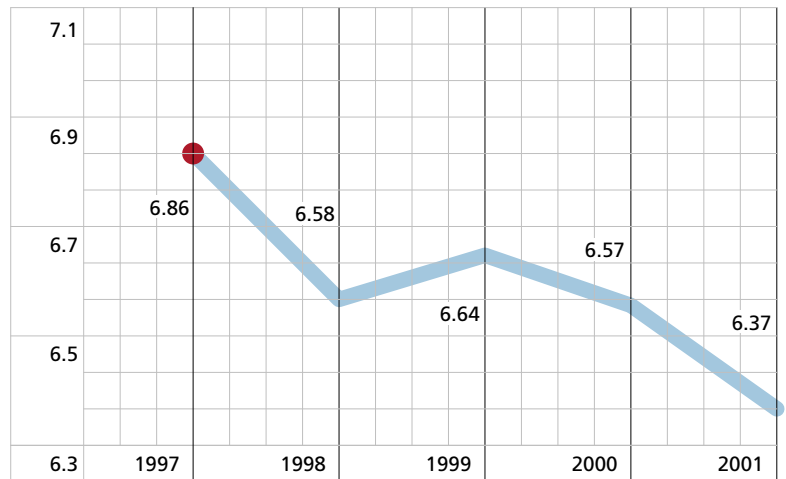
Number of admissions 1997 – 2001



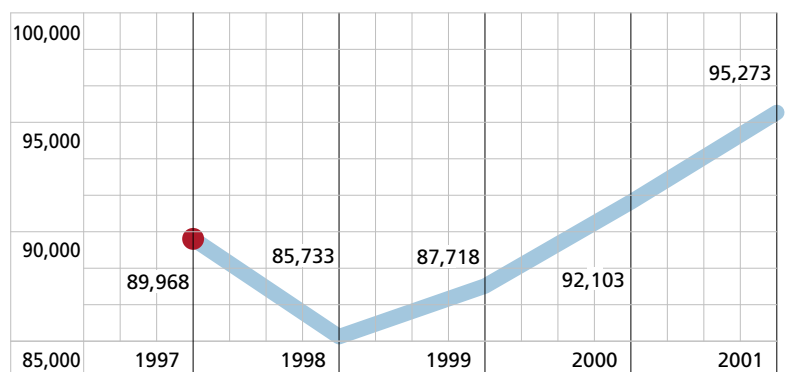
Number of interventions
(including outpatients) 1997 – 2001



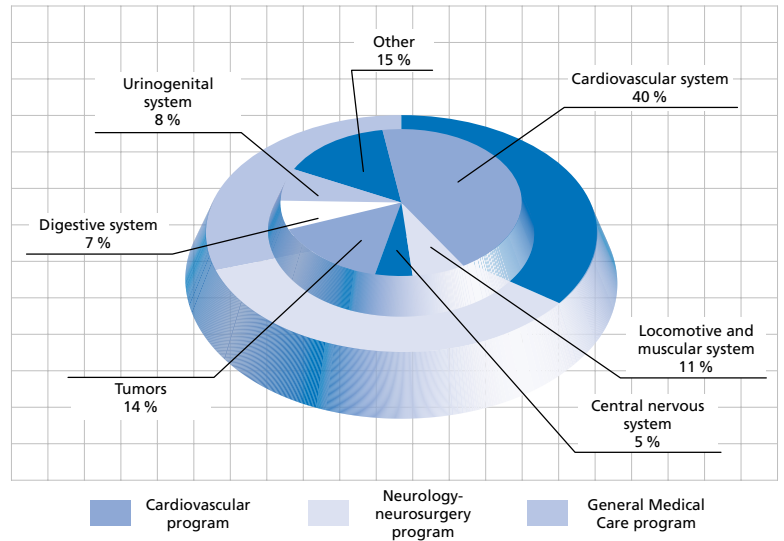
Average length of stay 1997 – 2001



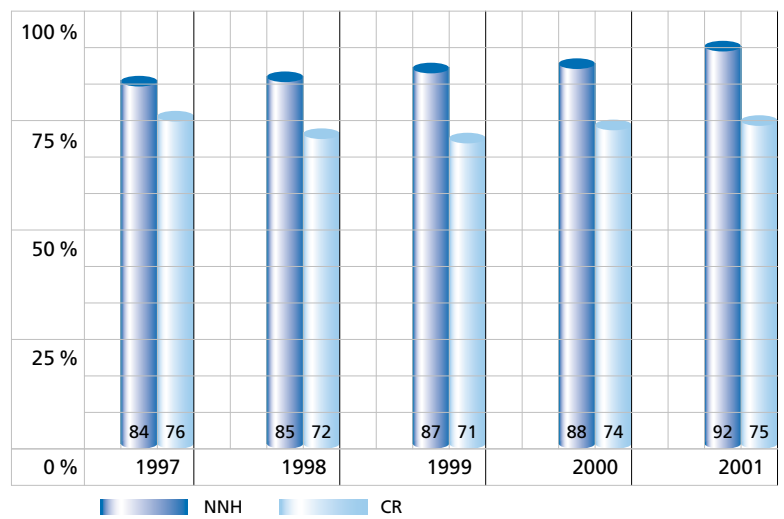
Number of days of treatment
1997 – 2001



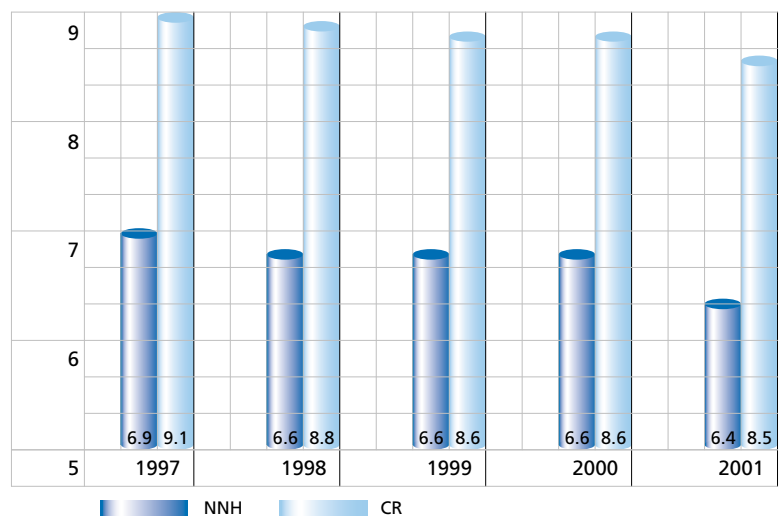
Structure of the main diagnoses in 2001



Bed utilization rate in % 1997 – 2001

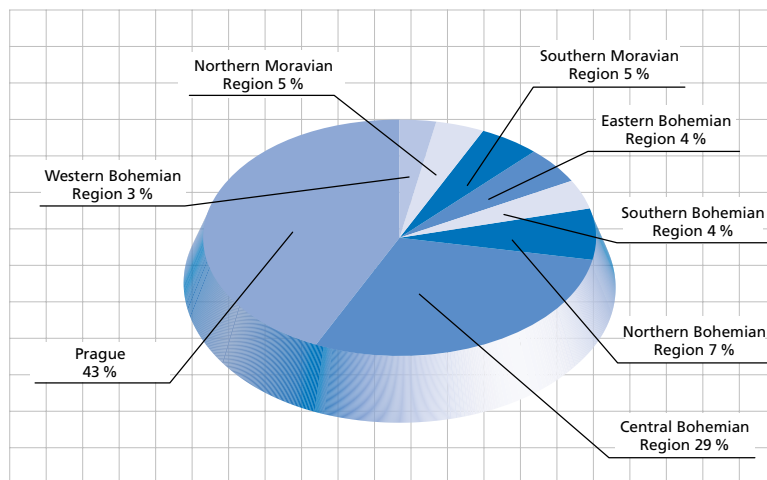


Average length of stay 1997 – 2001



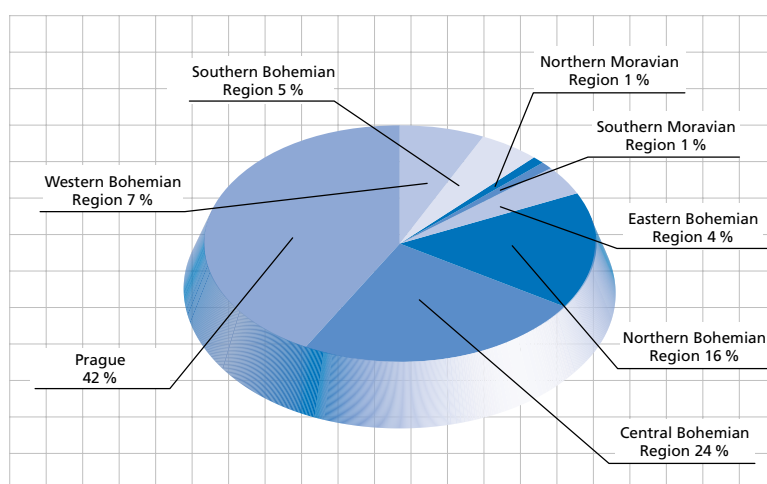
Origin of admitted patients
in 2001 by %

Neurology – Neurosurgical program



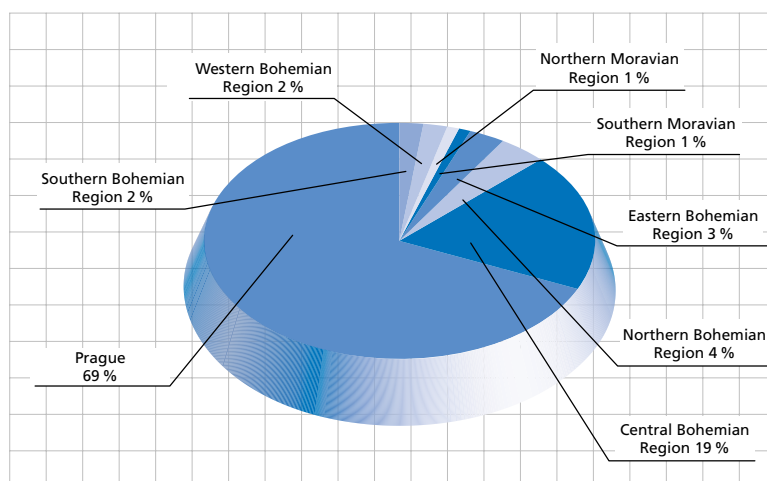
Origin of admitted patients
in 2001 by %

Cardiovascular program

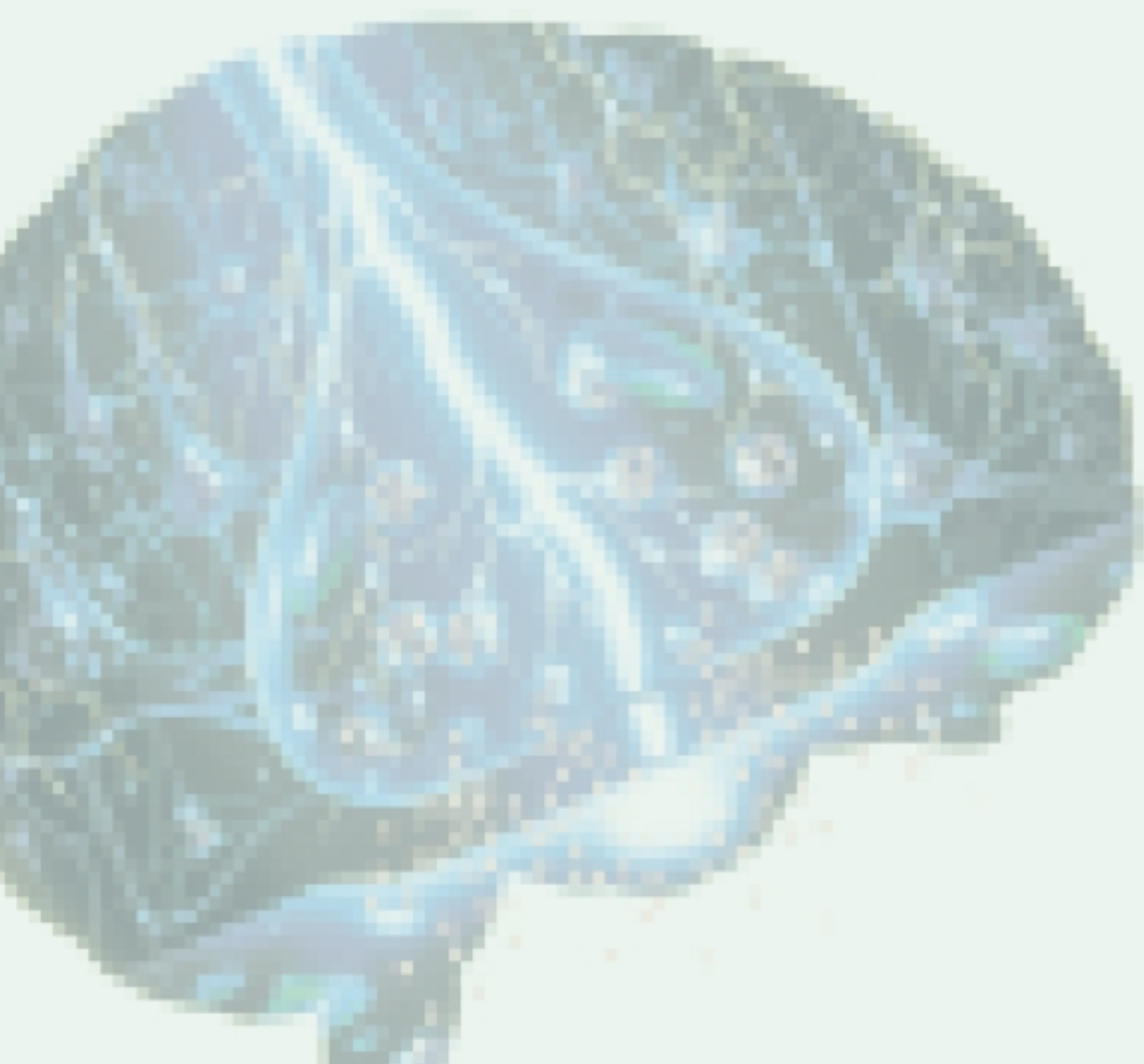


Origin of admitted patients
in 2001 by %

General Medical Care program



NEUROPROGRAM



DEPARTMENT OF NEUROLOGY

Head of Department:
Miroslav Kalina, M.D., Ph.D.

The department focuses on diagnostics and the non-surgical treatment of diseases of the brain, spinal cord, peripheral nerves and muscular apparatus, including special electrophysiological and ultrasonic diagnostic methods. It provides complex outpatient and ward care and includes a **Center for the treatment of epileptic patients**. It consists of two epilepsy counseling units, which serviced 1,792 patients during 2001, and the epilepsy monitoring unit (EMU), which, in addition to its other activities, carries out long-term monitoring and selection of patients for epileptosurgical treatment, and provides advanced counseling services to neurological centers in the Czech Republic. In 2001, 156 patients were admitted to the EMU, of whom 18 were monitored by invasive implantation of electrodes, 39 were referred for epileptosurgical intervention and 7 vagal stimulators were implanted. The Department of Neurology of the Na Homolce Hospital holds an accreditation from the Czech League against Epilepsy and VZP (the General Health Insurance Company) for the prescription and implementation of this type of therapy. Interdisciplinary cooperation between the Department of Neurosurgery and the Department of Stereotactic and Radiation Neurosurgery can sometimes allow for a choice between two treatment alternatives for patients suffering from forms of epilepsy which cannot be managed by drug therapy – between open surgery and gamma knife irradiation. Na Homolce Hospital is the only medical institution in the Czech Republic which can offer this.

The Special Intensive Care Unit for the treatment of acute and very serious neurological conditions also serves as a postgraduate training center for neurological intensive care. Outpatient care also covers, in addition to the outpatient clinic for the treatment of general neurological disorders, the **neurovascular clinic** and the **spinal counseling unit**, which also refers patients for surgical interventions to the spinal canal, as well as the **electromyographic laboratory** and the **transcranial Doppler ultrasound unit**.

Teaching

The Department of Neurology of Na Homolce Hospital is the teaching base of the Institute of Health Care Postgraduate Education for acute neurology, epileptology and electro-encephalography. Teaching by individual doctors in 2001 included both graduate and postgraduate courses, mainly consisting of lecturing and overseeing courses and fellowships for the Institute of Health Care Postgraduate Education in the areas listed above.

Research

The Department of Neurology participated in work on 3 grant projects in 2001 (see the annex on Grants).

Publications

Eight papers were published in professional journals abroad, one monograph was published in the Czech professional literature (Kalina, M. Vascular diseases of the brain, Prague, Triton, 2001) and seven papers appeared in the Czech journals.

Basic data

Number of beds	32
standard	27
intensive care	5
Number of physicians	12
Number of nurses	41
Number of outpatient examinations	13,654
epilepsy clinic examinations	1,792
Number of patient admissions	1,042
Number of days of treatment	8,119
standard	6,567
intensive care	1,552
Bed occupancy rate (as a %)	92 %
standard	92 %
intensive care	88 %
Average length of stay (in days)	7.79
standard	6.28
intensive care	7.68

DEPARTMENT OF NEUROSURGERY

Head of Department:
František Tovaryš, M.D., Ph.D.

In 2001, just as in previous years, the Department of Neurosurgery focused its attention on further improvements in its treatment of patients in four key areas of its activities, namely the **neurooncological**, **neurovascular**, **epileptosurgical** and **spinal programs**. Alongside the complex diagnostic, therapeutic and follow-up care provided in these priority areas, the department continued to develop minor neurosurgical specializations (neurotraumatology, neurosurgery of peripheral nerves, etc.) in collaboration with the other Neuroprogram hospital units. In 2001, the number of surgical interventions increased by 4% as compared to the previous year. The total number of 1,837 operations again places the Department of Neurology in Na Homolce Hospital in first place in the Czech Republic. Nonetheless, the breakdown of surgical operations by type continues to be stable, and the reduction in the numbers of operations for cerebral vascular aneurysm comes as a logical result of the growing trend towards treating this disease by endovascular means, that is by a minimally invasive intervention. Within the framework of the **neurooncological program**, 2001 saw further successful development of the experimental Boron Neutron Capture Therapy (BNCT), in association with the Nuclear Research Institute in Řež. A total of five patients suffering from brain tumors have now been operated on and irradiated with a neutron beam in the Czech Republic. The equipment of operation theaters with navigation systems was completed with the purchase of another station with a complete software package which allows cerebral and spinal surgery to be performed at a level comparable with the best available worldwide. Simultaneous navigational devices were also brought into routine operation in two operating theaters, as is customary elsewhere. The past year also saw the development of a program of surgical treatment of pathological processes in the functionally important centers of the brain (for instance in the center of motility) with the help of neuronavigation and detailed electrophysiological intraoperative scanning and monitoring. In the **neurovascular program**, an increasing tendency to treat selected cerebral vascular diseases by endovascular methods (and, where appropriate for multiple pathological processes, by a combination of surgery and endovascular intervention) was evident in the reduction in the number of open cerebral vascular operations over the past year. A new development was the introduction and routine use of intraoperative angiography for surgical management of some complicated cerebral aneurysms. In the **epileptosurgical program** the numbers of patients undergoing epileptosurgical operations declined in comparison with 2000, primarily because of the tightening of the criteria determining the need for surgical intervention. Resection interventions in 2001 used standard navigation techniques and the indication spectrum for extratemporal types of epilepsy was extended. The number of vagal stimulators applied for the treatment of epilepsy exceeded twenty. Within the framework of the **spinal program** there was further development in stabilization and fixation interventions for both traumatic and degenerative diseases of the whole length of the spine in 2001, with the possibility of large scale interventions on the rear and front parts of the spine (with thoracic or abdominal access available). In cooperation with the Department of Anesthesiology and Resuscitation, progress was made in 2001 in the application of spinal neurostimulation techniques to treat certain forms of spinal pain.

Teaching

In 2001, doctors from the Neurosurgical Department contributed to postgraduate teaching courses in neurosurgery for the Institute of Health Care Postgraduate Education, and in courses for medical students at the First Medical Faculty of Charles University.

Publications and Lectures

In terms of lecturing activities in 2001, doctors from the Neurosurgical Department delivered fifteen lectures at events held within the Czech Republic and three at events abroad. Two papers were published in the Czech professional journals.

In November, 2001, the Neurosurgical Department of Na Homolce Hospital hosted the first national course of navigated neurosurgery.

Basic data

Number of beds	65
standard	45
intensive care	8
intermediary	12
Number of physicians	15
Number of nurses	78
Number of outpatient examinations	7,913
Number of patient admissions	2,226
Number of days of treatment	19,391
Bed occupancy rate	89 %
Average length of stay (in days)	8.71

Breakdown of surgical interventions in 2001

Cerebral tumors	250
Cerebral vascular diseases	100
Spinal diseases including tumors	850
Injuries	60
Epileptosurgery	30
Miscellaneous	547
Total	1,837

Number of surgical interventions

1997	1998	1999	2000	2001
1,666	1,577	1,600	1,744	1,837

DEPARTMENT OF STEREOTACTIC AND RADIATION NEUROSURGERY

Head of Department:
Roman Liščák, M.D., Ph.D.

The clinical activity of the department is focused on non-invasive radiosurgical treatment of certain types of cerebral tumors, cerebral vascular malformations and functional diseases of the brain by use of the *Leksell gamma knife* as well as stereotactic and functional neurosurgery. In 2001, the outpatient clinic, in addition to providing consultation and follow-up care for the department's neurosurgical patients, also provided chemotherapy for patients with oncological diseases and specialized ophthalmologic care.

In 2001 the number of patients treated in the department increased as against the year 2000 by 30%, and compared to 1999 it was 44% higher. This meant that the number of surgical interventions in the department rose to a total of 956 (Leksell gamma knife irradiation and other operations). Among the patients who were irradiated using the Leksell gamma knife in 2001, were patients from the Ukraine, who were offered this treatment free of charge (child patients) under a tripartite agreement between Na Homolce Hospital, the Charta '77 Foundation and the Ukraine, or under the same conditions enjoyed by Czech patients (adults).

Also in 2001, the grant project for the Internal Grant Agency of the Ministry of Health of the Czech Republic, entitled "Radiosurgical Lesion of the Hippocampus in a Laboratory Rat by Leksell Gamma Knife: Relationship between the Radiation Dose and Functional and Structural Damage to the Hippocampus" was completed. In the same year a clinical research study of radiosurgical treatment of advanced glaucoma continued in collaboration with the Střešovice ÚVN Eye Clinic. The number of patients with ophthalmologic indications for irradiation by the Leksell gamma knife was 11% of all indications in the past year.

The Department of Stereotactic and Radiation Neurosurgery is the only center of its kind in the Czech Republic and in the Eastern Europe region. The quality of its work and the range of its experience has meant that the professional community has confirmed it as one of the most advanced centers of this type in the world.

Teaching

In 2001 physicians and other professionals from the Department of Stereotactic and Radiation Neurosurgery contributed to the undergraduate teaching program

for medical students studying at the First Medical Faculty of Charles University, for students in the Department of Biophysics in the Brno Technical University, and courses for the Department of Nuclear and Physical Engineering at the Czech Technical University in Prague, and for students of the College for Health Care in Prague. Eighty trainees attended the unit during 2001 in the context of their post-graduate studies, most frequently organized by the Institute of Health Care Postgraduate Education, as well as professional training programs organized by the International Atomic Energy Agency in Vienna.

Research

The Department of Stereotactic and Radiation Neurosurgery worked on 2 grant projects in 2001 (see annex on Grants).

Publications and Lectures

Physicians from the Department of Stereotactic and Radiation Neurosurgery gave eleven lectures at professional events organized within the Czech Republic and twelve lectures at congresses abroad. Ten papers were published in Czech professional journals and eight papers were published abroad.

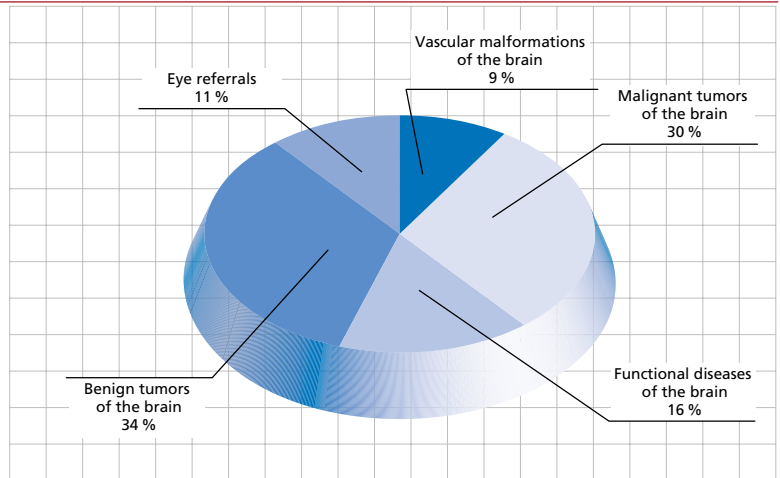
Basic data

Number of beds – short stay	8
Number of physicians	6
Number of other college graduates	2
Number of nurses	7
Hospital ward	
Number of patient admissions	815
Number of operations carried out with the Leksell gamma knife	735
Number of other stereotactic operations	221
Number of days of treatment	1,326
Bed occupancy rate	78 %
Average length of stay (in days)	1.63
Outpatient clinic	
Number of outpatient examinations	2,583
Number of written consultations	885
Number of patients visiting the oncological clinic	172
Number of patients visiting the eye clinic	176
Number of neurophysiological examinations	186

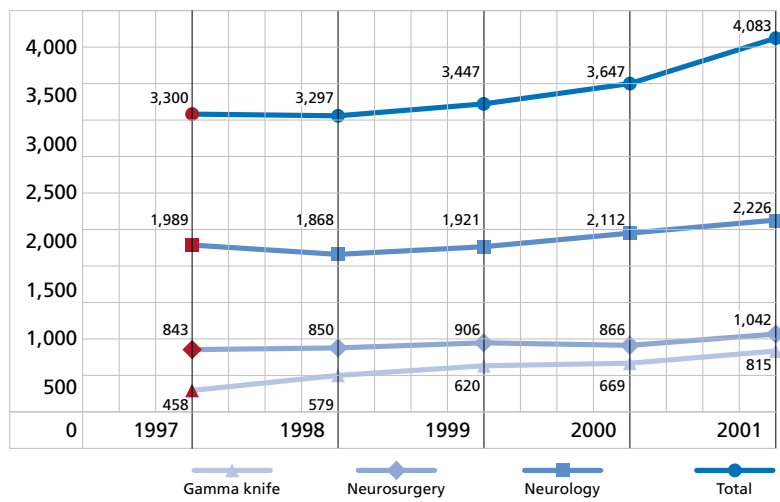
Number of patients treated with the Leksell gamma knife

1997	1998	1999	2000	2001
459	461	511	566	735

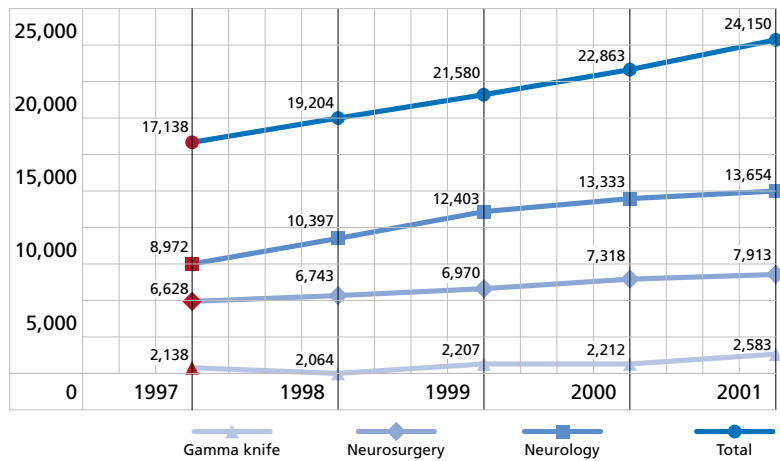
Radiosurgical treatment by Leksell gamma knife in 2001 broken down by individual indication



Development in the numbers of Neuroprogram patient admissions



Development in the numbers of Neuroprogram outpatient examinations





CARDIOVASCULAR PROGRAM

DEPARTMENT OF CARDIOLOGY

Head of Department:

Associate Profesor

Petr Niederle, M.D., Ph.D.

The clinical activities of the department cover the complete spectrum of preventive, diagnostic, therapeutic and rehabilitation methods for patients with manifest diseases of the heart and blood vessels, or with a high risk of incurring these diseases. In 2001, just as in previous years, several specialized areas were fully covered. **Acute cardiology** examines and treats patients in acute and severe condition by intensive care and monitoring of essential vital functions. **Invasive cardiology**, deals with diagnostics of diseases of the coronary arteries, including therapeutic interventions, as well as treating cardiac rhythm disorders. In addition to routine activities (electrophysiological examinations of the electric conductive system of the heart, the implantation of pacemakers and cardioverter-defibrillators, and catheterization radiofrequency ablations), a whole range of completely new electrophysiological methods were introduced in 2001 – primarily, and, **FOR THE FIRST TIME IN THE CZECH REPUBLIC, A PERCUTANEOUS EPICARDIAL ABLATION WAS CARRIED OUT**, and, again for the first time in the republic, **PREVENTIVE ALGORITHMS FOR PAROXYSMAL ATRIAL FIBRILLATION** were performed, a cryoablation was carried out, only the seventh of its kind in Europe and also RF ablation for atrial fibrillation (insulation of pulmonary veins – CARTO) and a research application of Doppler tissue analysis during desynchronization therapy for cardiac failure (biventricular stimulation). 2001 saw the opening of operations in the newly reconstructed catheterization unit with an equipped angioelectrophysiological theater. **Non-invasive cardiology** continued to offer patients a wide range of diagnostics of cardiovascular diseases during this period, including ultrasound, electrocardiography exercise tests and echocardiography tests, as well as long-term monitoring of cardiac rhythm and blood pressure etc. **Clinical cardiology** traditionally included diagnostics and treatment of cardiovascular diseases in both hospital wards and a specialized outpatient ward, and participated in the final treatment and physiotherapy for acute conditions and in the treatment of chronic diseases of the circulatory system.

Teaching

In 2001 the Department of Cardiology, in collaboration with the Institute of Health Care Postgraduate Education, participated in postgraduate courses for doctors in echocardiography. In the context of undergraduate studies, the department organized a block training course for students of the 3rd Medical Faculty of Charles University. The department has a accreditation from the Czech Chamber of Medicine for postgraduate teaching in the specialized areas of invasive cardiology diagnostics, interventional cardiology, long-term cardiostimulation, cardiac electrophysiology and catheterization ablations, and esophageal echocardiography.

Publications and lectures

Physicians from the Department of Cardiology published a total of 28 papers in Czech professional journals, and one paper in a foreign professional publication. In April 2001, the Department of Cardiology held its traditional afternoon of lectures for cardiologists, interns and general practitioners entitled “Hot-line to cardiology III.” and in November 2001 held its, also traditional, two-day seminar “Cardiological days at Na Homolce” in collaboration with the committee of the Czech Cardiology Society.

Basic data

Number of beds	49
standard	27
intensive care	18
day care clinic	4
Number of physicians	20
Number of nurses	73
Number of outpatient examinations	24,988
Number of patient admissions	3,058
+ cardiac electrophysiology day care clinic	1,212
Number of days of treatment	14,814
standard	9,175
intensive care	5,639
Bed occupancy rate (as a %)	96 %
standard	97 %
intensive care	95 %
Average length of stay (in days)	4.84
standard	5.02
intensive care	3.49

Specialized interventions in 2001

Angiography Center		
Coronarography (SKG)		1,482
Ventriculography (LVG)		601
Catheterization R		7
Catheterization R-L		62
PTCA		551
Stents		
	number of patients	460
	number of stents	563
Bulbus aortography		42
Alcohol septal ablation		1
Occlusion of ventricular septal defect (Amplatz)		3
IVUS		3
Other angio and specialized interventions		98
Complications		
	fatal	2
	non-Q myocardial infarction after PTCA	1
	emergency bypass	2
	embolism in CNS	0
Electrophysiology Center		
Primary implantation and exchange of pacemakers		777
Electrophysiology (EFV)		521
Implantations and reimplantations of ICDs		61
Biventricular stimulation		27
RF ablations in total		330
Extraction of electrodes		42
Right ventricle biopsy		7
Implantation of IV port for the administration of drugs		3
Implantable arrhythmia monitor (REVEAL)		11
Spinal neurostimulation		7
Total		1,786
Complications		
	pneumothorax	7
	A – V fistula	1
	fatal	1
Outpatient clinic		
General cardiology		10,086
Pacemakers		6 665
Angiology		1,550
Non-invasive cardiology		
Echocardiography		3,405
	esophagus examination	424
	dobutamine load	9
Total		3,838
ECG exercise test		1,513
Holter EKG		1,084
Blood pressure monitoring		1,067
TT test		36
SPECT perfusion with ergometry		219

DEPARTMENT OF CARDIOVASCULAR SURGERY

Head of Department:
Pavel Šebesta, M.D., Ph.D.

The department provides surgical and angioradiological invasive diagnostics and therapy of vascular diseases, especially in cases of narrowing or blockage of the blood vessels due to atherosclerotic changes. As in previous years, **operations on the arteries supplying the brain** constituted the group of surgical interventions most frequently performed. New local anesthetic treatment techniques were applied to this operation in 2001, where the intervention takes place on a conscious patient. The range of surgical interventions also included **operations of the thoracic and abdominal aorta including surgical and endovascular treatment of aneurysms, as well as reconstruction of the pelvic arteries and arteries to the lower limbs**. Other types of intervention mainly involved **operations on blockages of the coronary arteries**.

The Department of Cardiovascular Surgery in Na Homolce Hospital is the largest center in the Czech Republic, independently focusing on problems involving vascular surgery, and a training center in vascular surgery for postgraduate students at the Institute of Health Care Postgraduate Education. It also functions as the ultimate center for consultations in cases of serious and complicated conditions in vascular surgery. During last year, close professional cooperation was maintained with the Department of Adult Cardiosurgery of the University Teaching Hospital in Motol with direct mutual participation in interventions carried out in both institutions. International collaboration with the University Hospital in Maastricht focused on problems involved in the surgical treatment of thoracoabdominal aortic aneurysms.

Teaching

In 2001 the Department of Cardiovascular Surgery continued to provide an undergraduate teaching program for students of the Second Medical Faculty at Charles University and participated in postgraduate teaching for trainees in the field of vascular surgery in courses for the Institute of Health Care Postgraduate Education.

Lectures and publications

In 2001, surgeons from the Department of Cardiovascular Surgery gave a total of nine lectures at seminars held in the Czech Republic and nine lectures at international seminars abroad. Twelve papers were published in Czech professional publications.

Basic data

Number of beds	73
standard	50
intensive care	11
intermediary	12
Number of physicians	17
Number of nurses	114
Number of outpatient examinations	10,425
Number of patient admissions	2,722
Number of days of treatment (in days)	19,165
standard	12,308
intensive care	3,308
intermediary	3,549
Bed occupancy rate (as a %)	86 %
standard	85 %
intensive care	88 %
intermediary	87 %
Average length of stay (in days)	7.04
standard	3.25
intensive care	2.80
intermediary	2.52

Total number of vascular reconstructions

1997	1998	1999	2000	2001
1,214	1,412	1,443	1,345	1,349

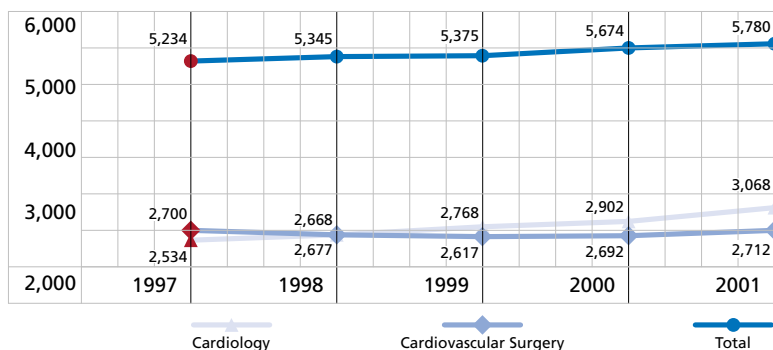
Breakdown of vascular and general surgical interventions – 2001

Thoracoabdominal aneurysms	6
Stent implants	40
Shank reconstructions	44
Pelvic reconstructions	65
Varicose vein operations	76
Acute revascularizations	87
Abdominal aneurysms	96
Aortofemoral reconstructions	100
Other vascular operations	156
Femoropopliteal reconstructions	157
Endarterectomies	258

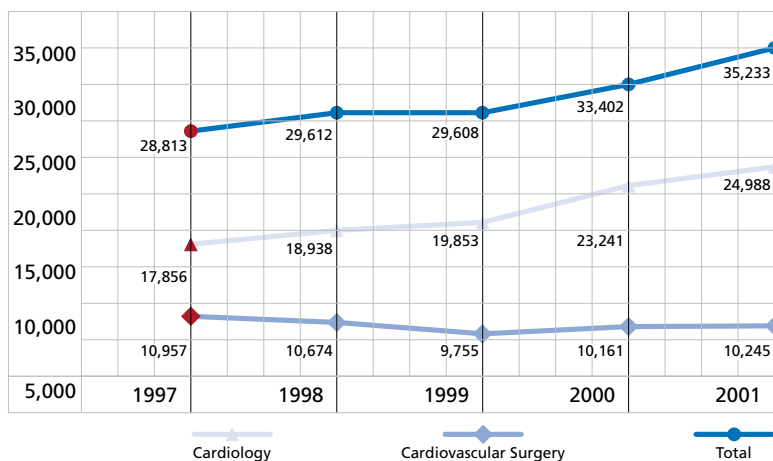
Heart surgery – 2001

Myocardial revascularization	240
Aortal valve replacement	14
Mitral valve replacement	3
Combined interventions (CABG and Ao)	4

Development in the numbers of Cardiovascular Program patient admissions



Development in the numbers of Cardiovascular Program outpatient examinations





GENERAL
MEDICAL
CARE
PROGRAM

DEPARTMENT OF INTERNAL MEDICINE

Head of Department:
Associate Professor Jan Kábrt, M.D., Ph.D.

The activities of the department consist of providing diagnostic methods and conservative treatment for internal diseases, with an important subspecialization in the field of **artificial nutrition and metabolic care, gastroenterology, diabetology and endocrinology**. The intensive care unit is dedicated for patients with acute internal diseases.

Teaching

In 2001, the Department of Internal Medicine at Na Homolce Hospital provided teaching courses for undergraduate medical students from the First and Third Medical Faculties of Charles University, and postgraduate courses comprising diploma programs in internal medicine and general medicine. The department has a accreditation from the Czech Medical Chamber as a center for postgraduate studies in the specialized areas of artificial nutrition and metabolic care.

Lectures and publications

Physicians from the Department of Internal Medicine delivered a total of twenty-four lectures at seminars held in the Czech Republic during 2001. Nine papers were published in the Czech medical press, and two papers in professional publications abroad.

Basic data

Number of beds	29
standard	21
intensive care	8
Number of physicians	21
Number of nurses	34
Number of outpatient examinations	44,515
Internal medicine outpatient clinic	21,621
General practice outpatient clinic	12,856
Gastroenterology outpatient clinic	14,687
Number of patients admitted	1,028
Number of days of treatment	9,343
standard	6,740
intensive care	2,603
Bed occupancy rate (as a %)	93 %
standard	93 %
intensive care	93 %
Average length of stay (in days)	9.09
standard	7.11
intensive care	7.15

Specialized interventions in 2001

Ultrasonography	38,797
Endoscopy	4,297
ERCP	210
Endoscopic sonography	73
PEG	29

DEPARTMENT OF SURGERY

Head of Department: Pavel Beňo, M.D.

The spectrum of the department's services covers diagnostics and surgical treatment in the areas of **general surgery, orthopedics and urology**, while the outpatient clinic also includes **counseling centers for mammology, phlebology, abdominal surgery, an orthopedic outpatients clinic, a urological clinic and a clinic for minor surgical interventions**.

In the area of general surgery, operations, just as in previous years, included abdominal and thoracic surgery using minimally invasive methods in all areas of laparoscopic surgery and the development of one-day surgery, as well as oncological surgery of the digestive system and mammology. In 2001 the surgical department fully developed hernia operating techniques using Trabucco, PHMS and laparoscopic IPOM plastic surgery, particularly in one-day surgery. Total proficiency was achieved in new surgical techniques for anal prolapses and hemorrhoids and the department was selected to be one of the five centers in the Czech

Republic for a pilot study of these surgical techniques. Laparoscopic surgery was extended to cover the most demanding interventions on the colon, rectum and gastrointestinal tract using the newly purchased **HARMONIC SCALPEL**. Partial interventions to the breast were also extended. Orthopedic surgery last year included total replacement of joints, including shoulder and ankle joints, as well as reimplantation of joints. An **ORTHOPEDIC NAVIGATION** system was newly introduced into surgery on large joints in 2001. The orthopedic center was the only one in the Czech Republic last year to continue to carry out bilateral total endoprostheses of ankle joints and made further developments in modern methods of hallux surgery (Swanson endoprosthesis in the hallux rigidus as a routine intervention, and Stoffel osteotomy in the hallux vagus). Utilization of a bone bank allowed progress to be made in a wide range of orthopedic and elective traumatological operations and other minimally invasive surgical techniques. In the area of urology, just as in the previous period, open and endoscopic interventions were performed on the urinary system, including urological oncological surgery, using modern laparoscopic, cystoscopic and ureterorenoscopic surgical methods. Endoscopic urethrotomy was included in the range of routine surgical interventions and ureterorenoscopic techniques were fully developed.

Teaching

In 2001, surgeons from the Department of Surgery participated in undergraduate teaching programs for students at the First and Third Medical Faculties at Charles University and in postgraduate training for physicians in the field of surgery within the framework of the educational program organized by the Institute of Health Care Postgraduate Education. The Department of Surgery of Na Homolce Hospital is a reference and training center in the Czech Republic for ankle joint surgery.

Publications

Five papers by surgeons from the Department of Surgery appeared in Czech publications in 2001.

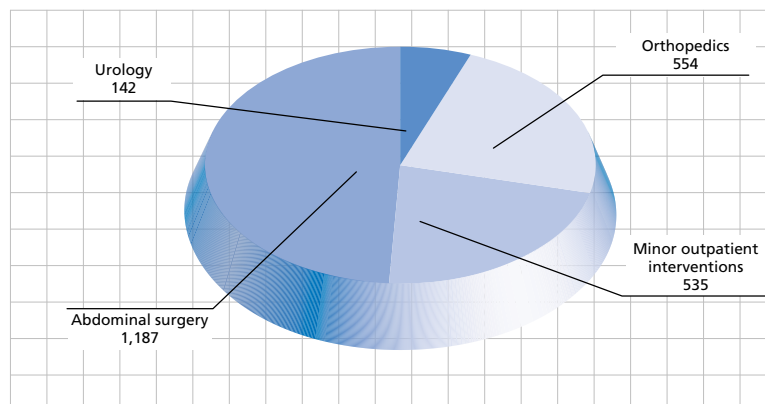
Basic data

Number of beds	31
standard	16
intensive care	15
Number of physicians	15
Number of nurses	43
Number of outpatient examinations	33,952
surgical	18,955
orthopedic	7,729
urological	7,268
Number of patients admissions	1,874
Number of surgical interventions	1,883
minor outpatient interventions	535
Number of days of treatment	9,431
standard	7,760
intensive care	1,671
Bed occupancy rate (as a %)	98 %
standard	99 %
intensive care	94 %
Average length of stay (in days)	5.03
standard	3.68
intensive care	4.37

Number of admissions by diagnosis in 2001

	2000	2001
Neoplasms	271	283
Diseases of the digestive system	754	757
Diseases of the urinogenital system	122	156
Diseases of the muscular, skeletal and connective systems	270	301
Miscellaneous	363	377
total	1,780	1,874

Number of surgical interventions in year 2001



DEPARTMENT OF GYNECOLOGY AND MINIMALLY INVASIVE THERAPY

Head of Department:
Pavel Bartoš, M.D., M MED

The activities of the department cover diagnostics and surgical treatment of gynecological diseases. The complete range of pelvic and gynecological surgery was concentrated into four clinical programs last year. **The oncological and oncolaparoscopic program** includes traditional and oncolaparoscopic radical surgery for malignant tumors of the cervix, ovaries, endometrium, vulva and collaboration with breast surgery. Here, surgical techniques were increased in 2001 to incorporate the ultrasound aspirating tissue dissector (CUSA), which made oncolaparoscopic surgery considerably more precise and faster. The scale of laparoscopic electro-surgery was also expanded. The introduction of these new techniques has positioned the department among the best equipped centers for radical and advanced laparoscopic surgery in the Czech Republic. In 2001 the department completed research and development of laparoscopic management of radical hysterectomy with pelvic and paraaortal lymphadenectomy for cervical cancer from a totally laparoscopic approach using CUSA. **Urogynecological and reconstructive surgery** covers surgical treatment of incontinence and complex surgical procedures in prolapses of the pelvic organs and incontinence, where emphasis is placed on finding a laparoscopic solution to the problems which arise. In 2001 research and development of a global laparoscopic solution to total prolapse of the female organs, including incontinence, using CUSA and techniques involving a network of prostheses and tackers. Development of techniques in laparoscopic extraperitoneal slings for female incontinence was also completed. **General gynecological surgery** deals with surgery for endometriosis, infertility, myomatosis of the uterus, adnextumors and cysts, as well as problems such as post-operational adhesion, chronic pelvic pain, inflammation and congenital developmental disorders of the uterus, in particular aplasia of the uterus and vagina. In this area, research and development of laparoscopic reconstruction of the neovagina in congenital aplasia of the uterus and vagina was completed last year. **The hysteroscopic program** includes diagnostic and surgical endoscopy of the cavity of the uterus for cases of dysfunctional hemorrhage, polypoid, congenital defects of the uterus, adhesion, cancer of the uterus and submucous myomas. In total, **during 2001 90.2 % of all surgery** including oncological interventions **was carried out laparoscopically** or hysteroscopically, i.e. by so-called minimally invasive methods.

Teaching

The Department of Gynecology and Minimally Invasive Therapy participates in the continuing education programs of the Institute of Health Care Postgraduate Education and is also a teaching center for laparoscopic gynecology and postgraduate medical training. Four training courses in hysteroscopy were organized for the Endoscopy Section of the Czech Society for Gynecology and Obstetrics.

Publications and lectures

During 2001, surgeons from the department delivered a total of seventeen lectures, of which two were delivered at international seminars abroad. Five papers were published in Czech professional journals, and one appeared in a foreign professional publication.

Basic data

Number of beds	23
standard	19
intensive care	4
Number of physicians	7
Number of nurses	24
Number of outpatient examinations	21,580
Total number of surgical interventions	1,943
extensive surgical operations	1,120
of which, for malignant tumors	101
minor surgical operations	823
Number of days of treatment	6,939
standard	5,601
intensive care	1,338
Bed occupancy rate (as a %)	97 %
standard	96 %
intensive care	99 %
Average length of stay (in days)	3.62
standard	2.14
intensive care	1.88

DEPARTMENT OF ENT / HEAD AND NECK SURGERY

Head of Department:
Jan Paska, M.D.

The department specializes in diagnostics and conservative and surgical treatment of diseases of the ears, nose and throat. Surgical interventions in 2001 included so-called **one-day surgery**, as well as **extensive surgical interventions**, focused on complete oncological surgery in the field of ENT, cophosurgical interventions, surgery to the nose and paranasal cavities including endoscopic interventions, complex surgery of the thyroid gland, adenotomy, as well as plastic surgery on the head and neck, operations on the soft tissues of the head and neck and surgery after injuries to the facial bones using the microplates technology. The number of multidisciplinary surgical interventions rose during the period under consideration, primarily in collaboration with the disciplines of neurosurgery and stomatology, as did the number of extensive interventions carried out under general anesthesia.

The department's outpatient section provided a complex range of services in 2001, including specialized counseling in **oncology, otoneurology, cophosurgery, otoprosthesis, a rhinopathy clinic, a clinic for thyroid disorders, a counseling service for sleep and snoring disorders and a clinic for corrective nose surgery**. The department also comprises a **specialized pediatric practice**.

Teaching

In 2001 physicians from the Department of ENT at Na Homolce Hospital participated in undergraduate teaching courses for the Third Medical Faculty at Charles University.

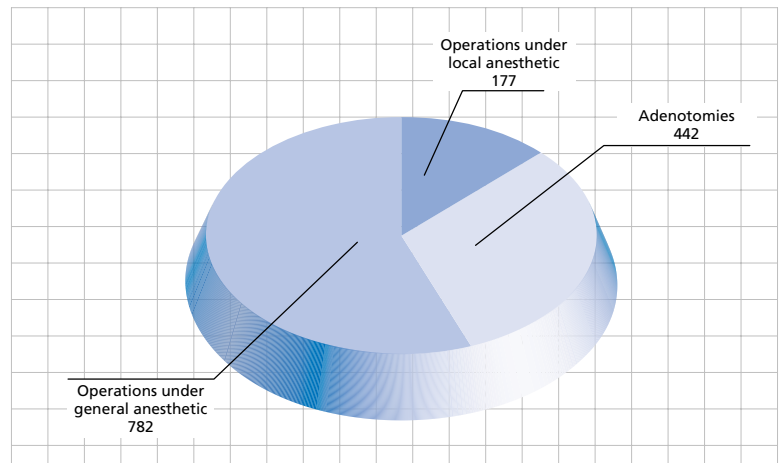
Publications and lectures

Physicians from the department delivered a total of eighteen lectures in professional seminars and congresses in the field of ENT and head and neck surgery during 2001. Nine papers were published in Czech professional journals over the same period.

Basic data

Number of beds	10
standard	8
intensive care	2
Number of physicians	8
Number of nurses	20
Number of outpatient examinations	33,542
Number of patient admissions	876
Number of surgical interventions	1,401
Number of days of treatment	3,564
standard	2,878
intensive care	686
Bed occupancy rate (as a %)	102 %
standard	103 %
intensive care	96 %
Average length of stay (in days)	4.07
standard	3.55
intensive care	4.70

Number of surgical interventions in 2001



DEPARTMENT OF NEPHROLOGY

Head of Department:
Lukáš Svoboda, M.D.

The Department of Nephrology provides outpatient nephrological care, a 24-hour emergency transplantation unit for patients on the waiting list for kidney transplants from donor cadavers and the entire spectrum of hemopurification therapy for chronic and acute patients. Part of the department comprises the nephrological outpatients clinic for diagnostics and treatment of kidney diseases, a counseling unit for ischaemic disorders of the kidney and an outpatients clinic for peritoneal dialysis. The hemodialysis center is open non-stop and has ten dialysis units including one box for patients suffering from hepatitis B and one box for patients with hepatitis C. Complete continuous dialysis care covers hemodialysis, hemodiafiltration, hemofiltration, plasmaphoresis, hemoperfusion and continual peritoneal dialysis which are provided for outpatients. In 2001 the hemodialysis center was newly equipped with a dialysis monitor providing HDF possibilities for online therapy, new methods were implemented to measure the temperature balance during dialysis, for non-invasive measurement of re-circulation, to monitor the adequacy of therapy using the OCM module and to measure changes in intravascular volume. Automatic peritoneal dialysis was also newly introduced. An important part of the department's activities is the long-term organization of rehabilitation and sports activities for dialysis and transplant patients, which is carried out by the Hospital Sports Club through the Czech Sporting Association. The club was established in collaboration with the Na Homolce Hospital hemodialysis center and another aspect of its work is the organization of winter and summer sporting activities, including trips abroad, arranging for sporting members to participate in international competitions, contributing to the creation of an integrated rehabilitation program for dialysis and transplant patients, etc.

Teaching

In 2001, the Department of Nephrology of Na Homolce Hospital participated in practical training courses for the Medea health care school and contributed to the undergraduate teaching program in physiotherapy at the Faculty of Sports of Charles University and in postgraduate training in nephrology within the framework of courses provided by the Institute of Health Care Postgraduate Education.

Publications and lectures

In 2001 physicians from the Department of Nephrology delivered seven lectures at seminars within the Czech Republic and two lectures at international events abroad.

Basic data

Number of full-time physicians	3
Number of external physicians on emergency call	4
Number of nurses	18
Number of nephrology examinations	1,103
Number of dialysis units	10
of which 1x box for patient suffering from hepatitis B	
of which 1x box for patient suffering from hepatitis C	
Number of dialysis monitors	11
Number of monitors for continuous hemopurification methods	2

Interventions performed in 2001

Hemodialysis	7,074
of which, in the acute program	267
Hemodiafiltration	186
Hemofiltration	241
Plasmaphoresis	23
Hemoperfusion	1
Continuous outpatient peritoneal dialysis treatment	2 patients
Mortality (the Czech average is 20 %, the European average is over 20 %)	8.6 %
Number of patients treated over 80 years of age	17 %

DEPARTMENT OF ANESTHESIOLOGY AND RESUSCITATION (ARO)

Head of Department: Milan Ročeň, M.D.

The Department of Anesthesiology and Resuscitation provides comprehensive care for patients during operations and during the pre- and postoperative periods, including the administration of general anesthesia and the more demanding types of local anesthesia. The Resuscitation unit provides comprehensive diagnostics and treatment for patients whose overall condition of general health, caused by disorders of their basic vital functions, is life-threatening and requires the highest level of medical care. The overwhelming majority of cases are patients with injuries of the brain and cranium. The modern facilities of the center include a hyperbaric chamber offering the possibility of artificial pulmonary ventilation and other special methods of resuscitation care. The outpatient clinic for pain management deals with the problems of patients in chronic pain.

Teaching

In 2001, physicians from the Department of Anesthesiology and Resuscitation participated in postgraduate teaching and diploma courses at the Institute of Health Care Postgraduate Education in the disciplines of anesthesiology and resuscitation as well as teaching in the department of emergency care at the Institute of Health Care Postgraduate Education. They also contributed to postgraduate courses at the Institute dealing with problems of anesthesia in vascular and thoracic surgery and anesthetics in cardiosurgery. Within the framework of courses for the Czech Medical Chamber in Prague, they delivered lectures to general practitioners on the problems involved in acute and chronic pain.

Publications and lectures

In 2001, physicians from the Department of Anesthesiology and Resuscitation delivered a total of twenty-three lectures at professional events, of which six were delivered at seminars abroad. They published twelve papers in Czech professional journals.

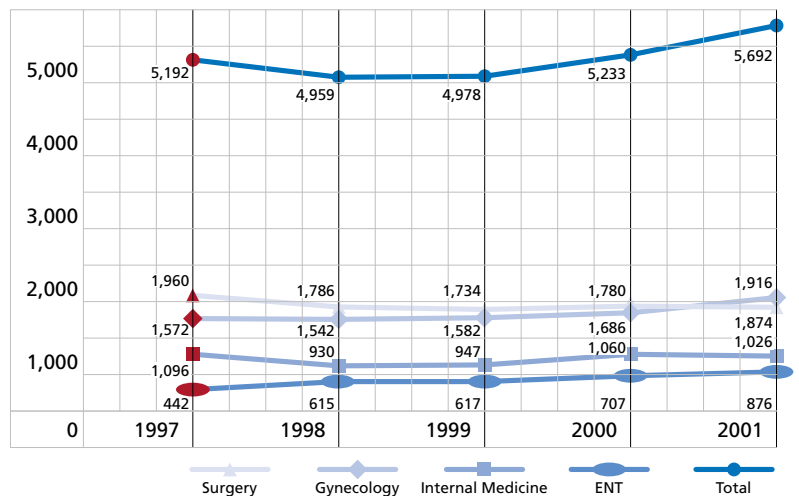
Basic data

Number of beds	10
Number of physicians	23
Number of nurses	60
Number of outpatient examinations	1,137
Number of patient admissions	93
Number of days of treatment	3,181
Bed occupancy rate (as a %)	95 %
Average length of stay (in days)	31.5
Unit structure	
	2 resuscitation units
	6 central operating theaters (neurosurgery, cardiovascular surgery)
	3 operating theaters for general surgery
	2 operating theaters for gynecology
	6 other operating theaters
	outpatient clinic for pain management

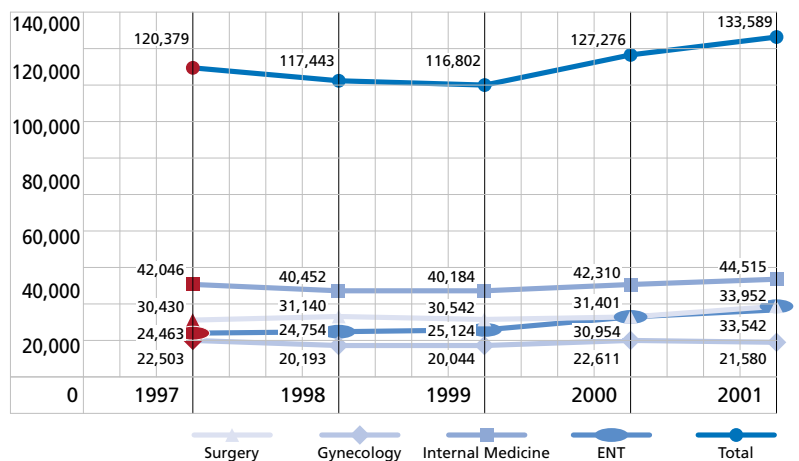
Breakdown of anesthesiology interventions in 2001

Total numbers anesthetized	8,617
Numbers anesthetized for interventions lasting more than 2 hours	5,297
Numbers of local anesthetics	889
Numbers of outpatients anesthetized	739
Numbers anesthetized during emergency interventions	1,006
Numbers of other anesthetics administered	686

Development in the numbers of General Medical Care Program patient admissions



Development in the numbers of General Medical Care Program outpatient examinations





ACTIVITIES
OF THE COMPLEMENTARY
SERVICES

Complementary services

Department of Radiodiagnostics
Department of Nuclear Medicine
Department of Clinical Biochemistry, Hematology
and Immunology
Department of Clinical Microbiology
Department of Pathology
Department of Central Sterilization and Hygiene

DEPARTMENT OF RADIODIAGNOSTICS

Head of Department:
Ladislava Janoušková, M.D.

During 2001 the department provided services both to Na Homolce Hospital and also to other health care facilities. The scope of its activities included diagnostic examination in all areas of radiodiagnostics, with emphasis on diseases of the nervous, locomotive and cardiovascular systems and also on vascular and non-vascular interventions. In the area of **vascular methods** the program of implantation of stent-grafts in aneurysms of the abdominal aorta and pelvic circulation continued over the past year, and also to a greater extent in the thoracic aorta. The Na Homolce Hospital is one of only four centers in the Czech Republic where these interventions are performed. The program of endovascular treatment of cerebral aneurysms with GDC was also continued, and this treatment was also implemented on more peripheral aneurysms. In the same way, treatment of local intracranial thrombolysis in acute closure of the cerebral arteries continued. A new intervention was the first angioplastic stenosis of the cerebral arteries. In **computer tomography methods** (CT), apart from standard examination methods, a new algorithm was introduced for the examination of the otocranium and the inner ear as well as HRCT examination of pulmonary parenchyma. The first vertebroplastic operation under CT control was also performed on patients with compress fractures of the vertebra. In **magnetic resonance imaging** faster and more efficient methods were introduced for the detection of cerebrospinal fluid flow rates, examination of small joints was extended and techniques for performing cardiac examinations and MR myelography were perfected. Measurement of the volume of tumors treated with the Leksell gamma knife was brought into routine operation. During the final quarter of 2001, the Department of Radiodiagnostics was newly furnished with more magnetic resonance imaging equipment used mainly for imaging the area of peripheral arterial circulation, as well as the heart muscle, brain and spinal cord. In **ultrasonography**, experience with Doppler evaluation of blood vessels and the determination of appropriate indication and diagnostic criteria served in selected cases of tight carotid stenosis as a sufficient recommendation for surgery on the basis of the ultrasonography findings alone, without angiography. In 2001 a total of 24 % of patients with ACI stenosis were operated on the basis of ultrasonography findings only, with a 98.5% correlation with the findings during surgery. In 2001 the ultrasonography unit was equipped with new ultrasound equipment for abdominal and mammological diagnostics and for examination of patients in the intensive care unit.

Teaching

Physicians from the Department of Radiodiagnostics at Na Homolce Hospital participated in undergraduate education programs for the First and Third Medical Faculties at Charles University and in postgraduate teaching within the framework of courses provided by the Institute of Health Care Postgraduate Education in 2001.

Research

In 2001 the Department of Radiodiagnostics participated in 2 grant projects (see annex on Grants).

Publications and lectures

In 2001 physicians from the Department of Radiodiagnostics published six papers in professional journals, of which two were published abroad. Twenty lectures were delivered last year at seminars in the Czech Republic and two lectures were delivered at congresses abroad.

Basic data	Number of physicians	16
	Number of laboratory technicians	26
	Number of nurses	6
	Technical equipment	
	Angiography Center	
		1 x Multistar Siemens
		1 x Toshiba CAS
		1 x theater OEC 9700
	CT unit	1 x Siemens Somatom Plus 4 1 x Siemens DRH
MR unit	1 x Magnetom Impact Expert 1 T 1 x Magnetom Symphony 1,5 T	
USG unit	1 x Toshiba 270 1 x Toshiba Eccocee 1 x Vingmed System V	
Mammography	1 x Lorad M-IV	
Radioscopy-radiography unit	3 x radioscopy – radiographic units 1 x stationary radiographic machine 4 x mobile radioscopy - radiographic machines with C branch 8 x mobile radiographic machines to cover basic RDG diagnostics	

Specialized therapeutic interventions in 2001	PTA	467
	Implantation of vascular stents	173
	Implantation of stentgrafts into abdominal and thoracic aortal aneurysms	61
	Endovascular treatment of cerebral aneurysms with GDC	39
	Local intraarterial thrombolysis for closure of the arteries of the lower limbs	34
	Local intraarterial thrombolysis in cerebral vascular events	5
	Vascular embolization and interventions to the head and spinal column	24
	CT-guided radicular injections	317
	Chemical sympathectomy	86
	Drainage of abscesses and cysts, guided biopses	57

Selected radiodiagnostic examinations in 2001	Computer tomography	8,844
	Magnetic resonance	9,096
	Angiography of the pelvis and lower limbs	9,281
	Cerebral angiography	5,730
	Ultrasound examinations	20,009
	Mammography	4,815
	Total number of all RDG examinations	108,607

DEPARTMENT OF NUCLEAR MEDICINE/PET CENTER

Head of Department:
Otakar Bělohávek, M.D., Ph.D.

Along with the usual spectrum of nuclear medicine examination methods, which include *scintigraphic functional imaging and immunoanalytical laboratory examination methods* (RSA – radiosaturation analysis and chemiluminescence) the department is unique in the Czech Republic in providing *PET (positron emission tomography)*, which is used especially in diagnostics of oncological, neurological and cardiovascular diseases.

In 2001 the Department of Nuclear Medicine / PET Center provided services for patients of Na Homolce Hospital as well as those in other health care facilities throughout the Czech Republic (primarily in the provision of PET examinations). During the course of the year, an increased interest was registered in the examinations offered, which resulted in a marked increase in the numbers of all diagnostic activities in the department. There was a half-year increase of 15 % in scintigraphic imaging, an increase of 70% in PET examinations (while maintain-

ing all-day operations), and in immunoanalysis a 24 % increase. The immunoanalytic laboratory introduced five new types of assays and in total provided thirty-seven in vitro assays. During the past year, the laboratory has maintained its strong position on gynecological problems, with emphasis on prenatal screening for congenital defects including their risk quantification, where it works in close collaboration with the genetics unit at the Motol Teaching Hospital.

Teaching

In 2001 the Department of Nuclear Medicine / PET Center contributed to the undergraduate teaching program for the 3rd Medical Faculty at Charles University and postgraduate courses for the Institute of Health Care Postgraduate Education in nuclear medicine. It also supervised undergraduate theses of students of the Faculty of Electrical Engineering at the Czech Technical University and the Faculty of Mathematics and Physics at Charles University. A study course was organized at the PET Center for a number of Czech and foreign experts, and consultancy was provided for a model project by the International Atomic Energy Agency.

Research

The department participated in two grant projects in 2001 (see annex on Grants).

Publications and lectures

Physicians and other health care professionals from the Department of Nuclear Medicine / PET Center delivered a total of twenty-six lectures in seminars in the Czech Republic during 2001. Twenty-two papers were published in the professional press, of which twelve were published in foreign journals.

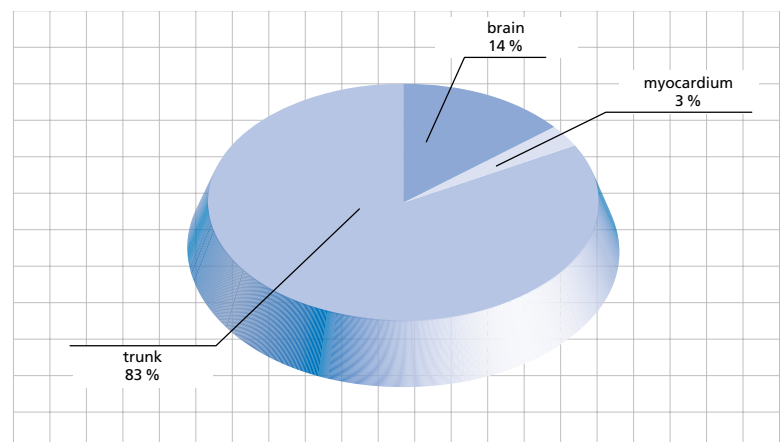
Basic data

Number of physicians	4
Number of other college graduates	2
Number of nurses and laboratory technicians	11
Technical equipment	
2 x scintigraphic camera	
1 x positron emission tomography camera	
Imaging station	
Immunoanalyzers	

Number of interventions/examinations in 2001

Scintigraphy	
Number of interventions	5,239
Number of examinations	1,797
Positron emission tomography	
Number of interventions/examinations	1,963
Laboratory tests	
Number of interventions	108,833
Number of assays	76,131

Breakdown of PET examinations in 2001



DEPARTMENT OF CLINICAL BIOCHEMISTRY, HEMATOLOGY AND IMMUNOLOGY

Head of Department:

Prof. Josef Hyánek, M.D., Ph.D.

In the field of *clinical biochemistry* the department provides a routine biochemical service for both hospital wards and outpatient clinics in Na Homolce Hospital and focuses on diagnostics and treatment of critically ill patients admitted to the hospital. In hospital wards where patients are in a critical state, testing is carried out directly in the wards (POCT diagnostics), as well as analysis of cardiomyocyte, amino acid levels and drug levels. The biochemical unit started operations last year of a new second generation cardiomyocyte analyzer to make diagnostics of cardiac diseases faster and more accurate and introduced new methods to establish the biochemistry of important markers. Again in 2001 the biochemistry clinic also provided services to general practitioners, pediatricians and other specialists working in the field. An important part of the work carried out by the biochemical unit concerns the analysis of lipid metabolism disorders. Routine diagnostics of these atherogenic disorders is supplemented by the metabolic tests for homocystein levels and other related parameters. The diagnostics are also focused on investigating genetic anomalies relating to the metabolism of lipids in adults and especially in children. Over the past year, the activities of the Club of parents of children suffering from lipid disorders were further extended by a metabolic counseling service, particularly in the area of rehabilitation, reconditioning and educational activities for members of the Club. In the area of *hematology*, it provides a routine service for clinical units and conducts specialized analysis of coagulation parameters for the Department of Cardiovascular Surgery. *The immunological laboratory* again in 2001 carried out a wide spectrum of serological and cytological examination methods in immunology and allergology. Specialized activities were focused on the diagnosis of septic conditions in critically ill patients and on the diagnosis of respiratory dysfunctions. *The transfusion center* ensures the supply of blood and blood derivatives and carries out autotransfusions according to the requirements of the surgical departments. *The laboratory for cerebrospinal fluid and neuroimmunology* last year carried out routine analyses of serum and cerebrospinal fluid and cytological analyses on patients with neurological and neurosurgical diseases. It also serves over the long term as a reference center for the cerebrospinal fluid laboratory in the Czech Republic in the area of cytological analysis.

Teaching

The Department of Clinical Biochemistry, Hematology and Immunology of Na Homolce Hospital served in 2001 as a training center for problems involving urinary sediments and cerebrospinal fluid for the Department of Clinical Biochemistry of the Institute of Health Care Postgraduate Education and for immunology and allergology for the Subdepartment of Clinical Immunology and Allergology of the Institute.

Research

The Department of Clinical Biochemistry, Hematology and Immunology participated in five grant projects in 2001 (see annex on Grants).

Publications and lectures

Last year the Department of Clinical Biochemistry, Hematology and Immunology organized the Fourth National Seminar on Problems of HLP in Children, the Fourth National Seminar on Cerebrospinal Fluid and its Cytology, a National Seminar on Problems of Analyzing Urine and Urinary Sediments, and the Flow Cytometry Days. Physicians from the department delivered thirty-nine lectures during 2001 at seminars in the Czech Republic and made eight contributions to international congresses abroad. Twenty-one papers were published in the Czech medical press last year, and ten papers were published in professional journals abroad and one monograph was also published abroad (Adam P., Táborský L., Sobek O., Hildebrand T., Kelbich P., Průcha M., Hyánek J.: Cerebrospinal Fluid. In: Advances in Clinical Chemistry. New York, Academic Press, 2001).

Basic data

Number of physicians	10
Number of other college graduates	5
Number of laboratory technicians	30
Number of nurses	8
Number of examinations	2,951,838

Breakdown of examinations in 2001

Laboratory	
Urine examinations	39,589
POCT	43,842
Drug laboratory	5,280
Cerebrospinal fluid examinations	68,759
Routine and research biochemistry	1,719,562
Total BIOCHEMISTRY	1,877,032
HEMATOLOGY	866,885
IMMUNOLOGY	87,334
BLOOD BANK AND TRANSFUSIONS	73,065
total	2,904,316
Outpatient clinics	
Metabolic disorders	11,416
Hematology	4,709
Immunology and allergology	17,884
Neurology	13,513
total	47,522

DEPARTMENT OF CLINICAL MICROBIOLOGY AND ANTIBIOTIC CENTER

Head of Department:
Vlastimil Jindrák, M.D.

The Department of Clinical Microbiology provides laboratory diagnostics of community and nosocomial infections or complications in hospitalized patients, as well as consultative work focused on their diagnosis, treatment and prevention. The department's consultants participate in routine interdisciplinary work in a team of specialists to provide the highest possible level of treatment for hospitalized patients and outpatients. An important part of the department's activities is the work carried out by the Antibiotic Center, which deals with antibiotic policies both at Na Homolce Hospital and in primary outpatient care. Lately, the department has also been involved in various epidemiological activities such as the local surveillance of resistance to antibiotics and the surveillance of nosocomial infections. Laboratory diagnostic services, in the same way as last year, were provided both to the Na Homolce Hospital outpatient clinics, and to primary care physicians and specialists. During the period under review, there were no fundamental changes made in the area of laboratory diagnostics. The slight increase in the numbers of examinations carried out reflects the rise in the numbers of hospital admissions.

In terms of specialized activities, in 2001 the department took part in a multidisciplinary project on "Influencing resistance to antibiotics by the quality of antibiotics used", and also coordinated a project entitled "An audit of antibiotics prescribed in primary pediatric care", the results of which were presented at the 11th European Congress of Clinical Microbiology and Infectious Diseases in Istanbul. Since the end of 2001, the department has been involved with a project for the Ministry of Health of the Czech Republic to produce a "National Register of Nosocomial Infections", which continues on from the activities of the newly established Center for Quality Health Care at the State Institute of Health.

Teaching

In the field of teaching, 2001 saw a more intensive level of cooperation with the Institute of Health Care Postgraduate Education. Physicians from the Department of Clinical Microbiology participated in postgraduate teaching for courses run by

the Institute of Health Care Postgraduate Education in the disciplines of medical microbiology, intensive care medicine, neurology and the treatment of infections.

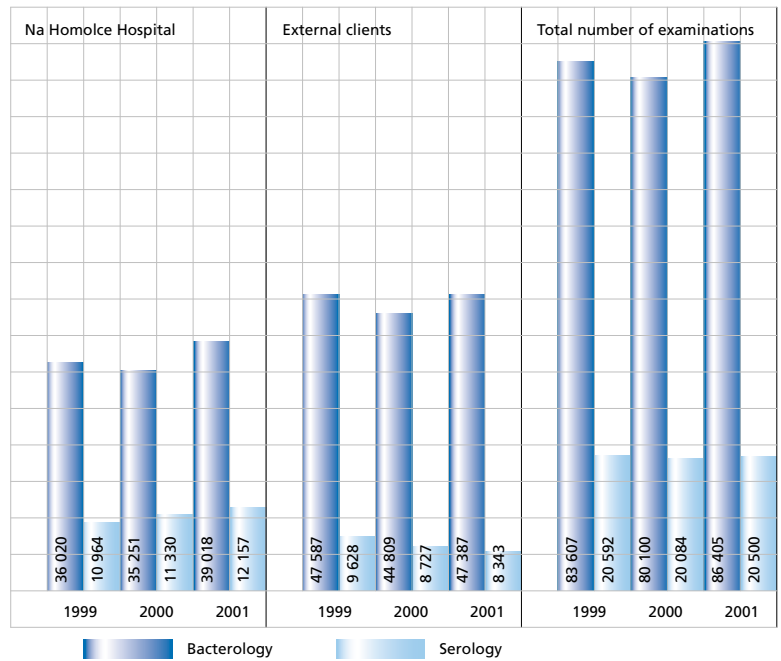
Lectures and publications

During the course of 2001, physicians from the Department of Clinical Microbiology delivered a total of 40 lectures at domestic seminars, 4 lectures at congresses abroad, and published 4 works in Czech professional journals.

Basic data

Number of physicians	3
Number of other college graduates	1
Number of laboratory technicians	14
Number of examinations	100,695

Number of examinations carried out between 1999 and 2001



Consultations for antimicrobial therapy in admitted patients

	1999	2000	2001
Number of consultations	4,370	4,287	5,069
Number of patients consulted	967	905	1,024
Proportion of patients consulted out of the total of admitted patients	7.3 %	6.5 %	6.8 %

A close-up photograph of a hand holding a white, oval-shaped pill. The hand is positioned on the left side of the frame, with the thumb and index finger gripping the pill. The background is a solid, light teal color. The lighting is soft, highlighting the texture of the skin and the smooth surface of the pill.

TREATMENT
ENDS
BUT CARE
CARRIES ON

Club for parents of children suffering from lipid disorders

Club for parents of children suffering from lipid disorders
Clinic for Metabolic Disorders
Na Homolce Hospital
Roentgenova 2, 150 30 Prague 5
Tel.: + 420 2 57 27 32 29
E-mail: vera.martnikova@homolka.cz

This Club was established in 1995 through the Clinic for Metabolic Disorders in Na Homolce Hospital. It links families with children suffering from inherited disorders related to the metabolism of lipids, known as hypercholesterolemia. Patients who have inherited this disorder have increased levels of cholesterol in their blood, which gives rise to a high risk of cardiovascular diseases. Basic treatment for children suffering from this disorder involves following a controlled low-calorie diet, with medication treatment for those patients who are worst affected. The Club is affiliated with the Association for the assistance of chronically ill children, and in 2001 its membership rose to 110. The Club is run primarily by medical volunteers and parents. Parents, doctors and dietary nurses work closely together to form good health habits in families at risk, to provide information on health nutrition and suitable types of food product, as well as new discoveries concerning treatment of hypercholesterolemia. Amongst the Club's traditional and popular activities are the organized water therapy exercises in the Na Homolce Hospital pool, day or weekend trips, and, most of all, the summer fitness camp, focusing on a low cholesterol diet and exercise. Between July and August 2001, children and their parents met for what was the fifth week-long therapeutic camp with a low calorie diet in Javorna in the Šumava. The Club of parents with children suffering from lipid disorders plays an important part in preventing cardiovascular disease by encouraging good nutrition and eating habits as well as increased physical activity.

Klub AA Homolka

Klub AA Homolka
Dept. of Pediatric Allergology and Clinical Immunology
Na Homolce Hospital
Roentgenova 2, 150 30 Prague 5
Tel.: +420 2 57 27 20 17

Klub AA Homolka was established by the Department of Pediatric Allergology and Clinical Immunology in Na Homolce Hospital in 1998. It brings together families with children suffering from allergies and asthma. Last year membership numbers rose to 107 (families), representing not only patients treated at Na Homolce, but also those from other units in Prague and elsewhere. The club's activities are diverse, ranging from the retrieval and circulation of information concerning individual allergic diseases, through the organization of discussions with experts for the parents, to the publication of the club magazine, Motýlek (Butterfly), which includes contributions from the children themselves, or organizing entertaining and educational activities for the young patients. The most popular club event is the annual three-week trip to the sea for children with allergies, when they are accompanied by medical professionals. This is for school-age children suffering from atopic eczema, bronchial asthma, allergic rhinitis, immune disorders or repeated respiratory infections. Last year, the children spent their therapeutic holiday at Porto Helli in Greece. Klub AA Homolka is a member of the Association for the assistance of chronically ill children.

Sports club for dialysis and transplant patients - Czech Sporting Association

Sports club for dialysis and transplant patients
Hemodialysis center
Na Homolce Hospital
Roentgenova 2, 150 30 Prague 5
Tel.: + 420 2 57 27 22 20
E-mail: lukas.svoboda@homolka.cz

The sports club for dialysis and transplant patients was established by the Hemodialysis Center at Na Homolce Hospital in 1995. It is a member of the Association of internally handicapped sportsmen and women and also a member of the WTGD and EDTPF international federations. Last year it gathered together 158 active members and a number of patrons from throughout the Czech Republic. The club's activities are not confined to creating and promoting an integrated rehabilitation program for patients who have to rely on artificial kidney treatment, or those living with a transplanted kidney (creation of education and reference materials for those disabled, specialized lectures), but also extend into putting these ideas into practice. Examples of this are the organization of the annual winter and summer sporting competitions for dialysis and transplant patients. In 2001 the eighth annual games were held in the Czech Republic and the club's sportsmen and women also competed in an international sports tournament in Paesto in Italy. The Czech team brought home a total of six medals last year from the international games for transplant patients in Nendaz in Switzerland.



ECONOMIC INFORMATION

ECONOMIC INFORMATION

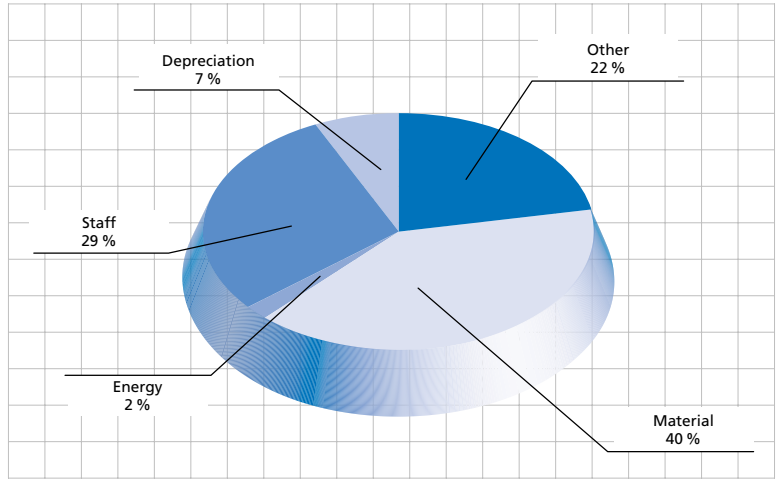
BALANCE SHEET as of December 31st, 2001, figures in thousands of CZK

ASSETS		as of Jan. 1st, 2001	as of Dec. 31st, 2001
A. Fixed assets		1,329,831	1,497,176
1.	Intangible fixed assets	21,081	26,389
2.	Accumulated depreciation	-9,494	-15,043
3.	Tangible fixed assets	2,092,291	2,307,460
4.	Accumulated depreciation	-774,748	-914,916
5.	Financial investments	700	93,286
B. Current assets		496,182	389,755
1.	Inventory	12,876	12,544
2.	Receivables	223,940	56,037
3.	Financial assets	124,881	198,333
5.	Temporary credit accounts	134,485	122,841
TOTAL ASSETS		1,826,013	1,886,931
LIABILITIES			
C. Own resources		1,681,108	1,686,369
1.	Property funds	1,369,678	1,537,023
2.	Financial funds	257,884	123,731
5.	Economic result	53,545	25,615
D. Other resources		144,905	200,562
1.	Reserves	0	6,550
3.	Short-term liabilities	138,421	179,480
4.	Bank credits		
5.	Temporary debit accounts	6,484	14,532
TOTAL LIABILITIES		1,826,013	1,886,931

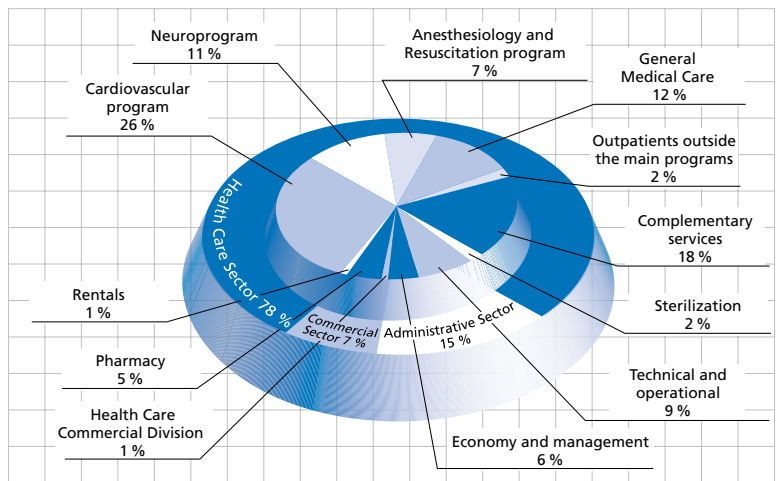
PROFIT AND LOSS STATEMENT as of December 31st, 2001, figures in thousands of CZK

	Activity
I. Revenues from sales of goods	105,062
A.	Cost of goods sold
	Margin
	86,496
	18,566
II. Production	1,508,358
1.	Revenues from own products and services
B. 1.	Material and energy consumption
2.	Services
	Added value
	1,508,358
	694,403
	158,078
	674,442
III. Operating costs	6,521
C.	Personnel expenses
1.	Wages and salaries
2.	Social insurance expenses
3.	Social security expenses
D.	Taxes and fees
	486,888
	343,363
	127,810
	15,715
	153
GROSS OPERATIONAL ECONOMIC RESULT	193,922
E.	Depreciations - tangible and intangible fixed assets
IV. Revenues from sales of tangible and intangible fixed assets and materials	1,229
F.	Residual price of tangible and intangible fixed assets sold
	Economic result from tangible and intangible fixed asset sales
	1,470
	-241
V. Settlement of reserves and accrual and deferral	0
G.	Created reserves and accrual and deferral
	Difference between settlement and created reserves and accrual and deferral
	6,550
	-6,650
VI. Revenues from sales of securities	0
	Securities sold
	0
VIII. Other revenues	40,420
I.	Other costs
J.	Income tax
	69,459
	19,671
ECONOMIC RESULT FOR THE FISCAL PERIOD	25,615

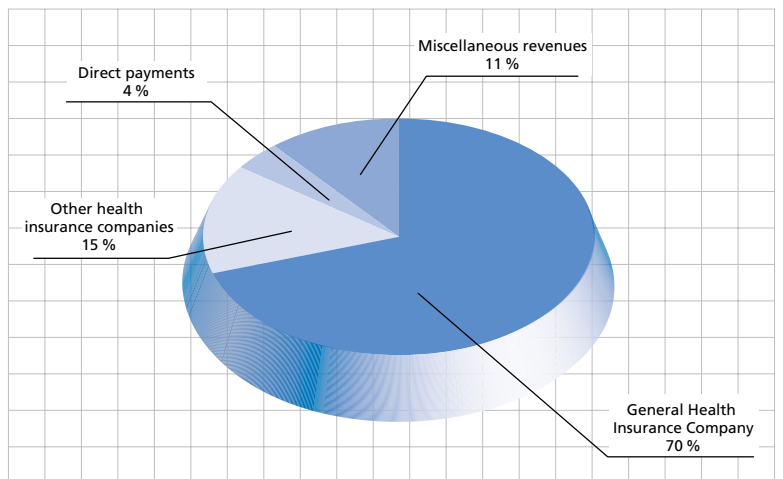
Breakdown of costs by type in 2001



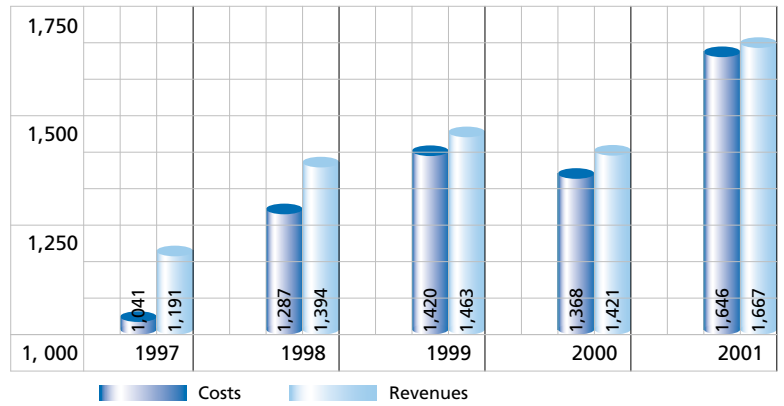
Breakdown of costs by unit in 2001



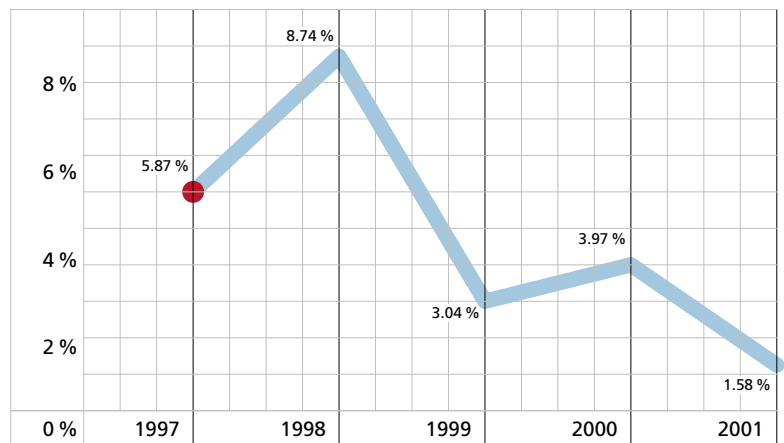
Breakdown of revenues in 2001



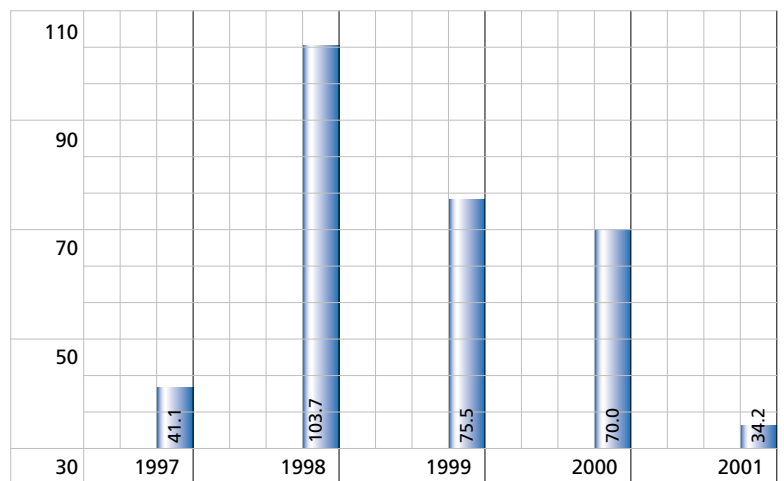
Costs and revenues (in millions of CZK)



Cost effectiveness (in %)



Development in overdue receivables (in millions of CZK)

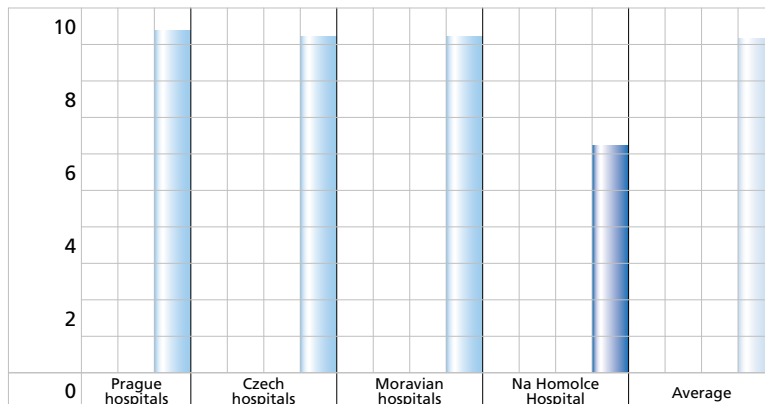


NA HOMOLCE HOSPITAL BENCH MARKING

© ÚZIS ČR, 2001

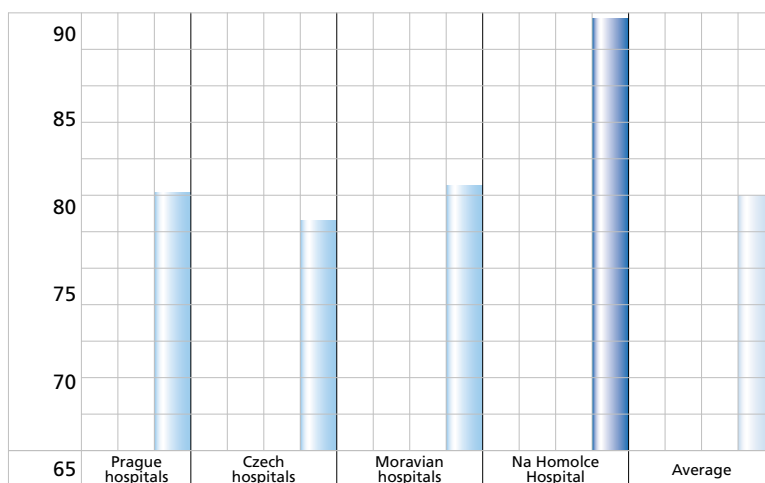
Average length of treatment (in days)

(figures are to 6. 30. 2001)



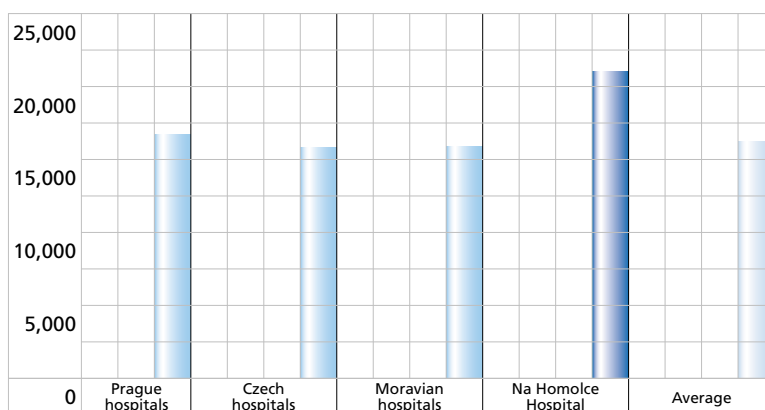
Bed occupancy rate (as a %)

(figures are to 6. 30. 2001)

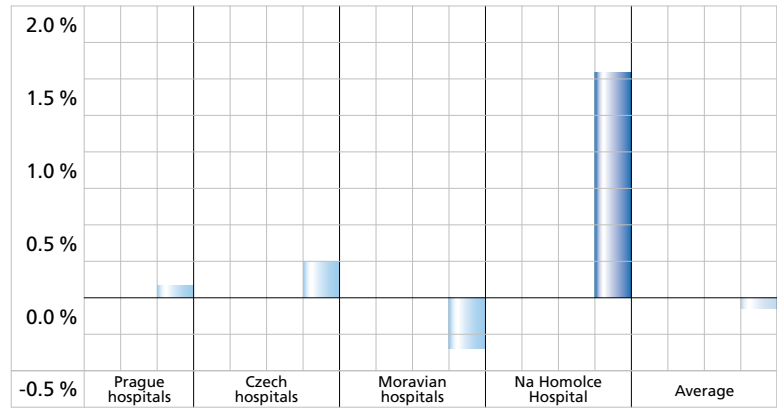


Average monthly salary (in CZK)

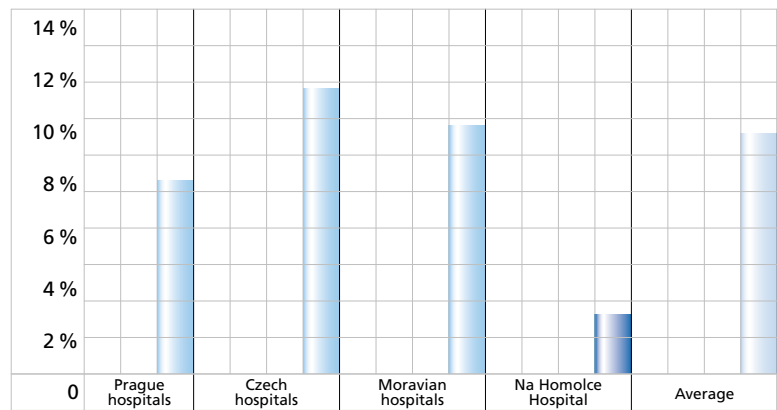
(figures are to 6. 30. 2001)



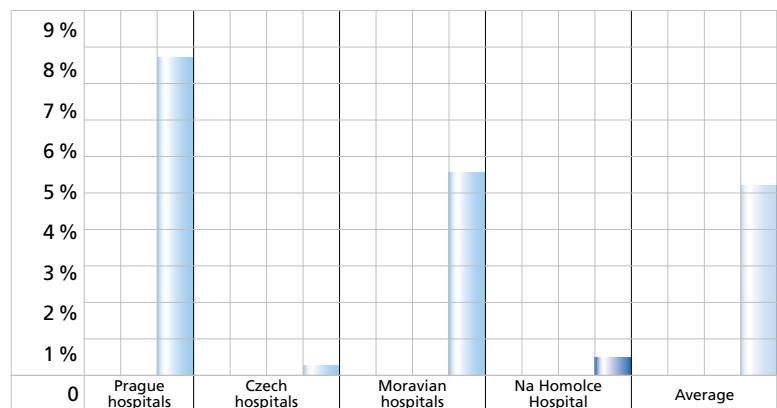
Cost effectiveness (as a %)



Receivables as a percentage of total costs



Payables as a percentage of total costs



Personnel and salaries

Staff

Na Homolce Hospital employed 1,445.05 staff in 2001 (the figure represents the total calculated to full-time jobs)

	numbers	as %
Total staff numbers to 12. 31. 2001	1,445	
Physicians	211	15%
Pharmacists	7	0.4%
Other graduates and professionals (non medical)	17	1%
Nurses	705	49%
Other nursing staff	15	1%
Assistant nursing staff	106	7%
Technical and administrative staff	225	16%
Operational and general service staff	159	11%

The total staff numbers in 2001, as compared to 2000, increased by 74 employees.

Physicians	10
Pharmacists	-2
Other graduates and professionals (non medical)	2
Nurses	25
Other nursing staff	-2
Assistant nursing staff	30
Technical and administrative staff	15
Operational and general service staff	-3

Salaries

A total of 364,609,600 CZK was spent on salaries in 2001. This represented a 13% increase compared to expenditure in 2000. Remuneration for people in community service amounted to a total of 255,137 CZK. 86,096,324 CZK was paid out in the form of special bonuses, of which 23,353,783 CZK, or 24% of the total expenditure on salaries, was paid out of the bonus fund. The gross average salary for all employees of Na Homolce Hospital, was 21,477 CZK last year.

Physicians	45,524
Pharmacists	35,253
Other graduates and professionals (non medical)	35,734
Nurses	17,815
Other nursing staff	13,505
Assistant nursing staff	11,880
Technical and administrative staff	18,674
Operational and general service staff	14,613

The gross average salary increased by 10% as compared to the year 2000.

AUDITOR'S CERTIFICATE

The balance sheet for Na Homolce Hospital

to December 31st, 2001

is hereby certified

“without reservation”

Grounds for the decision:

On the basis of our verification, the bookkeeping and the annual balance sheet comply in all essential aspects to the relevant legal regulations. The annual balance sheet has been drawn up in accordance with the principles of good accounting practice and, in all important aspects, provides a true and faithful representation of the assets, liabilities and financial situation of the organization in compliance with Act no. 564/1991 Sb. on accounting, as well as with any other applicable regulations.

Drawn up in Čelákovice, March 28th, 2002



A handwritten signature in blue ink, appearing to read "Bartoš", written over a dotted line.

ATLAS AUDIT s r.o.
Tomáš Bartoš, M.Sc. – auditor
License number 300

GRANTS



RESEARCH GRANTS IN NA HOMOLCE HOSPITAL IN 2000

Total number: 15

Grant IGA NL 5745-3

Title: *THERAPY OF CONVULSIVE STATUS EPILEPTICUS – EXPERIMENTAL AND CLINICAL STUDY*

Period: 2000 – 2001

Authors: Miroslav Kalina, M.D., Ph.D. – Department of Neurology, Na Homolce
Prof. Pavel Mareš, M.D., Ph.D. – Institute of Physiology, Czech Academy of Sciences

The project focuses on the comparison of semiologic, and particularly electrophysiological manifestations of human status epilepticus with different experimental models of epilepsy in rats. The course of status epilepticus in rats, induced by various methods, will be monitored by EEG and essential electrographic characteristics of ictus manifestations with or without treatment will be compared to ictus manifestations in patients with status epilepticus at the beginning of therapy and during its course. On the basis of this analysis, the rat model of status epilepticus which is identified as being the closest to the human one will be used for further experimental research, testing of new antiepileptic drugs etc.

McDonnell Foundation – Eastern Europe Cognitive Neuroscience Collaborative Program: 97-34EE “Homolka”

Title: *MEMORY FUNCTION OF THE HIPPOCAMPUS: FROM SELECTIVE LESIONS TO ELECTROPHYSIOLOGY*

Period: 1999 – 2001

Authors: Dr. Veronique Bohbot – Montreal Neurology Institute, McGill University
Miroslav Kalina, M.D., Ph.D. – Department of Neurology, Na Homolce
Kateřina Štěpánková, M.D. – Department of Neurology, Na Homolce
Jan Bureš, M.D. – Institute of Physiology, Czech Academy of Sciences
Dr. Andre Fenton – Institute of Physiology, Czech Academy of Sciences

The aim of the project was to determine the functional importance of a given structure of the right or left temporal lobe in spatial analysis and memory. The main work was devoted to developing sensitive neuropsychological tests in a special circular space (the arena) and their use on patients who had undergone therapy for temporal epilepsy in the 80s and the beginning of the 90s using thermocoagulation. A special experimental unit, which was created at the Na Homolce Hospital, will be further utilized for an IGA grant project which has already been approved, whose authors are the Institute of Physiology of the Czech Academy of Sciences, the Czech Alzheimer Society and the Department of Neurology of Na Homolce Hospital.

Grant IGA NF 5161-3

Title: *RADIOSURGICAL LESION OF THE HIPPOCAMPUS IN A LABORATORY RAT BY LEKSELL GAMMA KNIFE: RELATIONSHIP BETWEEN RADIATION DOSE AND FUNCTIONAL AND STRUCTURAL DAMAGE TO THE HIPPOCAMPUS*

Period: 1999 – 2001

Author: Roman Liščák, M.D., Ph.D., Department of Stereotactic and Radiation Neurosurgery, Na Homolce

Co-authors: Prof. Gustav Brožek, M.D., Ph.D. – Department of Physiology, Second Medical Faculty of Charles University
Assoc. Prof. Vladislav Mareš, M.D., Ph.D. – Institute of Physiology, Czech Academy of Sciences
Milan Hájek, M.D., Ph.D. – Unit of Radiodiagnosics and Intervention Radiology, Institute for Clinical and Experimental Medicine
Prof. Eva Syková, M.D., Ph.D. – Institute of Experimental Medicine, Czech Academy of Sciences

Using a gradual radiosurgical irradiation of the hippocampus of a laboratory rat with the Leksell gamma knife, it is possible to assess the dose and the timeframe which determine when its function and structure will change. Damaged hippocampus functions are revealed as memory disorders which can be objectively shown by the worse orientation capabilities of the rat in the



Morrison water labyrinth. Change in metabolite concentrations (N-acetyl aspartate, creatinine, choline) in irradiated tissue was detected by examination of the animals before and after irradiation using MR spectroscopic and MR imaging methods with the Bruker 4.7/20 experimental spectrometer. Histopathological examination showed that radiosurgical elimination of hippocampus functions is linked to postradiation necrosis.

Importance of the experiment for clinical work:

The orientation towards radiosurgical treatment of focal epilepsy by using subnecrotic doses appears far more promising than the application of necrotic doses. In applying subnecrotic doses, we can assume the presence of a therapeutic window, when the radiation dose applied positively modulates the epileptic activity of the irradiated site, but does not disrupt the normal functions of the target structure. We can assume that double-sided irradiation of the hippocampus of a patient, using low doses of radiation, does not inevitably lead to spatial memory failure. This information would allow us to extend the range of indications for gamma knife epileptology to patients with bitemporal epileptogenic sites, who do not currently qualify.

Grant NS 1295 (Na Homolce Hospital and Elekta)

Title: *TREATMENT OF ADVANCED GLAUCOMA WITH THE LEKSELL GAMMA KNIFE*

Period: 2000 – 2002

Authors: Assoc. Prof. V. Vladyka, M.D., Ph.D. – Department of Stereotactic and Radiation Neurosurgery, Na Homolce
Roman Liščák, M.D., Ph.D. – Department of Stereotactic and Radiation Neurosurgery, Na Homolce
Gabriela Šimonová, M.D., Ph.D. – Department of Stereotactic and Radiation Neurosurgery, Na Homolce
Josef Vymazal, M.D., Ph.D. – Department of Radiodiagnostics, Na Homolce
Jiří Pilbauer, M.D. – Střešovice ÚVN Eye Clinic, Prague
Iveta Hejduková, M.D. – Střešovice ÚVN Eye Clinic, Prague
Pavel Němec, M.D. – Střešovice ÚVN Eye Clinic, Prague

The objective of this grant project is to establish suitable indications and therapeutic results during the treatment of different types of glaucoma using the Leksell gamma knife. Glaucoma is a chronic disease which leads to the degeneration of the optic nerve. It is the second most common disease leading to blindness. One of the main pathogenic mechanisms is the increase in intra-ocular pressure which is brought on by the overproduction of aqueous humor by the ciliary body or its insufficient resorption. Previous methods of treatment, to reduce the production of intra-ocular fluid, or to assist in its drainage, are pharmacological, by laser, or by spot freezing or intra-ocular filtration operations. These may, however, gradually start to fail and the eye becomes enormously painful and progressively blind. The only remaining option is its enucleation. Ten percent of patients suffering from glaucoma reach this phase. During therapy of inner eye tumors using the Leksell gamma knife, we noted in several patients who also had associated glaucoma that it improved when the ciliary body was partially impacted by focal irradiation. Therefore, irradiation by the gamma knife may halt the progress in glaucoma patients in cases where traditional forms of treatment have failed. This warning should be given priority.

Grant IGA NF 4967–4

Title : *TREATMENT OF INTRACRANIAL ANEURYSMS WITH GUGLIELMI DETACHABLE COILS (GDC)*

Period: 1998 – 2001

Authors: Ladislava Janoušková, M.D. – Department of Radiodiagnostics, Na Homolce
Vladimír Borůvka, M.D. – Department of Radiodiagnostics, Na Homolce
Michal Šetlík, M.D. – Department of Neurosurgery, Na Homolce
Martin Barták, M.D. – Department of Neurosurgery, Na Homolce

The aim of this project is to introduce endovascular treatment of cerebral aneurysms with the use of Guglielmi detachable coils.

The incidence of hemorrhage resulting from aneurysm rupture is comparable to the occurrence of hemorrhagic vascular cerebral events, however mostly younger patients are affected and mortality is high. The most frequent cause of death is recurrent bleeding or serious vasospasms. Until recently the main means of prevention of recurrent bleeding was neurosurgical treatment only, where mortality and morbidity rates remained relatively high despite the introduction of microsurgical methods. Endovascular closure of the aneurysm, avoiding the need for open surgery and without manipulation of the brain, presents a more sparing alternative to this treatment. In order

to ensure successful treatment, good interdisciplinary cooperation must be provided with clear indication criteria, precise diagnostics and a proper methodology for the intervention to prevent complications. The first part of the project was directed towards formulating precise diagnostics for the source of hemorrhage using 2D and 3D CT angiography and 3D subtraction angiography in order to assess the aneurysm size, its neck width and its relation to surrounding arteries. The main part of the project was then concentrated on treating cerebral aneurysms with GDC, and introducing new types of 2D and 3D shaped coils to close aneurysms with wider necks. The final part of the project was devoted to endovascular treatment of vasospasms. Treatment of patients is still continuing and now incorporates balloon remodeling techniques for aneurysms with wide necks, without which this type of aneurysm would be untreatable.

Grant IGA NA 6216–3

Title : *LOCAL INTRAARTERIAL THROMBOLYSIS IN ACUTE VASCULAR CEREBRAL EVENTS ON THE BASIS OF CLOSURE IN CAROTID OR VERTEBROBASAL CIRCULATION.*

Period: 2000 – 2002

Authors : Ladislava Janoušková, M.D. – Department of Radiodiagnostics, Na Homolce
Vladimír Borůvka, M.D. – Department of Radiodiagnostics, Na Homolce
Miroslav Kalina, M.D., Ph.D. – Department of Neurology, Na Homolce
Denisa Vondráčková, M.D. – Department of Neurology, Na Homolce

The aim of the project is to introduce local intraarterial thrombolysis (LIT) in cases of acute cerebral vascular events (CMP) caused by arterial closure. The incidence of CMP caused by the closure of some of the major cerebral arteries is a frequently occurring disease with high mortality and a considerable morbidity rate. The conservative treatment used hitherto has proved relatively ineffective despite improvements in intensive care, more alternatives for drug therapy and a high level of rehabilitation. Intravenous thrombolytic treatment suffers from the high risk of complications and low and late local efficiency. LIT, in which the thrombolytic agent is administered directly into the thrombus of the closed artery, enables rapid recanalization and resumption of blood flow in the affected part of the brain. In this way, the extent of damaged brain tissue is reduced. In patients with the appropriate indication, this method means a significant reversal of the prognosis, which would otherwise be poor. The algorithm of entry diagnostics was prepared, and in indicated cases the procedures include an examination with perfusion CT in order to precisely define the extent of the ischaemic site and ischaemic penumbra. LIT entry criteria were specified, and in our experience the most important factors affecting the prognosis are the time period since the closure and also the development of clinical manifestations and the condition of the collateral circulation. A newly developed In-time catheter was used for the treatment to reduce the duration of the intervention. The greatest problem is early diagnosis of the lesions (especially in primary care), which limits the number of patients potentially receiving the treatment.

Grant IGA NF 6377–3

Title: *METHODOLOGY OF FUNCTIONAL IMAGING BY MAGNETIC RESONANCE*

Period: 2000 – 2002

Author: Jaroslav Tintěra, M.S., Ph.D., Unit of Radiodiagnostics and Intervention Radiology, Institute of Clinical and Experimental Medicine

Co-author: Josef Vymazal, M.D., Ph.D., Department of Radiodiagnostics, Na Homolce

The ideal of neurosurgery, both traditional and stereotactic, is to eliminate or to disintegrate the pathological site, or site in general, responsible for abnormal functions, while at the same time avoiding damage to structures essential for important functions (movement, speech, sensitivity). The introduction of functional methods to neurological science (functional MR and PET) enables a much more precise mapping of these centers and a definition of their relation to the site with the pathological morphology or functional disorder. The grant project is focused on the development of functional magnetic resonance, and particularly on its functions, which are useful for neurosurgical planning of interventions close to the centers of movement and speech. The technique enabling the mapping is based on different magnetic properties of oxidized and unoxidized blood which can be imaged when certain parts of the brain are working intensively. This type of examination does not require any administration of a contrast substance nor place any stress on the patient.

Grant IGA NC/5975–3

Title: *THE ROLE OF POSITRON EMISSION TOMOGRAPHY IN THE DIAGNOSIS OF RECURRENT CEREBRAL TUMOR*

Period: 2000 – 2002

Author: Otakar Bělohávek, M.D., Ph.D., Department of Nuclear Medicine / PET Center, Na Homolce

Co-authors: Kateřina Táborská, M.D., Department of Nuclear Medicine / PET Center, Na Homolce
Daniel Janeba, M.Sc., Department of Nuclear Medicine / PET Center, Na Homolce
Roman Liščák, M.D., Ph.D., Department of Stereotactic and Radiation Neurosurgery, Na Homolce
Gabriela Šimonová, M.D., Department of Stereotactic and Radiation Neurosurgery, Na Homolce
Josef Novotný Jr., M.Sc., Department of Stereotactic and Radiation Neurosurgery, Na Homolce
František Továryš, M.D., Ph.D., Department of Neurosurgery, Na Homolce
Vladimír Dbalý, M.D., Department of Neurosurgery, Na Homolce
Jan Klener, M.D., Department of Neurosurgery, Na Homolce

The differentiation between recurrence or persistence of cerebral tumor and the condition of necrosis or fibrosis, induced by therapy, presents a considerable clinical problem which has a fundamental influence on the selection of future therapy. Conventional imaging methods bring few benefits in this case, opinions on the suitability of using PET with fluorodeoxyglucose (18 FDG) are varied. The objective of the project is to define the role of PET in differential diagnostics of residual cerebral lesions and to propose the most expedient method of incorporating PET into the diagnostic algorithm under current Czech health care conditions. It is expected that PET will be of different value to different groups of patients and histologically different types of tumors. The observation of 18FDG accumulation in the brain during the course of therapy with the use of PET in combination with MRI findings will help determine whether the residual lesion is a viable tumor, threatening the patient in the future, or not. The project has been designed as a three-year prospective blind study, and it should contribute to the improvement of oncological health care. The results of the project can be beneficial both for individual patients (more precise treatment), as well as for the society because of cost savings (more precise targeting of expensive therapy).

Research center established by the Ministry of Education, Youth and Sports: LN00B122

Title: *CENTER OF NEUROPSYCHIATRIC STUDIES.* Participation of Na Homolce Hospital in the project: Utilization of positron emission tomography in the study of neuropsychiatric disorders.

Period: 2000 – 2004

Author: Cyril Höschl, M.D., Ph.D. – Center of Psychiatry, Prague

Co-author: Otakar Bělohávek, M.D., Ph.D. – Department of Nuclear Medicine / PET Center, Na Homolce

In part of the project, patients with schizophrenia are examined by positron emission tomography at Na Homolce Hospital. In these patients, neuroleptic therapy was discontinued for various reasons. Furthermore the group of examined patients also includes those in the first episode of schizophrenia, those who use medication and experience an onset of remission. PET examination serves to monitor the relationship between the formula of PET activation and several other variables such as type of therapy, symptomatology assessed by psychometric scales and undesirable effects of therapy – extrapyramidal syndrome.

Grant IGA NE 5489–3

Title: *DIFFERENTIATION OF MILD HYPERHOMOCYSTEINEMIA, ITS DIAGNOSTIC IMPORTANCE AND POSSIBLE UTILIZATION AS A SELECTIVE SCREENING METHOD IN CHILDREN AT RISK FROM CARDIOVASCULAR DISEASE*

Period: 1999-2001

Authors: Prof. J. Hyánek, M.D. Ph.D. – Department of Clinical Biochemistry, Hematology and Immunology, Na Homolce
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Mild hyperhomocysteinemia (mHHC) indicates increased concentration of the non-essential amino acid homocystein (Hcy) in the blood above reference values. Increased Hcy is caused by environmental and genetic factors (gene deficiency accentuated by vitamin deficiency) and results in numerous toxic effects, especially in the vascular endothelium of cerebral, peripheral and coronary arteries. The heredity of the previously unknown risk factor is probably autosomal dominant – similar to familial hypercholesterolemia.

The grant project deals with the differentiation of mHHC found in patients of Na Homolce Hospital who underwent vascular surgery and then in their children and grandchildren. The frequency of mHHC in the population of patients was determined as 1:52. Frequency of moderate hyperhomocysteinemia of a different type was determined as 1:1125 and of atypical classic homocystinuria as 1:2500. In children and grandchildren, mHHC was only observed from 12-15 years of age. Positive samples of plasma are analyzed by a complex chromatographic technique using HPLC or GC-MS to determine new pathognomonic metabolites of Hcy to be used in mHHC diagnosis and possible selective screening of the in risk population. Both in adults and in children with confirmed mHHC, a therapeutic supplementation with critical vitamins was started (folate, pyridoxine, cobalamin). Changes in homocystein metabolites are monitored in plasma together with registration of sonographically demonstrable regression of changes in the walls of blood vessels.

Grant NM 26-3

Title: *MILD HYPERHOMOCYSTEINEMIA IN THE CZECH POPULATION: ANALYSIS OF GENETIC FACTORS IN PATIENTS WITH ARTERIOSCLEROSIS*

Period: 1999 – 2001

Author: Viktor Kožich, M.D. Ph.D. – Institute of inherited metabolic disorders, First Medical Faculty, Charles University

Co-author: Prof. Josef Hyánek, M.D., Ph.D. – Department of Clinical Biochemistry, Hematology and Immunology, Na Homolce

Stress tests with methionine were carried out on 591 healthy subjects and 296 patients with ICHS and ICHDK and examinations were made for biologically important aminothioles – homocystein, cystein, glutathion. Polymorphic examinations for pathogenic mutations in genes were carried out for cystathionin-beta-synthase. The importance of the risk factor was proved as well the protective effect of the polymorphisms MTRR, I22M and CBS 844ins68, which contributed to the emergence and development of ICHS.

Grant IGA NH 5596-3

Title: *AMINO ACID METABOLIC DISORDERS DURING PHYSIOLOGICAL AND PATHOLOGICAL PREGNANCY*

Period: 1999 – 2001

Author: Prof. J. Živný, M.D., Ph.D. – Clinic of Gynecology and Obstetrics, First Medical Faculty, Charles University

Co-author: Prof. J. Hyánek, M.D., Ph.D. – Department of Clinical Biochemistry, Hematology and Immunology, Na Homolce

Amino acid disorders during normal and pathological pregnancy always adversely affect the mother's state of health and are decisive for correct fetal development. The changes are particularly important in mothers who suffer from a hereditary metabolic disorder. These can only bear a healthy baby if previous biochemical and genetic examinations of the couple have been appropriately carried out and if they make a timely start on a very complex and strict diet prior to conception and during the whole period of the pregnancy. The study utilizes sophisticated laboratory methods for monitoring the metabolic and somatic development of children born to these mothers in an attempt to detect as early as possible any metabolic changes occurring during prenatal and postnatal development, caused by the diet being inadequately prepared and monitored. Attention was also paid to potential toxic damage to the fetus due to increased levels of homocystein or a deficit of critical vitamins (folate, B12, B6), which may result either in damage to the fetus, or in incomplete closure of the neural tube.

Grant NM 6548–3

- Title:** *HYPERHOMOCYSTEINEMIA IN PREGNANCY: THE ROLE OF GENETIC FACTORS IN THE APPEARANCE OF DEFECTS IN THE NEURAL TUBE, OROFACIAL CLEFTS AND PREECLAMPSIA*
- Period:** 2001 – 2003
- Author:** Viktor Kožich, M.D. Ph.D. – Institute of inherited metabolic disorders, First Medical Faculty, Charles University
- Co-author:** Prof. Josef Hyánek, M.D., Ph.D. – Department of Clinical Biochemistry, Hematology and Immunology, Na Homolce

The project deals with three objectives related to complications in pregnancy and hyperhomocysteinemia: 1. To find in the Czech population new human variations in genes contributing to the metabolism of homocystein (CTH, GNMT, MAT1A, MAT2A, AHCY, PK). 2. To determine whether the selected genetic variations contribute to the pathogenesis of defects of the neural tube, orofacial clefts and preeclampsia. 3. To determine whether genes from the methionine cycle contribute to the complications in pregnancy being researched.

Grant IGA NA 6497–3

- Title:** *PART PLAYED BY HYPERHOMOCYSTEINEMIA IN THE INCIDENCE OF CARDIOVASCULAR AND THROMBOEMBOLIC COMPLICATIONS IN PATIENTS IN INTENSIVE CARE*
- Period:** 2001 – 2003
- Author:** Prof. Josef Hyánek, M.D., Ph.D. – Department of Clinical Biochemistry, Hematology and Immunology, Na Homolce
- Co-author:** Prof. Milan Macek, M.D., Ph.D., – Institute of Biology and Medical Genetics, Molecular Genetics Laboratory, Motol University Hospital

An increase in homocystein (Hcy) levels in plasma (hyperhomocysteinemia – HHC), occurring in 12 – 16% of the population, is currently recognized as an independent risk factor of endothelial damage leading to the frequent occurrence of thromboembolic and cardiovascular diseases. The assumed multifactorial etiology derives from the gene mutation MTHFR and a vitamin deficiency (folate, pyridoxine, cobalamin) in food. It is possible, by supplementing these vitamins to reduce the level of Hcy and thus prevent direct damage to the endothelium, maintain thrombostatic balance, prevent oxidative damage to the cellular component, slow down the atherosclerotic process of lipid oxidation, disinhibit thrombolysis, etc. Results of pilot studies diagnosing mild HHC in 5,000 patients from Na Homolce Hospital, with indications for peripheral or coronary bypass operations occurring at a frequency of 1:52 and diagnosis of pronounced HHC in 1:1255, lead us to assume that increased Hcy must necessarily contribute to thromboembolic and cardiovascular complications, primarily during the course of treatment of patients in intensive care units. Here, HHC presence may be accentuated during amino acid parenteral alimentation. Admission examinations for intensive care patients will be supplemented by routine establishment of Hcy and its effect on the assessment of the progress of treatment and the eventual appearance of thromboembolic complications will be evaluated.

Grant IGA NF 6460–3

- Title:** *DIFFERENTIAL DIAGNOSTICS OF INFLAMMATORY AND AUTO IMMUNE DISEASES OF THE CENTRAL NERVOUS SYSTEM CNS: ASSISTANCE IN MONITORING PROTEIN FRACTIONS IN CEREBROSPINAL FLUID*
- Period:** 2001 – 2003
- Authors:** Assoc. Prof. Pavel Adam, M.D., Ph.D. – Department of Clinical Biochemistry, Hematology and Immunology, Na Homolce
Ondřej Sobek, M.D. – Department of Clinical Biochemistry, Hematology and Immunology, Na Homolce

The grant project concerns monitoring the biological behavior of protein fractions in cerebrospinal fluid of patients with inflammatory and autoimmune diseases of the nervous system. The established methodology is laser nephelometry, in certain cases linked to the utilization of latex particules or with monoclonal antibodies. Monitoring occurred together with the cytological examination of the cerebrospinal fluid, its routine biochemical examination and in some cases this is supplemented with isoelectrical focusing. The results of the already extremely extensive file are continually analyzed by mathematico-statistical methods, which is very laborious. Preliminary results of the project indicate that certain cerebrospinal fluid protein markers could be used in routine cerebrospinal fluid diagnostics, which is an undoubted advantage. The results achieved to date in this grant project have already been published in the Czech and foreign press, and there is now a monograph planned for publication which will deal with the biological behavior of protein fractions in cerebrospinal fluid.



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