

# Annual report 2013 FN Motol





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## Introductory word

Dear friends,

in your hands you are holding the annual report of the Motol University Hospital for the year 2013 which reflects one of the most exciting years of the Czech health care system. It is not only the year when two people switched at the post of the Minister of Health within the year, but also the year when hospitals experienced an economic experiment so that they gained less money than in the previous year. Honestly, that was not a good idea and the majority of hospitals have faced considerable economic problems.

This decision had a neutral impact on the MUH, especially because the hospital benefited from positive results of economic activity from the past years. One of the unpleasant consequences for the hospital remains the fact that the wage growth has been almost stopped; fortunately this was compensated by minimal increase in inflation in the country. Nevertheless, the wages were one of the priority issues that hospital management want to address.

The year 2013 was also unusual in the fact that there has been no major reconstruction under way affecting the activity of the hospital. However, this will change in the upcoming years as the hospital awaits the completion of the reconstruction of the Wing B and Children's Outpatient Centre. Both the reconstructions expect the final year to be 2016, which means that the complex reconstruction of the Children's University Hospital should have been completed after eight years. A usual problem for all large hospitals is the fact that after 20 years of operation it must predominantly undergo a partial renovation. From this perspective, the biggest challenge for the MUH is the adult part, the so called blue pavilion, officially opened in the autumn of 1996. We expect that it will be necessary to prepare for its sequential modernization.

The Motol University Hospital confirmed its position as one of the leaders of the Czech health care also at the international level due to its cooperation with hospitals in Japan and China which starts to be developed more deeply. In the future, the hospital plans mostly the interchange of research results in the field of treatment of pediatric oncology and

transplantation medicine in children. At the same time, the hospital was able to help countries where the health care system is not so developed or affected by war. An example is the successful mission of physicians from the Pediatric Cardio Centre of the MUH in Kenya and surgeries of Syrian refugees in Jordan.

Dear friends, I am glad to conclude the introductory word of the annual report with optimistic prediction that the upcoming year will be better than the previous one. I believe that with the influx of new financial resources to the health care system coming from the state budget, it will be possible to fulfill this prediction.



A handwritten signature in black ink, appearing to read 'Miloslav Ludvík'. The signature is fluid and cursive.

Miloslav Ludvík, LLD, MBA  
Director

# Management of the Motol University Hospital

Director of the Hospital	<b>Miloslav Ludvík, LL.D., MBA</b>
Deputy Manager for Medical Preventive Care	<b>Martin Holcát, MD, MBA</b> <b>/dep. for Roman Chmel, MD, Ph.D</b>
Deputy Manager for Nursing Care	<b>Jana Nováková, MBA</b>
Deputy Manager for Economy	<b>Jiří Čihař</b>
Personnel Deputy Manager	<b>Jindřiška Feldmanová</b>
Deputy Manager for Engineering and Technology	<b>Pavel Budinský, MD, MBA</b>
Deputy Manager for Science and Research	<b>prof. Anna Šedivá, MD, Ph.D</b>
Deputy Manager for Health Insurance	<b>Božena Šintáková, MD</b>
Deputy Business Manager	<b>Luděk Navara</b>

## Scientific board

prof. Marek Babjuk, MD, Ph.D.

*Head of Department of Urology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Jan Betka, MD, Ph.D.

*Head of Department of ENT, Head and Neck Surgery, 1st Faculty of Medicine, Charles University and Motol University Hospital*

assoc. prof. Ondřej Cinek, MD, Ph.D.

*Department of Paediatrics, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Karel Cvachovec, MD, MBA

*Head of Department of Anaesthesiology and ICM, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Tomáš Eckschlager, MD

*Department of Paediatric Haematology and Oncology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

Markéta Havlovicová, MD

*Senior consultant of Department of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Jiří Hoch, MD

*Head of Department of Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

Martin Holcát, MD, MBA

*Deputy Manager for Medical Preventive Care, Motol University Hospital*

prof. Václav Chaloupecký, MD

*Paediatric Children's Heart Centre, Motol University Hospital*

assoc. prof. Zdeněk Kabelka, MD

*Head of Department of ENT, 2nd Faculty of Medicine and Motol University Hospital*

prof. Josef Koutecký, MD, Ph.D.

*Department of Paediatric Haematology and Oncology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Milan Kvapil, MD, MBA

*Head of Department of Internal Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Robert Lischke, MD, Ph.D.

*Head of Department of Surgery, 1st Faculty of Medicine, Charles University and Motol University Hospital*

assoc. prof. Milan Macek, MD, Ph.D.

*Department of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

assoc. prof. Jana Prausová, MD, Ph.D.

*Head of Department of Oncology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Lukáš Rob, MD

*Head of Department of Obstetrics and Gynaecology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

assoc. prof. Miloslav Roček, MD

*Head of Department of Radiology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Anna Šedivá, MD, Ph.D.

*Senior Consultant of Department of Immunology, 2nd Faculty of Medicine, Charles University and Motol University Hospital, Deputy manager for Science and Research*

assoc. prof. Radek Špíšek, MD, Ph.D.

*Department of Immunology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Zdeněk Šumník, MD, Ph.D.

*Department of Paediatrics, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

assoc. prof. Josef Zámečník, MD, Ph.D.

*Department of Pathology and Molecular Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

## Director's consulting committee

prof. Jiřina Bartůňková, MD, MBA

*Head of Department of Immunology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Jan Betka, MD

*Head of Department of ENT, Head and Neck Surgery, 1st Faculty of Medicine, Charles University and Motol University Hospital*

prof. Karel Cvachovec, MD, MBA

*Head of Department of Anaesthesiology and ICM, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Jiří Hoch, MD

*Head of Department of Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Pavel Kolář, Ph.D.

*Head of Department of Rehabilitation and Sports Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Milan Kvapil, MD, MBA

*Head of Department of Internal Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

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prof. Miloslav Roček, MD

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assoc. prof. Jana Prausová, MD, Ph.D. MBA

*Head of Department of Oncology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Lukáš Rob, MD

*Head of Department of Obstetrics and Gynaecology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*



prof. Antonín Sosna, MD

*Head of Department of Orthopaedics, 1st Faculty of Medicine, Charles University and Motol University Hospital*

prof. Jan Starý, MD

*Head of Department of Paediatric Haematology and Oncology, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

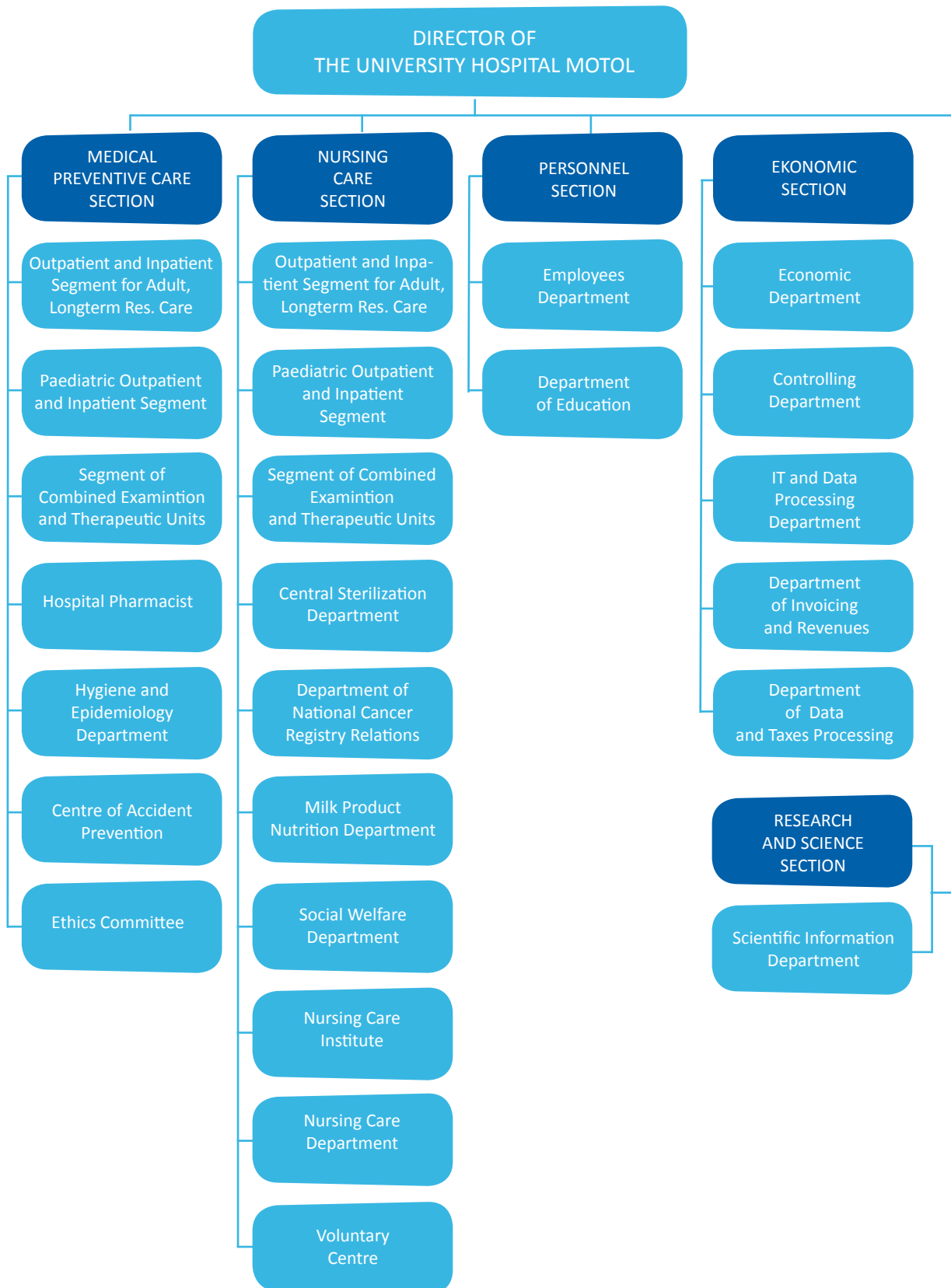
prof. Jiří Šnajdauf, MD, FEBPS

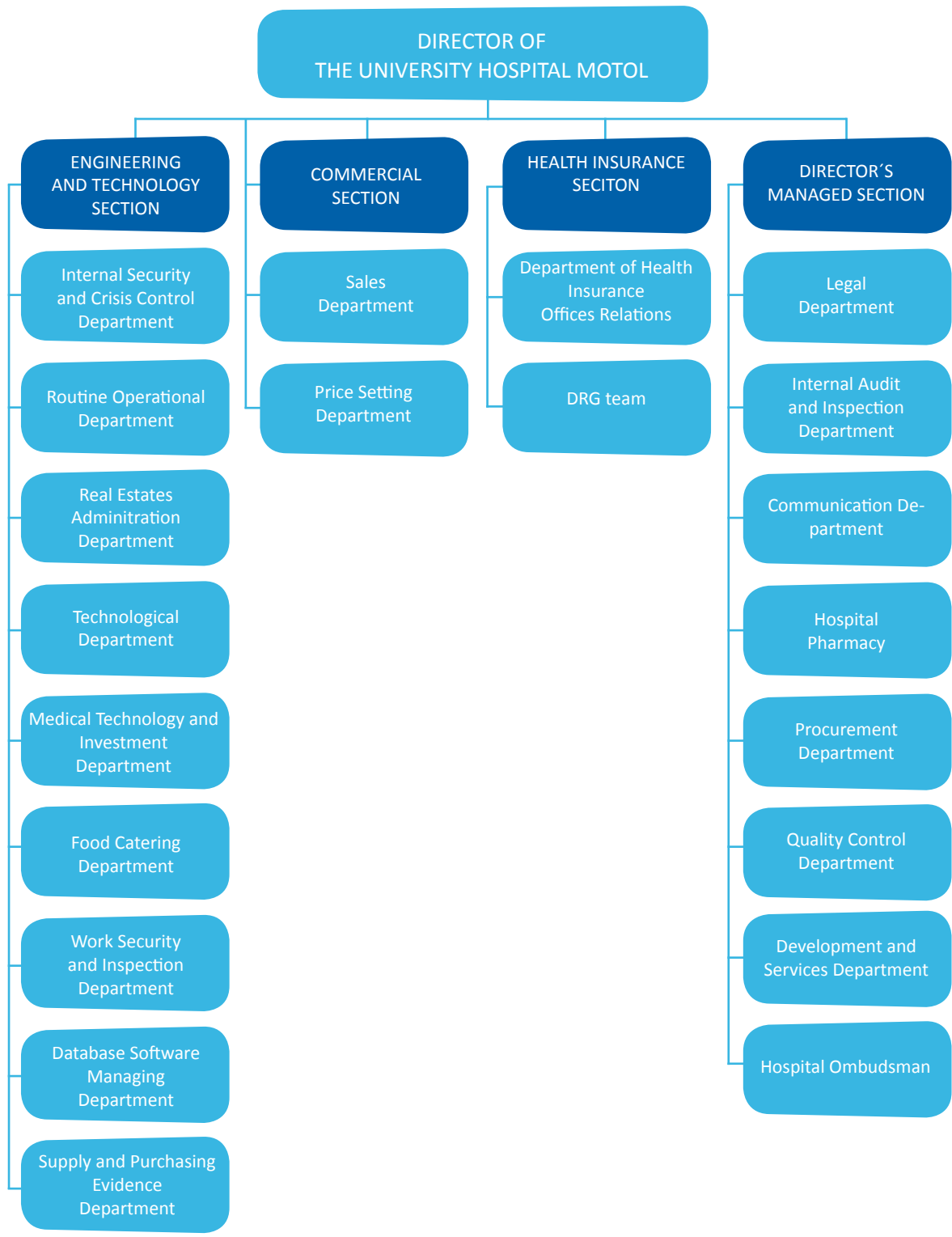
*Head of Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

prof. Tomáš Trč, MD, MBA

*Head of Department of Orthopaedics, 2nd Faculty of Medicine, Charles University and Motol University Hospital*

# Basic organizational structure





Hospital Estate Area /m2	348 000
Assets /in thousand CZK/	11 211 992
Total turnover /in thousand CZK/	7 152 775
Employees /natural persons/	5 647
Employees /employment/	5 065

Number of Hospitalisations	76 167
Number of Outpatient treatments	717 454
Number of Treatment Days /excepted Longterm Residential/	464 930
Number of Anaesthesia treatments	38 703
Number of Childbirths	3 183
Death Rate	1,39

# List of Medical Departments

## Paediatric Inpatient Part

Department of Paediatrics \*)

*Head: prof. Jan Lebl, MD*

Children's Heart Centre, Motol University Hospital

*Head: prof. Jan Janoušek, MD, Ph.D.*

Department of Paediatric Psychiatry \*)

*Head: prof. Michal Hrdlička, MD*

Department of Stomatology \*)

*Head: prof. Taťjana Dostálová, MD, Ph.D., MBA*

Department of Paediatric Surgery \*)

*Head: prof. Jiří Šnajdauf, MD, Ph.D., FEBPS*

Department of Paediatric Haematology and Oncology \*)

*Head: prof. Jan Starý, MD, Ph.D.*

- Bone Marrow Transplant Unit

*Head: prof. Petr Sedláček, MD*

Department of Paediatric Neurology \*)

*Head: prof. Vladimír Komárek MD*

Department of ENT \*)

*Head: assoc. prof. Zdeněk Kabelka, MD*

- Department of Phoniatics

*Head: Eva Vymlátilová, Ph.D.*

## Adult Inpatient Part

Department of Obstetrics and Gynaecology \*)

*Head: prof. MUDr. Lukáš Rob, MD*

- Department of Neonatology with IRCU

*Head: Miloš Černý, MD*

Department of Surgery \*)

*Head: prof. Jiří Hoch, MD*

3rd Department of Surgery \*\*)

*Head: prof. Robert Lischke, MD, Ph.D.*

Department of Internal medicine \*)

*Head: prof. Milan Kvapil, MD, MBA*

Department of Cardiovascular Surgery \*)

*Head: Jan Burkert, PhD., MD*

Department of Cardiology \*)

*Head: prof. Josef Veselka, MD, FESC*

Department of ENT, Head and Neck surgery \*\*)

*Head: prof. Jan Betka, MD, Ph.D.*

*Department of Nuclear Medicine and Endocrinology \*)*

*Head: prof. Petr Vlček, MD*

Centre of Postacute Care, Motol University Hospital

*Head: Martina Nováková, MD*

Department of Neurology \*)

*Head: assoc.prof. Petr Marusič, MD, Ph.D.*

Centre for Spinal Surgery, Motol University Hospital

*Head: prof. Jan Štulík, MD*

1st Department of Orthopaedics \*\*)

*Head: prof. Antonín Sosna, MD*

Department of Pneumology \*)

*Head: prof. Miloslav Marel, MD*

Department of Oncology \*)

*Head: assoc. prof. Jana Prausová, MD, Ph.D., MBA*

Department of Urology \*)

*Head: prof. Marek Babjuk, MD*

## Common Inpatient Sites of Paediatric and Adult Parts

Department of Anaesthesiology and ICM \*)

*Head: prof. Karel Cvachovec, MD, MBA*

Department of Chronic Resuscitation and Intensive Care

*Head: Jiří Procházka, MD*

Department of Rehabilitation and Sports Medicine \*)

*Head: prof. Pavel Kolář, Ph.D.*

– Department of Rehabilitation

*Head: Martina Kövári, MD*

– Department of Pain Research and Treatment

*Head: Jiří Kozák, MD, Ph.D.*

– Spinal Unit

*Head: Jiří Kříž, MD*

– Department of Sport Medicine  
*Head: assoc. prof. Jiří Radvanský, MD*

Department of Ophthalmology \*)  
*Head: prof. Dagmar Dotřelová, MD, FEBO*

Department of Neurosurgery \*)  
*Head: assoc. prof. Michal Tichý, MD*

Department of Orthopaedics \*)  
*Head: prof. MUDr. Tomáš Trč, MD, MBA*

## Common Examination and Therapeutic Units

Department of Radiology \*)  
*Head: prof. Miloslav Roček, MD*

Department of Clinical Haematology, Motol University Hospital  
*Head: Ivana Hochová, MD*

Blood Bank Department, Motol University Hospital  
*Head: Eva Linhartová, MD*

Department of Biology and Medical Genetics \*)  
*Head: prof. Milan Macek, MD, Ph.D.*

Department of Immunology \*)  
*Head: prof. Jiřina Bartůňková, MD, Ph.D.*

Department of Medical Chemistry and Clinical Biochemistry \*)  
*Head: prof. Richard Průša, MD*

Department of Medical Microbiology \*)  
*Head: Pavel Dřevínek, MD, Ph.D.*

Department of Pathology and Molecular Medicine \*)  
*Head: prof. Roman Kodet, MD*

Department of Clinical Psychology, Motol University Hospital  
*Head: Jaroslava Raudenská Dr., Ph.D.*

Department of Rheumatology, Motol University Hospital  
*Head: Ivana Vavřincová, MD*

Department of Therapeutic Nutrition, Motol University Hospital  
*Head: Marieta Baliková*

Transplantation Centre, Motol University Hospital

*Head: Jaroslav Špatenka, MD*

## Outpatient Sector

Central Operating Theatres – paediatric part, Motol University Hospital

*Head: Drahomíra Fryčová*

Central Operating Theatres – adult part, Motol University Hospital

*Head: Mgr. Vladana Roušalová*

Department of Dermatovenerology and Venerology, Motol University Hospital

*Head: Alena Machovcová, MD, Ph.D., MBA*

Emergency Department for Children, Motol University Hospital

*Head: Marie Mikulecká, MD, MBA*

Emergency Department for Adults, Motol University Hospital

*Head: Jiří Zika, MD*

Department of Pediatric Dermatology, Motol University Hospital

*Head: Štěpánka Čapková, MD*

Primary Care Department, Motol University Hospital

*Head: Jaroslava Kulhánková, MD*

\*) 2nd Faculty of Medicine, Charles University in Prague and Motol University Hospital

\*\*\*) 1st Faculty of Medicine, Charles University in Prague and Motol University Hospital



# Medical preventive care

## Paediatric inpatient part

Department of Paediatrics, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Jan Lebl MD*

*Senior consultant: Jana Tejnická, MD, MBA*

*Head nurse: Bc. Jitka Kaplická*

### **Basic characteristics:**

The department provides diagnostics, treatment and dispensary care for paediatric patients from the whole Czech Republic in almost all branches of internal medicine. In the course of 2013, a total of 4,544 patients were hospitalised there (about 10 % more than in 2012) and the outpatient treatment was provided for 29,907 clients (about 20 % more than in 2012). Twelve patients underwent kidney transplantation, other eight were prepared for the liver transplantation in the IKEM (Institute for Clinical and Experimental Medicine) and other four children were put into the waiting list for lung TX. At the endoscopic operating theatre, 787 interventions were performed and at the department of elimination methods, 4,894 performances were achieved.

### **Specialised outpatient centres:**

The department involves 17 specialist outpatient clinics (including two ambulances for children after kidney and liver TX) and department of elimination methods. All clinics provide examinations for patients from all over the Czech Republic.

### **New methods and procedures:**

- Nephrology group successfully continued with a unique elimination method – immunoabsorption in children.
- Pneumology team developed diagnostics for patients with primary and secondary movement disorders of ciliary epithelium.
- Working group for the treatment of patients with Cystic Fibrosis introduced a new methodology for the investigation of chloride in sweat (Macroduct).
- Gastroenterology team successfully applied a new method of treatment of stenosis of the esophagus – implementing of biodegradable stents.
- Diabetology and endocrinology working group put into service a new Paediatric Diabetes Registry. The team continues in the diagnosis of musculoskeletal disorders (combination of methods of peripheral qualitative CT sensitometry and mechano-graphy).

### **Unique technological equipment:**

- exhaled gas analyzer (LCI) for testing of lung function
- microscope with high-speed camera for the diagnosis of ciliary dyskinesia
- device of new generation for immunoabsorbtion

**Important event in 2013:**

- Pneumology group organized The Course of Flexible Bronchoscopy, it also published a book „Bronchial Asthma in Childhood“ and as co-authors it contributed to some foreign publications.
- Working group for the treatment of patients with Cystic Fibrosis was awarded the title „Centre of Highly Specialized Medical Care for Patients with Cystic Fibrosis of the MUH.“
- Diabetology-endocrinology group won The Award for Creative Achievement of the MUH - „Introduction of Functional Diagnosis of Osteoporosis“ and it received awards from the Czech Endocrine Society for the best publication in the field of endocrinology. The doctors of this working group were awarded the prize for the best publication in the field of paediatric endocrinology in 2013. The gastroenterology working team successfully organized the project International School of Child Nutrition. It published the first comprehensive monograph - „Practical Paediatric Gastroenterology, Hematology and Nutrition.“

## Children´s Heart Centre of Motol University Hospital

*Head physician: Prof. Jan Janoušek, MD, Ph.D.*

*Senior consultant of the dept. of Cardiology: Prof. Václav Chaloupecký, MD,*

*Senior consultant of the dept. of Cardiosurgery: Prof. Tomáš Tláškal, MD,*

*Senior consultant of the dept. Functional Diagnostics: Petr Tax, MD*

*Head nurse: Mgr. Dana Křivská*

**Basic characteristics:**

Paediatric Cardiocentre is the only cardiological and cardiosurgical complex centre for children with a nationwide competence. It is concerned mainly with diagnostics and treatment of congenital cardiac defects in children and it also collaborates with other departments in the treatment of adult patients with congenital cardiac disease. Preference of non-invasive diagnostic procedures (ECHO, MRI, Ct) and primary corrections of defects at an early age are characteristic features of this workplace. In the year 2013 the Paediatric Cardiocentre performed 514 surgeries (+ 25 open arterial duct ligation in low birth weight newborns at other workplaces), 327 catheterisations (including 230 interventional catheterisations), 846 patients were hospitalized and outpatient treatment was provided for 4,593 patients. These numbers represent an increase in the amount of surgeries and catheter interventions compared to previous years, reflecting the relocation of the department to a new room with more suitable capacity. This increase led to the desirable decrease of the number of patients on the waiting list for surgeries – from 140 patients at the beginning of the year to current number - approximately 80-90 patients. As well as in the previous year, the department provided also medical care for foreign patients within the Medevac Humanitarian Programme.

**Specialised outpatient facilities:**

- Clinical cardiology
- Electrophysiology and cardiostimulation
- Prenatal cardiology
- Connective tissue disease

**New methods and procedures:**

- 3D echocardiography
- percutaneous pulmonary valve implantation
- interventional treatment of native coarctation of the aorta
- Nikaidoh surgery for general transposition of the great arteries
- catheter cryoablation for arrhythmogenic substrates
- standard non-fluoroscopic navigation for catheter ablation of arrhythmias by LocaLisa system
- intracardiac ultrasound (ICE)

**Unique technological equipment:**

- Toshiba bipolar sciascopic device
- 3D transesophageal echocardiography Philips
- three-dimensional electroanatomic mapping system of arrhythmias CARTO
- Medtronic CryoCath Cryoablation system

**Important event in 2013:**

- Charitable mission of the Cardiology-Cardiosurgery team in the Mater Hospital in Nairobi, Kenya (23th September – 6th October, surgeries of 15 patients with one late death, successful catheter ablation of cardiac arrhythmias in 3 patients)
- Humanitarian mission of Cardiology-Cardiosurgery team in Amman, Jordan (December 2013, surgeries of 7 patients from Syrian refugee camp without any loss of life)
- Czech Insurance Company Runtour - participation in running races and a subsequent gift in the amount of 750.000,- CZK from the Czech insurance Company Foundation for the purchase of a centrifugal pump for short-term mechanical cardiac support.

## Department of Paediatric Psychiatry, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Michal Hrdlička, MD,*

*Senior consultant: Jiří Koutek, MD*

*Head nurse: Hana Palkovská*

**Basic characteristics:**

This department is the only independent clinical department in this field in the CR. It is concerned with diagnostics, treatment and prevention of mental disorders in paediatric and adolescent patients, it is focused mainly on autism in children, food intake disorders, hyperkinetic syndrome, psychotic conditions and suicidal tendencies in children and adolescents. Another part of the department is the Family Centre, specialising in family therapy. The department is also both pre-graduate and post-graduate teaching facility. Specialisation in paediatric and adolescent psychiatry and adult psychiatry are accredited for the postgraduate course of studies. In 2013, a total of 6,500 interventions were performed on the outpatient basis, 1,510 consultancies together with 460 hospitalised patients.

**Specialised outpatient facilities:**

- Family Centre, specialising in family therapy of paedopsychiatric patients

### **New methods and procedures:**

- In 2010 the department joined the international scientific research consortium COST surveying an early diagnostics of disruptions of autistic spectrum and for the project, the Department of Paediatric Psychology acquired a financial subvention from The Ministry of education, youth and sport for years 2011-2014. Recently, a new diagnostic method for autism spectrum disorders - Autism Diagnostic Observation Schedule (ADOS) was put into operation. Since 2012, the ADOS has been already routinely used at the clinic and a total of 153 patients were tested till the end of 2013.
- In the area of screening for autism, the workers of the department are further involved in the translation, standardization and publication of the CAST screening test for school children (Dudová, I., Beranová, Š., Hrdlička, M., Urbánek, T.: CAST - Screening Test for Autism Spectrum Disorders. 1st edition, Prague, National Institute of Education, 2013, 54 pages.). They also translated and published the M - CHAT Screening Test for children aged 2 years (Dudová, I., Beranová, Š., Hrdlička, M.: Screening and Diagnosis of Childhood Autism in Early Childhood. Pediatrics in practice, 14, 2013, No. 3, p. 153-156.). Both methods are already commonly used in the department.
- The comprehensive therapy of eating disorders, in which the department has a nationwide significance, is further developed. In 2013, the research on suicidal behaviour and self-harm in patients with eating disorders (47 girls examined) took place at the clinic, subsidized by The Ministry of Health of the Czech Republic.
- Diagnostics and full therapy of psychotic conditions is of supra-regional importance.
- A research on early markers of bipolar disorder in children at high risk is under way.

## **Department of Paediatric Stomatology, 2nd Faculty of Medicine, Charles University and Motol University Hospital**

*Head physician: Prof. Tatjana Dostálová, MD, Ph.D., MBA*

*Senior consultant: Milan Hubáček, MD*

*Head nurse: Mgr. Václava Jirků*

### **Basic characteristics:**

Paediatric and adolescent stomatology directed at both healthy and handicapped patients – a multidisciplinary cooperation of practical dentist, paedostomatologist, parodontologist, prosthodontist, orthodontist, dentoalveolar as well as craniomaxillofacial surgeons in treatment of congenital and acquired developmental defects, injuries and tumors. The centre for distraction osteogenesis of the facial skeleton with congenital defects and articular central for total endoprostheses of the jaw articulation. In cooperation with the Neurosurgery, the Department of Paediatric Stomatology provided treatment of inborn and additional defects of splanchno-neurocranium. A development of a method of microscopic craniomaxillofacial surgery is under way.

In 2013, a total of 25,423 outpatient examinations and 853 one-day surgical interventions / 523 dental rehabilitations under total anaesthesia and 330 surgical procedures/ were performed at the department. A total of 715 patients were hospitalised at the inpatient section and 734 surgeries were performed there, including 308 dental rehabilitations in handicapped patients under total anaesthesia.

**Specialised outpatient facilities:**

- Maxillofacial surgery /with specification on distractions of congenital defects/
- Diseases of the jaw articulation
- Oncology
- Diseases of the salivary glands in children
- Prosthetics
- Implantology
- Parodontology
- Orthodontics

**New methods and procedures:**

- use of resorbable osteosynthetic materials for injuries and in reconstructive surgeries in children
- use of new augmentation materials (MEDPOR)
- care for patients with clefts (general stomatological care)
- orthognathic surgical methods including special counselling and a 3D reconstruction
- dental implantology and guided bone regeneration with a special reference to young handicapped patients
- treatment of the teeth of handicapped patients under general anaesthesia and analgesation
- surgery of the jaw articulation including subtotal and total endoprosthesis (TEP TMK)
- distraction of the facial skeleton in children with congenital defects

**Unique technological equipment:**

- DIAGNOCAM 2170 / digital camera system for the diagnosis of dental lesions /
- Reciproc, BEEFILL /special device for endodontics/
- UZ-taxidermy for hard dental tissues
- CATCAM / technology for dental refunds creation/
- PC dental arch
- 3-D imaging system CBCT I-CAT

**Important event in 2013:**

- Award for the lecture by a physician younger than 35 years on the 10th Czech-Slovak-Polish trilateral Symposium for Oral and Maxillofacial Surgery and 2nd National Congress of the Association of Maxillofacial Surgery.

**Department of Paediatric Haematology and Oncology, 2nd Faculty of Medicine, Charles University and Motol University Hospital**

*Head physician: Prof. Jan Starý, MD, Ph.D.*

*Senior consultant: Vladimír Komrská, MD*

*Senior consultant: Vratislav Šmelhaus, MD*

**Basic characteristics:**

The work of the department is focused on diagnostics, treatment and research of oncological diseases in childhood, benign diseases such as anaemia, haemorrhagic conditions and congenital coagulation disorders (haemophilia). Further diseases requiring bone marrow transplantation such as congenital disorders of the immune system or metabolic defects are treated here.

In 2013, a total of 15,348 examinations and treatments were performed at the specialised outpatient facilities, 2,557 patients with oncological diseases and 1,736 patients with benign diseases were treated. Newly were diagnosed: 168 children with malignant solid tumours, 47 children with leucaemia, 4 patients with acquired bone marrow failure, 233 patients with benign tumours, 594 children with non-oncological disease.

The total number of hospitalised patients was 2,445 plus 1,528 relatives who accompanied them.

Totally, 52 operations of bone marrow were performed - 30 from donors not related to the patient (including 5 cord blood grafts), 3 bone marrow were offered from relatives and 19 operations were autologous.

#### **Specialised outpatient facilities:**

- Oncology
- Centre of late consequences
- Centre for hemangiomas
- Haematology outpatient clinic
- Haematology stationary ward
- Congenital disorders of blood coagulation and haemorrhagic conditions
- Care for patients after bone marrow transplantation

#### **New methods and procedures:**

- Introduction of the SNP array method for comprehensive genetic analysis of acute lymphoblastic leukemia.
- Introduction of Next Generation Sequencing method besides other functions, for the detection of minimal residual disease of acute lymphoblastic leukemia.
- Launching of diagnosis of minimal residual disease in acute myeloid leukemia, a significant extension of molecular changes detection in the diagnosis of acute myeloid leukemia.
- Introduction of the gene mutation analysis for the beta-catenin gene, important for the major classification of medulloblastoma, neuroblastoma and some other tumors.

#### **Important event in 2013:**

- Publishing activity of the employees of the department in 2013: 62 publications about the overall IF = 297.223 were published.
- The department joined the EU grant 7RP - PanCareLIFE. The aim is to evaluate the individual inclination to the risk of late consequences, including genetic heterogeneity of individuals studied. The study focuses primarily on the risk of hearing defects and decreased fertility.
- In 2013, the department participated in the international study „offspring study“ - relating to newborns of our cured patients. A total of 406 children were born to 292 our former cancer patients, out of which 138 patients completed a detailed questionnaire for international evaluation about the health of their offspring.
- The results of the international randomized study of treatment of 5,060 children with acute lymphoblastic leukemia (which was coordinated by the department) were published in the prestigious Journal of Clinical Oncology.

## Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Jiří Šnajdauf, MD, Ph.D., FEBPS*

*Senior consultant: Richard Fryč, MD*

*Head nurse: Mgr. Ilona Mayerová*

### **Basic characteristics:**

In frame of specialised skills – neonatal surgery, thoracic surgery, oncosurgery, proctology, urology, surgery of the liver, portal hypertension, biliary tract, extrophy of the urinary bladder and polytraumas in children – the department provides care for paediatric patients from the whole country and super-counselling also for foreign patients.

In 2013, 2,743 patients were hospitalised there in total, of which 2,167 were operated. The total number of outpatient children was 16,135 (including 7,960 children in constitutional emergency service).

### **Specialised outpatient facilities:**

- Thoracic surgery
- Oncosurgery
- Surgery of the liver, biliary tract and pancreas
- Neonatal surgery
- Urology
- Proctology
- Traumatology
- Burns
- Paediatrics
- Consultation for home parenteral nutrition
- Psychological consultation centre

### **New methods and procedures:**

- Introduction of surgical exstrophy of the bladder (according to Mr. Kelly) and of hypospadias by using a foam cover.
- Laparoscopy – the methods of pyeloplasty and splenectomy using laparoscopic technique were further elaborated.
- Introduction of a new technique in solving the inverted chest by mini-invasive method according to Mr. Nuss, which was published in the international literature and was positively evaluated by the author of this technique prof. Nuss from the USA.

### **Unique technological equipment:**

- Duet Encompass – a modern video device for urology and the EMG of the pelvic floor
- Laparoscopic and thoracoscopic device for small children
- CUSA
- New harmonic scalpel
- Ligasure - coagulation

### **Important event in 2013:**

- On 31th October 2013, Mr. Imran Mushtaq, MD from London operated two patients with bladder and hypospadias exstrophy in the operating room of the department.

During this surgery, the first live transmission from paediatric operating rooms to a lecture room was realised via MUH network. Then another surgery with a new technique, which will be used in the future in such malformed children, was performed by MUH paediatric surgeons.

## Department of Paediatric Neurology of 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Vladimír Komárek, MD*

*Senior consultant : Věra Sebroňová, MD*

*Head nurse: Zlatica Pitoňáková*

### **Basic characteristics:**

The department provides diagnostics and treatment of paediatric patients from the whole Czech Republic in all branches of paediatric neurology and it serves as both a pre-graduate and postgraduate teaching workplace. A part of the department are standard beds, ICU beds of a lower type, outpatient clinics, laboratories for electrophysiology and specialized centres. In 2013, a total of 1,265 children were hospitalized there out of 1,658 admissions. At the outpatient facilities 16,125 clinical investigations were provided, 1,265 patients with diagnosed epilepsy treated and 1,498 outpatient EEG and 388 EMG were performed. In electrophysiology laboratory, 5,973 examinations were performed out of which 3,791 EEG examinations, 378 long-term video-EEGs + polysomnography examinations, 1,114 EP examinations and 660 EMG examinations.

### **Specialised outpatient facilities:**

- Comprehensive centre for epilepsy and epilepsy surgery
- Centre for hereditary neuropathy
- Center for hereditary ataxias
- Neuromuscular consulting centre
- Centre for neurocutaneous diseases
- Demyelination consulting unit
- Centre for botulotoxin application
- Clinic for sleep disorders in children

### **New methods and procedures:**

- In 2013, the department implemented new procedures in the treatment of Rasmussen's encephalitis based on experience with the treatment of serious neuro-auto-immune diseases.
- In 2013, a comprehensive analysis of neuropsychological dysfunction in patients with cortical dysplasia was completed; the study was published in a prestigious neurological journal (Neurology, IF = 8.31).
- The DNA analysis of the SPRED1 gene in patients with NF1 was introduced and a project of early diagnosis and targeted treatment of complications of rapamycin analogs in patients with TSC in order to influence the development of the SEGA and secondary epileptic encephalopathy. Both methods were introduced in frame of the Neurocutaneous programme in cooperation with the Department of Biology and Medical Genetics.
- A method for targeted enrichment of gene areas by using HaloPlex technology was established as the first in the Czech Republic. We compiled a panel of all 59 genes



whose mutations can cause Charcot-Marie-Tooth hereditary neuropathy. This panel was examined in first selected 25 patients and it helped detecting the cause of hereditary neuropathy in at least 5 of them. The HINT1 gene examination, whose mutations were newly discovered as the cause of hereditary axonal neuropathy with neuromyotonia, was introduced and it was found that mutations in the gene HINT1 were surprisingly common cause of hereditary neuropathy in Czech patients.

**Unique technological equipment:**

- Video-EEG system for the pre-operation monitoring of 128 channels in children with refractory epilepsy, polysomnography system with on-line esophageal pH measurement;

**Important event in 2013:**

- Senior consultant, Mrs. Sebroňová, MD and. Mrs. Libá, MD, Ph.D received a special recognition of the MUH Scientific Council for Introduction of a New Procedure for the Treatment of Refractory Form of a-NMDARs Encephalitis. The new procedure was published in "Lancet Neurology" (IF = 23.92).
- Scientific thesis of Mr. Kudra, MD was awarded by an invitation of the author to present the results at the ceremonial meeting on the occasion of the twentieth anniversary of the Grant Agency of Charles University (GAUK).

## Department of ENT, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Assist. Prof. Zdeněk Kabelka, MD*

*Senior consultant: Michal Jurovčík, MD*

*Head nurse: Adriana Roškaňuková*

**Basic characteristics:**

The department is concerned with diagnostics and both surgical and conservative treatment of the ENT- related diseases in children from birth up to 18 years of age. As a super-consulting workplace, it provides medical care for children with diseases difficult to diagnose and treat from the whole country. The Centre for cochlear implants in children is a part of the phoniatic section of the department. Till 2013, the department was the only place in the Czech Republic that performed the cochlear implant surgeries in children. In cooperation with a plastic surgeon, the department provides surgeries for newborns with cleft face defects.

In 2013, 2,016 surgeries were performed here, 2,270 patients were hospitalised and outpatient treatment was provided for 18,403 patients.

The Phoniatic section and rehabilitation centre for cochlear implants in children is another part of the ENT department. This workplace is focused mainly on selection of candidates for cochlear implants in children and on pre-operative and longterm post-operative care for patients with cochlear implants for who it provides full phoniatic, logopedic and psychological care including programming of speech processors. Further it actively ensures supplementary logopedic rehabilitation in the place of their residence throughout the whole Czech Republic. The head of this removed workplace is Eva Vymlátlová, Ph.D.

**Specialised outpatient facilities:**

- Kophosurgery – in the Centre for Cochlear Implants
- Audiology
- Comprehensive Care for Hearing Impaired Patients including rehabilitation after Cochlear Implantation in Mrazovka centre
- Solution of developmental defects of the neck and the head
- Monitoring of glandular swelling
- Phoniatic outpatient clinic
- Logopedy
- Thyreology
- Diagnosis of GERd
- Somnology

**New methods and procedures:**

- Solution of choanal atresia with the help of BD stent
- Laryngotracheal reconstruction with the help of Monnier LT-Mold stent
- A methodology for measuring of esophageal impedance, which extends options of the current pH-metry
- Application of the BAHA system in clinical practice, it is a unique application of bone hearing aid, a part of it is imbedded into the skull behind the ear. After its incorporation (osseointegration) a special
- external hearing aid can be connected, it provides significantly better auditory perception for indicated patients than conventional bone hearing aids.
- The introduction of a high-frequency tympanometry in routine treatment of the tympanic cavity in the youngest children, where conventional devices show false negative results;
- Sleep monitoring in apnoics / PSG /;
- Introduction of Custom Sound Suite 1.0 - a new type of processor tuning and recording of the implant functions- was introduced. A new version of Custom Sound Suite 1.3 with extended functions was used.
- A new diagnostic method on the basis of DPOAE – CochleaScan and the use of the bone (BC) module in technology of the SSEP measurement were introduced. Both methods significantly contribute to refined acoustic diagnostics in youngest children.
- Programme of early surgeries of cleft defects in newborns. The early detection and treatment of secretory otitis symptoms in children with cleft defects.
- Introduction of wireless module for automatic pre-operative measurement of STR and NTR (neural response telemetry) for Cochlear Implantations.
- Intranasal application of Lactobacillus acidophilus in children, a new study

**Unique technological equipment:**

- PH Impedancemetry device
- Polysomnograph
- Maico MI 34, a high frequency tympanometer
- CO2 Laser with a mikromanipulator
- The newest type of Bienair drill
- CochleaScann on the DPOAE basis – a new technology of objective audiometry
- BioMarker device – possibility of objective measurement of cognitive abilities in paediatric patients
- NRT/Neural Response Telemetry/ module in pre-operative measurement of the C1

function

- Screening AABR device
- Shaver / microdebrider / with an attachment to pharynx and larynx
- Harmonic scalpel
- Measurement of steady potentials by M.A.S.T.E.R. device
- Wireless module for automatic intraoperative measurement of STR and NRT in Cochlear Implantation.
- 3-channel intraoperative monitor of peripheral nerves

**Important event in 2013:**

- Organization of a seminar for the 20th anniversary of the Centre for Cochlear Implantation in Children in the Czech Republic: "20 Years of Cochlear Implantation in Children in the Czech Republic, Prague, 30th October, 2013.
- In cooperation with the Institute of Postgraduate Medical Education, organization of two day courses „What life brings in the field of paediatric ENT“ for paediatricians and otolaryngologists, March and November 2013.
- Participation in the Interdisciplinary Symposium: 20 Years of Implantable Hearing Solutions in the Czech Republic.
- ▪ 20 publications, including 5 in a journal with IF and 10 in peer-reviewed journal, more than 30 lectures at national and international congresses and events.

## COMMON INPATIENT DEPARTMENTS OF PAEDIATRIC AND ADULT PARTS

### Department of Anaesthesiology and ICM, 2nd faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Karel Cvachovec, MD, MBA*

*Senior consultant: Tomáš Vymazal, MD*

*Head nurse: Mgr. Taťána Maňasová*

**Basic characteristics:**

The department provides anaesthesiological and resuscitation care for both paediatric and adult patients in accordance with the needs and requirements of the MUH. With its number of physicians, other nursing staff as well as the range of its activities it is the biggest workplace in the CR. This workplace provides a specialized care requested by health centres of a lower type in the whole republic. It is a leading and coordinating centre for the postgraduate education of doctors and nurses, it provides training for anaesthesiologists and other specialists. It also ensures teaching of students in the Master's degree programme and the Bachelor's course at 2nd Faculty of Medicine and in international educational projects.

In 2013, so far the highest number of patients have been hospitalised at the department - a total of 1,479 patients, of which 821 patients were adults, 609 children and 49 patients needed chronic intensive care. There were performed a total of 38,703 anaesthesiological interventions, including 10,084 interventions in children.

**New methods and procedures:**

- Wide-range use of echocardiography in patients undergoing cardiosurgical or different surgery, including lung transplantation, the project „Ex-vivo lung perfusion before Tx“ was run in cooperation with surgeons;
- Consistent implementation of elimination methods using the citrate
- Implementation of modern pharmaceuticals in daily anaesthesiological care
- Modernization of medical devices with regard to latest ventilation techniques using transpulmonary pressure measurements
- Extension of sonographic techniques in nerve block anaesthesia and safe vascular inputs ensuring in adults and children
- Introduction of sonography in early diagnosis of bleeding into cavities in traumatized patients
- Extension of hemocoagulation investigation at the bedside - TEG, ROTEM for early diagnosis of coagulopathy, change of the actions in case of bleeding
- Introduction of ECMO support in conditions of serious pulmonary failure
- Continuous replacement of the renal function together with haemoabsorption (CPFA);
- Use of videolaryngoscope method in case of difficult intubation, including one-use intubation instruments and subserviences;
- Use of combined neuroaxial blockades in replacements of the major joints (hip, knee), including an education for employees in specialized workplaces;
- Routine use of neuromuscular blockade reversal after anesthesia
- Use of non-invasive ventilation techniques for the treatment of breathing insufficiency both in children and adults;
- Using of 10% solution of sodium chloride in the therapeutic protocol in the brain edema;
- Routine monitoring of cerebral oxymetry during surgeries in extracorporeal circulation and using of deep hypothermia;
- Pre-operative preventive administration of Levosimendan to manage the perioperative heart failure;
- Comprehensive therapeutic protocol to manage the diastolic heart failure;

**Important event in 2013:**

- Continuing reconstruction of the adult inpatient department
- Consolidation of personnel composition and acquiring of the scientific degree Ph.D
- A successful end of the internal grant of the MUH
- A number of scientific publications in peer-reviewed and impacted journals

**Department of Chronic Resuscitation and Intensive Care is a part of the department of Anaesthology and ICM, 2nd faculty of Medicine, Charles University and Motol University Hospital, since 1st April 2010**

## Department of Chronic Resuscitation and Intensive Care

*Senior consultant: Jiří Procházka, MD*

*Head nurse: Blanka Eliášová*

**Basic characteristics:**

Intensive care for patients with longterm ventilation, disconnecting from the ventilator, stabilisation of haemodynamics, restoring of the internal environment, neurorehabili-

tation, physio- and ergotherapy, recondition with mobilisation; artificial nutrition, basal stimulation.

**Specific features:**

- Consulting services for patients and their families in crisis, training of alternative communication, development of a programme for domestic artificial lung ventilation (DALV) and dispensary supervision in patients with DALV;
- Training for domestic enteral nutrition – PEG, training of patients for the care of chronic tracheostoma and tracheostomal cannula;
- Acute consulting service for emergencies in the building 21; training of physiotherapists in the Bachelor's course specialised in patients who need chronic resuscitation and intensive care.

**Unique technological equipment:**

- Miniature capnometer for monitoring of the training of spontaneous breathing and outpatient monitoring of patients with DALV;
- Electrolarynx for the training of alternative voice in tracheostomy.

**Department of Rehabilitation and Sport Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital**

*Head physician: Prof. Pavel Kolář, Ph.D*

*Senior rehabilitation physiotherapist: Mgr. Kateřina Míková*

**Department of Rehabilitation, Spinal Unit, Section of Sport Medicine and Pain Treatment and Research Centre are parts of the department.**

**1. Department of Rehabilitation**

*Head physician: Martina Kővári, MD*

*Head nurse: Mgr. Hana Jirků*

**Basic characteristics:**

The department is concerned with rehabilitation for adult and paediatric patients with vertebrogenic disorders, neurological and internal diseases, after orthopaedic surgeries and injuries of the locomotor apparatus and spinal surgeries. It also provides some special rehabilitation programmes. In 2013, 626 patients were hospitalised at the inpatient section of the department, its outpatient part examined 4,503 patients and rehabilitation was also provided to 13,645 patients of other departments of the MUH.

**Specific features of the workplace:**

- Some physicians and physiotherapists participate in interdisciplinary super-consulting programmes for patients with Cystic Fibrosis, DMO (poliomyelitis), hereditary motoric-sensitive neuropathy, swallowing disorders, newly created programme for patients with urine and faecal incontinence and spastic patients, for whom a new Centre for Spasticity was launched in cooperation with the Department of Neurology and lymphology programme. The department provides specialised prosthetic care and prescription of suitable aids for patients after amputations. Some physiotherapists participate in the multidisciplinary team of the Neurootology, specialized

in patients with dizziness and disorders of stability.

**New methods and procedures:**

- Measurement of changes of the activity of the oesophagus with consequent changes of afferentia in the locomotor system continues for the second year.
- Use of biofeedback (elektro-tactil language stimulation) in patients with cerebellar impairment.
- Standard extension of biofeedback in patients with faecal incontinence.
- Common rehabilitational-neurological seminars with the application of botulinum toxin and subsequent specific rehabilitation techniques conducted within the Centre for Spasticity.
- Rehabilitation programme of swallowing disorders created in collaboration with the Department of ENT has been successfully developed.
- Ongoing programme of so called NORA (neuro-orthopaedic-rehabilitational) seminars with a focus on paediatric patients with cerebral palsy, a unique programme within the Czech Republic.

**Unique technological equipment:**

- „Brain port“ device for diagnostic of vertiginous conditions;
- „Balance master“ device for the therapy of stability disorders and vertiginous conditions;
- “X box” device and “Wee” system for the training of stability and coordination skills in children
- Myofeedback device for electrical stimulation of pelvic floor muscles

**Important event in 2013:**

- Organization of a national conference Disorders of Respiratory Stereotype in the Physical Medicine Centre in Chodov with international participation (Prof. Chaitow)
- Organization of a separate conference called DNS Scientific Symposium in Chicago on 23rd October 2013
- Publishing of an English edition of the book Clinical Rehabilitation (author Kolář et al.)
- Significant publications in scientific international magazines such as: NeuroRehabilitation, Journal of Orthopaedic and Sports Physical Therapy, Journal of Neurological Science.

## 2. Spinal unit

*Head physician: Jiří Kříž, MD.*

*Head nurse: Bc. Hana Jirků*

**Basic characteristics:**

Spinal unit provides therapeutic and rehabilitation care for patients in the subacute stage after spinal injuries and also for patients in the chronic stage after the injury of the spinal cord with health complications. In 2013, 68 patients after acute spinal lesion and another 41 spinal patients in the chronic stage and with acute complications were hospitalised here, and 250 patients were treated on the outpatient basis within the dispensary or newly emerging problems.

**New methods and procedures:**

- Development of electronic forms for neurological examination in accordance with the International Standards for Neurological Classification of Spinal Cord Injury ( ISN-CSCI ), functional assessment of independence ( SCIM ), walk tests, the assessment of spasticity in spinal patients and launching of website forms on [www.spinalcord.cz](http://www.spinalcord.cz).
- Continuing of the common project “Fitness and Cardiovascular Response to Physical Exercise in Patients with Tetraplegia” in cooperation with the Department of Sport Medicine and common project “Sperm Taking in Spinal Patients via Vibrostimulation Method” in cooperation with the Department of Urology.
- Continuing of the NT 12381 grant “Dysfunction of the Respiratory System in Patients after Spinal Cord Injury”.
- Launching of international cooperation within the project „Effectiveness of Automated Locomotor Training in Patients with Incomplete Acute Spinal Cord Injury“

**Unique technological equipment:**

- Vibrostimulation device, used in cooperation with the Department of Urology.
- Medelec Synergy EMG / EP device for electrophysiological laboratory of the Department of Rehabilitation and Sport Medicine.

**Important event in 2013:**

- Organization of the 3rd Course for Examination of a Spinal Patient 13th – 14th September 2013
- Significant publications in international journals Spinal Cord and Journal of Spinal Cord Medicine

### 3. Department of Sport Medicine

*Head physician: Ass. Prof. Jiří Radvanský, MD*

*Head nurse: Bc. Hana Jirků*

**Basic characteristics:**

It focuses on consulting and counselling activities in patients with an excessive or inadequate physical exercise regimen, functional ballast diagnostics in paediatric patients after heart defects surgeries and in adults before elective surgeries. It provides special sport investigations and superconsiliary activities in course of licensing for racing sports. It also provides superconsiliary activities in the field of comprehensive lifestyle changes including

nutrition counseling and physical exercise programme in patients with civilisation diseases (metabolic syndrome, obesity, diabetes mellitus) and pediatric patients with chronic diseases, restricting sport activities.

The department performs specialized load testing before the movement therapy, under the leadership of physiotherapists.

In 2013, a total of 2,000 outpatient and consiliary examinations, 1,300 sport examinations and 2,500 hours of controlled physical activity of patients were performed.

**New methods and procedures:**

- Diagnosis of safe load intensity in individualized physical activity and determination of energetic strain of motion for motor-disabled persons

- Analysis of body composition by the bioimpedance method
- Determining of the risk of postoperative complications and elective surgeries by spirometry with the help of a winch

**Unique technological equipment:**

- Complex equipment of exercise physiology laboratory (treadmill, ergometer, winch, dynamometer) for ergometric and spiro-ergometric tests, an analyser of breathing gases exchange with differential paramagnetic sensor

**Important event in 2013:**

- Publication activity in impact journals

#### 4. Centre for Pain Treatment and Research

*Head physician: Jiří Kozák, MD., Ph.D..*

*Head nurse: Lenka Gavendová*

**Specific features of the workplace, Specialised outpatient facilities:**

The workplace has a multidisciplinary character in care of chronic pain, it is one of the six neuromodulation centres in frame of the Czech Republic, it is also a postgraduate educational workplace in the field of algesiology and neuromodulation techniques. The department runs a consulting telephone service „Line against pain“.

Specialized outpatient facilities: Psychology, Clinic for the Treatment of Neuropathic Pain.

**New methods and procedures:**

- The department develops primarily neurostimulation techniques (SCS) and radio-frequency procedures in the treatment of painful conditions. The neurostimulation offers an alternative in the treatment of the painful conditions where less invasive therapies are not effective or burdened by unmanageable side effects. The department prepares further improvement of invasive techniques in algesiology for the detection of neural structures under ultrasound control.

**Important event in 2013:**

- Active participation in the Czech – Slovak dialogues on pain – Martin - Slovakia
- Organization of the „Prague neuromodulation day“ in the MUH
- Publications – Treatment of Pain - Current Approaches to the Treatment of Pain and Pain Syndromes, 2nd updated edition - awarded by the Czech Medical Association of J.E. Purkyne as the best publication in the year 2013
- Scientific articles published in medical journals, seven articles in Czech and one in foreign journals



## Department of Ophthalmology, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Dagmar Dotřelová, MD, FEBO*

*Senior consultant: Milan Odehnal, MD, MBA*

*Head nurse: Bc. Jana Králíčková*

### **Basic characteristics:**

The department of Ophthalmology provides preventive, diagnostic, conservative and surgical care for patients from the birth till old age. In the field of paediatric ophthalmology, the department serves as a superconsiliary centre in Central and Eastern Europe. In the field of adult ophthalmology our department covers a wide spectrum of up-to-date modern diagnostic-therapeutic interventions, including cataract and vitreo-retinal surgery.

In 2013, a total of 1,200 surgeries in both children and adults and 510 examinations in hospitalised children were performed. The most frequent surgical interventions were cataract operations in adults, operations of strabism in both children and adults, retina and vitreous surgeries and examinations of children in general anaesthesia.

### **Specialised outpatient facilities:**

- Paediatric ophthalmology
- Centre for immature babies with retinopathy
- Centres for strabology, glaucoma, cataract and oncology
- Adult ophthalmology
- Vitreo-retinal centre, Centre for diabetology, cataracts, glaucoma and for plastic surgery
- Orthopedic outpatient centre

### **New methods and procedures:**

- Method of confocal corneal microscopy for observations of structures of cornea
- Introduction of safer and faster method of cannulation of the lacrimal pathways by Mr. Ritleng
- Application of Healaflo viscoelastic material during Ahmed's valve implantation
- New variant of the application of eyelid implants in the treatment of lagophthalmus, in which the creation of special pockets on the eyelid cartilage reaches the optimal results
- Biological treatment via Lucentis (Ranibizumab anti-VEGF-A) within the intravitreal application in patients with macular edema of diabetic retinopathy or retinal vein occlusion
- Treatment via OZURDEX intravitreal implant (dexamethasone 0.7 mg) in the treatment of macular edema or intraocular inflammation

### **Unique technological equipment:**

- Retcam – it allows to preserve and reproduce a three-dimensional image of the retina
- Confoscan - confocal microscope, which allows monitoring and studying of corneal endothelial cells „in vivo“
- UBM - ultrasound device for diagnostics of diseases of the anterior eye segment
- OCT (optical coherence tomography)

**Important event in 2013:**

- The first national monograph „Neonatology“ written by more authors was published. The author of the chapter „Retinopathy of prematurity“ is M. Odehnal, MD, MBA.
- The method of confocal corneal microscopy in a clinical study in patients with diabetic retinopathy within the Type 1 Diabetes Mellitus was conducted. The method serves for the diagnosis of nerve fibers in the subbasal plexus of the cornea – leads to determine the patient’s risk within the development of diabetic neuropathy (grant No. 6029 from the Ministry of Health of the Czech Republic).
- During the years 2012 – 2013, two patients with a rare stroma cyst of the iris were surgically treated. The use of ultrasound biomicroscopy for the early detection of recurrences is reported in a medical article.

## Department of Orthopaedics, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Tomáš Trč, MD, MBA*

*Senior consultant: Daniel Rybka, MD*

*Head nurse: Helena Hlásková*

**Basic characteristics:**

The department provides diagnostic and therapeutic care in terms of orthopaedics and traumatology for both paediatric and adult patients not only in the catchment area, but also superconsiliary and consulting services in the whole Czech Republic.

In 2013, a total of 1,331 paediatric and 2,373 adult patients (together 3,704 patients) were hospitalised at the department. A total of 1,183 interventions in paediatric patients and 2,271 interventions in adults were performed here, in total the department of Orthopaedics performed 3,454 surgeries. The treatment on an outpatient basis was provided for 34,412 outpatient patients.

The department further participates in the development and implementation of new methods in orthopaedics, traumatology, sport medicine and new biotechnologies used in the treatment of the locomotor apparatus (cartilages, ligaments, tendons and bones). At the present time, the employees of the department are investigators of several grant projects at the national as well as international level.

**Specialised outpatient facilities:**

- Onco-orthopaedics
- Scoliosis
- Sport traumatology for both children and adults
- Specialised arthroscopic interventions
- Neurogenic defects
- Congenital skeletal defects
- Primary and revise endoprosthetics
- Complex surgery of the humeral joint
- Arm surgery (specialized for subsequent care)

**New methods and procedures:**

- Transplantation of cartilages using cultured chondrocytes
- Use of mesenchymal stem cells in the treatment of diseases of articular cartilages, combination of the ASK intervention of microfractures and application of a joint

blockade

- Use of autologous blood plasma (growth factors obtained by the thrombocyte centrifugation in the treatment of bone cartilage degeneration (PRGF)
- Use of the PRGF cell method in the treatment of enthesopathies
- Rupture of the rotator cuff of the humerus treated with the help of PGRF
- Surgery of the replacements of anterior cruciate ligament in children with open growth plates via special technique without breaking the growth plate - we are the leading workplace for this technique in the Czech Republic - a unique group of patients of the MUH is being presented at national congresses
- Strategy for the treatment of patellar luxation in children and adolescents - preparation of a nationwide treatment standard, publications in domestic and foreign literature, organization of international monothematic congress
- Development of restorative surgery of the hip joint - modified Dunn osteotomy, standard osteotomy of the femoral neck and finally reduction osteotomy of hip joint head during the controlled hip luxation – all of it is unique within the Czech Republic
- Treatment of rotator cuff calcification in arm joint - a unique technology of mini-invasive (arthroscopic) treatment using radiofrequency energy
- Development of restorative surgery of the hip joint by mini-invasive technology - the inclusion of arthroscopy of the hip joint between the standard operating procedures – currently CAM treatment of lesions in the femoral neck via osteochondroplastica.
- Mini-invasive TEP of the hip joint as a standard operating procedure at the clinic. In Europe, this method is standard or at least a matter of choice, in the Czech Republic it is conducted only in a few workplaces

**Unique technological equipment:**

- Footplate – a device for diagnosis of foot arch injury
- Modern surgical instrumentation for navigated surgery of large joints
- The latest type of arthroscopic device
- Songraph for diagnostics of congenital hip dysplasia and other bone diseases
- Centrifugation system of blood plasma in order to obtain the PRGF

**Important event in 2013:**

- Diagnosis of the hip joint: CT 4D examinations (i.e. 3-dimensional processing of CT hip joint image in motion), on 23rd December 2013 the first in the Czech Republic in cooperation with the Department of Radiology of the MUH and the Central military hospital Prague.
- Preparation of a unique world clinical study approved by the State Institute of Drug Control - arthroscopic repair of the rotator cuff of the shoulder joint with using cultured stem cells to improve the biological healing of tendon - the first case report is in preparation for publication.
- The head of the department Prof. Tomáš Trč, MD, MBA. received a honorary membership in foreign companies - Israeli Orthopaedic Association and the Georgia Arthroscopy Association.

## Department of Neurosurgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Ass. Prof. Michal Tichý, MD*

*Senior consultant: Jiří Steindler, MD*

*Head nurse: Gabriela Šuláková*

### **Basic characteristics:**

The department is focused on specialised neuro-surgical acute or planned care for paediatric and adult patients, it provides consulting services in the whole range of its specialisation. It also provides education for pre- and postgraduate study courses and scientific and research activities. In 2013, a total of 1,204 patients were hospitalised in both paediatric and adult parts, 1,149 patients were operated and the outpatient treatment was provided for 5,294 patients.

### **Specialised outpatient facilities:**

- Neurosurgery for children
- Neurosurgery for adult patients

### **New methods and procedures:**

- Measurement of neurophysiological functions in surgeries of brain and spinal cord with the help of a multimodal device, intraoperative stimulation of brain centers in young children;
- Continuing of programmes in solution of age-limited tumors and congenital defects of the CNS;
- Continuing of implantation of baclofen pump for the treatment of generalised spasticity in children and in adults;
- Continuing of the treatment programme for refractory epilepsy – resection epileptosurgical
- surgeries and implantation of vagal nerve stimulators in paediatric and adult patients;
- Orientation towards mini-invasive methods in the treatment of degenerative diseases;
- Vertebroplasty and stentoplasty in the therapy of osteoporotic spinal fractures in cooperation with the Department of Imaging methods and the Department of Rehabilitation and Sport Medicine;
- Radiofrequency neuromodulation used in painful conditions (vertebral, peripheral nerves);
- Cooperation with plastic surgeons from the Department of Surgery and stomatosurgeon during reconstructive surgery.
- Using of highly specialized multimodal monitoring in patients with craniocerebral injury in the field of neuro-traumatology;
- Within the neurovascular programme, the surgical programme and endovascular techniques are both developed in cooperation with the Department of Imaging methods. Also decompressive craniectomy in patients with ischemic diseases is performed in collaboration with the Department of Neurology.
- Working out and using of frame and frameless stereotaxy- use in case of implementation of deep brain electrodes and brain biopsies.

**Unique technological equipment:**

- Mediatric electromagnetic neuronavigation without fixation of the head is provided in new central operating rooms for children (including frameless stereotaxy);
- Cerebral neuronavigation BrainLab, integrated with the Pentero microscope (Zeiss). The SW equipment enables the fusions of functional brain monitoring (MRI, SPECT, tractography etc.);
- Neuro-monitoring device Nicolet Endeavor for the intra-operative follow up of neurophysiological functions;
- Ultrasound applicator of the fixation of absorbable osteosynthesis SonicWeld.
- Stereotactic frame device Radionics
- Neuroendoscopic device
- DIGI - LIFE IP digital transcranial doppler

**Important event in 2013:**

- Active participation of doctors from the department on a number of professional events at home and abroad

## ADULT INPATIENT PART

### Department of Obstetrics and Gynaecology, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Lukáš Rob, MD*

*Senior consultant: Roman Chmel, MD, Ph.D.*

*Head nurse: Bc. Libuše Hofmannová*

**Basic characteristics:**

The department provides care in the full range of its specialisation – gynaecology and obstetrics – including methods of assisted reproduction and specialised interventions in the field of oncological gynaecology, senology and uro-gynaecological diagnostic examinations as well as interventions. The department is the Perinatology Centre of the highest level, including complete care for extremely immature neonates with a regional and nationwide competence. In 2013, the Oncogynecological department received the statute Oncological Centre and it also defended the statute (ESGO and EBCOG accreditation) of the European Institute of Oncology. In 2013, 9,784 patients were hospitalised there, a total number of surgeries was 6,114 and a total number of outpatient examinations were 101,319. At the department, 3,256 infants were born from 3,183 deliveries.

**Specialized outpatient facilities for:**

- Oncogynaecology and Colposcopy;
- Urogynaecology;
- Senology;
- Endoscopy;
- Centre for assisted reproduction;
- Ultrasound diagnostics and Fetal Medicine
- Prenatal Diabetology;
- Cardiopathies and Haematological diseases in pregnancy

**New methods and procedures:**

- In the therapy of vulvar carcinoma, in the standard therapeutic procedure the preoperative detection and extirpation of the sentinel lymphatic node (an alternative to a complete inguinal lymphadenectomy) has been introduced there, which will significantly reduce postoperative morbidity in patients (mainly lymphoedema of the lower limbs).
- In the treatment of carcinoma of the cervix, less radical procedures based on detection of the sentinel node were introduced, reducing the extent of the surgery and thus also postoperative morbidity for specific groups of women (mainly lymphoedema of the lower limbs, disorders of continence and evacuation of the bladder).
- Among the treatment procedures for young women in the early stage of cervical cancer, who are planning to become pregnant, fertility sparing treatment algorithm in two treatment protocols was put into operation.

**Unique technological equipment:**

- Therapeutic CO2 laser for the treatment of pre-cancerous changes in the vulva and vagina
- LigaSure- coagulation

**Important event in 2013:**

- In 2013, the oncogynecological department received the statute Oncological Centre and it also defended the statute (ESGO and EBCOG accreditation) of the European Institute of Oncology.
- 

**Department of Neonatology with ICRU (intensive care and resuscitation unit) is a part of the department of Gynaecology and Obstetrics.**

## Department of Neonatology with ICRU

*Senior consultant: Miloš Černý, MD*

*Head nurse: Dana Šmídlová*

**Basic characteristics:**

The department of Neonatology is a part of the Perinatology Centre of Intensive Care of the MUH with regional and nationwide activity. In cooperation with paediatric internal and surgical disciplines, it ensures the comprehensive care for neonates with congenital developmental defects (CDD) from the whole Czech Republic. During the last year, a total of 117 children were born with a severe congenital defect with the need for urgent or early intervention. This department further provides care specialised care and intensive resuscitation to immature babies, primarily extremely immature neonates and all critical ill neonates regardless their gestation age. The care of physiological neonates mainly in the room-in regimen is a routine. In 2013, a total of 3,271 infants were born there, of which 317 with low birth weight (less than 2,500 g), thereof 61 infants with extremely low birth weight (below 1500 g). At the ICRU/ICU/IMP, a total of 402 neonates were treated in 2013. For several past years, the department belongs to medical centres with the nearest specific mortality of neonates below 1000 g in the Czech Republic.

**Specialized outpatient facilities:**

- Children at risk and Comprehensive Care Centre for children with risky psychomotor development

**New methods and procedures:**

- Programme of an early correction of cleft lip and palate in neonates (up to 8th day postpartum) continues in cooperation with the Department of ENT of the MUH and a plastic surgeon. In 2013, a total of 29 corrections in neonates were performed. A simultaneous surgery of cleft palate and a plastic surgery was newly implemented in 2 neonates.
- Continuing of the programme of a non-invasive support of breathing in neonates, with reduction of the length of mechanical pulmonary ventilation to a minimum (INSURE).
- Treatment via whole-body hypothermia in neonates with perinatal asphyxia.
- Continuing of the study NEuroSIS – Neonatal European Study of Inhaled Steroids.

**Unique technological equipment:**

- aEEG monitor for continuous monitoring of electrophysiological activity of the CNS
- Therapeutic unit for comprehensive controlled treatment of whole-body hypothermia in neonates after asphyxia
- „Bed-side“ ABL 800 Flex Radiometer with wide spectrum for analysing of biochemical parameter.

**Important event in 2013:**

- The department was awarded the status „Perinatal Center of Intensive Care“ by the Ministry of Health of the Czech Republic.
- Collaboration on the monograph: J. Janota, Z. Straňák et al. Neonatology. 1st edition. Prague: Mladá fronta a.s., 2013 (physicians of the department wrote a total of 8 chapters)
- 31 publications, posters and presentations in national and international journals with the impact factor of 41.4.
- Project of the internal grant: „Adaptation of glucose homeostasis in a baby of diabetic mother and polarization of its immune response „ (M. Černý, MD)
- Nationwide data collection of late morbidity in children at perinatal risk (Ass. Prof. P. Zoban, MD)
- Establishment of a working group of the Czech Neonatology Society for a data collection in the field of neonatal infections from Perinatal Center of Intensive Care in the Czech Republic (P. Švihovec, MD)
- Evaluation of schooling of neonatology by students of the 2nd Faculty Medicine, Charles University was very positive
- Organization of the 6th meeting with former ICU patients, the so-called „ Immature picnic“
- Launching of activity „N Foundation“, <http://www.nadacnifondn.cz/>

## Department of Internal Medicine, 2nd Faculty Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Milan Kvapil, MD, MBA*

*Senior consultant: Vladimír Srnský, MD*

*Head nurse: Jarmila Schmittová*

### **Basic characteristics:**

Department of Internal medicine provides full diagnostic and therapeutic care almost in the whole range of its specialisation, for hospitalised patients from the catchment area and super consulting services for patients from the whole Bohemia. It offers pregraduate education for Czech and foreign students of 2nd Faculty of Medicine from the 3rd to the 6th year of their studies as well postgraduate course in frame of the discipline.

In 2013, the department provided outpatient treatment for 56,766 patients, 5,180 patients were hospitalised.

### **Specialised outpatient facilities for:**

- General internal medicine (including consulting services)
- Gastroenterology (including endoscopy and sonography)
- Diabetology
- Nephrology (including peritoneal dialysis)
- Cardiology (incl. ECHO)
- Angiology (incl. DUS examination of arteries and veins)
- Podology
- Nutrition
- Lipidology
- Rheumatology
- Endocrinology

### **New methods and procedures:**

- Advisory centre for pelvic floor disorders which carries out the examinations of patients with anal sphincter incontinence was put into operation. In cooperation with the Department of Rehabilitation and surgical clinics it provides comprehensive diagnostics and treatment in this field.
- Method of pH impedance testing of esophagus and electrogastrography allowing an accurate diagnosis of functional disorders of the esophagus and stomach was put into practice.
- High-Resolution Manometry of esophagus and rectum was performed in practice. It is used in the diagnosis of gastroesophageal reflux disease, achalasia and fecal incontinence.
- Measurement of transcutaneous oxygen tension (TcPO<sub>2</sub>) by the TCM device was performed in practice.
- SLEDD method (Sustained Low-Efficiency Daily Diafiltration) was introduced in the treatment of cardio-renal syndrome.
- The PICC team of nurses (for implementation of central venous catheters by peripheral route) was established at the Metabolic Unit, also taking care for all types of long-term vascular entry. It is the first team in this field of study in the Czech Republic.
- Working group for „Diabetes connected with Cystic Fibrosis“ was established - a system of dispensary care of adult patients with CFRD, in cooperation with internists,



paediatricians and pulmonologists.

**Unique technological equipment:**

- Devices for subcutaneous glucose levels measurements (CGMS): IPRO II, IPRO I, Realtime, DexCom
- Vmax Series 2130 device for investigation of indirect calorimetry and for the determination of energy needs in critically ill patients on mechanical pulmonary ventilation
- VAC therapy (Vacuum Assisted Closure) in hospitalized patients with diabetic foot syndrome was put into practice

**Important event in 2013:**

- Prof. Matoušovic is the co-author of the article „ IgA Nephropathy: Molecular Mechanism of the Disease“, published in the journal Annu Rev Pathol (with IF of 20).
- Jan Broda Foundation Fund (the chairman, prof. Karel Matoušovic, MD) organised the Educational Symposium of the Czech Society of Nephrology and 5th Jan Brod Memorial Lecture in cooperation with the Czech Society of Nephrology.
- Ass. Prof. Keil with the team organized a scientific symposium on the 20th anniversary of urgent operation of the Endoscopic Centre of the Department of Internal Medicine.
- Four two-day symposiums for diabetologists, internists and cardiologists called „Hlavolamy (Brain teasers)“ were organized.
- An annual two-day series of seminars called „Myths, Misconceptions and Truths in diabetology“ continued in 2013.
- Prof. Perušičová published books „Diabetes Mellitus and the Brain“, „ Diabetes Mellitus and Insulin Resistance, Dyslipidemia, Hypertension, Gout „ „ Diabetes Mellitus and Depression, Dementia (DM type 3)“, „Oral Diabetes Treatment in 2013 .“
- Štěchová, Piřhová: “Insulin Pump Therapy - the everyday life of the family of Novak”
- Perušičová, Piřhová, Račická: “Diabetes Mellitus and Dietary Supplements”
- Organization of the 9th Symposium „Cardiabetes or what is new on the way from obesity through diabetes up to cardiabetes“ in Prague.
- Organization of the traditional three-day seminar: the 19th Graduate seminar „News in diabetology.“ in Poděbrady
- Organization of the 9th traditional symposium „Individual treatment of type 2 Diabetes Mellitus - Strategy 2013“ in Prague and in Brno.
- The process for acquiring the professor title of Ass. Prof. Charvát has started.
- Sabina Pálová, MD defended the title Ph.D. with a thesis „Evaluation of the Nutritional Status and Cardiac Risk in Patients with Anorexia Nervosa“.
- The department is a training centre for abdominal sonography courses organized by the Postgraduate Medical School, including the licensing.
- The department is a training centre for doctors before attestation from diabetology / endocrinology.
- The systematic project of postgraduate medical training of doctors without specialized competence continued. The program is available on the website of the department.

**Department of Infectious Diseases is a part of the Department of Internal Medicine, 2nd Faculty Medicine, Charles University and Motol University Hospital since 1st January 2013, it is the 6th clinic of the department.**

**Basic characteristics:**

The department of Infectious Diseases provides outpatient and inpatient care for patients with infectious diseases or suspicion on them. It provides care for adults and children since the age of three years. The department has 24 beds incl. one insulating box. The Counseling Centre for Infection of the Liver, the Centre for Travel Medicine and Infectious Center for Drug Addicts are the parts of the department, the operation of the department is supported by the Ministry of Health of the Czech Republic.

**New methods and procedures:**

- Since 2012, the therapy of chronic virus hepatitis type C treated with new drugs (Boceprevir and Telaprevir) in triple combination with Ribavirin and Pegylated interferon  $\alpha$  is under way.

## Department of Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Jiří Hoch, MD*

*Senior consultant: Zbyněk Jech, MD*

*Head nurse: Bc. Růžena Macháčková*

**Basic characteristics:**

In 2013, the Department of Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital provided a complete surgical, outpatient, consulting and hospital care for its patients in the whole range of its specialisation – i.e. general and abdominal surgery, abdominal and thoracic traumatology and plastic surgery in the whole range of the discipline, including microsurgery. The department participated in the pre-graduate and post-graduate education, and in the solution of research projects.

In 2013, the outpatient treatment was provided for 22,062 patients, 3,097 patients were hospitalised and 2,642 patients underwent a surgery.

**Specialised consulting centres for:**

- Proctology
- Patients with colostomy – an educational and training centre
- Diseases of the pancreas and the biliary tract
- Malignant melanoma
- Endocrinology
- Mammology
- Lymphedema treatment
- Endoscopy, Anorectal manometry
- Plastic Surgery

**New methods and procedures:**

- Comprehensive care for patients with breast cancer, including the plastic reconstruction of the breast.
- The new laparoscopic system was purchased for operating rooms in frame of resto-

ring of medical devices for surgeries.

**Unique technological equipment:**

- The unit for electrocoagulation and dissection - LigaSure is being used in operating rooms.
- The scintillation detector for the identification of the sentinel lymph node during breast and malignant melanoma surgeries.

**Important event in 2013:**

- Organisation of the Working Day of the Coloproctological section of the Czech Surgical Society of the Czech Medical Association of J.E. Purkyně with foreign participants;
- Course „Comprehensive care for patients with breast cancer“; ConvaTec Academy – certified educational course for nurses working with patients with stoma; Course of endosutures;
- Leadership of the IGA multicentric grant in the Czech Republic in frame of the „NT13726 Parametric TME quality monitoring as a tool to reduce local recurrences after surgeries of rectal cancer.“
- Grant of the MUH “Modern Technology” – nanofiber technology continues;
- Leadership of the multicentric study of stoma care aids;
- The department enabled the intern for 16 doctors and 7 foreign students;
- One habilitation was successfully defended at the department.

### 3rd Department of Surgery, 1st Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Ass. prof. Robert Lischke, MD, Ph.D.*

*Senior consultant: Jiří Tvrdoň, MD*

*Head nurse: Mgr. Ida Lecnarová*

**Basic characteristics:**

The department is the biggest workplace of abdominal surgery in the Czech Republic - the center of excellence, it provides comprehensive care in many fields of thoracic surgery (surgery of lung, trachea and respiratory tract, chest wall and chest deformities, surgery of oesophagus, mediastinum, myasthenia gravis, diaphragm, surgery of sarcomas of the chest and abdominal cavities).

The department is the only centre in the Czech Republic with the Pulmonary transplantation programme. It is also the only accredited medical centre for thoracic surgery of the second degree.

It provides medical care in the whole range of abdominal surgery (surgeries of esophageal reflux disease, diaphragmatic hernia, esophageal achalasia, a surgery of the stomach and small intestine, liver, biliary tract and pancreas, a surgery of the colon and rectum, hernia surgeries, minimally invasive laparoscopic techniques, thoracic and abdominal traumatology and endocrinology).

In 2013, 2,940 surgeries were performed here, 3,330 patients were hospitalized and outpatient treatment was provided for 21,528 patients.

**Specialised outpatient centres for:**

- Lung transplantation
- One-day surgery

- Diseases of intestines and rectum
- Endocrinosurgery
- Diseases of veins and lower extremities
- Diseases of livers, biliary tract and pancreas
- Surgery of sarcomas of soft tissues
- Diseases of oesophagus and stomach
- Diseases of lungs, mediastinum and chest wall
- Diseases of mammary gland
- Internal clinic

**New methods and procedures:**

- Preparation of the programme Ex vivo lung perfusion and reconditioning, a method to increase the number of suitable
- grafts for lung transplantation;
- Introduction of a surgical rectoscope for the mini-invasive surgery in the rectal region;
- Introduction of an endoscopic application of absorbable stents in diseases of oesophagus, stomach and respiratory tract;
- Introduction of the use of radio-frequency ablation Habib in hepatic surgery and surgery of parenchymatous organs;
- Introduction of surgery of varixes with the help of radio-frequency ablation (RFA).

**Unique technological equipment:**

- Cardiohelp- centrifugal pump for extracorporeal membrane oxygenation
- Videobronchoscopy, gastroscopy
- Surgical rectoscope for mini-invasive interventions in the rectal region;
- Hemron – a device for the outpatient treatment of hemorrhoids;
- Device for radio-frequency ablation Habib, together with the department of imaging methods
- Harmonic scalpel, electrocoagulation and dissection unit LigaSure

**Important event in 2013:**

- 25th November 2013 – Organization of the Meeting of thoracic surgeons of the Czech Republic with an international participation.

**Department of Cardiology 2nd Faculty of Medicine, Charles University and Motol University Hospital**

*Head physician: Prof. Josef Veselka, MD, FESC, FSCAI, FICA*

*Senior consultant: Jana Páleníčková, MD*

*Head nurse: Bc. Jana Kovalčíková*

**Basic characteristics:**

The department provides comprehensive cardiological care for hospitalised and outpatient patients. It is directly related to the Department of Cardiosurgery and Angiosurgery.

In 2013, an outpatient treatment was provided for approximately 24,000 patients, almost 4,000 patients were hospitalised. At the department, 2,800 selective coronarographies, 900 percutaneous coronal interventions, 350 peripheral arterial angioplasties,

7,100 echocardiographic examinations, 1,372 ergometric or spiroergometric examinations, 139 first implantations + 42 reimplantations of pacemaker, 120 electrophysiological examinations and catheter ablation, 54 ICD implantations and 2,500 duplex ultrasound examinations of the peripheral vessels were performed.

**Specialised outpatient facilities for:**

- Congenital and acquired cardiac defects,
- Cardiac failure
- Hypertrophic cardiomyopathy
- Electrophysiology and cardiac pacing
- Angiology

**New methods and procedures:**

- Implantation of fully biodegradable stents in coronary arteries- the first performance of this type in the Czech Republic
- Extension of using the fractional flow reserve technique in patients with a stable AP and angiographic findings at the borderline level
- Catheterisation implantation of biological valve in the aortic position
- Direct transarterial aortic valve implantation – the first performance of this type in the Czech Republic
- Valvuloplasties of all cardiac valves
- Alcohol septal ablation - the largest set in the Czech Republic
- Radiofrequency ablation of the interventricular septum in patients with hypertrophic cardiomyopathy - the second intervention of this type in the world
- Carotid stenting - the largest set in the Czech Republic
- Using of the proximal-protection system during the stent implantation in the carotid bed
- Catheterisation occlusion of atrial septal defect and patent foramen ovale (PFO)
- Catheterisation occlusion of para-valvular leak and aortic valve
- Method of controlled hypothermia in resuscitated patients
- Imaging of the heart by 3D echocardiography
- Programme of endomyocardial biopsy
- Treatment of rhythm disorders with the help of 3D electroanatomical mapping
- Renal denervation programme for the treatment of resistant hypertension
- Programme for cardiological examination of marathon runners

**Unique technological equipment:**

- CARTO - a device for a three-dimensional electroanatomic mapping
- Echocardiographical device with a 3D transesophageal echocardiography
- Echocardiographical device including an intracardiac echocardiography
- Lucas Compression System – a device for external cardiac compressions

**Important event in 2013:**

- ESC 2013, Amsterdam, Netherlands, prof. J. Veselka, MD presented the thesis: Outcomes of alcohol septal ablation for hypertrophic obstructive cardiomyopathy: a European multicentre and multinational study, which was awarded the best original study in intervention cardiology.
- J. Honěk, MD reached the 3rd place in the Challenge Cases of young physicians.

- The 62nd International Congress ESCVS 2013, Regensburg, Germany – presentation of the lecture PCI and CAS – stenting or not?;
- 55th Annual World Congress – ICA 2013, New Haven, USA – presentation of the lecture Fine tuning of CAS Technique;
- EuroEcho - Imaging 2013, Istanbul, Turkey – presentation of the poster;
- Publications: 7 articles in Czech journals and 15 articles in international journals;
- Organization of the annual symposium Prague Intervention VII. with an international participation and organization of the seminar Arrhythmology for practice – Basics of cardiostimulation.

## Department of Cardiovascular Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Jan Burkert, MD Ph.D, (in position since 1st August 2013)*

*Senior consultant: Milan Horn, MD*

*Head nurse: Drahomíra Vrbová*

### **Basic characteristics:**

The Department of Cardiosurgery provides comprehensive care in the whole range of its specialisation: cardiosurgery and vascular surgery. It ensures a 24 hour surgical service for all emergencies of the cardiovascular system including traumas.

In 2013, the outpatient care was provided for 4,277 patients and 806 major surgeries were performed, of which 322 were cardiac and 484 vascular interventions. Within the transplantation programs, 17 lung transplantations were performed via extracorporeal circulation.

### **Specialised outpatient facilities for:**

- Cardiology
- Cardiosurgery
- Vascular diseases
- Congenital heart defects in adults
- Arrhythmology – after surgical treatment of atrial fibrillation
- Treatment of ischaemic defects of lower extremities
- Clinic for patients after surgical treatment of infective endocarditis

### **New methods and procedures:**

- Video-assisted mini-invasive surgery of valvular diseases
- Video-assisted mini-invasive surgery of some congenital cardiac defects (e.g. defect of the atrial septum)
- Comprehensive care for adult patients with congenital heart disease
- Surgical treatment of infectious endocarditis, including the treatment of drug addicts in cooperation with the Department of Infectious Diseases of the MUH
- Hybrid mini-invasive solution of polymorbid patients with ICHS (PCI – stent + MID-CAB – monobypass from the minithoracotomy without the extracorporeal circulation)
- Development of methods of mechanical cardiac support
- Reconstructive (sparing) surgeries of the aortic valve
- Revascularisation of the myocardium without using the extracorporeal circulation

**Important event in 2013:**

- Active participation of physicians from the department on many medical events in the Czech Republic as well as abroad:
- Annual Congress of the Czech Society of Cardiology; Days of Cardioanesthesiology with an international participation; Annual conference of the Working Group for Acute Cardiology of the Czech Society of Cardiology; Annual Symposium of the Working group for congenital heart disease in adulthood of the Czech Society of Cardiology; The day of the South Bohemian Cardiac Centre; Prague Intervention.
- Western Georgia National Center of Medicine, Kuitasi, Georgia, programme of training of foreign colleagues, Jan Bukert, MD, Ph.D. organised and led a 5-week “Post-gradual Specialised Course of Modern Cardiosurgery”, including practical application of surgical techniques, which have not been conducted by the local surgeon team yet.
- A total of 4 ex-vivo lung reconditions with the usage of extracorporeal circulation were performed in cooperation with the 3rd Department of Surgery, 1st Faculty of Medicine, Charles University and MUH.

## Department of ENT, Head and Neck Surgery, 1st Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Jan Betka, MD, Ph.D.*

*Senior consultant: Pavol Jablonický, MD*

*Head nurse: Jana Jandová*

**Basic characteristics:**

The clinical department provides a complete spectrum of examinations and treatment of diseases in the ENT field. Surgical methods are performed in the full extent including super-specialised interventions, in most cases for the whole Czech Republic. In the year 2013, 3,315 patients were hospitalised, of which 1,379 at the ICU. Average casemix index of patients was 1,67. In our operating rooms, 3,215 surgeries were performed and next 226 patients of Motol University Hospital underwent the operation outside the clinic. The department performed 58,289 outpatient medical services for 16,367 patients. In 2,742 patients there were performed further specialised audiometric examinations, and a total of 8,521 operations were undertaken. Objective audiometry was performed in 296 patients and otoacoustic emissions in 320 patients. The examination of the statoacoustic apparatus was performed in 1002 cases and the ENG examination in 153 patients. Department performed examination for indication of hearing aid in 309 patients.

**Specialised outpatient facilities for:**

- Oncology
- Kophosurgery
- Rhinology
- Endocrinosurgery
- Otoneurology
- Hearing aids
- Laryngo-phonosurgery
- Voice prostheses
- Snoring-related problems and sleep disorders
- Sonography

- Salivary glands disorders
- Swallowing disorders
- Neurosurgery and cranial base
- Centre for lasersurgery
- Centre for surgery of the thyroid and parathyroid glands
- Centre for cochlear implant
- Center for head and neck oncosurgery
- Center for rehabilitation in patients after total laryngectomy

#### **New methods and procedures:**

- Plastic reconstructive procedures after oncologic resection of tumors of the head and neck by means of remote transmission vascular muscle and bone lobes
- Radio navigation in surgery of the thyroid and parathyroid glands
- Mini-invasive endoscopic surgery of the thyroid gland (MIVAT)
- Endoscopic approaches to removal of tumors of the internal auditory canal
- Perioperative neuromonitoring
- Fibroendoscopy of swallowing pathways (FEEST)
- Operation of the sentinel node in carcinoma of the oropharynx and the oral cavity with help of the gamma probe detection;
- Investigation by means videostroboscopy in patients prior to microlaryngoscopy and phonosurgical interventions;
- Extended microsurgery for tumors of the paranasal sinuses using navigation
- Identification of the target structure in the course of cochlear implantation by means of EABR.
- endoscopic resection of esophageal diverticula
- endoscopic diagnostics of respiratory tract tumors and tumors of swallowing pathways, with the help of MBI
- Endoscopic examination of the salivary glands and endoscopic treatment of sialolithiasis
- Rehabilitation of patients after total laryngectomy by synthetic voice recordings in collaboration with the University of West Bohemia in Pilsen - Department of Cybernetics

#### **Unique technological equipment:**

- CO2 Laser, Dioxi Laser
- Harmonic scalpel, radio-frequency scalpel;
- Endoscopic equipment for the mini-invasive interventions of the thyroid gland and in the operation of the cranial base and the inner auditory meatus;
- Videostroboscope, ENG Video
- Neuronavigation, radionavigation
- Video endoscopy of salivary glands
- Microcutter for stapedius ear surgery

#### **Important event in 2013:**

- Prof. Betka, as a president of the 3rd Congress of the Confederation of the European ORL - HNS (CE-ORL-HNS), held 7 to 11.6 in 2015 in Prague, he became a visiting member of the Executive Committee of the European Academy of ORL-HNS. On



December 12, 2013 Prof. Betka attended the meeting of Presidential Council CE-ORLHNS in Brussels.

- MD. Zdeněk Fík: 14th Student Scientific Conference 1.MFUK - May 23, 2013 - Stem cell squamous cell carcinomas of the head and neck - 3rd place.
- Prof. MD. Eduard Zvěřina, DSc., FCMA - September 27, 2013, he was awarded the silver commemorative medal on the eve of the Day of Czech Statehood by the Senate of the Czech Republic. The medal is awarded to outstanding figures from the world of science, culture, sports and social life. Milan Stech took the silver commemorative medal from the hands of the President of the Senate.
- Prof. MD. Jan Betka, DSc., FCMA – On December 3rd, 2013 he was awarded by the Minister of Health of the Czech Republic - Annual award for the development of health and social care in 2013, for outstanding achievements in the development of cochlear implantation in the Czech Republic
- Prof. Eduard Zvěřina became a member of the International Advisory Board of the magazine Neurosurgery. 23rd to 24th of May-75th Congress of the Czech Society of Otorhinolaryngology and Head and Neck Surgery and 5th Czech-Slovak Congress of ORL, Hradec Králové, 10th of October-13th ORL Forum Prague, guest lecture by prof. Kwang Hyun Kim, M.D. from Seoul, Korea. Prof. Kwang Hyun Kim, M.D. received an honorary membership of the Czech Society of Otorhinolaryngology and Head and Neck Surgery
- 11th to 12th of October – 12th annual of Czech-German days, Liberec with the guest lecture by prof. Kwang Hyun Kim, M.D. Seoul, Korea and prof. Karl Hörmann M.D. , Mannheim, Germany
- 5 th – 8th of November. - 26th International Course of endoscopic endonasal surgery (EES, FES, FESS), Prague, Department of Otorhinolaryngology and Head and Neck Surgery 1st Faculty of Medicine and University Hospital.

## Department of Nuclear Medicine and Endocrinology, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Petr Vlček, MD, Ph.D.*

*Head nurse: Jana Richterová*

### **Basic characteristics:**

The interdisciplinary workplace of Nuclear medicine and Endocrinology which is, besides standard diagnostics by means of radioisotope methods, focused on diagnostics, treatment and dispensary care of patients with differentiated carcinoma of the thyroid gland and severe forms of thyroid orbitopathy and on therapy of <sup>131</sup>I-MIBG from the whole Czech republic. The department also serves as an educational centre, it accredited in specialisation of Endocrinology and Nuclear Medicine. Last year it provided care for 20,000 patients, 1,000 of which were hospitalised. The outpatient facilities provided 4,000 investigations and therapeutic applications of radioactive pharmaceuticals.

### **Specialized outpatient facilities for:**

- Endocrinology and diagnostics of differentiated carcinoma of thyroid gland (DTC); the dispensary has over 13,100 patients (this is one of the greatest ensembles in the world)
- Clinic for thyroid microcarcinoma

- Consulting for medullary thyroid carcinoma (MTC)
- clinic for thyroid ophthalmopathy (TAO)
- nuclear medicine clinic

The department is a center for the treatment by TAO inhibitors of growth hormone for the diagnosis and treatment of advanced forms of differentiated thyroid cancer using recombinant human TSH (Thyrogen) and for the treatment of neuroendocrine tumors using the radiopharmaceutical <sup>131</sup>I-MIBG (the only center in the Czech Republic).

**New methods and procedures:**

- Diagnostics and treatment of differentiated carcinoma of the thyroid gland using human recombinant thyreostimulation hormone;
- Diagnostics using a hybrid combination of X-ray (CT) scanning and isotope (SPECT) imaging;
- Introduction of new radiopharmaceuticals in clinical practice Tectrotyd-99m;
- Clinical testing of new pharmaceutical for the therapy of medullary carcinoma and radioiodine-refractory differentiated thyroid carcinomas;
- Providing of genetic testing in patients with familial forms of medullary thyroid carcinoma.

**Unique technological equipment:**

- Symbia TruePoint SPECT/CT T

## Centre of Postacute Care of Motol University Hospital

*Senior consultant: Martina Nováková, MD*

*Head nurse: BA Lucie Kubová*

**Basic characteristics:**

LTT-Aftercare Centre has 381 inpatient beds at 13 stations. It specializes in geriatric issues on the one hand, and care of patients after trauma, surgery, chronic internal diseases, cerebrovascular accidents, etc., without age restrictions on the other.

10th station has 24 beds and it specializes in hospitalized patients requiring intensive care, respectively acute care appropriate internal department.

14th-patient station, which has 29 beds is focused on follow-up care for patients in chronic hemodialysis program and works closely with Fresenius hemodialysis center.

LTT- Aftercare Centre specializes in wound healing, nutrition, physiotherapy and occupational therapy. Patients have available clinical psychologist, speech therapist and 4 social workers.

Physiotherapy is carried out individually or in groups, using the most modern techniques such as electrotherapy, magnetic therapy, ultrasound, vacuum compressive therapy on the healing of chronic defects, etc. there is continued cooperation with the Volunteer Center.

Department received accreditation of the first degree for teaching geriatrics and is involved in postgraduate medical education in geriatrics and internal medicine teaching a bachelor's degree nurses.

**New methods and procedures:**

- Healing wounds using vacuum-compression device Extremiter with application of CO<sub>2</sub>

- Department continues in the international study MIDFRAIL

**Unique technological equipment:**

- 2010-Extremiter better future - + CO2 therapy - a device for vacuum-compression therapy

**Important event in 2013:**

- J.Krupková, MD + M.Horáčková, MD: Altrazeal-new path in wound healing (lecture at the congress way to modern nursing, Prague)
- M.Nováková, MD: Treatment of pain in frail older people (lecture at the Congress practitioners, Prague)
- V.Hejlová, MD: Options rehabilitation interventions Center aftercare FNM (lecture at the 19th Congress of Gerontology Hradec Králové)
- V.Hejlová, MD + V.Krejčová, MD: Possible practical use of vacuum-compressive therapy in CNP FNM (lecture at the Faculty of biomechanics expert seminar CTU + fa. Embitron - Brno).

## Department of Neurology, 2nd Faculty of Medicine and Motol University Hospital

*Head physician: Ass. Prof. Petr Marusič, MD, Ph.D.*

*Senior consultant: Aleš Tomek, MD*

*Head nurse: Hana Chvátalová*

**Basic characteristics:**

Neurological Clinic provides comprehensive diagnostic and therapeutic care of patients with diseases of the nervous system. The main programs developed on the highest possible level in the Czech Republic are cognitive, epileptological, vestibulological, neuromuscular, Neuroimmunological and neurovascular program. In addition to care for the catchment area is selectively provided superconsiliary care for patients from all over the country.

In 2013, the department provided outpatient examination for 37,750 patients. A total of 1,899 patients were hospitalised.

**Specialised outpatient facilities:**

- Centre for diagnostics and treatment of demyelination diseases;
- Centre for epilepsy - advisory centre for seizure disorders;
- Ictus Center of Motol Hospital, Cerebrovascular clinic and laboratory neurosonology;
- Centre for disorders of cognitive functions;
- Centre for Neuromuscular Diseases;
- Centre for Parkinson's disease and other extrapyramidal disorders;
- Advisory centre for neurocutaneous diseases;
- Advisory centre for vertiginous states;
- Advisory centre for neuroAIDS;
- Advisory centre for myoskeletal medicine;
- Centre for headaches;

### **New methods and procedures:**

- Extension of personalized medicine in the secondary prevention of cerebrovascular disease in collaboration with the Laboratory of Molecular Diagnostics of Hospital Na Homolce and laboratories of Pharmakl including pharmacogenetics of clopidogrel and dabigatran and determination of titration levels of apixaban, rivaroxaban and dabigatran.
- The introduction of computer-based testing methodology of spatial memory, including virtual reality.
- In collaboration with the Institute of Neuroscience at 2nd MF CU - stem cell transplantation in patients with spinal cord lesions, and amyotrophic lateral sclerosis - stage clinical evaluation.
- Endovascular treatment of acute ischemic stroke as a routine medical procedure. (Cooperation with KZM).
- Development and implementation of special MR protocol for patients with multiple sclerosis (Cooperation with KZM).
- Examination of measure of atrophy of critical brain structures with MRI volumetry and the introduction of examination integrity of white matter diffusion tensor imaging (DTI) in cooperation with the Motol University Hospital KZM.
- Development of MR images using automatic volumetry in patients with cognitive impairment and epilepsy. (cooperation with KZM)
- CSF laboratory (in collaboration with the Institute of Immunology) Diagnostics-encephalitis-autoimmune antibodies against onconeural well-characterized antigens (Hu, Yo, Ri, MA2 (Ta), CV2 (CRMP5), amphiphysin) by Western blot method with a subsequent automated semiquantitative evaluation - Diagnosis, detection of antibodies against membrane and synaptic antigens (NMDAR, AMPA1R, AMPA2R, GABA<sub>B</sub>R, Caspro-2 LGI-1) by indirect immunofluorescence on cells transfected with genes for the relevant antigens.
- Diagnosis of neurodegenerative diseases.
- In collaboration with the Laboratory of Molecular Diagnostics Hospital Na Homolce - Examination TOMM40 gene polymorphisms in patients with Alzheimer's disease; introduction of the indicator model MxA protein levels in routine practice in patients with multiple sclerosis treated with interferon.
- Hospitalization program of rehabilitation of balance disorders using biofeedback (BrainPort) in collaboration with the Department of Rehabilitation.
- Creation of programs for the rehabilitation of strabismus, amblyopia and functional programming Hess screen version in cooperation with the Department of Cybernetics, CTU in Prague and Motol Hospital Eye Clinic;
- Examination otolith system using the „cervical myogenic evoked potential“.
- Testing of thin fibers of peripheral nerves method for determination of thermal threshold using the Peltier element.
- Synchronization of neuropsychological battery by tests used at the Mayo Clinic (Rochester, USA), implementation of new questionnaires used to detect early stages of Alzheimer's disease.
- The protocol for patients with suspected normotensive hydrocephalus including the implementation of a standardized lumbar infusion test.
- Introduction of methods Pupillometry - Advanced Option examination of existing equipment for videoculography (VOG).

**Unique technological equipment:**

- Toshiba ultrasonographic device 500 applications for examination transcranial and extracranial arteries and peripheral nerves with a 3D display along with MR / CT data
- 128-channel EEG system NicoletOne video EEG monitoring
- Rotating armchair NYDIAK for electronystagmography - ENG testing;
- Two systems for videoEEG monitoring Schwarzer/BrainLab and Schwarzer/Stellate;
- FAN Study system for a complete evaluation of functioning of the autonomous nervous system including the test on an inclined plain.
- Experimental laboratory for testing spatial memory and spatial orientation (Blue Arena) - in cooperation with the Institute of Physiology

**Important event in 2013:**

- Participation on organization of the 27th Czech and Slovak neuromuscular Congress in Prague, 41th Czech and Slovak cerebrovascular Congress in Štrbské Pleso;
- Organizing of international training days in neurotology;
- Awards Czech Neurological Society CMS JEP for the best original work of the author up to 35 years old - MD. Nedělská and a team in the journal Proceedings of the National Academy of Sciences of the United States of America);
- Awards of the magazine Czech and Slovak Neurology and Neurosurgery for the best publication of the year 2013 - as. Mazanec a team;
- Total 32 publications in international journals, three publications in peer-reviewed international journals, two chapters in foreign monographs, 11 articles in domestic journals and six chapters in monographs home.

## 1st Department of Orthopaedics, 1st Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Antonín Sosna, MD, Ph.D..*

*Senior consultant: Prof. Stanislav Popelka, MD, Ph.D..*

*Head nurse: Mgr. Jana Sládková*

**Basic characteristics:**

1st Department of Orthopaedics provides both conservative and surgical care for adult patients in the full spectrum of orthopaedic interventions and traumatology of the locomotors apparatus with the exception of the spine and paediatric orthopaedics.

The department has 144 beds of which 14 at the ICU for nonseptic patients and 2 for ICU septic orthopaedics, 30 for traumatology and 20 are septic.

A total of 4,854 patients were hospitalised in 2013 and the outpatient care was provided for 60,022 patients. Total number of operations made was 4,476

**Specialised outpatient facilities:**

- Joint replacement
- Surgery of major joints
- Surgery of the hand and the leg
- Arthroscopy of the shoulder, wrist, hip, knee and ankle joint

- Sport traumatology
- Septic orthopaedics
- Rheumatology
- Oncology
- General traumatology

**New methods and procedures:**

- Research and development of new joints implants in cooperation not only with domestic but also foreign partners;
- Introduction of routine use of reverse shoulder arthroplasty
- New techniques in wrist surgery
- New replacement was developed for the metatarsophalangeal joint of the thumb, which was put into practice
- Developed and put into practice retrograde nail for arthrodesis of the ankle
- RS Scan International - pedobarograf - functional load measuring foot before and after surgery

**Important event in 2013:**

- June 11, 2013 was Ass. Prof. Stanislav Popelka, MD., Ph.D. appointed as a professor of orthopaedics.
- In December 2013 Rastislav Hromádka, as. MD., Ph.D. successfully defended his habilitation thesis in front of the Scientific Council of the 1st UK.
- Honorary Membership College of Rheumatology JEP granted to Ass. Prof. Jan Pech, MD, Ph.D..
- Josef Hlávka Award in 2013 won by Ivan Landor, Pavel Vavřík, George Gallo, Antonín Sosna for the monography: Revision total hip surgery.
- Prof. Jahoda as vice-chairman of SBI CSOT co-organized and chaired the 32nd annual meeting of the EBJIS 2013 (32nd Annual Congress of the European Society for Bone and joint infections) in 12th-14th of September 2013 in Prague. 360 participants from 36 countries attended the congress.
- Prof. Jahoda - chair and an organizer of Palacademy symposium: Antibiotics in infection prevention - Ways To Increase efficiency, Prague in 2013.

## Centre for Spinal Surgery of Motol University Hospital

*Senior consultant: Prof. Jan Štulík, MD*

*Head nurse: Bc. Dagmar Šeborová*

**Basic characteristics:**

Specialized department has been treating injuries and diseases of the spine, including the consequences. In a year 2013 total of 1,358 patients were operated, 1 419 patients were hospitalised and outpatient care was provided for 11,987 patients.

**Specialised outpatient facilities:**

- Treatment of injuries and diseases of the spine
- scoliosis clinic for children

**New methods and procedures:**

- Mobile total replacement of the cervical and lumbar intravertebral disc M6
- Dorsal dynamic stabilisation of the lumbar spine (Agile Horizon, Dynesys, DSS);
- Occipitocervical fixation (Vertex, Vertex max, S4C, Peak Summit SI);
- Total spondylectomy C2;
- Mini-invasive approaches to the thoracic and lumbar spine, translaminar fixation (TLP Signus);
- Transsacral spondylodesis AxiaLIF;
- SI desis of the joint DIANA.
- The navigation O-ARM
- Vertebral body replacement Obelisc, ADD Plus

**Unique technological equipment:**

- O – ARM – device for 3D imaging of the spine in the course of surgical intervention and a navigation spinal system
- NIM – ECLIPSE – device for peroperative monitoring of neurological functions
- Surgical microscope Carl Zeiss

**Important event in 2013:**

- Cervical Spine Course, Aesculap Academy, Prague, Czech Republic – lecture
- AOSpine Master Symposium, Primary tumors and metastatic disease, Prague, Czech Republic – lecture
- Aesculap Spine Days, Trends in Cervical Spine Surgery, Berlin, Germany-lecture
- XI. Spondylitis surgery congress 2013- Ostrava
- Štulík, J.: Injury to the spine in children. In: Havranek, P. et al.: Children's fractures. Prague, Galen 2013
- Štulík, J.: Injury to the spine. In: Dungal et al.: Orthopedics. Prague, Grada 2013
- Štulík, J.: Injury to the spine. In: Zeman et al.: Special Surgery. Prague, Grada 2013
- Štulík, J.: Clinical Rehabilitation, Pavel Kolar et al.

## Department of Pneumology, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: prof. Miloslav Marel, MD, Ph.D.*

*Senior consultant: František Petřík, MD*

*Head nurse: Mgr. Jana Zelenková*

**Basic characteristics:**

Department of Pneumology is concerned with diagnostics, treatment, evaluation and research of diseases of the lower respiratory tract with orientation to intensive pneumological care, interventional bronchology, comprehensive care for patients with COPD, treatment of patients with cystic fibrosis, oncology including biological therapy, sleep medicine, examination of patients prior to lung transplantation and the treatment of tobacco addiction. In 2013, 1,633 patients were hospitalized, outpatient treatment was given to 11,180 patients, bronchoscopy was performed 1,313 times and 1,058 times was given chemotherapy.

**Specialised outpatient facilities for:**

- Diseases with bronchial obstruction
- Cystic fibrosis
- Interstitial pulmonary disease
- Oncology
- Transplantations
- Treatment of tobacco addiction
- Patients with sleep breathing disorders

**New methods and procedures:**

- Biological treatment of lung cancer patients with ALK-positive breakthrough using the crizotinib medicament;
- Endobronchial ultrasonography (EBUS) allowing puncture mediastinal lymph nodes under ultrasonographic control in real time with immediate cytological evaluation findings using ROSE (Rapid On Site Evaluation).
- Cryocauter use during bronchoscopy, which allows you to draw more biopsies and alternative cryocauter at disobliteration large airways

**Unique technological equipment:**

- Ultrasound bronchovideoscope Olympus BF-UC 160F-OL8
- ICU equipped with modern non-invasive ventilator Philips V60, which can be used as a transport
- measurement of carbon monoxide in exhaled air unit Smokerlyzer to verify non-smoking

**Important event in 2013:**

- Head of Department Petrik performed the first lung lavage total cardiopulmonary bypass in a patient with alveolar proteinosis. Motol CF center, which also includes our clinic, was enrolled in the prestigious European Cystic Fibrosis Clinical Trial Network.
- Active participation at the 15th congress of the International Association for the Study of Lung Cancer in Sydney, Australia with two contributions, the first one delivered by prof. Marel
- Active participation at the 36th European Cystic Fibrosis Conference, Lisbon, Portugal, 12-15 June 2013, contribution delivered by MD. Fila.
- The department has started entering patient data into the registry of patients with COPD and pulmonary fibrosis in the Czech Republic.
- Biological treatment of patients with pulmonary fibrosis Esbriet was applied for the first time at the Motol University Hospital.
- Dr. Fila is co-author of the recommended procedure of CPPS for exacerbation COPD; prof. Marel is the author of recommended procedure of CPPS for diagnosing and treating fluidothorax the Czech Republic.
- Head of Department prof. Marel was awarded Teacher of the Year at MUH in 2013.



## Department of Oncology of Motol University Hospital

*Head physician: Ass. Prof. Jana Prausová, MD, Ph.D., MBA*

*Senior consultant: Zdeněk Linke, MD*

*Head nurse: MSc. Drahomíra Nikodémová*

*Senior radiology assistant: Alena Čuprová*

### **Basic characteristics:**

The department provides a complete care for oncological patients in the field of anti-tumorigenic pharmacotherapy and radiation therapy. It belongs to Complex oncological centres in the CR that provide a highly specialised care. Department is accredited for specialist training in clinical oncology and radiation oncology. Department is accredited for the practical part of specialist training in the field of imaging and radiation technology in radiotherapy.

In 2013, a total of 202,328 patients were treated on the outpatient basis, 3,182 of newly admitted (of which 1,993 to chemotherapy and 1,125 to radiotherapy), 2,861 patients were hospitalised. The number of irradiated fields was 144,912, number of brachytherapy applications was 583 and number of applied cycles of chemotherapy was 9,860.

### **Specialised outpatient facilities for:**

- Dispensary care for patients after the anti-tumorigenic treatment was completed
- Checking of patients during chemotherapy
- Checking of patients during teletherapy
- Chemotherapy application
- Checking of patients during brachytherapy

### **New methods and procedures:**

- Periodic adjustment of protocols of the treatment of malignancies with the introduction of new molecules chemotherapy, new combinations of chemotherapy and biological therapy. Improving symptomatic therapy, improvement of pain treatment, monitoring nutrition of patients, the use of growth factors for the treatment and prevention of decrease in the number of blood cells during cancer treatment.
- Introduction of central venous access (ports) and peripheral PICC in all patients with chemotherapy applications.
- Cooperation in clinical studies and grants with an international participation which solve new therapeutic methods in solid tumours and hemoblastomas.
- Cooperation in the research project together with genetic workplaces in the search for families with a genetic risk of malignancies.
- Cooperation with the Institute of Immunology and Department of Urology, Motol University Hospital in application preparation SNP01 - established center for the treatment of prostate cancer.
- Improvements and full use of IMRT method (intensity modulated radiotherapy) which allows for a higher dose in the target volume, sparing healthy tissues
- Implementation of IGRT techniques (image guided radiotherapy) – based on control of the present position of the patient during radiotherapy and possible correction according to reference position during the radiation simulation of Irradiation plan. Use of the function of dynamic wedges in linear accelerators allows for a better 3D (three dimensional) planning. Possibility of fusion of the scans from MRI and CT examination with the planning CT scans to develop a more precise radiation plan.

- Registration of MRI images, CT and PET / CT images with the planning CT to clarify the definition of target volumes for radiotherapy.
- Implementation of fractionated stereotactic radiotherapy of brain.
- Implementation of interstitial prostate brachytherapy.

**Unique technological equipment:**

- Two linear accelerators Clinac 2100 C/D, Varian medical Systems (photon beams 6MV, 18MV, electron beams 6, 9, 12, 20 MeV) with a multilamellar colimator (MLC) Millenium MLC-120 and with an electronic imaging system (EPID – electronic portal imaging device) for the check of correct position of the patient during therapy. One of these accelerators is equipped with an additional kV source for exact imaging of the patient's positioning during therapy (OBI -on-boarding imaging).
- Linear accelerator Clinac 600 C/D, Varian Medical systems (photon beams 4MV) with a multilamellar colimator (MLC) Millenium MLC-120 and an electronic imaging system (EPID). This accelerator is equipped with a micromultilamellar colimator (m3 micro-MLC) and accessories for stereotactic radiation.
- Radio therapeutic simulator Acuity EX, Varian Medical Systems for preparation of radiation therapy.
- CT device Brilliance Big Bore, Philips for the therapy planning.
- Cancer Information System Aria, which integrates linear accelerator, simulator, planning systems for external beam radiotherapy (Eclipse), stereotactic radiation therapy (iPlan) and brachytherapy (Brachyvision).
- Brachytherapeutic device for HDR brachytherapy with an automatic after loading Gammamed Plus iX. Ultrasonograph ProFocus 2202, B-K Medical and pacing device EXII Tracked Stepper for prostatic brachytherapy. Mobile X-ray machine with C arm BV Pulsera, Philips for localisation of applicators in brachytherapy.

**Important event in 2013:**

- In 2013, the department became the Oncology Clinic as part of the 2nd Medical Faculty of Charles University and Motol University Hospital.
- The clinic participated on the organization and lecturing at the 2nd annual symposium on colorectal cancer with international participation - 4th annual of PragueOnco colloquium. It actively participated in the implementation of Uro-oncological symposium and other Czech symposiums.
- In 2013, there was already XV. Annual of Motol Oncology days, this time in collaboration with an oncology department of Thomayer hospital on the topic of news in the treatment of malignancies.
- Doctors have actively participated in international events ASCO, ESMO with their abstracts and posters.

## Department of Urology, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Marek Babjuk, MD, Ph.D.*

*Senior consultant: Jan Jerie, MD*

*Head nurse: Bc. Alena Kašajová*

### **Basic characteristics:**

Department of Urology provides therapeutic and preventive care in the full range of adult urology. It is specialised in surgical treatment of malignancies of the uropoetic tract including the subsequent oncological treatment. It belongs among top workplaces in the treatment of lithiasis and is a unique workplace for surgical conversion of the sex. In 2013, the treatment was provided for 25,310 outpatient clients, 3,287 patients were hospitalised of which number 1,579 were operated.

### **Specialised outpatient facilities for:**

- Oncology
- Treatment of lithiasis and chronic infection
- Andrology
- Dysfunction of the lower urinary tract
- Centre for research and treatment of prostate cancer (in collaboration with the Department of Radiotherapy-Oncology and Institute of Immunology)
- Centre for the surgical treatment of transsexualism

### **New methods and procedures:**

- laparoscopic radical cystectomy;
- Enhancement of nephrectomy technique performed by using the single-port approach (LESS nephrectomy);
- Enhancement of laparoscopic technique of radical prostatectomy;
- Laparoscopic resection of the kidney tumor;
- Enhancement of radical prostatectomy;
- Enhancement of shunt operations after cystectomy;
- Use of new imaging methods for diagnostics of the urinary bladder tumors („narrow band imaging“);
- neuromodulation in the treatment of urge urinary bladder symptoms;
- Introduction of microsurgical method in surgeries of varicocele;
- Use of Ho:YAG laser in surgical interventions;

### **Unique technological equipment:**

- Ho:YAG laser
- devices for NBI (narrow band imaging), fluorescence cystoscopy
- devices for LESS

### **Important event in 2013:**

- Organization of Central European Congress of the European Association of Urology (EAU CEM) in Prague, 3rd to 5th of October 2013. The event was attended by 300 doctors from 26 countries.

# COMMON EXAMINATION AND THERAPEUTIC UNITS

## Department of Radiology of 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Miloslav Roček, MD FCIRSE, EBIR*

*Senior consultant: Radek Pádr, MD*

*Head of RA: Mgr. Tomáš Schilla*

### **Basic characteristics:**

In 2013, Clinic of Medical Imaging (CMI) carried a total of 245,439 examinations. This number includes conventional examinations, examinations of the gastrointestinal tract examination in the child radiology, ultrasound examinations, CT scan, MRI and examination of vascular and interventional radiology. There has been steady increase of the number of MR examinations, which is related to the full service of the MR at the children department of CMI. The number of CT examinations remains stable. There is also an increasing demand at the Department angiography and interventional radiology.

### **Specialised workplaces:**

- Magnetic resonance – three devices: testing the whole range except spectroscopy
- CT – three machines with 64 rows of detectors (of which one is „Dual source“)
- New modern angiography Toshiba's Infinix
- Mammography, mammary sonography, stereotax, vacuum biptome
- Sonography in both children and adults, Doppler sonography
- 6x fully digitized skiagraphy

### **New methods and procedures – Unique technological equipment:**

- CT angiography, 3D VR visualization.
- CT cardio – imaging of the heart, CT coronarography.
- CT creating Vol data for neuronavigation, ENT and stomatology.
- MR new opportunities for examination of blood vessels, heart function tests, tractography, T2 relaxometry, examination of uncooperative patients, spectroscopy.
- Prenatal US and MR diagnostics.
- MAMO SONO workplace - ductography, cyst puncture and cut core biopsy under ultrasound control, puncture by device Vacora, preoperative localization by ultrasound and stereotactic navigation
- Radio-frequency ablation and chemo-embolisation of metastases in the liver and lungs.
- Implantation of aortal stentgrafts, subintimal recanalisation of peripheral arteries in the lower extremities, treatment of acute and chronic deep venous thrombosis, treatment of vascular accesses to haemodialysis, introduction of translumbar catheters.
- Treatment of cerebral malformations in both children and adults.
- Interventions on the bile ducts (including absorbable stent implantation), spondylitis and vertebroplasty
- Interventions under CT fluoroscopy.
- Ultrasound equipment Toshiba Aplio software, which enables the use of diagnostic contrast agents, especially for dynamic diagnosis of focal liver lesions in particular. This examination plays important role in children, that avoids radiation load on CT.

- Extended use of dictation systems.
- Using the Polycom device the department could hold conferences and consultations with departments in the Czech Republic and other European countries.

#### **Important event in 2013:**

- The new children's diagnostic center continued exposure adjustment for paediatric patients in collaboration with paediatrics hospital in Graz.
- The clinic has organized the European School of ultrasound EUROSONO 2013.
- Under the auspices of the European School of Radiology, the clinic organized 1st ESOR Tutorial of Radiology in Prague. On this unique school in the national scale participated leading experts in the field of radiology from the Czech Republic, Europe, USA and Asia.
- Doc. MD. M. Cholt has issued in Grada a second monograph called Vascular Sonography, which won the first prize of Czech Society of Angiology

### **Department of Biology and Medical Genetics of 2nd Faculty of Medicine, Charles University and Motol University Hospital**

*Head physician: Prof. Milan Macek, MD, Ph.D.*

*Senior consultant: Marie Havlovicová, MD*

*Senior laboratory technician: Hana Stouhalová*

#### **Basic characteristics:**

This department provides a wide range of preventive and diagnostic medical care in the field of genetics. It determines diagnostics of selected congenital developmental disorders, hereditary tumors, neurodegenerative diseases in children and adults, including disorders of mental development in both prenatal and postnatal periods. At the same time DBMG cooperates with other departments of the University Hospital in solving the subsequent genetic issues (Department of Obstetrics and Gynaecology, Paediatrics and more). The department solves projects in the field of biomedicine research, participates in the undergradual, postgradual and specialising education of doctors and health care professionals, cooperates with a number of foreign departments and international research consortia. It also solves a number of projects of the 7th OPK Framework Program and the European Commission in the field of medical genetics. In 2013, the outpatients of our department provided care for 8,982 patients /5,386 families and we have terminated 31 pregnancies from the genetic indications, and 6 pregnancies were terminated in the first trimester (in this group was the predominant reason underlying disease pregnant), the remaining 25 pregnancies we have phased out in cooperation with GPK MUH in the second trimester (there were three groups of indications, the same number of ultrasound findings in a fetus detected congenital chromosomal aberrations in the fetus and molecular genetically confirmed genetic lesion in the fetus).

DBMG laboratories are accredited by the Czech Institute for Accreditation (CIA) based on the assessment of compliance with the accreditation criteria of the standard DIN EN ISO 15 189 The accreditation is molecular-genetic and cytogenetic examinations.

DBMG Laboratories are also recorded in the registry of clinical laboratories authorization of the National Centre for Clinical Laboratory at Czech Medical Society of Jan Evangelista Purkyně and hold a certificate of compliance audits and the expertise for clinical biochemistry and medical genetics.

Center of Reproductive Genetics DBMG obtained a license for the tissue establishment

from the State Institute for Drug Control.

**Specialised outpatient facilities:**

- Prenatal genetic consulting
- Neurogenetic consulting
- Genetic consulting for sensoric disorders and non-syndromic deafness
- Genetic consulting for microdeletion syndromes
- Genetic consulting dealing with dysmorphology
- Genetic consulting for infertile and infertile couples
- Genetic consulting for mental retardation and autism
- Genetic consulting for thrombophilic conditions
- Genetic consulting for gastroenterology and hereditary pancreatitis
- Genetic consulting for cystic fibrosis – solved in the section of the Centre for CF

**New methods and procedures:**

- Continued expansion of new diagnosis of microdeletion syndromes by FISH. We continue to refine the interphase FISH on native amniotic fluid, CVS, lymphocytes and buccal swab.
- Better accuracy is reached regarding diagnosis of submicroscopic aberrations by array CGH using different types of oligonucleotide microarrays fy. Bluegenome Agilent using the most accurate commercially available chips for aCGH - oligo 4x180K with loci for testing the loss of heterozygosity. That allows to diagnose new microdeletion and microduplicating syndromes
- In 2013, the department introduced oligoarray CGH also to prenatal diagnosis, not only from the cultured, as well as the native (i.e., freshly collected) material. Diagnosis can be made from a minimum amount of DNA (250 ng).
- Further extension of molecular genetic diagnosis group dysmorphic syndromes. Enhancement of molecular genetic diagnosis on the examination of genes KMT2D (MLL2) and KDM6A responsible for Kabuki syndrome and examination SRCAP gene, responsible for the Floating Harbor Syndrome. An extension of aneuploidy by QFP-CR the examination of chromosomes 15, 16 and 22.
- In order to refine individualized hormone therapy FSH and LH to increase the success rate was introduced in 2013 and developed severe pre-eclampsia screening in the first trimester to the early detection of risks and to implement prevention anopyrine examination of placental growth factor PLGF.
- Since 2013, there is a possibility to cryopreservation of oocytes for cancer patients before treatment.
- If indicated, we perform tests of sperm DNA instability by flow cytometry.
- Introduction of the determination of oxidative DNA damage using single cell gel electrophoresis (comet assay) and test Halosperm, which allows you to specify the percentage of sperm with fragmented DNA.

**Unique technological equipment:**

- Measuring device InControl for the accurate verification of cultivation conditions
- Aylor-Wharton Cryogenics-type K10 with a capacity of 10,000 doses
- Laminar box fy Faster, SafetyFast Classic, Class II biohazard
- Increase the comfort of the Centre for Reproductive Genetics
- Fy Illumina HiSeq 1500 for NGS
- MiSeq fy for Illumina NGS

- CBOT, Covaris S200 NGS

**Important event in 2013:**

- Acquisition of new instrumentation for the new generation sequencing (NGS)
- In early 2013, the laboratory DBMG moved from temporary premises into newly refurbished premises 4G monoblock. In the September 2013, there was a partial move together three operations, namely genetic ambulance ÚBLG, Space Centre for Reproductive Genetics ÚBLG and Space Center of Reproductive Medicine Gynecology-por. clinics.

**Department of Medical Chemistry and Clinical Biochemistry, 2nd Faculty of Medicine, Charles University and Motol University Hospital**

*Head physician: Prof. Richard Průša, MD*

*Senior consultant: Jana Čepová, MD, Ph.D., MBA*

*Senior laboratory technician: Mgr. Martina Bunešová*

**Basic characteristics:**

The department's laboratory provides over 220 different laboratory examinations. A daily average is about 1,800 biological samples, i. e. 602,828 examinations per month in a 24 hour three shift operation. A number of examinations (MTX, cyclosporine A, tacrolimus, sirolimus, lead, platinum, antimycotics, busulfan, IGF-1 etc.) is performed also for other health institutions. A total number of outputs in 2013 amounted to 7,233,939, which is, by 1% than in 2012. Another sections of the department are specialised outpatients facilities focused on hyperlipoproteinemia-related problems, disorders of bone metabolism, nutrition disorders in terms of obesity and malnutrition. In 2013 we treated 6,080 patients in outpatient clinics.

**Specialised outpatient facilities:**

- lipid clinic
- department of clinical pharmacology

**New methods and procedures:**

- 2011 - Determination of chloride in sweat
- 2011 - determination of polymorphisms in the genes CYP2C9 and VKORC1
- 2011 - determination of SAA (serum amyloid A)
- 2012 - stat intraoperative intact PTH
- 2012 - Capillary electrophoresis of serum proteins
- 2013 - introduction of the determination of levetiracetam

**Unique technological equipment:**

- new blood gas analyzer Rapidlab 1245
- Radiometer ABL 837 Flex (at the neonatal intensive care unit)
- Radiometer ABL 825 Flex (2x ARKD2 - replacement for NOVA SP CCX)
- gas chromatogram, coulometer

**Important event in 2013:**

- Successful completion of the audit authorization II National Centre for Clinical Laboratory stacked (June 2013) and audit TÜV Rheinland (January 2013)
- Completion of a joint project of medical schools and ESF EU and the Ministry of Education Investment in the development of education - teaching clinical biochemistry e-Learning - December 2013
- XI. national congress CSKB - September 2013
- Business Day section biochemical lab - October 2013
- Atherosclerosis - October 2013
- Euromedlab, Milan, Italy - May 2013
- World Congress of TDM, Salt Lake City, USA - September 2013
- Publications: Monograph 2, 4 scientific articles in journals, 3 scientific articles in peer-reviewed journals, chapters in four monographs, 12 major lectures, 2 non-fiction articles, 18 abstracts

## Department of Immunology, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Jiřina Bartůňková, MD, Ph.D., MBA*

*Senior consultant: Prof. Anna Šedivá, MD, Ph.D.*

*Senior laboratory technician: Bc. Anna Skalická*

**Basic characteristics:**

Department of immunology provides full care for both paediatric and adult patients with immunopathological conditions including clinical and laboratory examination as well as dispensary care. Besides the outpatient examination and treatment in the full extent of allergology and clinical immunology, the department provides also a regular therapy and infusion application of the indicated drugs in serious immune disorders at the ward for both paediatric and adult patients. Since 2012, the department includes the Institute of Immunology and Vaccine Centre. It serves as a basis for pre- and post-graduate education of immunology and is also concerned with research in the same discipline.

The outpatient facilities in 2013 examined 15,372 patients and the laboratories carried out 240,129 examinations of 34,143 patients.

**Specialised outpatient facilities for:**

- Immunodeficiencies
- Allergies, autoinflammatory and autoimmune diseases
- Short stay ward for the therapy of immunopathological conditions
- Specialized premises for the production of antitumorigenic vaccines and specialized outpatient clinic for their application in clinical studies
- ambulance of vaccination centre

**Specialized laboratory:**

- CSF laboratory (in collaboration with the Clinical Department of Neurology)

**New methods and procedures:**

- Extended possibilities of diagnostics of severe immune disorders mainly in examination methods of cellular immunity



- Expansion of examination spec. IgE with molecular allergens Bet Bet v1 and v2
- Expansion of home care centres in supervision by subcutaneous immunoglobulin
- Clinical studies of immunoglobulin preparations
- Treatment center hard to treat asthma (Omalizumab, a monoclonal anti-IgE antibody)
- Center for the treatment of hereditary angioedema (substitution C1inhibitoru, inhibition of bradykinin)
- Center for the treatment of subcutaneous immunoglobulins
- Blocking cytokine treatment (anti-IL-1 therapy).

**Unique technological equipment:**

- Completely equipped laboratory for flow cytometry
- Microscopic workplace including confocal microscope and scanning cytometer

**Important event in 2013:**

- Audit II stacked expertise for 813 - Laboratory of Allergy and immunology ;
- Re-accreditation of the Ministry of Health for the practical training of laboratory technicians within specialized education , field of Immunology and Allergology ;
- Continuation Phase I / II clinical trials for prostate cancer immunotherapy using vaccines based on dendritic cells in prostate cancer Eudragit CT 2009-017295-24 and Eudragit CT 2009-017259-91 ;
- Management Immunodeficient centers in the global network of centers of Jeffrey Modell Foundation , USA;
- Certifications in the field of Rheumatology ( MUDr.R.Horváth , Ph.D. , ) , postgraduate study in Allergology and Clinical Immunology ( MUDr.Horáková );
- Title Bc General Nurse , 1x, Ph.D. (.Jana Kayser, MD, Ph.D. ) ;
- Publications Basic Immunology , Triton 2013
- Solution institutional support projects University Hospital; Project „ T cell therapy of prostate cancer „ in the scheme of advanced therapies ;
- 9 impacted foreign publications.

**Department of Medical Microbiology, 2nd Faculty of Medicine, Charles University and Motol University Hospital**

*Head physician: Ass. Prof. Pavel Dřevínek, MD, Ph.D.*

*Senior Consultant: Otakar Nyč, MD, Ph.D.*

*Senior laboratory technician: Bc. Vilma Klemensová*

**Basic characteristics:**

Department carries out laboratory diagnosis of bacterial, viral, fungal, parasitic infections. It also provides consulting services in the antibiotic therapy, differential diagnosis of infections and infectious complications. Cooperation in monitoring the incidence of nosocomial infection and monitored for abnormal profiles of antibiotic resistance. It is connected to the European system of surveillance and antibiotic resistance in European studies to monitor the incidence of infections caused by *Clostridium difficile*. Through representatives of the CCC NAP and SKAP CLS JEP is actively involved in the implementation of antibiotic policies in the country. In 2013 the department reported a total of 104,633,439 points.

**New methods and procedures:**

- Diagnostics (i) based on PCR: panel 16 respiratory viruses, enteroviruses, panfungal PCR, micromycetes and candidates, (ii) using immunochromatography: astroviruses
- Detection of virulence factors and resistance genes: (i) PCR: MRSA and PVL in *S. aureus*, (ii) MALDI-TOF: carbapenemase
- Molecular typing: *C. difficile* (for the needs of the Czech Republic), *P. aeruginosa* and *B. cepacia* complex (chronic infections in patients with cystic fibrosis)
- Demonstration of neutralizing antibodies against drugs type beta-interferon for MS center CR
- Cooperation with the Department of Internal Medicine Motol University Hospital in introducing fecal transplantation in patients with recurrent *C. difficile* colitis induced.

**Unique technological equipment:**

- Insulator of nucleic Acids for PCR diagnostics Qiacube
- Anaerobic box JOUAN
- IF BX 53 Olympus microscope equipped for photographic documentation
- MALDI-TOF: mass spectrometry equipment for quick and highly reliable identification of bacteria and fungi.
- PCR cyler with high resolution melting analysis
- System for the extraction of bacterial and fungal DNA (NA Select)

**Important event in 2013:**

- Active participation of DMM workers at international conferences in 2013 (9) ECC-MID (Berlin); Infectious Diseases 2013 (Poprad); 36th European Cystic Fibrosis Conference, Lisbon); 8th International Conference on HHV-6 & 7 (Paris), North American CF Conference, Emerging Zygomycetes, a new problem in the clinical lab (Netherlands), XXIII. Conference of pediatric hematologists and oncologists (Bratislava)
- Publishing Activity: 8 impacted foreign publications, 4 home impacted publication, 7 articles in Czech peer-reviewed journals, one chapter in the Czech monograph.

## Department of Pathology and Molecular Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital

*Head physician: Prof. Roman Kodet, MD*

*Senior consultant: Daniela Kodetová, MD*

*Senior laboratory technician: Vladimíra Kratinová*

**Basic characteristics:**

The department is concerned with diagnostics of various types of diseases. It employs methods of classical histology and cytology combined with other special laboratory methods. In 2013, a total of 24,473 patients were examined which represents 441,186 histological slides. The department is both undergraduate and postgraduate teaching workplace. The autopsy section of the department has educational and supervisory functions in the frame of the hospital.

**Specialised laboratories for:**

- Electron microscopy
- Immunohistochemistry
- Diagnostics of neuromuscular diseases

- In situ hybridisation
- DNA and RNA analysis
- cytology
- Biopsy
- Necropsy
- pulmonary cytology

**New methods and procedures:**

- Since 2008, the Institute is part of the so-called predictive pathology laboratory, which is to deal with the investigation of patients with mammary carcinomas and colorectal carcinoma with regard to the indication for biological treatment.
- Complex screening of the GIST tumours, morphological and molecular diagnostics
- New diagnosis of lung cancer by PCR EGFR gene mutations and breaks ALK gene, ROS1 and c-MET.
- Analysis of clonality, which uses the STR locus in a gene HUMARA and methyl sensitive restriction enzymes
- Application of new immunohistochemical methods for diagnosis of tumours.
- Continuously during the year we introduce new immunohistochemical method for the diagnosis of tumors.

**Unique technological equipment:**

- Cyclery for real-time PCR

**Important event in 2013:**

- Project institutional support for science of The Ministry of Health of the Czech Republic continues in 2013 at a good level, overall IF for 2013 was 36,666.

## Department of Clinical Haematology of Motol University Hospital

*Senior consultant: Ivana Hochová, MD*

*Senior laboratory technician: Naděžda Hanusová*

**Basic characteristics:**

The department provides enhanced hemato-oncological care according to the criteria Czech Society of Haematology. The department is divided into two parts, laboratory and clinical.

The laboratory performs routine and special haematology tests to Motol Hospital with supra-regional powers. In 2013, the laboratory conducted 750,000 performances. The laboratory is the reference laboratory for the diagnostics of paediatric acute myeloid leukaemia and myeloproliferative conditions in children. In adult haematology attention is focused on its morphological diagnosis of myelodysplastic syndrome.

The clinical part of the workplace includes an outpatient section for paediatric and adult part. The clinic is part of the adult day care centre serving the application of blood products and chemotherapy. A total of 11,000 patients were examined in 2013. The Department is teaching medical students and undergraduate students in the study field of technician.

**New methods and procedures:**

- Procedures for functional analysis of platelets
- Introduction to the methodology of the evaluation of new antithrombotic drugs
- More accurate and faster diagnostics of Willebrand's disease
- Morphological laboratory of the department participates in the International Study of the treatment of paediatric acute lymphoid leukemias Protocol – Interim ALL-BFM 2000
- Grant IGA 9905-4 Changes in coagulation parameters monitored during pregnancy -
- OKH participating in the project of the European register of patients with myelodysplastic syndrome (EUMDS), which is organized by European LeukemiaNet in cooperation with the European Hematology Association. The department is actively involved in activities CZECH MDS GROUP 2 times a year and holds morphology seminars nationwide.
- The department began to be international study - Open-label, randomized, parallel-group, assets, controlled, multi-center, noninferiority study of dabigatran etexilate versus standard of care for treatment versus thromboembolism in children from birth to less Than 18 years of age: The study DIVERSITY Clinical Phase IIb / III.

**Unique technological equipment:**

- Coagulometer (ACL) for the examination of special coagulation tests
- Device for platelet function analysis (PFA Innovance 200)
- Hematologic line Sysmex XE-Alpha N
- Microscope (Olympus, Leica) with camera equipment

**Important event in 2013:**

- Department of Clinical Haematology has been granted the status of work with extended hemato-oncological care under the auspices of CHS CMS JEP.
- Department is the author and maintainer of the web application Atlas myelodysplastic syndrome on MDS CZECH GROUP.

## Department of Clinical Psychology of Motol University Hospital

*Head physician: Jaroslava Raudenská, Ph.D.*

**Basic characteristics:**

The department consists of 33 psychologists with various workloads in both adult and paediatric parts who provide preventive, diagnostic, psychotherapeutic and rehabilitation care for paediatric and adult patients, in- and outpatients and their families in UH Motol.

This department examines monthly 1,100 and annually 13,500 patients. It is accredited by the Czech Ministry of Health in the field of Clinical Psychology and Paediatric Clinical Psychology.

**New methods and procedures:**

- Long-term research plan of the quality of life of patients with chronic cancer and non-malignant pain in collaboration with the Centre for Treatment and Research in painful conditions, and other departments.
- Share on psychological research of epilepsy in collaboration with the Center for epilepsy and cognition research in collaboration with cognitive Center Neurology Clinic.

- Involved in research in food intake and suicidal behaviour in cooperation with the psychiatric clinic.

**Important event in 2013:**

- Department organized 10 professional seminars accredited by the Association of Clinical Psychologists of the Czech Republic in the system of lifelong learning.
- Employees actively participated in lectures at national and Slovak psychological, psychiatric, psychosomatic and somatic congresses.
- Lectures abroad, such as Schmerzwoche Mayrhofen, Austria; Neuropsychological Meeting Amsterdam, EFIC Florence Congress of Cognitive Therapy Peru);
- Bibliography: 2 articles in international journals with IF, 2 articles in peer-reviewed international journals, two articles in Czech IF journals, 16 articles in Czech peer-reviewed journals, two chapters in monographs, 9 abstract.

## Blood Bank Department of Motol University Hospital

*Senior consultant: Eva Linhartová, MD*

*Senior laboratory technician: Mgr. Martin Matějček*

**Basic characteristics:**

Department of Blood Bank is one of the CITD at the University Hospital. It provides purchasing, storing and expedition of all types of transfusion preparations for patients of UH Motol. In 2013 there was dispatched a total of 41,989 T.U. of all types of transfusion preparations, of which 20,827 erythrocytic preparations, 17,027 of plasma T.U., 3,629 thrombocytic preparations T.U. and granulocytic TP 93 T.U. Consumption of blood products remained the same for all types of blood products, except for plasma, which fell against dispensing in 2012.

The blood bank department carries out basic and special immunohaematological investigations according to requirements of clinics and departments, prenatal examinations for pregnancy counseling Gynecol-obstetric clinic and if needed, it procures transfusion preparations for the intrauterine and replaceable transfusion.

In 2013 was carried out a total of 10,882 of pretransfusion basic tests (blood group), 19,030 antibody screening and 36,843 compatibility tests. Number of specialized immunohematological examinations raised compared to 2012 by nearly 16% to 1,042 (841 in previous year). Number of irradiation of blood components raised compared to 2012 – 8,952 irradiations.

In the field of autologous donations are performed autologous whole blood mainly for orthopedic patients, Motol University Hospital, Department of Urology, Charles University, 2nd Faculty of Medicine and Motol University Hospital, but also for patients Hospital Na Homolce. In 2013 were carried out a total of 535 autologous donations. The department provides instruction in the 2nd Faculty of Medicine and pre-and post-graduate study in transfusiology for doctors.

**Important event in 2013:**

- Initiation of separation (leukocyte apheresis) for voluntary donors through the separator Spectra Optia

## Department of Rheumatology for children and adults of Motol University Hospital

*Head physician: Pavla Vavřincová, MD, Ph.D.*

### **Basic characteristics:**

Department of Rheumatology for children and adults provides diagnosis, treatment and dispensarization of child and adult patients with rheumatic and other autoimmune diseases. The department provides consulting service for MUH departments as well as for others out of Prague. During 2013, 3,170 outpatient treatments were performed. Ambulance also provides intravenous boluses of biological samples and corticosteroids.

### **Specific features of the department:**

- The department embodies 2 national centres for biological treatment of rheumatology patients - for children and for adults. Laboratory results and clinical data of patients treated are registered in the ATTRA project.
- The department has carried out 17 international studies, most of which is focused on patients with rheumatoid arthritis, three studies on the issue of Osteoarthritis and 1 study BASE - Treatment of patients with systemic lupus erythematosus belimumab.
- The department is involved in long-term international project (100 centers) - P10-262 study to verify the long-term safety and efficacy of Humira in patients with active juvenile idiopathic arthritis (JIA) polyarticular type.

### **New methods and procedures:**

- During 2013 it was opened to use tocilizumab in the treatment of patients with JIA
- Initiated intra-articular administration of Lederlon in patients with JIA.

### **Important event in 2013:**

- Employees are actively involved in the presentation of results of ATTRA project in the Czech Republic and abroad on the soil of EULAR and the ACR congresses.

## Department of Central Operating Theatres for Paediatric Patients of Motol University Hospital

*Head nurse: Drahomíra Fryčová*

*The physician responsible for the supervision: Vladimír Mixa, MD, Ph.D., KARIM*

### **Basic characteristics:**

In addition to the cardiac surgery, the department concentrates all surgical interventions of all surgical as well as non-surgical disciplines from the paediatric part of the hospital with the exception of cardio surgery; in the field of ophthalmology it ensures also surgeries of adult patients. A total number of interventions in 2013 was 7,868.

### **New methods and procedures:**

- Department continues to be made in accordance with the Act. 123/2000 Coll. thorough documentation of all equipment in the patient's medical history, including documentation of sterile supplies and instruments.
- Department of COTP for children is fully traceable to the central sterilization, re-

quests are sent to the sterilization of all workplaces operating rooms only in electronic form.

- In the field of transplantations, 12 kidney transplants were performed.
- In the field of pediatric surgery, 2,166 performances were done, among others two-hundredth chest deformity surgery - PE NUSS.
- In the field of pediatric orthopaedics and traumatology, 1,183 performances were made in 2013.
- In the field of dentistry, 397 performances have been carried out on COTP, 7 operations were conducted in the field of pediatric gynecology.
- In children's ENT, 2017 performances were carried out, five-hundredth of a cochlear implant surgery.
- Within the Eye Clinic for children and adults, 1366 performances for children were performed at COTP.

**Unique technological equipment:**

- Neuronavigation, devices for mini-invasive laparoscopic, arthroscopic and endoscopic techniques, ultrasonic aspirator crusher and tumor masses, harmonic scalpel, surgical microscopes, special ultrasonic crusher and extractor lens materials for ophthalmology.

**Important event in 2013:**

- At the Congress of Scrub nurse society lecture presented by our nurse was awarded by first place.

## Department of Central Operating Theatres for Adult Patients of Motol University Hospital

*Head nurse: Mgr. Vladana Roušalová*

*The physician responsible for the supervision: Petr Příklad, MD, KARIM*

**Basic characteristics:**

The department provides a background for 9 of 11 surgical workplaces of the adult part of Motol University Hospital; it supplies about two thirds of the personnel. In 2013, 18,685 of interventions were performed. The department also organises further study of nurses in the specialisation of perioperative care.

By the decision of the hospital's management, the department of COT-adults is led solely by the head nurse since May 1, 2013. Supervision of the operations of COT-adults medically is responsible the Department of Anaesthesiology and Intensive Care Medicine (KARIM).

**New methods and procedures:**

- Further negotiations on the management system operating rooms and central sterilization Medix, including tools and network optimization.

**Important event in 2013:**

- Title published „Sister perioperative care“ J.Wichsová et al., Mainly directed training nurses and perioperative nurses COT-adults.
- 2 rooms received new operating light.





## Transplant Centre of Motol University Hospital

*Head physician: Jaroslav Špatenka, MD*

### **Basic characteristics:**

The centre forms an organizational background for individual workplaces so that they can carry out collections of organs and tissues, transplantations of the kidneys in children and lung transplantations. It cooperates with a Coordination transplant centre (CTC), with all regional TC in the CR and with the Czech Ministry of Health. It is responsible for the specialised tissue bank (STB 85) which is concerned with collection, processing, storing and distribution of cardiovascular tissue from dead donors and bone tissue from living donors. The programs of kidney transplantations in children, collection and lung transplantations and the bank of cardiovascular tissue work with a national competence. In 2013, 8 multi-organ collections from dead donors and 12 kidney transplantations in children were performed (of which one from a living donor) and 17 lung transplants. To bank of cardiovascular tissue were taken 59 hearts and 70 issued transplant grafts to transplant heart valves.

### **Important event in 2013:**

- In 2013 the program Ross operation continued successfully (European Journal of Cardiothoracic Surgery) and was presented at domestic and international events.
- In an animal experiment developed by the transplant team, led by prof. Lischke method „ex-vivo lung perfusion“ (EVPP). It was made 5 EVPP under preclinical studies. The aim is to expand the pool of donor lungs.

## OUTPATIENT SECTION

### Emergency Department for Children of Motol University Hospital

*Head physician: Marie Mikulecká, MD, MBA, Ph.D.*

*Head nurse: Zdena Čechová*

### **Basic characteristics:**

The department provides a comprehensive evaluation and treatment of acute conditions of children in an unfinished 19th year of life. In service there are paediatric outpatient departments as well as department surgical, ENT, orthopaedic, oral surgery, ocular and neurological. These outpatient departments work during emergency hours, in the morning shift work podiatric departments for acute paediatric conditions, with the exception of those that are brought in by ambulance and treated in the emergency reception SP. During morning shift is also in service paediatric department for foreigners.

Under Medical first aid service were performed a total of 15,842 paediatric examinations in 2013, 21,400 examinations performed by other disciplines, which makes together total of 37,424 examinations. In the emergency intake on both floors, a total of 13,866 examinations were performed. Department as a whole reported 51,108 examinations.

### **Unique technological equipment:**

- Laboratory equipment enabling rapid diagnosis of diseases indicative directly in the emergency intake.

## Department of Dermatovenerology of Motol University Hospital

*Head physician: Alena Machovcová, MD, Ph.D., MBA*

*Head nurse: Bc. Helena Janoušková*

### **Basic characteristics:**

This is an outpatient department with no connection to the inpatient department of Motol University Hospital. The department provides basic and specialised outpatient and consulting care in the field of dermatovenerology focused on dermato allergology and profession-related skin diseases, prevention and treatment of skin cancer and treatment of psoriasis. In a year 2013, 7,878 patients were treated on an outpatient basis and 24,728 treatments were performed.

### **Specialised outpatient facilities for:**

- Venereology
- Pigmentary nevi and skin tumours
- Dermatoallergology and professional dermatoses
- Corrective dermatology
- Lymphology
- Acne consulting
- clinic for patients after organ transplantation
- Short stay ward for lamphology
- Short stay ward for phototherapy
- Flebological ambulance
- Clinic for diagnosis and treatment of diseases of nail

### **New methods and procedures:**

- Examination of pigmented lesions by digital dermoscope
- Examination of the skin perfusion with the PeriScan PIM II device
- Laser surgery corrective and aesthetic dermatology

### **Unique technological equipment:**

- Digital dermoscope, Digital videocapillaroscope PeriScan PIM II, high-performance laser photons XS Erb: YAG and Nd: YAG.

## Dermatological Department for Children

*Head physician: Štěpánka Čapková, MD*

### **Basic characteristics:**

Department composed of two clinics with 3 doctors and 2 nurses treat patients in a field of paediatric dermatology and not only provides consulting services for all inpatient children's department of the hospital, but also superconsiliary service for the whole country. In 2013 there were treated 9,001 patients aged 0-19 years.

### **Specific features of the department:**

- Doctors provide specialist advice (for emergency patients with severe atopic eczema, neve disease, genodermatozy, hemangiomas). In 2013, in cooperation with pharmacy MUH and the Department of Paediatric Haematology and Oncology our department introduced new treatment of superficial hemangiomas - a non-selecti-

ve beta-blocker propranolol locally.

**Important event in 2013:**

- Committee of Czech Dermatological Society suggested separation as a Center for rare dermatosis of childhood for the country.
- Publications (peer-reviewed journals): Čapková W, Čadová J, Malis J, Klovrzová S: Therapeutic options for hemangiomas. (Practice Dermatology 2013, 7 (3);
- Čapková W: Dermal hyperplasia viral origin. Vox paediatricae 2013 4 (13);
- Čapková W: Atopic eczema - what's new in treatment? Acta Medicinæ 2013 2;
- Čapková W: What brought us the magical „13“ in the treatment of atopic eczema? Allergy 2013; 2 (15).
- The Head physician Čapková completed a number of important lectures throughout the Czech Republic - „invited speaker“.

## Emergency Department for Adults of Motol University Hospital

*Head physician: Jiří Zíka, MD*

*Head nurse: Bc. Renáta Všeťková*

**Basic characteristics:**

The department is an entry point for unsubscribed hospital (acute) patients with acute renal health or life-threatening non-traumatic causes.

Injuries are treated in the same hall ED accident outpatient orthopedic clinic.

The staff also treats people with acute health disorders which are within the hospital outside medical facilities (parking lots, corridors, entrance halls, etc.)

In 2013 15,435 patients were treated. Department works in continuous operation.

It is a point of contact for patients and crew rescue services and the hospital's reception ED. It is also a key point in announcing trauma plan of the hospital in the expected crash in patients receiving large scale disasters.

## Department of First aid for Adults of Motol University Hospital

*Head physician: Jiří Zíka, MD*

*Head nurse: Bc. Dana Černá*

**Basic characteristics:**

The Department provides an outpatient treatment of acute patients with sudden health disorder after regular working time, to the extent of general practitioner care medicine. On weekdays, one doctor and one nurse have office hours, on weekend shifts are reinforced by another doctor.

When it is necessary, patients are referred for further treatment at the emergency department or specialized outpatient ambulances of the hospital. During 2013, 14,625 patients were treated there.

## Department of Primary Care of Motol University Hospital

*Head physician: Jaroslava Kulhánková, MD*

*Head nurse: Dana Černá*

### **Basic characteristics:**

The department provides both acute and long-term preventive care for the employees, patients registered under capitation from other hospitals, foreigners insured as well without health insurance with the Czech insurance companies and over-standard care for with Czech insurance. The department is a undergraduate and postgraduate educational workplace; it is accredited in the field of General medicine.

In 2013, the Dept. of Primary Care had 25,133 patients.

## Department of Hygiene and Epidemiology of Motol University Hospital

*Head physician – epidemiologist: Vilma Benešová, MD*

*Senior hygiene technician: Mgr. Jana Hrončková*

### **Basic characteristics:**

Activities of the department lie in the application of hygiene and anti-epidemiological care in the specific conditions of the MUH. The priority is the prevention of hospital infections, measures to reduce their incidence, monitoring of its performance and efficiency, monitoring of infections in the local surveillance, supervision of treating community-acquired infections and principles in the provision of health care.

### **Specifics of the department:**

- The total number of nosocomial infections (NI) of all Division 1,677, ie 2,02 % of total NI released from hospital treatment. Another increase, even if is a real number, suggests a further improvement of communication with clinicians and physicians to contact NI, indicating a positive impact of the educational program. In 2013, we recorded 122 seizures MRSA, both colonization and clinical infection, which corresponds to 1,46 to 1000 patients.
- According to current legislation was controlled sterilization technique, made tests against sanitary code of workplace clinics and departments and 640 control handprints were collected for microbiological examination and 3,810 swab to control bacterial environmental cleanliness. Particular attention was paid to the clear spaces, which are regularly monitored by Air Sampler (71 samples). Part of current sanitary surveillance is a prevention of the occurrence of legionella. Total of 282 investigations were performed for diagnosed infections in hospitalized patients, 205 investigations of reportable diseases, in cooperation with public health authorities dealt with a total of 280 community infections. Constitutional disinfector performed 345 spatial disinfections. Our department conducted 299 internal hygiene audits of workplaces.

### **New methods and procedures:**

- Introduced a new methodology for measuring net space – using aero scope and particle counter that provides the required spectrum measurement, graphical outputs and outputs directly to PC.

**Important events in 2013:**

- In 2013, fourth annual World Day of hand hygiene was held at the Motol University Hospital.
- Laboratory section has been expanded to include new aero scope and particle counter for monitoring environmental cleanliness of selected workplaces.
- Fifth cycle about the experience of participants of accredited course work in the field of hospital hygiene and epidemiology and, third cycle of lectures about Infection prevention management and control in healthcare facilities - focused on intensive care.

## Pharmacy of Motol University Hospital

*Head pharmacist: PharmDr. Petr Horák*

*Head pharmaceutical assistant: Jaromíra Mariašová*

**Basic characteristics:**

The pharmacy's priority is to provide effective, quality and safe pharmaceuticals for both hospitalised patients and outpatient clients of UH Motol and general setting and control of all steps in dealing with drugs that have an impact on patient safety and the results of their treatment. The hospital pharmacy provides medicament distribution and individual and collective preparation of sterile medicaments (from the group of cytostatic agents, parenteral medicines without antimicrobial agents and others) and non-sterile (in particular the preparations for paediatric patients), the acquisition of unregistered medicines and provision of medicines for clinical trials.

During the normal working day, the pharmacy issues about 10,000 packages of drugs and prepare hundreds of individually prepared medicines, including about 150-200 cytostatic infusion and 30 individual parenteral nutrition.

**Specific features of the department:**

- Pharmacy provides consulting services for patients and healthcare professionals, and educational activities incl. securing internships for undergraduate and postgraduate students.
- The hospital pharmacy is involved in the formulation of drug policy FN Motol - the establishment of a positive list of medicines, ensuring the most cost-effective medicines, etc. It also creates internal regulations FN Motol in the handling of drugs.
- In accordance with the principles of good clinical practice and good pharmacy practice pharmacy participates in all clinical trials of drugs that take place in the Motol University Hospital.
- In the area of scientific publications, among others, focuses on the individual products for specific age groups of patients, especially paediatric patients, the development of new products with extemporaneous formulations suitable and validated method of verifying stability. Outcomes of these activities are regularly published and presented at professional forums in Europe.

**Important events in 2013:**

- Monograph „individually prepared drugs for paediatric use“ prepared mostly by copyright collective of our pharmacy. The monograph also includes recommended procedures for preparing dosage forms suitable for paediatric patients who have undergone evaluation SIDC and opposition in the Czech pharmaceutical company.

## Nursing care

In the context of nursing care, which is an integral part of health care, the MUH steadily continued to improve the quality of nursing care and patient safety during the year 2013. We focused mainly on interdisciplinary collaboration with physicians, physiotherapists and other paramedical staff in favour of the patient care. Promotion of communication and management, focused on improving of patient and staff satisfaction is already a commonplace.

In 2013, the Centre for Vascular Input / PICC Team / was established under the auspices of the Department of Internal Medicine. The PICC team consists of six nurses and it provides care for long-term hospitalized patients, especially oncologic patients and patents on long-term infusion therapy. During the past year, the team introduced methods: 167 PICC /peripherally applied central venous catheter/ and 172 midline / peripheral catheter/.

With the support of the European Social Fund, the MUH successfully continues in the programme of deepening of the communication and managerial skills of medical workers which was launched in 2011. In September 2013, the hospital introduces another programme, designed for medical workers on the threshold of professional life /till the age of 30 or above the age of 50/. The goal of the project is to create good conditions for the formation of the desired communication style between the medical staff and patients.

## Social care

The Department of Social Care actively assists by the release or transfer of non-self-sufficient patients and thereby it contributes to the efficient use of the hospital bed capacity. In 2013, the department has experienced an increase in the number of adult patients requiring assistance. A total of 500 patients were release from acute beds, 1,218 patients were placed in the Long-Term Care Hospital including the Aftercare Centre within the MUH. From the Aftercare Centre, a total of 188 patients were released into residential facilities providing social services. The comprehensive social care was provided also for 820 children.

## Spiritual care

In 2013, the spiritual care by the hospital chaplains was provided for 3,153 clients. The interest of patients, relatives and staff in spiritual care is steadily increasing regardless the disease and age. Meeting the spiritual needs becomes a natural part of comprehensive patient care.

## Volunteers

The number of participants who wish to participate in the volunteer programme rises every year. To 31st December 2013, a total of 411 volunteers were registered in the hospital. Volunteers make the time spent in hospital more pleasant for adult and paediatric patients and together they spend time reading, playing games, doing visual art activities, singing, training the memory, providing dog therapy etc. In 2013, the centre published the book „The Fairy Tale Guide for Paediatric Patients and Escorts“.

## Healthy hospital

The MUH is a member of the international network of hospitals promoting health according to the WHO, since 2003. In 2013, Department of Pneumology 2nd Faculty of Medicine, Charles University and MUH was actively involved in the international project „Recognition Process“ and passed the assessment. The outputs became the basis for the creation of the action plan of activities for health support. The aim of the project is to show that the process brings real benefits from realisation of health support promotion in hospitals and whether it is ultimately beneficial to the health of patients and staff.

## Quality management

The year 2013 was marked by the consolidation of information services for executives and managers a new quality in the workplace of Motol University Hospital. But it was also a year of evaluation.

Quality management is carried out in the hospital for the tenth year. It is appropriate to take this opportunity to remind that since November 2003, when the quality control became part of the strategic plan of the management of MUH, hospital did a great deal and has changed for the better. The main measure of quality is the benefit of patients. By monitoring quality indicators we can document what has improved and can offer information on raising quality and our patients.

Individual Quality Control Department (IQCD) can evaluate as well as hospitals – it has an authentic system to improve quality, which has repeatedly passed the external assessment professionals and patients. This is evidenced by two certificates by Joint Accreditation Commission.

The second proof, not less important, is a survey of patient satisfaction. The two main criteria: the average grade rating on a scale of 1-5, the number of fully satisfied patients shows a sustained upward trend. As a success, we consider that the number of patients completely satisfied with the work of nurses and doctors (graded 1) in 2013 exceeded 90%.

Part of the work IQCD is also a range of new educational activities. New employees emerged from training through an extensive series of seminars for quality managers in the workplace, participation in undergraduate teaching at the Institute of Public Health, 2nd Faculty MUH, lecturing in graduate education courses mandatory attestation to the lectures for continuing education of nurses or a separate course in quality management IPEM.

While evaluating the success, we need to sort the results of checks enclosed medical records. In particular, thanks to systematic education and controls, the level of medical records has greatly improved and in 2013 all work safely reached the imaginary boundary of 95% fulfilled legal requirements for medical documentation. Even this brief list promises that 2014 will be the third successful year of accreditation.



## Scientific research activities

The Motol university Hospital consistently and in for a long-term supports scientific research activities that are found throughout the range of represented disciplines. In this activity the hospital uses the connection with the second Faculty of Medicine and the co-operation with other research organizations in the Czech Republic and abroad. In accordance with the new trends in the application of the results of scientific research activities the MUH supports innovations and an implementation of results into practice.

Promotion of science, research and innovations in the MUH is realized by combined financing through institutional resources and assigned resources, which are mostly realized in the form of grants. Recently in 2013, the research teams at the University Hospital address also grants of the 7th Framework Programme of the EU.

### Institutional support and research grants:

- Since 2012 the MUH is a recipient of an institutional support by the Ministry of Health. The institutional support of the research organization in the MUH is organized by the system of internal projects undertaken at individual clinics and hospital departments. The year 2013 was the second year of the scheme.
- In 2013, the MUH dealt with 19 projects of the Internal Grant Agency (IGA) of the Ministry of Health, as the principal investigator and 50 projects as a co-investigator. Within the institutional support 33 Internal grant projects have been addressed.
- In 2013, the financial means (in CZK) for science and research in the MUH were distributed as follows:

IGA investigator	28 535 000,-
IGA co-investigator:	20 209 000,-
TA CR	1 081 000,-
Institutional Support	57 324 000.-
FP7 EU	4 432 000.-

The obtained support for scientific and research activities was **111,581,000,- CZK** in total.

- The support for research activities is directly related to the outputs of the RDI as reported in the national database of the Board for Research, Development and Innovation. Results from the BRI outputs are used firstly to a comparison within the Czech Republic, where the MUH holds one of the leading positions and secondly in relation to the distribution of resources in the internal system of grants so that individual research facilities would be supported in accordance with their performance. In 2013 there was an increase of the total impact factor of MUH which reached 1,222 points.

- From the data above the RDI derives priorities for the next period. As the most powerful lines of research in the MUH are gradually shown to be paediatric fields, particularly paediatric haematooncology, genetics, children Cardio Centre, from other disciplines neurology, pathology, but also the surgical areas and orthopaedics. We will continue to support the work of strong research groups in these priority areas, which are in line with global trends.
- In recent years the MUH strongly supports the development of innovative therapeutic and diagnostic procedures based on modern technologies, which provide space for the development and clinical testing.

### Projects of Modern Therapy

In order to support innovation and transfer of research results into practice, the hospital has introduced a system of hospital projects of „modern therapies“. Eight projects have been now addressed under this scheme, which is expected to have a practical output in the form of new diagnostic and therapeutic options.

### Combined program of education of doctors, MD and Ph.D. Program

The combined Program MD / Ph.D. was listed in 2012 mainly for the above mentioned priority areas. In 2013, we have accepted two new students in this scheme. At the present time 12 physicians at the MUH study this program in preparation for obtaining the PhD and medical specialization in the field.

### International activities

In 2013, we significantly improved our international activities. This was mainly reflected in cooperation programs of the 7th Framework Programme of the EU, which now deals with four hospitals, in the fields of child haematooncology, pediatric neurology and cardiology. There has been also an increase in publishing activity, taking into account international cooperation.

### Creative initiative

Motol University Hospital monitors and appreciates the quality and achievements in the field of medicine and scientific research progress. In 2013 the hospital has awarded best creative achievement in the previous year for the sixth time. This time, the award went to the Pediatric Clinic team for the introduction of functional diagnosis of osteoporosis in chronically ill children.

In 2013, the hospital also gave a special award to the team of Paediatric Neurology, in cooperation with other experts from the of MUH Motol, they solved an extraordinary casuistry of autoimmune encephalitis (Libá Z., Sebroňová V., V. Komarek, A. Grey, P. Sedlacek, Prevalence and treatment of anti-NMDA receptor encephalitis, *The Lancet Neurology*, 2013, 12 (5) :424-5, IF 23.917).

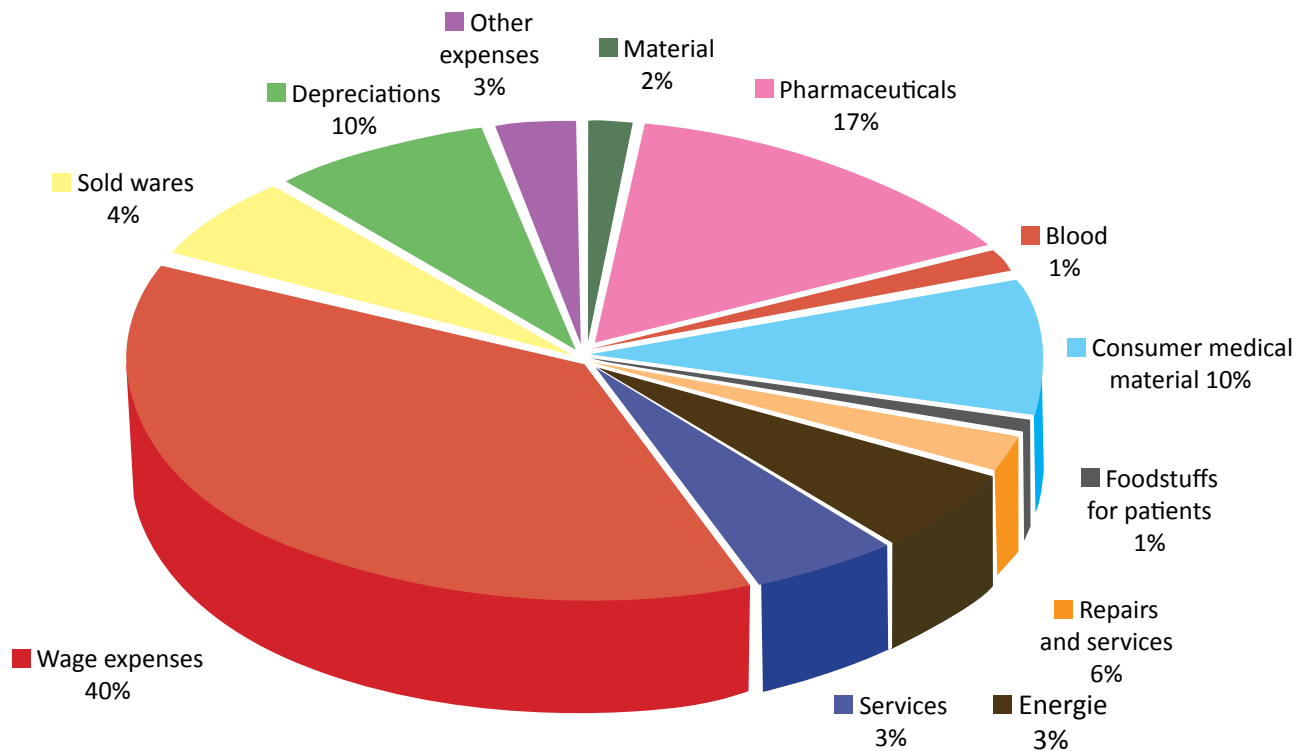
## Economic activities

### BALANCE SHEET (in thousands CZK)

	Situation on 1st Jan 2013	Situation on 31st Dec 2013
A SSETS	11,740,875.65	11,211,992.37
Permanent assets	9,372,606.33	9,016,953.53
Long-term intangible assets	9,318.41	24,504.27
Long-term tangible assets	9,356,923.45	8,983,881.47
Long-term financial assets	12.03	11.93
Long-term claims	6,352.44	8,555.86
Current assets	2,368,269.31	2,195,038.84
Reserves	134,834.52	148,757.17
Claims	1,015,127.39	1,287,961.75
Financial assets	1,218,307.40	758,319.92
<b>LIABILITIES</b>	11,740,875.65	11,211,992.37
Own Resources	10,915,387.04	10,527,410.64
Property funds	9,381,329.68	9,030,112.06
Financial and monetary funds	2,969,364.71	2,931,084.45
Economic result for current accounting period	1,739.17	1,521.47
Accumulated loss from previous years	-1,437,046.52	-1,435,307.34
Economic result in licensing procedure (trading income)		
Foreign sources	825,488.61	684,581.73
Reserves	488.79	753.29
Long-term liabilities	61,972.83	750.53
Current liabilities	763,026.99	683,077.91
Bank accommodations and loans	0.00	0.00

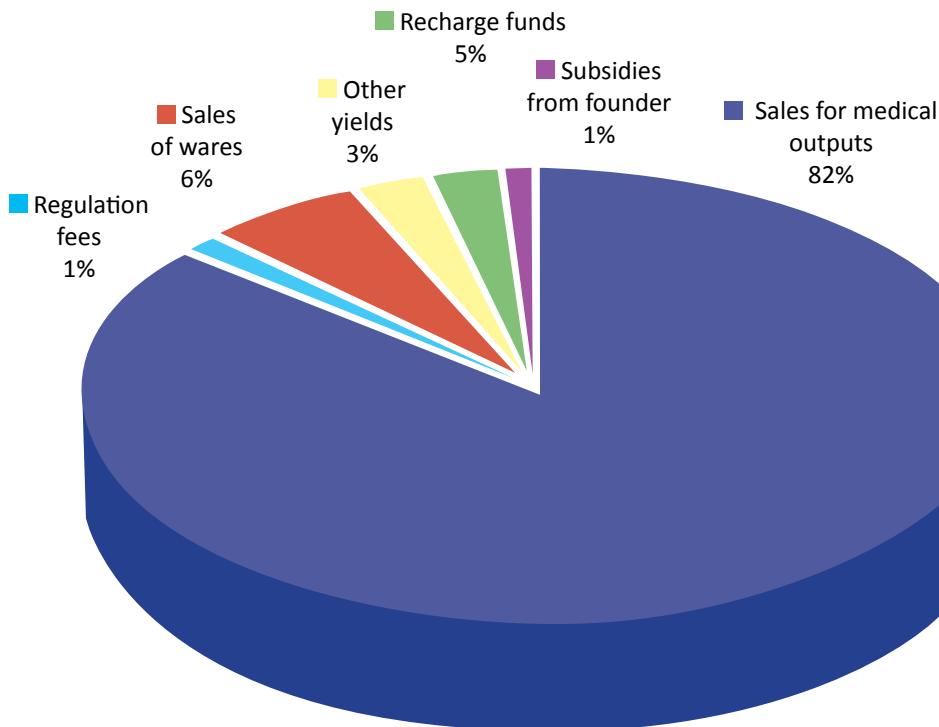
Profit and loss statement (in thousands czk)	situation on 31th December 2013
Material costs	2,231,066.71
Repair and service expences	622,626.33
Wage expenses	2,862,734.28
Taxes and charges	243.26
Other costs	734,693.44
Depreciations, sold property, reserves and adjusting items	693,929.00
Financial costs	356.87
Cost of indisputable rights (the state budget, local governments, state funds)	0
<b>Total costs</b>	<b>7,145,649.89</b>
Revenues for medical outputs and wares	6,442,403.79
Other revenues	567,563.64
Financial income	8,564.47
Income of indisputable rights (the state budget, local governments, state funds)	134,243.56
<b>Total revenues</b>	<b>7,152,775.46</b>
Economic result before taxation	7,125.57
Income tax	5,604.10
Additional income tax payments	0
<b>Economic result after taxation</b>	<b>1,521.47</b>

## Survey of Expenses for 2013



■ Wage expenses, ■ Sold wares, ■ Depreciations, ■ Other expenses, ■ Material, ■ Pharmaceuticals, ■ Blood, ■ Consumer medical material, ■ Foodstuffs for patients, ■ Repairs and services, ■ Services and energies, ■ Energies

## Survey of Yields in 2013



■ Regulation fees, ■ Sales of wares, ■ Other yields, ■ Recharge funds, ■ Subsidies from founder, ■ Sales for medical outputs

## Survey of economic indexes

Index	2011	2012	2013	13/12 in %
Yields	6,830,039	7,167,908	7,151,254	99.77
Expenses	6,826,595	7,169,647	7,152,775	99.76
Economic result	3,444	1,739	1,521	87.46
Accumulated loss from previous years	-1,440,491	-1,437,046	-1,435,307	99.87
Tangible investment assets	9,795,815	9,356,923	8,983,881	96.01
Reserves	156,259	134,834	148,757	110.32
Claims	833,322	1,015,127	1,287,962	126.88
Obligations	818,012	763,027	683,077	89.52
Payroll Fund	0	0	0	0
Cultural and Social Services Fund	19,124	18,881	17,674	93.60
Reserve fund	48,907	42,881	44,242	103.17
Fund for reproduction of investment assets	2,735,446	2,907,600	2,869,167	98.68
Fond reprodukce inv. majetku	2 735 446	2 907 600	2 869 167	98,68

### I. Liabilities and claims

Short-term trade liabilities	319,544,803.39 CZK
Short-term trade claims	740,456,196.32 CZK
Long-term liabilities	750,529.80 CZK
Long-term claims	8,555,860.38 CZK
Liabilities after the due date	72,586.32 CZK
Claims after the due date	55,525,151.63 CZK
Liabilities for employees	130,465,446.10 CZK
Claims against employees	17,153,959.58 CZK

Liabilities of the MUH are regularly refunded within 90 – 120 days after the arrival of the invoice and since July 2013 they were compensated within 60 days after the arrival of the invoice in accordance with the amendment to the Commercial Code 513/1991 Coll., as amended. Payments were covered in accordance with the term of maturity and only invoices that have to be solved due to material and time discrepancies, become liabilities after the due date. Long-term liabilities are continuously paid according to the repayment plan, the balance is registered in the financial statements.

The total state of the claims is stable. The volume of short-term claims increased com-

pared to the previous year, but the state is only temporary. Payments from health insurance companies are scheduled and paid within the term of maturity, with a maximum delay of 5 days. Claims after the due date are mostly claims after foreigners that are difficult to collect and these are therefore continuously written off during the reporting period. In the total volume of claims after the due date are included also overdue claims for regulatory fees in the amount of 4,547 million CZK. Their early enforcement and use in court ensures that it does not lead to their limitation. Written off claims are still kept in off-balance sheet accounts unless it is factually and legally documented that the payment will not be made or they are kept until the time when the debts legally extinguished. With the validity since 1st January 2010, the accounting adjustments to claims are being created and the claims are continuously written off into expenses. Overall, a total of 4.13 million CZK of claims and 3,938 million CZK of accounting adjustments were written off since the beginning of 2013. It represents returns that have not been paid and the possibility of payment is minimal.

Financial flows of the Motol University Hospital were balanced for the whole year 2013, the hospital pays its liabilities in the due date and it has no liabilities over 90 days after the due date. During the year, the hospital paid the reconstruction of the University Children's Hospital from its own resources which distinctively decreased cash-flow. The payment discipline belongs to priorities of the Motol University Hospital and the records of both liabilities and claims have been thoroughly monitored. In accordance with law 563/1991 Sb., on Accounting, as amended, the final balances of claims and liabilities were approved as well as their correctness and the process of inventory making was performed according to Decree No. 270/2010 Coll., on the inventory of assets and liabilities.

## II. Inventories

The situation on inventories of the MUH:

- material, low value tangible fixed assets	50,137,340.39 CZK
- medicaments, consumer medical material	84,520,401.01 CZK

The number of inventories of material and low value tangible fixed assets increased compared to the same period of the year 2013. This is a temporary situation that will be balanced again during the year 2014. The increase in inventories of material was mainly affected by the long-term asset for the equipment of Children's Hospital, which is being increased gradually.

In the area of the inventories of medicaments and consumer medical material, there was a slight increase of inventories compared to the year 2012. Also the increase in the VAT rate had an impact on inventories, there was no real increase in the volume of inventories but in prices. Inventories of medicaments and consumer medical material are kept to a minimum, because the distribution of supplies of these goods is very fast and on the other hand, the creation of high stocks is economically disadvantageous. Motol University Hospital ensures the purchase of medicaments and consumer medical material through electronic auctions, in many cases at substantially lower prices, and therefore it also reduces the direct costs per patient.

### III. Assets

Acquisition of fixed assets:	335 124 618,45 CZK
Acquisition of low value fixed assets:	42 050 426,01 CZK
Fixed assets implementation:	550 296 410,08 CZK
Low value fixed assets implementation:	44 012 069,02 CZK
Disposal of fixed assets:	61 527 487,73 CZK
Disposal of low value fixed assets:	26 808 832,29 CZK

### IV. Situation on accounts

Account balances on 31th December 2013

Current account	693,248,492.70 CZK
Deposit account	64,053,710.08 CZK
Account of Cultural and Social Services Fund	921,083.36 CZK

The balance of the current account decreased by 450.13 million CZK compared to 2012. This decrease was affected by financing of the reconstruction of the University Children's Hospital from its own resources and by the increase in prices due to the higher rate of VAT since 1st January 2013. At the same time there has been a decrease in reimbursements from health insurance companies. While the balance of the current account decreased by approximately 320 million CZK, there was an increase in claims for VZP insurance company in a similar amount. In the current account there are reserved funds for co-payments of the reconstruction of the University Children's Hospital from hospital's own sources.

The balance of the deposit account is mainly created from donations in the amount of 37.74 million CZK, the rest of the account are the deposits of patients of the hospital and long-term hospital patients.

Account of cultural and social services fund is influenced by its income and output. For the year 2013, the collective agreement was signed and the fund is created and drawn in accordance with the current legislation. Due to the lower level of creation of the fund the items for using the fund were reduced and regulated.



## V. Expenses and yields in 2012 and 2013

Costs connected directly with a patient

Item	year 2012 in thous. CZK	year 2013 in thous. CZK	growth in thous. CZK	growth in %
Medicaments	1,096,935.35	1,245,874.86	148,939.51	1.13
Blood	95,042.42	87,762.84	-7,279.58	0.92
Consumer medicine material	725,440.37	718,568.88	-6,871.49	0.99
Foodstuffs for Patients	46,319.13	47,362.12	1,042.99	1.02
Total	1,963,737.27	2,099,568.70	135,831.43	1.07

Expenses for electricity, water, gas

Item	year 2012 in thous. CZK	year 2013 in thous. CZK	growth in thous. CZK	growth in %
Water	24,600.90	27,673.32	3,072.42	1.12
Gas (heat energy)	76,638.27	75,840.35	-797.92	0.99
Electricity	92,381.34	101,274.00	8,892.66	1.09
Total	193,620.51	204,787.67	11,167.16	1.06

Other indexes

Item	year 2012 in thous. CZK	year 2013 in thous. CZK	growth in thous. CZK	growth in %
Material in general	79,520.36	84,268.36	4,748.00	1.06
Material for maintenance	7,260.77	5,183.73	-2,077.04	0.71
Linen	11,920.86	11,108.69	-812.17	0.93
Repairs and maintenance	245,033.33	276,781.20	31,747.87	1.13
Services	359,071.28	335,163.04	-23,908.24	0.93
Total	702,806.60	712,505.02	9,698.42	1.01

## Wages and salaries

Item	year 2012 in thous. CZK	year 2013 in thous. CZK	growth in thous. CZK	growth in %
Wages and salaries	2,150,251,00	2,129,799.37	-20,451.63	0.99
Health insurance	191,247,02	189,765.95	-1,481.07	0.99
Social security	525,484,01	522,195.36	-3,288.65	0.99
Creation of the Cultural and Social Services Fund	21,135,05	20,973.60	-161.45	0.99
Total	2,888,117,08	2,862,734.29	-25,382.79	0.99

## Revenues for medical outputs

Item	year 2012 in thous. CZK	year 2013 in thous. CZK	growth in thous. CZK	growth in %
Revenues for medical outputs – General Health Insurance	5,951,610.08	5,831,216.21	-120,393.87	0.98
Other medical outputs	150,249.96	166,066.31	15,816.35	1.10
Total	6,101,860.04	5,997,282.52	-104,577.52	0.98

## V. Conclusion

The economy of the Motol University Hospital to 31st December 2013 was balanced and it ended with a profit. The economic result before taxation reached 24.314 million CZK and economic result after taxation was 1.521 million CZK. The main economic activity of the hospital experienced a loss of -30.56 million CZK, but the overall economic activity reached a profit of 32.08 million CZK. The hospital managed to obtain a positive economic result in 2013 mainly thanks to the effective management, strict observation of the set limits and implementing of systemic regulation measures during the whole year 2013.

The year 2013 was in terms of financing very difficult for the Motol University Hospital. There was a reduction in reimbursements from health insurers according to the applicable reimbursement decree for the year 2013 and in the same time the hospital had to finance the reconstruction of the University Children's Hospital from its own sources. The profit was positively influenced by economic activities of the hospital and negatively influenced by the ongoing reconstruction of the University Children's Hospital, when it was not possible to use the full capacity of the hospital throughout the year. In the area of reimbursements from health insurance companies, there have been a reduction although the amount of health care services for hospitalization was similar as the previous year and for outpatient examinations there was even an increase of 2%.

The increase in VAT since 1st January 2013 has had a very negative impact on the economy of the hospital, especially in the area of medical supplies, where some items have risen by 8 %. In 2013, the MUH paid a tax in the amount of 85.87 million CZK.

In terms of financial situation, the MUH belonged in 2013 to directly managed organisations with the high liquidity and regarding this parameter, it kept itself among the third most successful Czech hospitals. The economy of the Motol University Hospital is balanced and it has no back tax, it is an economically stable organisation.

The management of the Motol University Hospital puts stress mainly on the observation of provisions to keep the balanced economy for the whole year while maintaining the current range of medical services and improving of the quality of provided health care in accordance with the Statute of the Accreditation.

## Personnel activities

In 2013, the Motol University Hospital employed:

in revised numbers (RN): 5,065 employees, of which 4,063 medical professionals

in natural persons (NP): 5,647 employees, of which 4,610 medical professionals

### Profession structure

(NP) Average number in natural persons

(RN) Average number in revised numbers

	2011	2012	2013	2011	2012	2013	INDEX 13/12	
	NP	NP	NP	RN	RN	RN	NP	RN
Total	5,501	5,642	5,647	4,911	5,014	5,065	1.00	1.01
PHYSICIANS	1,138	1,139	1,152	824	828	842	1.01	1.02
PHARMACISTS	26	28	31	25	25	25	1.11	1.00
NURSES	2,094	2,104	2,100	1,962	1,948	1,948	1.00	1.00
MP WITH PROF. QUALIFIC	357	378	361	330	349	346	0,96	0,99
MP WITH SPEC. SKILLS	206	213	208	169	169	175	0,98	1.03
MP UNDER SUPERVISION	655	686	694	641	659	683	1.01	1.04
JOP WITH PROF. QUALIFIC	62	53	64	49	40	44	1,21	1,10
TOS (TECHNICAL/ OFFICE STAFF)	657	687	693	604	641	655	1.01	1.02
WORKERS	306	354	344	304	355	347	0,98	0,98

## Employees according to age and sex – situation on 31th December, 2013

Age	Men	Women	Total	%
to 20 years	10	17	27	0.48
21 - 30 years	332	901	1,233	21,83
31 - 40 years	435	1,054	1,489	26.37
41 - 50 years	289	988	1,277	22,61
51 - 60 years	292	883	1,175	20,81
61 years and older	182	264	446	7.90
Total	1,540	4,107	5,647	100
%	27.27	72.73	100	

## Employees according to education and sex - situation on 31th December, 2013

Reached education	Men	Women	Total	%
Elementary	104	122	226	4.00
Trained	107	115	222	3,93
Secondary vocational	204	160	364	6.45
Full secondary vocational	334	2,165	2,499	44,25
Higher vocational	51	231	282	4.99
University	740	1,314	2,054	36,38
-of which Bachelor degree course	37	360	397	
<b>-Master degree course</b>	703	954	1,657	
Total	1,540	4,098	5,647	100

## Qualification structure – situation on 31thDecember 2013

1) **Health care professionals according to Law 95/2004 Coll.** = physicians and pharmacists: in total 1,183

Of 1,152 physicians, 25 are graduate doctors before introduction and 286 doctors already introduced into the field of specialization, i.e. 27,0 % physicians have only professional qualification. A total of 841 (73,0 %) physicians achieved specialized qualification (i.e. medical certificate of the 2nd degree, extension course, licence from the

Czech medical Chamber, certification from the Czech Ministry of Health).

2) **Health care professionals according to Law 96/2004 Coll.** = non-medical health care professions: in total 3,434 of which 2,104 are general nurses and midwives.

Reached education of nurses and midwives	Total	%	with specialisation	%
Secondary health care	1,503	62,14	782	52,03
Higher health care	192	9,14	30	15,63
University – Bachelor degree	293	13,95	128	43,67
University – Master degree	112	5,33	77	68,75
Total	2,100	100,00	1,017	48,43

## Wages area

A total of **CZK 2,090,077,156** were spent on wages in 2013 (without payments for work done out of employment). Compared with 2012, there has been a decrease of **CZK 16,964,640**, i.e. **0,1 %**.

In the context with the anticipated reduction in revenue from health insurance arising from the Decree of the Ministry of Health of reimbursement of health care in 2013, hospital management planned the stagnation of the wage bill which has been followed.

The average gross salary in the hospital on 31th December 2013 was **CZK 34,364**. Compared to the year 2012, it has decreased by **2 %**.

## Development of the average salary in last 10 years

	2004	2005	2006	2007	2008
TOTAL	21,026	21,989	24,625	26,835	27,711
PHYSICIANS	38,188	39,951	44,972	48,906	49,199
NURSES	19,447	20,369	22,946	24,860	26,724

	2009	2010	2011	2012	2013
	29,925	30,824	33,356	35,016	34,364
	50,565	51,373	61,510	67,464	65,564
	29,171	30,206	31,307	32,853	32,079

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