



ANNUAL REPORT 2021

MOTOL UNIVERSITY HOSPITAL



FN MOTOL

CONTENTS

INTRODUCTION	4
MANAGEMENT OF MOTOL UNIVERSITY HOSPITAL	5
SCIENTIFIC BOARD OF MOTOL UNIVERSITY HOSPITAL	6
ORGANIZATIONAL STRUCTURE	8
BASIC DETAILS	10
LIST OF DEPARTMENTS	11
MEDICAL PREVENTIVE CARE	16
NURSING CARE	106
HOSPITAL OMBUDSMAN	109
SCIENTIFIC RESEARCH ACTIVITIES	110
ECONOMIC ACTIVITIES	114
HUMAN RESOURCE ACTIVITIES	119
DONORS AND FOUNDATIONS	122

INTRODUCTION

Dear Friends,

Another year has passed and I'm writing my twenty-first introduction as Director of Motol University Hospital. So, how best to sum up 2021 and what are its quintessential highlights? Despite high vaccination rates in many countries, 2021 saw a continuation of the global covid pandemic, with the appearance of the South African mutation in January, later followed by the Brazilian variant of the SARS-CoV-2 virus. Here in the Czech Republic, the state of emergency lasted from autumn 2020 and ended after 188 days in April 2021. Shortly before that, Motol UH received the first 2,000 doses of REGN-CoV2, an infusion drug intended for the pre-hospital care of high-risk patients with confirmed covid. A total of 6,000 doses, which we and Brno UH purchased by order of the Minister, were redistributed to 6 regions following intensive negotiations with the regional governors. They were then sold on to a number of other hospitals and pharmacies via the hospital pharmacy. In the autumn of 2021, after a few months of respite from covid, we recorded another increase in cases, this time of the delta and later the omicron mutation. Again, this severely affected the provision of non-urgent health-care. Unfortunately, the decree allocating compensation for our hospital fell far short of covering the restrictions on care and the many essential organizational measures associated with Covid-19. These included continuing to operate the vaccination center for adults and later for children, including the one at the Nový Smíchov Shopping Centre, running testing sites for the public and employees, setting up a mobile vaccination site, and PCR testing for all patients admitted for elective hospitalization.

Covid-19 made it tougher to work at the hospital, but it did not stop us. We also had a number of successes. For instance, the loan of a second surgical robot and its expanded use for other surgical procedures, e.g., in the 1st Department of Surgery, the Department of Neurosurgery for Children and Adults or the Department of Gynecology and Obstetrics. By mid-year the Department of Urology had recorded its 1000th robotic procedure. Meanwhile, the 3rd Department of Surgery, celebrated its 500th lung transplant and a patient with multiple complications underwent a lung transplant with a record stay on extracorporeal circulation (143 days!). This extremely long, forced stay on ECMO had a negative impact on the patient's postoperative recovery, but thanks to the high commitment and expertise of the surgeons, intensivists and other specialists, everything worked out well. Unique procedures were also carried out in a number of other medical departments, e.g., the Department of ENT successfully used a 3D microscope to operate on a benign ear tumor for the first time and the Department of Spinal Surgery used a unique Swiss carbon implant (an expandable cage) when operating on a 13-year-old boy's malignant tumor and replacing a spinal vertebra. The hospital was also successful in more than just the medical field. Years of efforts to improve the comfort of patients in the adult part of the hospital came to fruition in 2019, thanks to financial support from European Structural Funds and national grants for insulating the façade and replacing substandard windows in the "blue pavilion".

After a complicated procurement procedure to choose the contractor using the Design+Build method, a contract was concluded in November 2021. Preparing the logistics for the entire construction was another demanding activity, this time by a select working group from the hospital and an external consulting firm. Work began in January 2022 with all the complications exacerbated by the energy crisis, rising inflation and Russia's invasion of Ukraine. The project must be completed by the end of 2023. I can already see the huge challenge that 2022 will bring, not just for Motol UH, but for Czech society as a whole and the greater European Community. Let's keep our fingers crossed!



A blue ink handwritten signature of Miloslav Ludvík.

Miloslav Ludvík, LLD, MBA
Director of Motol UH

MANAGEMENT OF MOTOL UNIVERSITY HOSPITAL

HOSPITAL DIRECTOR

Miloslav Ludvík, LLD, MBA

DEPUTY DIRECTOR FOR OPERATIONS AND TECHNICAL MATTERS

Pavel Budinský, MD, Ph.D., MBA

DEPUTY DIRECTOR FOR MEDICAL PREVENTIVE CARE

Martin Holcát, MD, MBA

DEPUTY DIRECTOR FOR NURSING CARE

Jana Nováková, MBA

DEPUTY DIRECTOR FOR ECONOMY

Jiří Čihař

DEPUTY DIRECTOR FOR HUMAN RESOURCES

Jindřiška Feldmanová

DEPUTY DIRECTOR FOR SCIENCE AND RESEARCH

prof. Anna Šedivá, MD, DSc.

DEPUTY BUSINESS DIRECTOR

Jana Bašeová

THE HOSPITAL'S SCIENTIFIC BOARD

Prof. MUDr. Anna Šedivá, DSc.

Chairwoman of the Scientific Council of the Motol UH

Prof. MUDr. Marek Babjuk,

Department of Urology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Ondřej Cinek, Ph.D.

Department of Paediatrics, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Dagmar Dotřelová

Department of Ophthalmology for Children and Adults, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Pavel Dřevínek, Ph.D.

Department of Medical Microbiology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Tomáš Eckschlager

Clinic of Paediatric Haematology and Oncology, 2nd Faculty of Medicine, Charles University and MUH

Senior Doctor MUDr. Markéta Havlovicová

Institute of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and MUH

MUDr. Martin Holcát, MBA

Deputy for Preventive Therapeutic Care at Motol University Hospital

Prof. MUDr. Jakub Hort, Ph.D.

Department of Neurology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. David Jahoda

1st Department of Orthopaedics, 1st Faculty of Medicine, Charles University and MUH

Doc. MUDr. Tomáš Kalina, Ph.D.

Department of Paediatric Haematology and Oncology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Radan Keil, Ph.D.

Department of Internal Medicine, 2nd Faculty of Medicine, Charles University and MUH

MUDr. Adam Klocperk, Ph.D.

Department of Immunology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Pavel Kršek, Ph.D.

Department of Paediatric Neurology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Jan Lebl

Department of Paediatrics, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Robert Lischke, Ph.D.

3rd Department of Surgery, 1st Faculty of Medicine, Charles University and MUH

Doc. MUDr. Štěpánka Průhová, Ph.D.

Department of Paediatrics, 2nd Faculty of Medicine, Charles University and MUH

Doc. MUDr. Oleg Reich, Ph.D.

Children's Heart Centre, 2nd Faculty of Medicine, Charles University and MUH

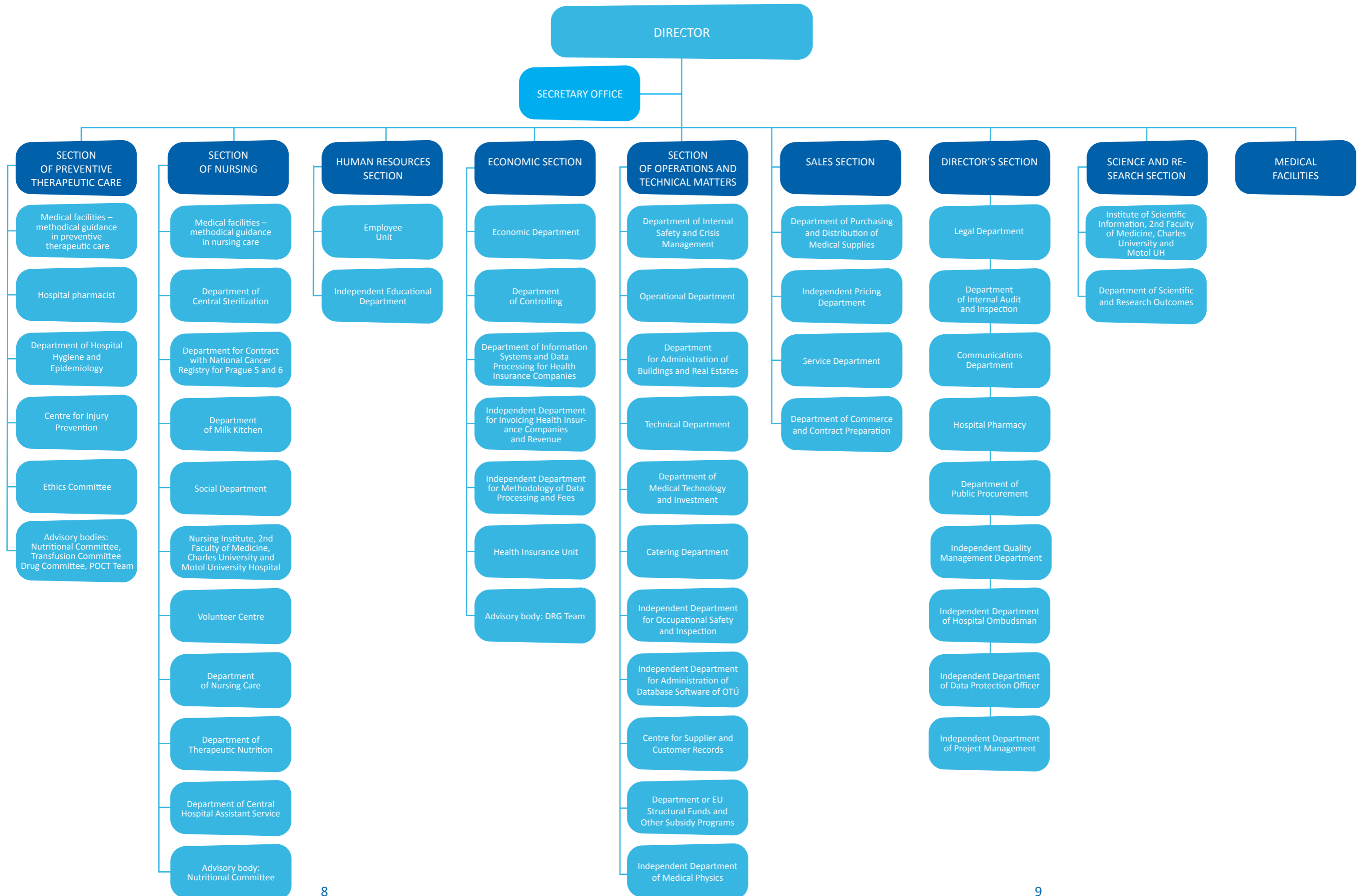
Doc. MUDr. Tomáš Vymazal, Ph.D.

Department of Anaesthesiology, Resuscitation and Intensive Medicine, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Josef Zámečník, Ph.D.

Department of Pathology and Molecular Medicine, 2nd Faculty of Medicine, Charles University and MUH

BASIC ORGANIZATIONAL STRUCTURE AS OF 31/12/2020



BASIC DETAILS AS AT 31/12/2021

Area of the premises (m ²)	348 000
Assets /in thous. (in thousand CZK)	11 682 037,95
Total turnover /in thous. (in thousand CZK)	14 230 289,16
Employees /natural persons/ (FO)	6 276
Employees /converted numbers/ (PP)	5 573
Beds	2 238

Beds

Of which:	Children	Adults	Total
acute standard	457	1017	1474
acute intensive	146	223	369
acute total	603	1240	1843
aftercare intensive	4	10	14
long-term	-	361	361
long-term intensive	-	20	20
beds total	607	1631	2238

Number of hospitalizations	73 926
Number of outpatient treatments	1 234 556
Number of treatment days / + AC-LSH /	552 978
Number of anesthesiology procedures	33 610
Number of births	2 702
Death rate / + AC-LSH /	2,1

LIST OF DEPARTMENTS

Paediatric Inpatient Part

Children's Heart Centre, 2nd Faculty of Medicine, Charles University and Motol University Hospital

Head - prof. MUDr. Jan Janoušek, Ph.D.

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

Head - prof. MUDr. Michal Hrdlička, CSc.

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

Head - Doc. MUDr. Lucie Šrámková Ph.D.

Bone Marrow Transplantation Unit

Chief physician - Prof. MUDr. Petr Sedláček CSc.

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

Head - prof. MUDr. Michal Rygl, Ph.D.

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

Head - prof. MUDr. Pavel Kršek, Ph.D.

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

Head - MUDr. Jiří Skřivan, CSc

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

Head - prof. MUDr. Zdeněk Šumník, Ph.D.

Common Inpatient Sites of Paediatric and Adult Parts

Department of Anesthesiology, Resuscitation and Intensive Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital

Head - assoc. prof. MUDr. Tomáš Vymazal, Ph.D.

Department of Subsequent Intensive and Long-term Intensive Nursing

Senior Consultant - MUDr. Kateřina Čadová

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

Head - prof. PaedDr. Pavel Kolář, Ph.D.

Department of Rehabilitation

Senior Consultant - MUDr. Martina Kővári

Spinal Unit

Senior Consultant - MUDr. Jiří Kříž

Department of Pain Research and Treatment

Senior Consultant - MUDr. Jiří Kozák, Ph.D.

Department of Sports Medicine

Senior Consultant - assoc. prof. MUDr. Jiří Radvanský, CSc

Department of Ophthalmology for Children and Adults, 2nd Faculty of Medicine, Charles University and Motol University Hospital

Head - MUDr. Martin Hložánek, Ph.D..

Department of Paediatric and Adult Orthopaedics and Traumatology, 2nd Faculty of Medicine, Charles University and Motol University Hospital

Head - prof. MUDr. Vojtěch Havlas, Ph.D.

Department of Neurosurgery for Children and Adults, 2nd Faculty of Medicine, Charles University and Motol University Hospital

Head - doc. MUDr. Vladimír Beneš, Ph.D.

Department of Stomatology for Children and Adults, 2nd Faculty of Medicine, Charles University and Motol University Hospital

Head - prof. MUDr. Tatjana Dostálová, DrSc., MBA

Adult Inpatient Part

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

Head - MUDr. Roman Chmel, Ph.D.

Department of Neonatology

Chief Physician - doc. MUDr. Jan Janota, Ph.D.

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

Head - doc. MUDr. Radan Keil, Ph.D

Department of Infectious Diseases

Chief Physician - MUDr. Martin Tulach

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

Head - doc. MUDr. Alan Stolz, Ph.D., MBA

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

Head - prof. MUDr. Robert Lischke, Ph.D.

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

Head - prof. MUDr. Josef Veselka, CSc.

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

Head - assoc. prof. MUDr. Vilém Rohn, CSc

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

Head - prof. MUDr. Petr Vlček, CSc.

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

Head - prof. MUDr. Jan Plzák, Ph.D.

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

Head - prof. MUDr. Jan Štulík, CSc.

Department of Long-term Treatment - Aftercare Centre

Senior Consultant - MUDr. Martina Nováková

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

Head - prof. MUDr. Petr Marusič, Ph.D.

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

Head - prof. MUDr. Ivan Landor, CSc.

Traumatology

Senior Consultant - MUDr. Jaroslav Kalvach

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

Head - assoc. prof. MUDr. Jana Prausová, Ph.D., MBA

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

Head - MUDr. Libor Fila, Ph.D.

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

Head - Prof. MUDr. Marek Babjuk, CSc.

Common Examination and Therapeutic Units

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

Head - prof. MUDr. Miloslav Roček, CSc.

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

Head - prof. MUDr. Milan Macek, DrSc.

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

Head - prof. MUDr. Richard Průša, CSc.

Department of Immunology, 2nd LF (Faculty of Medicine) and FN Motol (University Hospital Motol)

Head - prof. MUDr. Jiřina Bartůňková, DrSc., MBA

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

Head - prof. MUDr. Pavel Dřevínek, Ph.D.

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

Head - prof. MUDr. Josef Zámečník, Ph.D.

Department of Clinical Hematology

Senior Consultant - MUDr. Jitka Segethová

Department of Clinical Psychology

Head of Department Mgr. Markéta Mohaplová

Blood Bank Department

Senior Consultant - MUDr. Eva Linhartová

Department of Rheumatology for Children and Adults

Senior Consultant - doc. MUDr. Rudolf Horváth, Ph.D.

Department of Central Operating Theatres for Children

Head Nurse - Bc. Alice Podařilová

Department of Central Operating Theatres for Adults

Senior Consultant - MUDr. Zbyněk Jech

Department of Transplantations and Tissue Bank

Chief Physician - MUDr. Jan Burkert, Ph.D.

Outpatient sector

Emergency Department and Medical First Aid Service for Children

Senior Consultant - MUDr. Jitka Dissou

Department of Dermatovenereology for Adults

Senior Consultant - MUDr. Alena Machovcová, Ph.D., MBA

Department of Paediatric Dermatology

Senior Consultant - MUDr. Jana Čadová

Primary Care Department

Senior Consultant - MUDr. Jaroslava Kulhánková

Emergency Department and Medical First Aid Service for Adults

Senior Consultant - MUDr. Lenka Kozlíková

Department of Hospital Hygiene and Epidemiology

Chief physician - MUDr. Jarmila Rážová

Hospital Pharmacy

Senior Pharmacist - PharmDr. Petr Horák



MEDICAL PREVENTIVE CARE

Paediatric Inpatient Part

Children's Heart Centre, 2nd Faculty of Medicine, Charles University and MUH

Head - prof. MUDr. Jan Janoušek, Ph.D.

Senior Consultant of the Department of Cardiology - Doc. MUDr. Peter Kubuš, Ph.D.

Senior Consultant of the Cardiovascular Surgery - MUDr. Roman Gebauer

Head Nurse - Mgr. Jana Matušíková

Basic description:

Children's Heart Centre, 2nd Faculty of Medicine, Charles University and the Motol University Hospital (Children's Heart Centre) is the only comprehensive cardiovascular centre for children in the Czech Republic caring for children nationwide. The centre focuses mainly on diagnostics and treatment of congenital heart defects in children and cooperates with other facilities in treating adult patients with congenital heart defects. The preference of non-invasive diagnostic procedures (ECHO, MRI, CT) and primary correction of defects at an early age is typical for this site. **In 2021, 472 surgeries (of which 4 heart transplantations) were performed, 10 ligation procedures for patent ductus arteriosus for newborns with low birth weight were performed at different sites, 377 catheterizations were performed (of which 287 were intervention procedures), 955 patients were hospitalized (+729 accompanying persons) and 3901 patients were treated in the outpatient service.** These numbers signify only a slight drop in the number of procedures and hospital admissions, despite the complicated epidemiological situation related to the Covid-19 pandemic and the restrictions to planned care and ongoing staff shortages, especially in the segment of non-medical health workers.

The department takes part in a unique international quality control system for paediatric cardiac surgery within the European Congenital Heart Surgeons Association (ECHSA) database, which collects data on hundreds of thousands of operations from around the world and monitors early mortality as related to the complexity of the surgery. In this comparison, the Children's Cardiac Centre had an excellent early mortality rate of just 0.9% for the period 2012-2019.

In 2021, we took part in one foreign humanitarian and development mission to Nairobi, Kenya, organized by the Ministry of Foreign Affairs of the Slovak Republic and bilateral cooperation between Motol University Hospital and NUSCH a.s. in Bratislava. 11 patients with congenital heart disease were successfully treated, of whom 9 were operated on and 2 were catheterized. The agreement on cooperation in the surgical and cardiological treatment of paediatric patients with heart disease, concluded in 2017 with the University Hospital in Ljubljana, was also fulfilled in the form of regular trips by cardiac surgeons from the Children's Heart Centre (CHC) to Slovenia and by the surgical and catheterization treatment of more complex cases at the CHC at MUH.

Specialized outpatient units:

- clinical cardiology
- electrophysiology and cardiac stimulation
- prenatal cardiology
- connective tissue diseases
- heart failures and transplantations

New methods and procedures:

- The programme of long-term implantable mechanical heart support continues - since 2014 it has been used in 7 patients with terminal heart failure. In 2021, a beating heart transported from Slovakia in a special Transmedics transport box was successfully transplanted for the first time. Without this system, transplantation would not be possible at all due to the travel time.
- Heart transplantation in children - a total of 25 paediatric patients have had transplants since the programme was introduced in 2014 (4 patients in 2021). So far, the 5-year survival rate after transplantation is 95%;
- The programme for tracheoplasty for congenital trachea malformations in cooperation with the tracheal team of the MUH (since 2016).
- The programme for the molecular and genetic examination of families with hereditary arrhythmias and cardiomyopathies using the new generation sequencing method (NGS) in cooperation with Department of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and MUH.
- The programme of minimally invasive cardiac surgery was expanded in 2021 to include vascular ring surgery using the thoracoscopic technique.
- The foetal intervention programme for congenital heart disease in collaboration with the Department of Pediatric Cardiology at the Kepler University Hospital in Linz continues.

Unique equipment:

- Maquet Rotaflow centrifugal pumps as ECMO support and Thoratec CentriMag/ PediVas as short- and medium-term mechanical cardiac support.
- Ensite Precision 3D electrophysiology navigation and mapping system.
- GE Vivid E95 ultrasound machine together with ECHOPAC software
- A KIPS clinical information and planning system with related modules for catheterization (KatAp) and echocardiography (Echolog) connected to a KIS DKC

Major events in 2021:

- Continuing participation of the Children's Heart Centre as a member of the European Reference Network GuardHeart focusing on hereditary arrhythmias and cardiomyopathies;
- Our own KIPS clinical information and planning system with related modules for catheterization (KatAp) and echocardiography (Echolog) connected to a KIS DKC was commissioned.
- Continuing participation of the Children's Heart Centre as a member of the European Reference Network GuardHeart focusing on hereditary arrhythmias and cardiomyopathies;
- 19 articles in international journals with an impact factor:
 - Krause U, Paul T, Bella PD, Gulletta S, Gebauer RA, Paech C, Kubus P, Janousek J, Ferrari P, De Filippo P. "Pediatric catheter ablation at the beginning of the 21st century: results from the European Multicenter Pediatric Catheter Ablation Registry „EUROPA“". *Europace*. 2021 Mar 8;23(3):431-440. doi:10.1093/europace/euaa325. PMID: 33227133 **IF 5.2**
 - Kubuš P, Rubáčková Popelová J, Kovanda J, Sedláček K, Janoušek J. "Long-Term Outcome of Patients With Congenital Heart Disease Undergoing Cardiac Resynchronization The-

rapy” J Am Heart Assoc. 2021 Mar 16;10(6):e018302. doi:10.1161/JAHA.120.018302. Epub 2021 Mar 13. PMID: 33719495; PMCID: PMC8174233. **IF 5.5**

- Materna O, Koubský K, Pádr R, Janoušek J. “Major left ventricular thrombi in an adolescent with COVID-19-associated inflammatory syndrome” Eur Heart J. 2021 Aug 31;42(33):3207. doi: 10.1093/eurheartj/ehab165. PMID: 33734352; PMCID: PMC7989523. **IF 29.9**
- Materna O, Illinger V, Jičínská D, Koubský K, Kovanda J, Ložek M, Tax P, Reich O, Chaloupecký V, Janoušek J. “Influence of fenestration on long-term Fontan survival.” Cardiol Young. 2021 Aug 31:1-6. doi: 10.1017/S1047951121003516. Epub ahead of print. PMID: 34462027. **IF 0.89**
- Kallas D, Roston TM, Franciosi S, Brett L, Lieve KVV, Kwok SY, Kannankeril PJ, Krahn AD, LaPage MJ, Etheridge S, Hill A, Johnsrude C, Perry J, Knight L, Fischbach P, Balaji S, Tisma-Dupanovic S, Law I, Atallah J, Backhoff D, Kamp A, Kubus P, Kean A, Aziz PF, Kovach J, Lau Y, Kron J, Clur SA, Sarquella-Brugada G, Wilde AAM, Sanatani S. “Evaluation of age at symptom onset, proband status, and sex as predictors of disease severity in pediatric catecholaminergic polymorphic ventricular tachycardia.” Heart Rhythm. 2021 Nov;18(11):1825-1832. doi:10.1016/j.hrthm.2021.07.061. Epub 2021 Jul 29. PMID: 34333088. **IF 4.44**
- Fabian O, Gebauer R, Tomek V, Hornofova L, Havova M, Materna O, Janousek J. “Spectrum of postmortem autopsy findings in native and surgically corrected hearts with congenital malformations: a 10-year single-center experience.” Cardiovasc Pathol. 2021 Mar-Apr;51:107309. doi: 10.1016/j.carpath.2020.107309. Epub 2020 Nov 12. PMID: 33189923. **IF 2.1**
- Koubský K, Gebauer R, Tláškal T, Matějka T, Poruban R, Jičínská D, Hučín B, Janoušek J, Chaloupecký V. “Long-Term Survival and Freedom From Coronary Artery Reintervention After Arterial Switch Operation for Transposition of the Great Arteries: A Population-Based Nationwide Study.” J Am Heart Assoc. 2021 Jul 6;10(13):e020479. doi: 10.1161/JAHA.120.020479. Epub 2021 Jun 25. PMID: 34169727; PMCID: PMC8403335. **IF 5.5**
- David J, Rohanova M, Koubsky K, Gebauer R, Malcova H, Koukolska V, Stara V, Kollar M, Fencel F, Zieg J. Case report: “Case report: Anti-neutrophil Cytoplasmic Antibody-Associated Vasculitis Involving the Aortic Valve in a Twelve-year-old Girl.” KlinPadiatr. 2021 Jan;233(1):37-39. English. doi: 10.1055/a-1183-4785. Epub 2020 Jun 18. PMID: 32557504. **IF 0.6**
- Norrish G, Topriceanu C, Qu C, Field E, Walsh H, Ziólkowska L, Olivotto I, Passantino S, Favilli S, Anastasakis A, Vlagkouli V, Weintraub R, King I, Biagini E, Ragni L, Prendiville T, Duignan S, McLeod K, Ilina M, Fernández A, Bökenkamp R, Baban A, Drago F, Kubuš P, Daubeney PEF, Chivers S, Sarquella-Brugada G, Cesar S, Marrone C, Medrano C, Alvarez Garcia-Roves R, Uzun O, Gran F, Castro FJ, Gimeno JR, Barriales-Villa R, Rueda F, Adwani S, Searle J, Bharucha T, Siles A, Usano A, Rasmussen TB, Jones CB, Kubo T, Mogensen J, Reinhardt Z, Cervi E, Elliott PM, Omar RZ, Kaski JP. “The role of the electrocardiographic phenotype in risk stratification for sudden cardiac death in childhood hypertrophic cardiomyopathy.” Eur J Prev Cardiol. 2021 Mar 27:zwab046. doi: 10.1093/eurjpc/zwab046. Epub ahead of print. PMID: 33772274 **IF 7.8**
- Shah MJ, Silka MJ, Silva JNA, Balaji S, Beach CM, Benjamin MN, Berul CI, Cannon B, Cecchin F, Cohen MI, Dalal AS, Dechert BE, Foster A, Gebauer R, Gonzalez Corcia MC, Kannankeril PJ, Karpawich PP, Kim JJ, Krishna MR, Kubuš P, LaPage MJ, Mah DY, Malloy-Walton L, Miyazaki A, Motonaga, KS, Niu MC, Olen M, Paul T, Rosenthal E, Saarel

EV, Silveti MS, Stephenson EA, Tan RB, Triedman J, Bergen NHV, Wackel PL, Philip M, Chang, Fabrizio Drago, Anne M. Dubin, Susan P. Etheridge, Apichai Kongpatanayothin, Jose Manuel Moltedo, Ashish A. Nabar and George F. Van Hare. 2021 PACES. “Expert consensus statement on the indications and management of cardiovascular implantation of electronic devices in pediatric patients: executive summary” Cardiol Young. 2021 Nov;31(11):1717-1737. doi: 10.1017/S1047951121003395. Epub 2021 Jul 30. PMID: 34796795. **IF 0.8**

- Shah MJ, Silka MJ, Silva JNA, Balaji S, Beach CM, Benjamin MN, Berul CI, Cannon B, Cecchin F, Cohen MI, Dalal AS, Dechert BE, Foster A, Gebauer R, Gonzalez Corcia MC, Kannankeril PJ, Karpawich PP, Kim JJ, Krishna MR, Kubuš P, LaPage MJ, Mah DY, Malloy-Walton L, Miyazaki A, Motonaga, KS, Niu MC, Olen M, Paul T, Rosenthal E, Saarel EV, Silveti MS, Stephenson EA, Tan RB, Triedman J, Bergen NHV, Wackel PL. 2021 PACES “Expert Consensus Statement on the Indications and Management of Cardiovascular Implantable Electronic Devices in Pediatric Patients:” Developed in collaboration with and endorsed by the Heart Rhythm Society (HRS), the American College of Cardiology (ACC), the American Heart Association (AHA), and the Association for European Paediatric and Congenital Cardiology (AEPC) Endorsed by the Asia Pacific Heart Rhythm Society (APHRS), the Indian Heart Rhythm Society (IHRS), and the Latin American Heart Rhythm Society (LAHRS). JACC Clin Electrophysiol. 2021 Nov;7(11):1437-1472. doi: 10.1016/j.jacep.2021.07.009. Epub 2021 Jul 29. PMID: 34794667. **IF 6.3**
- Shah MJ, Silka MJ, Silva JNA, Balaji S, Beach CM, Benjamin MN, Berul CI, Cannon B, Cecchin F, Cohen MI, Dalal AS, Dechert BE, Foster A, Gebauer R, Gonzalez Corcia MC, Kannankeril PJ, Karpawich PP, Kim JJ, Krishna MR, Kubuš P, LaPage MJ, Mah DY, Malloy-Walton L, Miyazaki A, Motonaga, KS, Niu MC, Olen M, Paul T, Rosenthal E, Saarel EV, Silveti MS, Stephenson EA, Tan RB, Triedman J, Bergen NHV, Wackel PL. 2021 PACES. 2021 PACES “Expert Consensus Statement on the Indications and Management of Cardiovascular Implantable Electronic Devices in Pediatric Patients:” 2021 Nov;18(11):1888-1924. doi:10.1016/j.hrthm.2021.07.038. Epub 2021 Jul 29. PMID: 34363988. **IF 4.4**
- Shah MJ, Silka MJ, Silva JNA, Balaji S, Beach CM, Benjamin MN, Berul CI, Cannon B, Cecchin F, Cohen MI, Dalal AS, Dechert BE, Foster A, Gebauer R, Gonzalez Corcia MC, Kannankeril PJ, Karpawich PP, Kim JJ, Krishna MR, Kubuš P, LaPage MJ, Mah DY, Malloy-Walton L, Miyazaki A, Motonaga, KS, Niu MC, Olen M, Paul T, Rosenthal E, Saarel EV, Silveti MS, Stephenson EA, Tan RB, Triedman J, Bergen NHV, Wackel PL. 2021 PACES “Expert Consensus Statement on the Indications and Management of Cardiovascular Implantable Electronic Devices in Pediatric Patients:” 2021 Nov-Dec;21(6):367-393. doi: 10.1016/j.ipej.2021.07.005. Epub 2021 Jul 29. PMID: 34333141; PMCID: PMC8577100. **IF 0.5**
- Illinger V, Materna O, Slabý K, Jičínská D, Kovanda J, Koubský K, Pokorný J, Procházka M, Antonová P, Hoskovec A, Radvanský J, Chaloupecký V, Janoušek J. “Exercise capacity after total cavopulmonary anastomosis: a longitudinal paediatric and adult study” ESC Heart Fail. 2021 Dec 10. doi:10.1002/ehf2.13747. Epub ahead of print. PMID: 34894102. **IF 3.9**
- Peltenburg PJ, Kallas D, Bos JM, Lieve KVV, Franciosi S, Roston TM, Denjoy I, Sorensen KB, Ohno S, Roses-Noguer F, Aiba T, Maltret A, LaPage MJ, Atallah J, Giudicessi JR, Clur SB, Blom NA, Tanck M, Extramiana F, Kato K, Barc J, Borggrefe M, Behr ER, Sarquella-Brugada G, Tfelt-Hansen J, Zorio E, Swan H, Kammeraad JAE, Krahn AD, Davis A, Sacher F, Schwartz PJ, Roberts JD, Skinner JR, van den Berg MP, Kannankeril PJ, Drago F, Robyns T, Haugaa KH, Tavacova T, Semsarian C, Till J, Probst V, Brugada R, Shimizu W, Horie M, Leenhardt A, Ackerman MJ, Sanatani S, van der Werf C, Wilde AAM. “An International

- Multi-Center Cohort Study on β -blockers for the Treatment of Symptomatic Children with Catecholaminergic Polymorphic Ventricular Tachycardia." *Circulation*. 2021 Dec 7. doi: 10.1161/CIRCULATIONAHA.121.056018. Epub ahead of print. PMID: 34874747. **IF29.4**
- A Krebsova, P Votypka, P Peldova, J Haskova, T Tavacova, P Peichl, M Segetova, T Roubicek, V Vancura, P Kubus, M Sramko, M Macek Jr, V Zoubkova, J Janousek, J Kautzner, "Concealed cardiomyopathy as a frequent cause of idiopathic ventricular fibrillation in a representative Czech cohort of survivors of sudden cardiac arrest (SCA)", *EP Europace*, Volume23,IssueSupplement_3,May2021, euab116.343, <https://doi.org/10.1093/europace/euab116.343> **IF 5.2**
 - A Krebsova, P Votypka, P Peldova, K Rucklova, M Kulvajtova, S Pohlova -Kucerova, A Pilin, A Gregorova, T Tavacova, J Petrakova, M Dobias, P Tomasek, M Macek Jr, J Janousek, J Kautzner, "Outcomes of post mortem genetic diagnosis in SCD victims and primary prevention of cardiac arrest in relatives: a nationwide multidisciplinary and multicentric collaboration in the Czechia" *European Journal of Preventive Cardiology*, Volume 28, Issue Supplement_1, May 2021, zwab061.011, <https://doi.org/10.1093/eurjpc/zwab061.011> **IF 7.8**
 - E Borisinova, P Votypka, K Rucklova, A Pilin, M Kulvajtova, S Pohlova Kucerova, T Tavacova, M Kubanek, J Petrakova, M Dobias, P Tomasek, M Macek Jr, J Janousek, A Krebsova, J Kautzner,"Comparison of variant detection rate in genes between two cohorts of Czech living patients versus victims of sudden cardiac death with clinical / post mortem diagnosis of non-ischemic cardiomyopathy "European Heart Journal, Volume 41, Issue Supplement_2, November 2020, ehaa946.0338, <https://doi.org/10.1093/ehjci/ehaa946.0338> **IF 5.5**
 - Ondrej Fabian, MD; Mariia Havova, MD; Roman Gebauer, MD; Rudolf Poruban, MD, PhD; Jaroslav Spatenka,MD; Jan Burkert, MD, PhD; Vilem Rohn, MD; Vaclav Chaloupecky,"Structural Integrity and Cellular Viability of Cryopreserved Allograft Heart Valves in Right Ventricular Outflow Tract Reconstruction: Correlation of Histopathological Changes with Donor Characteristics and Preservation Times", *Brazilian Journal of Cardiovascular Surgery* 2021 - Ahead of print: 1-9 DOI: 10.21470/1678-9741-2020-0710 **IF 1.3**

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

Head prof. MUDr. Michal Hrdlička, CSc.

Senior Consultant doc. MUDr. Iva Dudová, Ph.D.

Head Nurse - Radka Raisová

Basic description:

The Child Psychiatric Clinic is the only independent clinical workplace in the field of child and adolescent psychiatry in the CR. It is engaged in the diagnosis, treatment and prevention of mental health disorders in childhood and adolescence. It specializes in childhood autism, eating disorders, psychotic disorders, and suicidal behaviour in children and adolescents. The department also operates as a pre- and postgraduate educational institution. **A total of 4,655 inpatient procedures and 2,592 medical consultations were carried out and 517 patients were hospitalized at the inpatient section in 2021.** With regards to the ongoing unfavourable epidemiological situation associated with the Covid-19 pandemic and its impact on the mental state of the child population in the CR, the number of psychiatric examinations of children and adolescents in the MUH emergency room and the number of acute (unplanned) admissions increased significantly compared to 2020.

Specialized outpatient units and centres:

- outpatient unit for child psychiatry
- outpatient unit for eating disorders
- family centre - centre for family therapy

New methods and procedures:

- Use of the Autism Diagnostic Observation Schedule (ADOS) as the gold standard method for diagnosing autism spectrum disorders.
- Research on the importance of maternal autoantibodies in the development of autism spectrum disorders supported by grant AZV NV 18-04-00085 in collaboration with the Institute of Physiology of the CAS (co-researcher doc. MUDr. Iva Dudová, Ph.D).
- Comprehensive therapy and research of eating disorders, the department's activities have national significance in this field.
- The significance of diagnostics and comprehensive therapy of psychotic conditions also exceeds the regional level.

Unique equipment:

- Thymatron DG device for electroconvulsive therapy

Major events in 2021:

- In the "VVOZP 2021 Prize for Journalistic Work Focused on the Topic of Disability" the Government Committee for Persons with Disabilities awarded Prof. MUDr. Michal Hrdlička, CSc. an honourable mention for his book *Myths and Facts about Autism*.
- MUDr. Michal Goetz, Ph. D. successfully completed the habilitation procedure.
- MUDr. Andrea Efremova successfully defended her dissertation and received her Ph.D.
- Publications with IF:
 - DHOSSCHE, D. - KELLNER, C.H. - GOETZ, Michal. Definitive treatment options for pediatric catatonia should include electroconvulsive therapy. *European Child and Adolescent Psychiatry*. 2021, 30(6), 985-986. ISSN 1018-8827. DOI 10.1007/s00787-020-01576-7. **IF 4,785**
 - VŇUKOVÁ, Martina - PTÁČEK, Radek - DĚCHTĚRENKO, Filip - WEISSEBERGER, Simone - PTÁČKOVÁ, Hana - BRAATEN, Ellen - RABOCH, Jiří - ANDERS, Martin - KLICPEROVÁ-BAKER, Martina - GOETZ, Michal. Prevalence of ADHD Symptomatology in Adult Population in the Czech Republic-A National Study. *Journal of Attention Disorders*. 2021, 25(12), 1657-1664. ISSN 1087-0547. DOI 10.1177/1087054720934042. **IF 3,256**
 - EFREMOVA, Andrea - LISÝ, Jiří - HRDLIČKA, Michal. The relationship between brain abnormalities and autistic psychopathology in pervasive developmental disorders. *Journal of Applied Biomedicine*. 2021, 19(2), 91-96. ISSN 1214-021X. DOI 10.32725/jab.2021.009. **IF 1,797**
 - POSPÍŠILOVÁ, Lenka - HRDLIČKA, Michal - KOMÁREK, Vladimír. Vývojová dysfázie - funkční a strukturální korelace. (Developmental dysphasia - functional and structural correlations.) *Česká a slovenská neurologie a neurochirurgie.Czech and Slovak neurology and neurosurgery*. 2021, 84(3), 237-244. ISSN 1210-7859. DOI 10.48095/ccsnn2021237. **IF 0.350**

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

Head Doc. MUDr. Lucie Šrámková Ph.D. /until 30.6. Prof. MUDr. Jan Starý DrSc.
senior consultant MUDr. Petra Keslová Ph.D./until 31.10. MUDr. Vladimír Komrská, CSc. and
MUDr. Vratislav Šmelhaus
Head Nurse - Bc. Jitka Wintnerová

Basic description:

The department focuses on diagnostics, treatment and research of tumorous diseases in children, benign blood disorders, such as anemias, bleeding disorders and congenital coagulation disorders (haemophilia). Allogeneic and autologous transplantation of hemopoietic stem cells in the treatment of high-risk leukemias, selected solid tumors, congenital immunity disorders and metabolic defects is carried out at the transplantation unit.

The clinic is the largest of its kind in the Czech Republic (CR), caring for approximately 2/3 of paediatric haematology and oncology patients in the CR, either completely or by sharing with other centres. It provides consular examinations of patients for Bohemia and, in the framework of certain diagnoses and medical procedures, for the entire Czech Republic and for other countries (Slovakia, Croatia, Poland...).

In 2021, there were 24,537 examinations and treatments made in outpatient clinics. A total of 3,793 cancer patients and 2,985 non-cancer patients were treated. 198 children with malign solid tumours, 45 children with leukemia and myelodysplastic syndrome, 261 patients with benign tumours and 1,049 children with non-tumorous diseases were newly diagnosed. The total number of hospitalized patients was 2,207 with 1,643 accompanying persons.

A total of 34 allogeneic bone marrow transplants were carried out, including 30 from unrelated donors from registries, 2 from identical siblings, 2 haploidentical transplants and 25 autologous grafts.

Specialized outpatient units:

- oncology outpatient unit and daycare centre
- outpatient unit for late consequences
- outpatient unit for hemangiomas and lymphangiomas
- neuro-oncology outpatient unit
- outpatient unit for Langerhans cell histiocytosis
- haematologic outpatient unit
- haematologic daycare centre
- outpatient unit for congenital coagulation defects and bleeding disorders
- outpatient unit for patients after bone marrow transplantation
- outpatient unit for palliative care

New methods and procedures

- The Centre for Paediatric Neurooncology was set up in cooperation with the Neurosurgery Clinic and other departments at Motol University Hospital. Its aim is to provide cutting-edge comprehensive diagnostics and treatment for children with CNS tumours and to conduct research in this field.
- The DPHO Laboratory Centre has also become a reference centre for the molecular diagnostics of paediatric acute myeloid leukaemia for the Slovak Republic
- In addition to the CR, the treatment programme for resistant acute lymphoblastic leukaemia with genetically modified T-lymphocytes (CAR-T cells) has now been extended to Slovakia

- 2 Phase I/II studies were opened in the framework of a prestigious European consortium, the ITCC (Innovative Therapies in Childhood Cancer)
- We have introduced a new algorithm to diagnose acute myeloid leukemia and monitor residual disease combining traditional methods with next-generation panel sequencing.

Major events in 2021:

- Mgr. Lenka Hovorková PhD. She received the Josef, Marie and Zdeňka Hlávka Foundation Award for exceptional ability and creative thinking in her field
- MUDr. Markéta Racková, won 1st place at the 18th International Medical Postgraduate Conference in Hradec Králové
- Interim accreditation of the transplantation unit - JACIE EBMT - was successful
- We published 98 articles in journals with IF (19 of them by the first or last author)
- Tomáš Kalina and Ondřej Hrušák were appointed professors
- We successfully launched a new accreditation cycle for the CLIP laboratories of the DPHO Laboratory Centre.

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

Head - prof. MUDr. Michal Rygl, Ph.D.
Senior Consultant MUDr. Luboš Zeman,
Head Nurse - Ilona Mayerová

Basic description:

The Department of Paediatric Surgery is a leading European site for paediatric surgery, providing comprehensive diagnostic and therapeutic care for children from immature newborns to adolescents. The department's specializations (surgery for newborns, chest surgery, surgical oncology, proctology, urology, surgery of liver and bile ducts, congenital developmental defects and polytraumas in children) provide care for young patients from the entire CR and for patients from abroad through the process of medical consultation. The Department of Paediatric Surgery has the highest accreditation for specialisation training in the field of paediatric surgery in the CR and is the only department in the CR with European UEMS accreditation for specialization training in paediatric surgery. In 2021, the Department of Paediatric Surgery met the conditions of a centre for highly specialized care in the European network for rare diseases ERNICA.

A total of 2,595 patients were hospitalized at the department, of which 219 newborns and infants were hospitalized at the surgical intensive care unit for newborns in 2021. Surgeries were performed on 1991 children. Specialized outpatient units treated 17,253 children and the emergency service provided care for 5,591 children.

Specialized outpatient units:

- chest surgery
- surgical oncology
- surgery of liver, bile ducts and pancreas
- surgery for newborns, congenital developmental defects, prenatal consultations
- urology
- proctology
- paediatrics
- advisory centre for home parenteral nutrition

New methods and procedures:

- chest consultation for conservative treatment of pectus carinatum and pectus excavatum
- implementation of unstitched central venous catheters
- fast track after bowel surgery in children
- educational programme for parents of patients with stomas
- educational programme for parents with urinary dysfunctions
- non-invasive ventilatory support using the high-flow cannula technique
- programme for robotic pyeloplasty in children in cooperation with the Urology Clinic of the 2nd Faculty of Medicine, Charles University and Motol UH
- Extended spectrum of minimally invasive surgery
 - - laparoscopically assisted Swenson operation for Hirschsprung's disease - transmural minimally invasive extraction of foreign bodies from the bladder
 - - operations using the SINGLE PORT technique (appendectomies, cholecystectomies, IC resections)
 - - surgery of inguinal hernia using the PIRS method
 - - surgery of pilonidal sinus using the PEPSIT method
 - - laparoscopically assisted proctocolectomy with ileal pouch
 - - laparoscopic assisted subtotal colectomy
- The Wound Healing treatment programme in MUH's paediatric section.

Unique equipment:

- Karl Storz flexible fibrescope for ureteroscopy in children
- a set of mini surgical instruments for thoracoscopic and laparoscopic operations on the smallest children (newborns, infants)
- equipment for minimally invasive surgery with 3D imaging (B. Braun)
- Duet Encompass device – modern video equipment for urology and EMG of the pelvic floor with simultaneous interconnection to X-ray devices
- cystoscope with endoresector for the smallest children allowing minimally invasive surgery in small children (by Olympus/ Wolf)
- mobile pumps for children using home parenteral nutrition (by B Braun)
- mobile pumps for home enteral nutrition (by Nutricie)
- laparoscopic simulator for training and simulating minimally invasive operations

Major events in 2021:

- The Department of Paediatric Surgery met the conditions of a centre for highly specialized care in the European network for rare diseases ERNICA (the only centre to do so in the CR).
- The Department of Paediatric Surgery has twice organized a Course of Laparoscopy in Paediatric Surgery in the CR (New Basic Course of Laparoscopy in Childhood).
- International cooperation between DPS MUH and Médecins Sans Frontières Bardsville Junction Hospital, Monrovia, Liberia, MUDr. Trachta conducted surgeries on 90 children with paediatric surgical and urological diseases during his month-long stay.
- The Department of Paediatric Surgery conducts an e-learning course "Clean Intermittent Catheterisation in Children" and "Balloon Enema in Children" - educational videos for children and parents" (in cooperation with the company Braun, which

finances the project, and the paediatric urology team of the VUH Urology Clinic).

- Specialization training: one physician successfully completed specialization training in "Paediatric Surgery", two physicians successfully passed the surgical trunk exam, 2 young physicians continue in the residency program „Paediatric Surgery“, an outpatient nurse completed the course for educating urological patients.
- Two doctors were recently admitted to study Ph.D.s on the topics: The influence of congenital chest deformity on psychosomatic development of adolescents and the options for prevention in the population and The influence of the microbiome on the long-term health status of children after oesophageal atresia surgery.
- Scientific activity:
 - 8 x publications in a journal with IF
 - 2 chapters in a professional medical book
 - 2 publications in a Czech magazine
 - 19 expert lectures

Department of Paediatric Neurology, 2nd LF (Faculty of Medicine) and MUH (University Hospital Motol)

Head - prof. MUDr. Pavel Kršek, Ph.D.

Senior Consultant MUDr. Věra Sebroňová

Head Nurse - Gabriela Pavlová

Basic description:

The Department of Paediatric Neurology (DPN) is a reference consultation site for all neurological diagnoses in children throughout the CR and provides care for patients from abroad in certain diagnostic and therapeutic programmes (such as surgical treatment of epilepsy). We have two fully reconstructed inpatient units with a total of 40 beds, including 6 beds for lower level of intensive care and 6 beds with video/EEG and polygraphic monitoring. The department includes a polyclinic with the following specialized outpatient clinics, a fully equipped Electrophysiology Laboratory and a Neurogenetics Laboratory offering molecular genetic diagnostics for some neurological diseases of childhood. The DPN is also a pregraduate and postgraduate educational institute and a scientific and research centre involved in many interdisciplinary and international projects.

In 2021, the department had a total of **1,143 hospitalized children** with a total number of hospitalization accounts of 1,412. A total of **18.230 outpatient examinations** were performed on 7,159 patients (unique personal ID numbers). A total of **5 485 procedures** were performed in the **electrophysiological laboratory**, of which 3,361 were EEG, 447 were EMG, 1,344 were EP and 223 were long-term video/EEG (with a total of 1,292 8-hour codes) and 110 polygraphs. **The epilepsy surgery programme included 38 resection surgeries**, 7 long-term intracranial video/EEG studies, 2 direct implantations and 2 vagal stimulator reimplantations.

Specialized outpatient units:

- epileptological advisory centre
- outpatient unit for sleep disorders in children
- outpatient unit for high-risk newborns and infants
- advisory centre for neuromuscular diseases
- outpatient unit for botulinum toxin application
- advisory centre for neurocutaneous disorders
- advisory centre for inflammatory and demyelinating diseases

- neuro-oncology outpatient unit
- neuro-genetic outpatient unit
- outpatient unit for hereditary neurometabolic and neurodegenerative diseases
- psychological and neuropsychological advisory centre

Centres with international certification:

- ERN for rare and complex epilepsies (ERN EpiCARE)
- ERN for rare neuromuscular diseases (ERN NMD)
- Centre for hereditary ataxias (under ERN RND)

Centres recognized by the Ministry of Health CR/Czech Medical Association of

J. E. Purkyně/other:

- Centre for highly specialized care for pharmacoresistant epilepsies
- Centre for sleep disorders in children
- Neuromuscular centre for paediatric patients
- Centre for highly specialized care for multiple sclerosis and neuromyelitis optica
- Epilepsy Research Centre Prague (EpiReC) - a consortium of the 2nd Faculty of Medicine, the Motol University Hospital, the Czech Academy of Sciences and the Czech Technical University

New methods and procedures:

- Accreditation of the DPN's Neurogenetics Laboratory. In 2021, the Neurogenetics Laboratory of the Department of Paediatric Neurology obtained accreditation from the Czech Institute for Accreditation (No. 8322).
- First causal treatment of a presymptomatic patient with spinal muscular atrophy. In 2021, we were the first institution in the CR to administer gene therapy with Zolgensma (onasemnogen abeparvovek) to a presymptomatic newborn with genetically confirmed disposition to spinal muscular atrophy (SMA).
- A new clinical trial of an experimental treatment for children with Duchenne muscular dystrophy. In 2021, the Neuromuscular Centre of the Department of Paediatric Neurology launched a new clinical trial of an experimental treatment for patients with Duchenne muscular dystrophy (DMD.) with pamrevlumab (FG-3019 - a vascular growth factor agonist).
- A new treatment for children with Dravet syndrome. In 2021, we were the first institution in the CR to administer the orphan drug fenfluramine (a substance that releases serotonin) to four children with Dravet syndrome (severe monogenic epileptic encephalopathy).
- International collaboration in research on the genetic causes of cortical malformations. Thanks to the financial support of the EPNS Research Fellowship, in 2021 MUDr. Barbora Heřmanovská completed a foreign internship at the Institut du Cerveau (ICM) in Paris, during which she examined the first 14 Czech and Slovak pediatric patients with focal cortical dysplasia (FCD) type I using the method of paired whole-exome DNA sequencing of blood and brain tissue.

Major events in 2021:

- 50 years of the Department of Paediatric Neurology The Department of Paediatric Neurology, 2nd Faculty of Medicine, Charles University and Motol University

Hospital was founded on 19 January 1971, by Professor Ivan Lesný (1914-2002) as the first independent clinical department for paediatric neurology in the CR and one of the first in the world; in 2021, we commemorated 50 years of service to our patients and their families.

- International collaboration in research on the genetic causes of cortical malformations. Thanks to the financial support of the EPNS Research Fellowship, in 2021 MUDr. Barbora Heřmanovská completed a foreign internship at the Institut du Cerveau (ICM) in Paris, during which she examined the first 14 Czech and Slovak pediatric patients with focal cortical dysplasia (FCD) type I using the method of paired whole-exome DNA sequencing of blood and brain tissue.
- Publications:
 - Two national textbooks on paediatric neurology. A team of authors from the Department of Paediatric Neurology made significant contributions to two books on paediatric neurology published in 2021: Soňa Nevšimalová, Vladimír Komárek, Jan Hadač, Pavel Kršek, et al. Dětská neurologie (Paediatric Neurology), 444 pages, Galén, EAN 9788074925573; Pavel Kršek, Alena Zumrová et al., Základy dětské neurologie (Basics of Paediatric Neurology), 214 pages, Galén, EAN 9788074925108.
- The L'Oréal-UNESCO Award for Women in Science went to MUDr. Petra Laššuthová, Ph.D.; MUDr. Petra Laššuthová, Ph.D. received the L'Oréal Czech Republic's Women in Science Award for 2021.
- Jan Marek Marci Prize for MUDr. Anežka Bělohávková, Ph.D.; MUDr. Anežka Bělohávková, Ph.D. was awarded the Jan Marek Marci Prize by the Czech League Against Epilepsy for the best epileptological publication (Bělohávková et al., Clinical features and blood iron metabolism markers in children with beta-propeller protein associated neurodegeneration, Eur J Paediatr Neurol, 2020).
- Successful habilitations. In 2021, MUDr. Jana Haberlová, Ph.D. (topic "Improving the diagnosis and treatment of hereditary neuromuscular diseases in children in the CR") and MUDr. Petra Laššuthová, Ph.D. (topic „Searching for rare and discovering new causes of hereditary peripheral neuropathies in the CR“) successfully completed the habilitation procedure.
- Successful defence of PhD. In 2021, MUDr. Anežka Bělohávková successfully completed her doctoral studies in Neuroscience (topic "Optimizing the surgical treatment of epilepsy in childhood", supervisor prof. Pavel Kršek).

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

Head - MUDr. Jiří Skřivan, CSc.

Senior Consultant MUDr. Petra Dytrych, Ph.D. /until 31. 5. MUDr. Michal Jurovčík

Head Nurse - Adriana Laudátová

Basic description:

The facility focuses on diagnostics and conservative and surgical treatment of ENT diseases in paediatric patients from birth to 18 years of age. The department operates as a medical consultation facility, providing care for children with poorly diagnosable or treatable diseases from all over the CR. The Centre for Cochlear Implants for Children (CCIC) operates within the phoniatic part of the department. The department arranges surgeries on newborns with facial cleft with

interdisciplinary cooperation as one of the two facilities of this kind in the CR. The facility is part of the laryngotracheal centre at MUH and holds the title of Implantation Centre 2 at MUH.

In 2021, despite the ongoing corona virus crisis, there was an increase in the number of procedures and hospital admissions compared to 2020. A total of 1,913 operations were performed and 1,832 patients were admitted.

The **Department of Phoniatics and the Centre for Cochlear Implants in Children** is part of the department. The departmental head is MUDr. Zdenka Aksenova, Ph.D. At the department, we not only perform diagnostics, but also provide aftercare and rehabilitation. The department focuses mainly on nationwide care for patients with severe hearing impairment. The CCIC arranges examination of children, prosthetic care (prior to implantation) with the subsequent rehabilitation (even after implantation). Besides physicians and clinical speech therapists, clinical psychologists are also involved in the work of the CCIC (they are organized under the Department of Clinical Psychologists of the MUH, where they report their activities) and clinical engineers (Contracts for work).

In 2021, a total of 1,690 examinations were performed in the outpatient clinics of phoniatrists and 2,667 examinations were performed in the outpatient clinics of clinical speech therapists.

We use the Interacoustics Eclipse device to investigate auditory evoked potentials. This allows us to investigate the auditory threshold using the SSEP/ASSR method as well as to perform a BERA examination. These examinations are made under sedation or general anaesthesia.

The clinic's oncology team, led by MUDr. Rami Katra, Ph.D., together with the Oncology Clinic and the Imaging Methods Clinic, specializes in the comprehensive treatment of childhood cancers, both benign and malignant (lymphangiomas, rhabdomyosarcomas, juvenile angiofibromas)

Specialized outpatient units:

- otosurgical outpatient unit
- audiology outpatient unit
- outpatient unit assessing candidates for cochlear implants and rehabilitation centre after cochlear implantation and after bone conduction implantation (BCI)
- outpatient unit for addressing developmental defects in the neck and head
- outpatient unit for monitoring nodular swelling
- phoniatics outpatient unit
- thyroidology outpatient unit
- outpatient unit for treating lymphangiomas and hemangiomas of the head and neck
- outpatient unit for GERD diagnostics
- somnology outpatient unit
- outpatient unit of plastic surgery

New methods and procedures:

- Lumify Phillips diagnostic ultrasound system - portable ultrasound device
- Application of a BD stent in the upper respiratory tract in children;
- Laryngotracheal reconstruction, Monnier, Montgomery stents;
- Application of the Baha Attract /Connect and BoneBridge implants in clinical practice;
- Sleep monitoring in people with apnoea (PSG);
- New hearing diagnostic method based on DPOAE – CochleaScann and using bone (BC) module in the SSEP measuring technology;
- Programme for early surgery of cleft defects in newborns, timely detection and study of the demonstrations of secretory otitis in patient with a cleft;
- Introduction of a wireless device for automatic perioperative measurement of

impedance and NRT in Nucleus cochlear implants;

- Setting up a multidisciplinary working group for complex surgical and conservative treatment for lymphangiomas and haemangiomas of the head and neck; its members include an otolaryngologist, oncologist, radiologist, possibly also a neurologist, ophthalmologist and stoma surgeon.
- Introduction of balloon dilations of tracheal stenosis;
- Introduction of plasma coblation as an alternative solution to traditional procedures (ToT AT) and others
- Setting up cooperation with the Cardiac Surgery Clinic in the surgical management of patients with tracheomalacia

Unique equipment:

- plasma generator – plasma coblation
- Aeris balloon catheter – used for gentler dilation of stenosis of the respiratory tract in children
- 24 h pH impedance meter
- micro instruments for laryngeal surgery in children
- micro instruments for FESS in children
- Maico MI 34 high-frequency tympanometer
- Neo Laser with microfibre
- Bien-Air high-revolution bone cutter
- cochleaScann based on DPOAE – new objective audiometry technology
- wireless unit for perioperative measurement of impedance and NRT in perioperative measurement of the CI function, second generation
- harmonic scalpel – gently tissue preparation, UZ principle, low temperatures
- EndoCameleon – optics with variable angle
- shaver – microdebrider, technique suitable in laryngeal microsurgery and rhinology
- three-channel perioperative monitor of peripheral nerves NeuroStim 3
- VEMP module

Major events in 2021:

- ČES Award for the best publication in 2020 (co-author) -1st RET, NTRK, ALK, BRAF, and MET Fusions in a Large Cohort of Pediatric Papillary Thyroid Carcinomas., Thyroid. 2020 Dec;30(12):1771-1780. doi: 10.1089/thy.2019.0802. Epub 2020 Jul 1. PMID: 32495721, IF: 5,227 (MUDr. Katra, Ph.D.) - awarded in 2021
- Honorary recognition by the Minister of Health for medical research and development for 2020 (research team of the Grant - Thyroid tumours in children and adolescents and their molecular genetic basis (MUDr. Katra, Ph.D.) - awarded in 2021
- Successful defence of the ongoing project Institutional Support for Research Organizations, Motos UH 6,024 for 2020: "Improving accurate diagnosis and comprehensive rehabilitation of children with severe congenital and acquired hearing loss" (MUDr. Jurovčík)
- 1 publication in a journal with IF
- 9 publications in peer-reviewed journals
- 3 chapters in monographs

Paediatric Clinic SFM CU and Motol University Hospital

head prof. MUDr. Zdeněk Šumník, Ph.D., / until 30.9. prof. MUDr. Jan Lebl, CSc.
Senior Consultant - MUDr. Jana Tejnická, MBA
Head Nurse - Mgr. Jana Boháčová

Basic description:

The Department of Paediatrics provides diagnostics, treatment and follow-up care for paediatric patients from various places in the Czech Republic in almost all internal medicine specializations. **A total of 4,765 patients were hospitalized and 60,562 outpatient examinations were carried out at the department during 2021. 6 patients successfully underwent a kidney transplant.**

Specialized outpatient units:

17 specialized outpatient units (including outpatient units for children after organ transplants) and a facility for elimination methods are incorporated in the department's inpatient section.

New methods and procedures:

- The Nephrology Work Group provided comprehensive care for children with kidney failure and other nephrological diseases. It cares for 16 patients on home peritoneal dialysis (the only facility in the CR that also treats infants). It provides paediatric and adult patients with elimination methods - plasmapheresis, immunoabsorption.
- The pneumology team was the only facility in the CR to be dedicated to the diagnosis and treatment of patients with primary ciliary dyskinesia. It also cared for children on home non-invasive pulmonary ventilation - mostly patients with severe neurological problems (SMA). It provided an endoscopy programme for the entire paediatric section of the hospital, including endoscopies for newborns. It provides very demanding care for 175 patients with cystic fibrosis. CF patients have been treated with CFTR modulators to very good effect.
- The gastroenterological team successfully continued its intensive endoscopic programme, including the introduction of percutaneous endoscopic gastrostomy in combination with a jejunal tube (PEG-J), it carried out endoscopic balloon dilatation for oesophageal strictures. It also cared for 5 patients using home parenteral nutrition. It was the only facility in the CR to initiate a new method to treat 6 paediatric patients with short bowel syndrome with Revestive. The team indicated 6 patients for liver transplantation.
- In 2021, the diabetes and endocrinology team successfully continued in launching new technology in the treatment of patients with type 1 diabetes - insulin pump deployment based on a semi-closed automatic insulin delivery system. In the SWEET Comparison of Centres of Excellence for the Treatment of Childhood Diabetes, this facility was among the top 3 centres in the world in 2021! This working group has been very successful in addressing the issue of bone metabolism disorders in children.
- Over the year the intensive care unit admitted patients with multi-organ disabilities, many of whom required non-invasive ALV, elimination methods, etc. During 2021, 61 patients with severe PIMS disease were hospitalized here.

Unique equipment:

- The gastroenterology and pneumology team is currently equipped with the latest technology, including endoscopes for examining children in the lowest weight categories. The gastroenterology team acquired a sonography machine to investigate patients with IBD and a high-resolution manometer to investigate patients with bowel motility disorders. The Paediatric Clinic is the only paediatric department in the CR equipped with a simulator for endoscopic operations in the field of gastroenterology and pneumology.
- The Centre for Paediatric Osteology uses two unique devices for the functional diagnosis of skeletal disorders, a peripheral quantitative CT densitometer and a mechanograph.

Major events in 2021:

- All of the above working groups have actively participated in a number of international projects, including grants, focused on their particular areas of expertise. The teams are involved in five European Reference Networks (ERN) for rare diseases.
- They also continued intensive international scientific cooperation in the framework of multicentre projects.
- The clinic's staff has published 83 papers in impact factor journals, making it one of the best facilities within the hospital.
- The young physicians at the clinic have received a number of awards for their research and publication activities (including the award for the best publication of the Czech Paediatric, Diabetology and Endocrinology Society). MUDr. Vít Neuman, PhD received the prestigious Albert Schweitzer Award.



Common Inpatient Sites of Paediatric and Adult Parts

Clinic of Anesthesiology, Resuscitation and Intensive Medicine, 2nd Faculty of Medicine, Charles University and Motol UH

Head - senior lecturer MUDr. Tomáš Vymazal, Ph.D., MHA

Senior Consultant for the adult section MUDr. Radka Klozová

Senior Consultant for the children's section MUDr. Jana Pavlíčková

Head Nurse for the adult section Taťána Maňasová

Head Nurse for the children's section Mgr. Ing. Lenka Malíková, MBA

Basic description:

The department provides anaesthesiology and resuscitation care in the paediatric and adult parts of the hospital in accordance with the needs and requirements of the MUH. As regards the number of physicians and other employees, as well as the extent of medical activities provided, our department is the largest facility of its kind in the CR. The department ensures specialized care for medical facilities of a lower level throughout the CR upon request. It is the managing and coordinating facility for postgraduate education of physicians and nurses and ensures tuition for anesthesiologists and physicians with other specializations. The facility has been repeatedly granted type II accreditation. The head was re-elected to the position of chair of the Accreditation Commission at the Ministry of Health of the Czech Republic. KARIM provides tuition to students of medicine and students in bachelor's programmes at the SFM CU in the range of more than 1100 hours/year and in the framework of international educational and research projects **In 2021, 1,400 patients requiring resuscitation care were admitted to the clinic's acute beds, of whom 830 were adults and 570 were children. In the first half of the year the FIC/LINC station was still used as a COVID unit - it treated 177 critically ill patients. In 2021, anesthesia was administered to 33,610 patients, of which 11,111 were children.** We managed all the procedures and hospital admissions with the current staffing levels while providing all the other duties at the covid unit.

New methods and procedures:

- In 2021, the MUH ECMO centre for adult and paediatric patients expanded significantly; KARIM is the coordinating facility. This support was provided to almost 100 patients.
- Thanks to the unique PFA instrument for functional thrombocyte analysis - part of the robust research implanted at the clinic - we provide this service to all MUH departments.
- Routine technology HighFlow Oxygen Therapy in the care for patients under resuscitation care with failing respiration has become the basic procedure when caring for covid patients;
- Expanding the activities of the Simulation Medicine Laboratory - we train doctors and nurses at MUH and organize elective courses for undergraduate students; in 2021, the laboratory was expanded to include a virtual model for newborns.
- In 2021, more than 100 long-term paediatric peripheral catheters (PICC) were reintroduced, making our clinic a leader in this field not only in the CR but also in Slovakia.
- In cooperation with the Department of Surgery of the Second Faculty of Medicine, Charles University and MUH, it set up the consistent application of ERAS procedures in large abdominal procedures with a clear impact on the quality of hospital ad-

- missions including publication of the results in the form of papers and workshops;
- In 2021, a record 50 lung transplant patients were admitted to KARIM, the greater half with organ-supported ECMO.
- Routine use of sonography in US guided vascular punctures and regional nerve block techniques in adults and children;
- Wide use of electrocardiography in patients undergoing cardio-surgery and other procedures, including lung transplantation.
- Routine use of the Target Temperature Management technology - targeted cooling in patients after circulation failure;
- Routine bedside coagulation examination – TEG, ROTEM for early diagnosis of coagulopathy, changes in the management of bleeding disorders with significant savings of blood derivatives; financial savings in hundreds of thousands CZK per year, procedures also implemented in the internal rules of the MUH;
- Ongoing modernization of the equipment in anaesthesiology theatres, including the use of the latest anesthetics;
- Use of sonography for early diagnosis of bleeding into cavities in traumatized patients;
- Use of the latest video laryngoscopic techniques in the case of difficult intubation, including disposable intubation aids and instruments;
- Use of combined neuroaxial blocks in large joint replacements (hip, knee), including training for staff at specialized facilities;
- Use of peripheral blocks in US navigated paediatric and adult patients;
- Routine use of the available reliable reversal of the neuromuscular block following anesthesia;
- Use of non-invasive ventilation techniques in the treatment of respiratory insufficiency in children and adults;
- Routine monitoring of cerebral oximetry and brain perfusion during surgeries on children and adults not only in the case of extracorporeal circulation using deep hypothermia;
- Comprehensive treatment protocol for the management of diastolic heart failure.

Major events in 2021:

- KARIM has 2 ongoing grants (TAČR and MUH), 2 local academic studies (both approved by the Ethics Committee of MUH) and 3 multicentre international studies organized by the ESA (European Society of Anaesthesiology).
- Defending the dissertation of 1 colleague and obtaining a Ph.D;
- Organizing pre-attestation and the core course including relevant examinations;
- 2 books with chapters written by the clinic's doctors were published.
- Extension of the technology for electronic documentation at paediatric resuscitation beds
- A total of 11 studies were published in peer-reviewed and impact magazines and in book chapters
- Script for medics released and upgraded.

The clinic includes:

A follow-up intensive care unit (FIC) and a long-term intensive nursing care unit (LINC).

Senior Consultant MUDr. Kateřina Čadová
Head nurse Mgr. Soňa Hájková

In the first half of the year the FIC/LINC station was still used as a COVID unit and it wasn't until September that it was transformed back to its original purpose of post-acute intensive care. Until the end of 2021, these beds were mainly used for long-covid patients who were dependent on ventilatory support.

Department of Rehabilitation and Sports Medicine, 2nd Faculty of Medicine, Charles University and Motol UH

Head - prof. PaedDr. Pavel Kolář, Ph.D.
Senior Physiotherapist - Kateřina Míková

The department includes the **Department of Rehabilitation - Adult and Paediatric Section, Spinal Unit, Department of Sports Medicine and Department of Pain Research and Treatment.**

1. Department of Rehabilitation

Senior Consultant - MUDr. Martina Kővári, MHA (adult section)
Senior Consultant MUDr. Olga Dyrhonová (children's section)
Head Nurse - Hana Jirků

Basic description:

The Department of Rehabilitation provides physiotherapy and medical rehabilitation to adult and paediatric patients in its entirety across all medical disciplines. We provide care to both outpatients (adult and paediatric section) and hospitalized patients (in individual clinics and departments of the adult and paediatric section of the hospital). The department also has a section for acute inpatient rehabilitation care. **During 2021, a total of 541 patients were hospitalized in the adult inpatient section of the clinic, 250 patients were hospitalized in the children's inpatient section, a total of 5,184 patients were treated in the outpatient section, and we provided rehabilitation care to 16,595 patients from other departments.**

Specifics of the facility:

Respiratory physiotherapy is one of the department's dominating activities. We are now gaining experience from respiratory physiotherapy for patients with COVID-19 and we are accepting patients with post-covid syndrome for rehabilitation in our adult inpatient unit. Additional specific procedures include treatment of spastic paresis (including applying botulinum toxin under sonographic or electrostimulation navigation), therapy of pelvic floor disorders, therapy of vestibular disorders, visceral rehabilitation, therapy and diagnosis of swallowing disorders and a lymphology programme. The department also runs other special programmes, such as a specialized programme for adult and paediatric patients after surgery for congenital heart disease. Serious forms of cerebral palsy are then assessed at interdisciplinary seminars with a consultation character (for patients under 18 and separately for adults from the entire CR). We also collaborate with the neurology department in the framework of testing patients with SMA during Spinraza therapy, and help in providing comprehensive care for patients with ALS.

A diagnostic and therapeutic concept Dynamic and Neuromuscular Stabilization (DNS) based on

the principles of developmental kinesiology was created at our department and put into practice. Professor Pavel Kolář, the head of the department is the founder of this concept. The facility is involved in lecturing on this concept in the CR and abroad. Significant effort has been devoted to the transition to hybrid teaching as a result of COVID. Three years ago, a 16-bed acute rehabilitation ward for children was opened. The doctoral programme in Kinesiology and Rehabilitation has now been successfully running for three years.

New methods and procedures:

- Last year, a Conversation Group for adult patients with communication deficits was set up, it is led by clinical speech therapists.
- A physiotherapy outpatient unit specializing in paediatric patients with respiratory problems, including patients with cystic fibrosis (CF), started its activity. A brochure focusing on physiotherapy for patients with cystic fibrosis was created. What's more, in cooperation with the Cystic Fibrosis Club, a series of videos was created for parents and patients with this disease. The videos focus on the topic of correct inhalation, respiratory handling in infants, suctioning and working with breathing simulators.
- We use a dynamic walkway with integrated pressure sensors and virtual feedback to examine and provide therapy for standing and walking disorders
- The therapy also includes the use of biofeedback devices for patients with faecal incontinence and the possibility of lending biofeedback devices for home therapy. A similar programme for children with pelvic floor disorders.
- The unique equipment also includes a Snoezelen room for multisensory therapy.
- With regard to the ongoing Covid-19 pandemic, the issue of pulmonary rehabilitation in patients with this disease was also elaborated.
- A new Mirror Box for Mirror Therapy was purchased. This technique helps patients with neurological diseases or patients that have had
- amputation and is used to improve the motor function of the upper limbs.

Unique equipment:

- OMNIHi5 - functional electrical stimulation of the upper limb
- Simeox for the children's section - used for decongesting the airways
- functional electrical stimulation to stimulate the n. peroneus in patients with „drop foot“
- dynamic path with integrated pressure sensors and virtual reality
- training machine for training hand function
- Balance Master device for therapy of stability disorders and vertigo conditions
- “X box” device and “Wii” system for training stability and coordination skills in children
- myofeedback and biofeedback for electrical stimulation of the pelvic floor muscles
- A sonographic device for navigating botulinum toxin application in the therapy of spastic patients with a high-frequency head and a shear-wave elastography probe
- a Dolosys pain tester.
- a high-power laser, ZimmerOpton Pro 25W, which is used in adult and pediatric patients with complicated scars, tendinopathies, joint capsule inflammation or injuries (partial ruptures, joint distortions)

Major events in 2021:

- Creating on-line seminars in the Czech Republic or abroad (e.g. seminar on vestibular rehabilitation, and Dynamic Neuromuscular Stabilization).
- The academic staff take an active part in professional conferences in the Czech Republic and abroad (on-line or in person).
- DSP student Kateřina Mádle (supervisor Doc. Kobesová) received grant support, GAUK118221, for the project: The effect of rehabilitation on lower oesophageal sphincter pressure changes and quality of life in patients with gastro-oesophageal reflux disease.
- The first state doctoral examinations were held in the newly established postgraduate field of Kinesiology and Rehabilitation.
- Doc. Kobesová joined the editorial board of the international journal Physical Activity Review.
- A multidisciplinary seminar with a prominent foreign expert, prof. Andreas Zwergal, was organized with a focus on the relationship between the cerebellum and the vestibular system.
- Notable publications:
 - Novak J, Jacisko J, Busch A, Cerny P, Stribny M, Kovari M, Podskalska P, Kolar P, Kobesova A. Intra-Abdominal Pressure Correlates with Abdominal Wall Tension During Clinical Evaluation Tests. *Clinical Biomechanics*. 2021.
 - Stverakova T, Jacisko J, Busch A, Safarova M, Kolar P, Kobesova A: The Impact of COVID-19 on the Physical Activity of Czech children. *PLOS ONE*, 2021.
 - Bitnar P, Stovicek J, Hlava S, Kolar P, Arlt J, Arltova M, Beranova K, Busch A, Kobesova A. Manual cervical traction and trunk stabilization cause significant changes in the upper and lower oesophageal sphincter: A randomized trial. *Journal of Manipulative and Physiological Therapeutics*. 2021 May;44(4):344-351.
 - Jacisko J, Stribny M, Novak J, Busch A, Cerny P, Kobesova A. Correlation Between Palpatory Assessment and Pressure Sensors in Response to Postural Trunk Tests. *Isokinetics and Exercise Science* 29 (2021) 299–308.
 - Novak J, Busch A, Kolar P, Kobesova A. Postural and respiratory function of the abdominal muscles: A pilot study to measure abdominal wall activity using belt sensors. *Isokinetics and Exercise Science*. Volume 29, Issue 2, April 2021, pp.175-84.

2nd Spinal Unit of the Department of Rehabilitation and Sports Medicine, 2nd Faculty of Medicine, Charles University and MUH

Head - prof. PaedDr. Pavel Kolář, Ph.D.

Senior Consultant - assoc. prof. MUDr. Jiří Kříž, Ph.D.

Head Nurse - Hana Jirků

Basic description:

The spinal unit ensures therapeutic and rehabilitation care for patients in post-acute stage after spinal injuries and for patients in the chronic stage after spinal injuries, who are experiencing serious health complications. **In 2021, 68 patients with acute spinal lesion and 30 spinal patients at the chronic stage with acute complications were hospitalized, approx. 250 patients were treated in the outpatient unit as part of follow-up or due to newly developed health problems.**

New methods and procedures:

- The first implantation of a diaphragm stimulator in the CR in a patient with a breathing disorder in cooperation with the Third Surgical Department.
- The first patient was included in the European study “Antibodies against Nogo-A to enhance regeneration and functional recovery after acute spinal cord injury, a multicenter European clinical proof of concept trial”. H2020, PHC 15-2015.
- Baclofen pump implants were given to patients following spinal cord injury with severe spasticity in collaboration with the Neurosurgical Department for Children and Adults.
- Treatment of chronic skin defects with amniotic membrane initiated.
- Continued work on the European project “European Multicentre Study about Spinal Cord Injury (EMSCI)”. IFP 2001/P 66.o
- In cooperation with the Paraple Centre, launch of the project “Managing Sleep Apnoea in People with Spinal Cord Injury, Treatment Options with Oral Correctors”.
- In cooperation with FBMI CTU, launching the project “Designing and Developing a Method to Prevent Autonomic Dysreflexia in Individuals Following Spinal Cord Injury”.

Unique equipment:

- Voice assistant for communicating with the surroundings and controlling equipment for patients with upper limb paralysis
- Tablet and communicator for baclofen pump programming
- CoughAssist device for supporting cough in patients with neck spinal lesion (gift from the “Nadace Pohyb bez pomoci” foundation)
- Pony FX device for spirometry examination of lesions (gift from the “Nadace Pohyb bez pomoci” foundation)
- Misonic SonicOne device for removing necrotic material and devitalized tissue from skin defects (gift from the “Nadace Pohyb bez pomoci” foundation)
- Finapres NOVA device for assessing defects of the autonomous nervous system (subsidy from the Ministry of Health, CR)
- ABPM device – pressure Holter monitor (gift from the “Nadace Pohyb bez pomoci” foundation)
- Conformat for a seated pressure map examination in individuals with spinal cord injury (donated by the “Pohyb bez pomoci” foundation)

Major events in 2021:

- Co-organization of a day-long seminar to mark International Spinal Cord Injury Day, Paraple Centre, 3. September 2021;
- ISCoS Virtual Meeting, 29th September – 2nd October 2021, Vancouver, Canada
 - Kříž J, Hyšperská V, Barna M, Štulík J. Back pain due to secondary spine disorders in chronic spinal cord injury
 - Honzátková L, Kříž J. Covid-19 and respiratory complications in SCI people in the Czech Republic
- Notable publications:
 - Schuld C, Franz S, Schweidler J, Kriz J, Hakova R, Weidner N, Rudiger R, Nan L. Implementation of multilingual support of the European Multicentre Study about Spinal

Cord Injury (EMSCI) ISNCSCI calculator. Spinal Cord 2021 Aug 17. doi: 10.1038/s41393-021-00672-y

- Kriz J, Sediva K, Maly M. Causes of death after spinal cord injury in the Czech Republic. SpinalCord 2021; 59: 814-820

3. Department of Pain Research and Treatment

Head - prof. PaedDr. Pavel Kolář, Ph.D.

Senior Consultant MUDr. Jiří Kozák, Ph.D.

Head Nurse Soňa Bašová

Basic description:

The Department for Pain Research and Treatment (DPRT) has a multidisciplinary character in the care for chronic painful conditions. It is one of the 11 neuromodulation centres in the CR, a pregraduate and postgraduate teaching institution in pain management and neuromodulation techniques for IPVZ in pre-attestation courses, for teaching in the Master's programme of the Department of RHB and TVL. 2nd Faculty of Medicine, Charles University. The DPRT provides outpatient and inpatient care. The DPRT is a consultation facility for departments treating pain in the CR. Practical teaching in the field, cooperation with the Institute for Postgraduate Medical Education (IPVZ) - internships.

The number of outpatient treatments was 6,569, the number of patients admitted with chronic pain 105, the number of consultations 303, the number of single and continuous neuroaxial blockades 482 (epidural, caudal), peripheral local injections, n. blockades 490, radiofrequency operations 45. Number of neuromodulation procedures (SCS spinal cord stimulation and peripheral nerve stimulation): 18 in all - (direct implantation, replacement of generators, electrode modifications - inspection, system explantation).

New methods and procedures:

- Extension of radiofrequency methods and indications for RF (facet syndrome, nerve blocks, large joint areas)
- Nerve blocks guided by USG and neurostimulator;
- Pain testing using the Dolosys - Pain Tracker - study published;
- The neuromodulation programme continues: Peripheral nerve stimulation and spinal stimulation.
- The use of cannabis and the introduction of Methadone into pain pharmacotherapy.
- By applying Capsaicin pl. (Qutenza) in neuropathic pain and creating a new code in the List of Medical Procedures.

Unique equipment:

- Pain Tracker - Dolosys - a testing device for assessing the RIII reflex – pain tester
- radiofrequency generator - invasive pain treatment (thermolysis, pulsed RF)
- neurostimulator for detecting nerve structures and navigating invasions
- USG device for guiding targeted nerve and soft tissue blocks
- neurostimulation systems for implanting SCS and PNS and monitoring neuromodulation methods

Major events in 2021:

- Postgraduate student in CLB, preparation of a publication with IF;
- Reissue of the book Opioids, 01/2021 (main editor doc. Kozák);

- Preparation of the reissue of the Methodological Guidelines for Pain Pharmacotherapy under the auspices of the professional society SSLB ČLS JEP (co-editor doc. Kozák);
- Creating CHOPIN, a registry of neuromodulation methods - coordination of NM centres;
- Taking part in e-learning - pain management chapters in EUNI;
- Active participation - presentation at 3 scientific conferences in the Czech Republic in pain management.

4. Department of Sports Medicine

Head - prof. PaedDr. Pavel Kolář, Ph.D.

Senior Consultant - assoc. prof. MUDr. Jiří Radvanský

Head Nurse - Hana Jirků

Basic description:

The Department of Sports Medicine is one of the department's outpatient units. It focuses mainly on functional diagnostics with at the regional level (in the case of congenital heart defects at the national level) and the subsequent mobility recommendations for patients from preschool children to seniors, targeted for example on patients with developed lifestyle diseases involving the metabolic syndrome or chronic respiratory diseases. The department conducts functional stress diagnostics of the circulatory system even in patients in wheelchairs using winch ergometry and spiroergometry, functional stress diagnostics as part of preoperative examinations before major elective and surgical procedures. The facility is the largest training centre for functional diagnostics under stress for the purposes of sports medicine and paediatric cardiac surgery in the country.

In 2021, the second year significantly affected by Covid-19, approximately 1,900 athletes were screened during preventive sports examinations as were 2,200 patients with exertional complaints, including those returning to sport after catching Covid-19. 112 patients underwent controlled movement therapy and we provided 3,250 interventions, including individually tailored movement therapy and dietary intervention, during this therapy.

New methods and procedures:

- Determining the speed of blood flow in the aorta under stress in patients with coarctation of the aorta and stress changes in circulation parameters detectable by echocardiograph in other patients after surgical correction of congenital heart defects.
- Part of the treatment and prevention activities was an examination procedure and consultation for athletes after having had Covid-19.
- In collaboration with surgical departments, we perform pre-rehabilitation of obese hernia patients to improve wall strength and reduce visceral fat.

Active participation at conferences:

- Mgr. Ulrichová - 13th International interdisciplinary conference on PPP and obesity, active participation in the form of a lecture on The Options for Therapeutic Rehabilitation for Patients Admitted with Anorexia Nervosa;
- Radvanský J. - Maintaining physical fitness and mobility during „curfew - why and how“, Ulrichová M. - Suggestions for home exercises during long winters, epidemics and other calamities - Gerontological Days Northwest 2021;

- Pokorný J. et al.: Exercise-induced bronchospasm - influence of environment on the examination result - Annual Conference of the Czech Society for Testing and Lung Disease 2021 5.11.2021 České Budějovice
- Publications:
 - Ulrichová M. et al.: Body schema disorder in patients with anorexia nervosa. Psychosom 3/2021. ISSN 1214-6102

Department of Ophthalmology for Children and Adults, 2nd Faculty of Medicine, Charles University and MUH

Head MUDr. Martin Hložánek, Ph.D., FEBO
 Senior Consultant MUDr. Milan Odehnal, MBA
 Head Nurse - Jana Králíčková

Basic description:

The Department of Ophthalmology for Children and Adults provides comprehensive preventive diagnostics and therapeutic care to patients from birth to advanced age. In the field of paediatric ophthalmology, the clinic acts as a super-consultation centre in the region of the CR, providing consultation care to children and adults admitted to the MUH. The inpatient section is equipped with 25 beds. Part of the complement are operating theatres, organizationally falling under the Department of Central Operating Theatres, the outpatient clinics have operating theatres for minor surgical procedures and intravitreal injections. In 2021, operational interventions continued with measures concerning Covid 19 (quarantine and other related measures). In 2021, the clinic carried out 1,083 surgeries and 457 minor procedures in the operating theatre. Cataract surgery was the most frequent procedure (368) and surgery for strabismus (111) and examination under total anaesthesia (214). During the year, 813 patients (excluding escorts) were admitted.

A total of 9,378 patients were examined in the paediatric outpatient clinic, 11,500 in the adult outpatient clinic and 3,358 in the framework of emergencies. 2,107 examinations were made at the orthoptic clinics. The clinic performed a total of 2,762 consultation examinations within the MUH.

Specialized outpatient units and counselling centres:

- orthoptic outpatient unit
- outpatient ophthalmology unit for children
- care centre for children with retinopathy in premature babies
- counselling centres - strabological, glaucoma, cataract, oncological, vitreoretinal, diabetological, uveological, neuro-ophthalmological

New methods and procedures:

- A methodology for collecting tears from the lower tear meniscus and measuring MMP9 levels in the collected sample was introduced. MMP9 in tears is considered one of the potential biomarkers of ocular surface disease; in a pilot study it was demonstrated that this parameter increases in type 1 diabetic patients.
- Intravitreal treatment (application to the vitreous body) in paediatric patients with retinal cancer (retinoblastoma) in collaboration with the Clinic of Imaging Methods and the Department of Paediatric Haematology and Oncology.
- The spectrum of operations includes retinal and vitreous surgeries using the 25g stitchless technique.
- Intravitreal biological therapy in children and adults.

- Introducing modern implants (PreserFlo) into the spectrum of antiglaucoma surgery for children.
- Implanting toric intraocular lenses to correct astigmatism and introducing extended focus lenses during cataract surgery.

Unique equipment:

- Tomey TMS-5 - a corneal topographer combined with Scheimpflug camera to precisely assess the anatomical conditions of the eye's anterior segment.

Major events in 2021:

- AZV grant awarded where the clinic is co-investigator - Randomized, double-blind, placebo-controlled, multicentre clinical trial of the efficacy and safety of highly diluted atropine collyrium in delaying the progression of myopia in children.
- Doc. MUDr. Pochop, MUDr. Cendelín, MUDr. Hložánek, MUDr. Mahelková were the authors and co-authors of papers in journals with a total IF of over 10.0.
- MUDr. Odehnal is an expert guarantor of a research project of the Faculty of Physical Culture of the University of Olomouc on the effects of focusing attention on gait in children with visual impairment.
- Doc. MUDr. Pochop et al. successfully continue intravitreal chemotherapy in children with retinoblastoma, working on developing a hydrogel implant for the local depot effect of chemotherapy.
- MUDr. Hložánek is part of the EuScreen team engaged in optimizing the screening for visual and hearing disorders in children within the EU.



Department of Paediatric and Adult Orthopaedics and Traumatology, 2nd Faculty of Medicine, Charles University and Motol UH

Head prof. MUDr. Vojtěch Havlas, Ph.D. /until 30.9. prof. MUDr. Tomáš Trč, CSc. MBA
Senior Consultant - MUDr. Daniel Rybka
Head Nurse - Bc. Lucie Plocová

Basic description:

The department provides care in orthopaedics and traumatology for paediatric and adult patients not only within its region, but also throughout the CR through medical consultation. It is one of the few orthopaedic workplaces in the CR to cover the entire spectrum of orthopaedic and traumatological care. **In 2021, a total of 1,176 children and 1,793 adult patients were admitted, which is 2,969 patients in all. 931 surgeries were performed on children and 1,710 on adult patients, which is 2,641 surgeries in total. In the children's outpatient unit, 22,261 children were treated and 15,288 adults were treated in the adults' outpatient unit, i.e. 37,549 patients in total. In addition, the number of consultations in the children's section was 332, in the adult section 878, i.e. a total of 1,210 consultations.** The slight decrease in operations compared to previous years is due to the reduction in operative and inpatient capacity in connection with the covid pandemic.

Specialized outpatient units:

- orthopaedic oncology outpatient unit
- scoliosis outpatient unit
- outpatient unit of sports traumatology for children and adults
- specialized outpatient unit for arthroscopic procedures
- outpatient unit for neurogenic defects
- outpatient unit for congenital skeleton defects
- outpatient unit for primary and revision endoprosthesis
- outpatient unit for comprehensive surgeries of the shoulder joint

New methods and procedures:

- X-ray assisted minimally invasive surgery of leg deformities
- treatment of cartilage defects with an artificial implant based on collagen
- use of magnesium implants in orthopaedics and traumatology
- meniscus sutures in children and adults using self-ligating implants
- replacement surgery of the anterior cruciate ligament in children with an open growth gap using a technique without disturbing the growth plate.
- the department is one of two high-volume centres in the CR for developing hip arthroscopy
- wider use of minimally invasive approaches to hip TEP implantation
- use of a new navigation system for knee joint TEP implantation
- endoprosthetics of the shoulder joint, including surface replacements

Unique equipment:

- 2 ultrasonography devices Canon Xario 100 Platinum and Xario 200 Platinum pro.
- Neonatal hip screening and an ultrasound examination of the locomotor apparatus and its therapy. Several software modules and a wide spectrum of supplied probes and accessories, including surgical 18MHz probe, allow for comprehensive examination of patients including targeted therapy, for example using bioptic guiding
- SIMBIONIX ARTHRO surgical simulator for ASK operations

Major events in 2021:

- Prof. MUDr. Vojtěch Havlas, PhD. became the new head of the department. Doc. MUDr. Jakub Kautzner, Ph.D. was elected Chairman of the Society for Sports Traumatology and Arthroscopy of the ČLS JEP. As. MUDr. Jan Kotaška completed his postgraduate study.
- MUDr. Martin Hanus, Ph.D completed an MBA programme.
- Publications with an impact factor:
 - Evaluation of primary hip arthroscopy complications in mid-term follow-up: a multicentric prospective study. Zeman P, Rafi M, Kautzner J. International Orthopaedics 2021 Oct;45(10):2525-2529. doi: 10.1007/s00264-021-05114-1 **IF 2.854**
 - Systematic Literature Review and Expert Opinion for the Use of Viscosupplementation with Hyaluronic Acid in Different Localizations of Osteoarthritis. Migliore A, Gigliucci G, Alekseeva L, Bannur U, Blicharski T, Diracoguglu D, Gerogiadis A, Hamoud H, Martusevich N, Matucci Cerinic M, Perduk J, Szerb I, Trc T, Chevalier X. Orthopedic Research and Reviews 2021 13:255-273. DOI <https://doi.org/10.2147/ORR.S336185> **IF 2.55**
 - Paediatric pelvic injuries: a retrospective epidemiological study from four level 1 trauma centers. Salášek M, Havránek P, Havlas V, Pavelka T, Peší T, Stančák A, Hendrych J, Džupa V. International Orthopaedics 2021 Aug;45(8):2033-2048. doi: 10.1007/s00264-021-05105-2. **IF 2.854**
 - Hyaluronic acid concentration in synovial fluid as an indicator of the severity and degree of disability in patients with enarthrosis. Kotaška J, Hanousková L, Průša R, Trč T, Kotaška K. Acta Chirurgiae Orthopaedicae et Traumatologiae Českoslovacica, 2021;88:85-88. **IF 0.256**
 - Reoperation on LCA reconstructions in our cohort. Hanus M, Stančák A, Šťastný E, Trč T. Acta Chir Orthop Traumatol Cech. 2021;88(2):124-130. PMID: 33960925 **IF 0.256**

Department of Neurosurgery for Children and Adults, 2nd Faculty of Medicine, Charles University and Motol UH

Head doc. MUDr. Vladimír Beneš, Ph.D.
Senior Consultant doc. MUDr. RNDr. Ondřej Bradáč, Ph.D.
Head Sister Bc. Tereza Drbohlavová

Basic description:

The department focuses on specialized acute and planned neurosurgery care for children and adults and provides medical consultation in the field's entire scope. Above all in paediatric neurosurgery, it represents the most productive facility in the country. It also provides pre- and postgraduate tuition and carries out research activities. Apart from patients from the clearly defined catchment area of Prague and its surroundings, it accepts patients from all over the CR and, in the case of some specialised operations, also from abroad. **In 2021, in spite of the ongoing pandemic, we managed to increase the volume of surgery, for both parts of the department, by more than 300 procedures, mainly in the field of neuro-oncology. A similar increase can be seen in the number of inpatients, where we successfully increased the adult section's bed capacity by 6 beds.**

Together with the Department of Paediatric Neurology and the Neurology Clinic for Adults, the department is part of the Centre for Highly Specialized Care for Pharmacoresistant Epilepsies and the Epilepsy Research Centre Prague (EpiReC) -a consortium of the 2nd Faculty of Medicine, the Motol University Hospital, the Czech Academy of Sciences and the Czech Technical University In collaboration with the Neurology Clinic, it is part of the Centre for Highly Specialized Cerebrovascular Care.

Specialized outpatient units:

- outpatient unit of neurosurgery for children
- neurosurgical outpatient clinic for adults with a focus on cranial spondylosurgical issues

New methods and procedures:

- Measurement of neurophysiological functions during surgeries of the brain and spinal cord using a multimodal device, perioperative stimulation of brain centres in small children.
- Implantation of baclofen pump for the treatment of generalized spasticity in children and adults continues.
- Surgical treatment of craniosynostoses, where the most complex deformities are resolved with the presence of a maxillofacial surgeon.
- Focus on minimally invasive approaches to the treatment of degenerative spinal defects.
- Vertebroplasty and stentoplasty in the therapy of osteoporosis fractures of the spine in cooperation with the Department of Radiology and the Department of Rehabilitation and Sports Medicine.
- Radiofrequency neuromodulation in painful conditions (vertebrogenic, peripheral nerves).
- We treat extensive lesions in the area of the cranial base and face under multidisciplinary cooperation with a maxillofacial surgeon, ENT specialist and plastic surgeon, with the resection procedure often followed by a reconstruction procedure with covering details with microvascular transfer of a free lobe.
- Use of highly specialized multimodal monitoring of the patients with craniocerebral injuries in neuro-traumatology.
- The surgical programme and endovascular techniques are developed in cooperation with the Department of Radiology as part of the neurovascular program.
- Fine tuning and standard use of frame and frameless stereotactic procedures - application during insertion of deep brain electrodes and during brain biopsies.
- The programme for treating refractory epilepsy under the Centre for Epilepsies of the MUH. Stereotactic implantation of deep brain electrodes for subsequent long-term video and EEG monitoring for pharmaco-resistant epilepsies and resection epileptic surgery procedures is carried out.
- Radiofrequency thermoablation.
- Further development of endoscopic surgery for the ventricular system - 3rd ventriculostomy, endoscopic biopsies.

Unique equipment:

- endoscopic CUSA - Sornic - allows tumour extirpation during endoscopic procedures
- exoscope - digital microscope - by Aesculap, allowing 3D surgery combining the advantages of a microscope and an endoscope
- electromagnetic neuro-guidance Medtronic without the need to immobilize the head at new operating theatres for children (including frameless stereotactic procedures)
- brain neuro-guidance Brain Lab integrated with the Pentero microscope from Zeiss.

- Perioperative ultrasound machine
- M-Turbo Ultrasound System by Sonosite
- InVent endoscope (Aesculap) including instruments, endoscopic instrumentation with a wide working channel

Major events in 2021:

- Notable publications:
 - Prediction of Shunt Responsiveness in Suspected Patients With Normal Pressure Hydrocephalus Using the Lumbar Infusion Test: A Machine Learning Approach. Mládek A, Gerla V, Skalický P, Vlasák A, Zazay A, Lhotská L, Beneš V Sr, Beneš V Jr, Bradáč O. *Neurosurgery*. 2022 Jan 28. doi: 10.1227/NEU.000000000001838. Online acad of print.
 - Cerebral venous sinus thrombosis in infant with COVID-19. Blazkova J, Skalicky P, Bradac O, Benes V Jr. *Acta Neurochir (Wien)*. 2022 Jan 19:1-6. doi: 10.1007/s00701-022-05116-x.
 - Survival and functional outcomes in paediatric thalamic and thalamopeduncular low grade gliomas. Beneš V 3rd, Zápotocký M, Libý P, Táborský J, Blažková J Jr, Blažková J Sr, Sumerauer D, Mišove A, Perníková I, Kynčl M, Krsková L, Koblížek M, Zámečník J, Bradáč O, Tichý M. *Acta Neurochir (Wien)*. 2022 Jan 19. doi: 10.1007/s00701-021-05106-5.
 - From head micro-motions towards CSF dynamics and non-invasive intracranial pressure monitoring. Mládek A, Gerla V, Šeba P, Kolář V, Skalický P, Whitley H, Lhotská L, Beneš V, Bradáč O. *SciRep*. 2021 Jul 12;11(1):14349. doi: 10.1038/s41598-021-93740-5.
 - Skalický P, Mladek A, Bradac O. Normotenzní hydrocephalus (Normotensive hydrocephalus). *Cesk Slov Neurol N* 2021; 84/ 117(6): 512–534. doi:10.48095/cccsnn2021512
 - Bubeníková A, Skalický P, Beneš V Jr, Beneš V Sr, Bradáč O. Overview of Cerebral Cavernous Malformations – Comparison of Treatment Approaches. A Systematic Review and Meta-Analysis. *Journal of Neurology, Neurosurgery and Psychiatry* 2022. In press.
 - Vlasak A, Gerla V, Skalicky P, Mladek A, Sedlak V, Vrana J, Whitley H, Lhotska L, Benes V Sr, Benes V Jr, Bradac O. Boosting Phase Contrast MRI Performance in iNPH Diagnostics by Means of a Machine Learning Approach. *Neurosurg Focus* 2022. In press.
 - Lomachinsky V, Táborský J, Felici G, Charvát F, Beneš V III, Libý P. Endoscopic third ventriculostomy in an infant with vein of Galen aneurysmal malformation treated by endovascular occlusion: case report and review of literature. *Neurochirurgie* 2022. In press.
 - Jurák L, Beneš V III, Bradáč O, Eichlová Z, Dienelt J, Jíra M, Suchomel P. Comparing the impact of the first and second waves of the COVID-19 pandemic on the number of hospitalized patients with ischemic stroke, their diagnosis, treatment and prognosis. *Cesk Slov Neurol N* 2021;84:473-476.
 - Jurák L, Beneš V III, Bradáč O, Dienelt J, Suchomel P. The impact of the first wave of the COVID-19 pandemic on the number of hospitalized patients with ischemic stroke, their diagnosis and therapy. *Cesk Slov Neurol N* 2021;84:89-91.
 - Blaha M, Tichy M. Treatment of Vagus Nerve Stimulator Pocket Infection without removal of the Hardware. *Epilepsi*2021;27:62-65. doi: 10.14744/epilepsi.2020.48344
 - Fík Z, Vlasák A.2, Čada Z, Schuler R, Lazák J, Svobodová V, Vokřál J, Zvěřina E, Betka J. First experience with the use of direct monitoring of the auditory nerve in vestibular schwannoma surgery in the Czech Republic. *Cesk Slov Neurol N* 2021; 84(5): 477-480. doi: 10.48095/cccsnn2021477
- 20 oral presentations made at the national and international level.
- Allocating the organization of the Czech Neurosurgical Society Working Days for the year 2028

Department of Stomatology for Children and Adults, 2nd Faculty of Medicine, Charles University and MUH

Head - prof. MUDr. Tatjana Dostálová, DrSc., MBA

Senior Consultant MUDr. Milan Hubáček

Head Nurse - Václava Kolomazníková

Basic description:

Stomatology for children and adolescents focusing on healthy and handicapped patients – multidisciplinary cooperation between a general dentist, paedodontologist, periodontologist, prosthodontist, orthodontist, dentoalveolar and craniomaxillofacial surgeon in the treatment of congenital and acquired developmental defects, injuries and tumors, children's centre for distraction osteogenesis of the facial skeleton as a congenital developmental defect and joint centre for endoprosthesis of the jaw joint. Diagnostics and treatment of congenital and acquired defects of the splanchnocranium, development of microscopic craniomaxillofacial surgery in cooperation with other departments and institutes (such as neurosurgery, ENT, ophthalmology, oncology, plastic surgery, biology and genetics).

In 2021, despite various restrictions due to Covid-19, 47,347 outpatient treatments and 539 one-day treatments were performed /308 tooth rehabilitation under total anaesthesia and 231 surgical procedures/. 707 patients were admitted at the inpatient department and 747 surgeries were performed, of which 287 were tooth rehabilitation for handicapped patients under total anaesthesia.

Specialized outpatient units:

- maxillofacial surgery /with specification of congenital developmental defects/
- defects of the jaw joint in children and adolescents
- oncology
- diseases of the salivary glands in children
- prosthetics
- implantology
- periodontology
- orthodontics
- orthodontic surgery focusing on the treatment of jaw anomalies
- for children with special needs / disabilities
- monitoring the swallowing act during phonation using special obturation plates in cooperation with ENT;
- In collaboration with the Department of Biology and Medical Genetics, monitoring therapy in children and adolescents with rare diseases using an intraoral and facial scanner and comparison with young healthy subjects.
- In clinical practice, we generate 3D models of the dental arch and jaw relationships for orthodontic, surgical and prosthetic treatment.

New methods and procedures:

- care for patients with a cleft - /comprehensive stomatological care/
- orthognathic surgical procedures including specialized advisory centre and 3D modelling, planning and reconstruction
- dental implantology and controlled bone regeneration focusing on young handicapped patients
- care for the teeth of handicapped children under total anaesthesia or analgosedation

- surgery of the jaw joint, including subtotal endoprosthesis
- distraction of the facial skeleton in congenital developmental defects in children
- digital stomatology using an intraoral and facial scanner
- cooperation with the Institute of Criminalistics on optimizing super-projection 3D skull models, including forming virtual models of skulls and faces from a medical point of view
- cooperation with the Department of Mathematics of the Faculty of Applied Sciences on mathematical models for facial skeleton reconstruction;
- cooperation with the Department of Computer and Control Engineering of the Faculty of Chemical Engineering when analysing 2D and 3D image stacking, X-ray and working models when creating virtual treatment planning including printing the individual components;
- cooperation with the Nuclear Sciences and Physical Engineering of the CTU when assessing laser and ultrasound-based micropreparation techniques.

Unique equipment:

- DIAGNOCAM 2170 /digital camera system for diagnosis of dental lesions/
- CAD - CAM /technology for producing stomatologic replacements/
- PC tooth arch
- 3D imaging system CBCT I-CAT
- 3SHAPE Trios intraoral scanner
- Stereolithographic 3D printer

Major events in 2021:

- Participation in grant studies:
- Use of Dental Imaging Technologies in Forensic Anthropology;
- Reconstruction of Hard and Soft Tissues in the Orofacial Area (institutional support);
- Plastic and Maxillofacial Surgery in the Context of Forensic Portrait Identification of Persons VIIVS/281;
- In the framework of European cooperation, participation in the following studies:
- Rare Congenital and Developmental Diseases of the Orofacial System ERN CRANIO
- Congenital and Developmental Defects of the Orofacial System (Centre for the CR within the EU)
- Publications:
 - Eliasova H, Dostalova T, Prochazka A, Sediva E, Horacek M, Urbanova P, Hlinakova P. Comparison of 2D OPG image versus orthopantomogram from 3D CBCT from the forensic point of view. Leg Med (Tokyo). 2021 Feb;48:101802. doi: 10.1016/j.legal-med.2020.101802. Epub 2020 Oct 16. PMID: 33478657. IF: 1.376
 - Schwarz M, Ryba L, Křepelová A, Moslerová V, Zelinová M, Turnovec M, Martinková J, Kratochvílová L, Drahanský M, Macek M Jr, Havlovicová M. Zimmermann-Laband syndrome in monozygotic twins with a mild neurobehavioral phenotype lacking gingival overgrowth-A case report of a novel KCNN3 gene variant. Am J Med Genet A. 2021 Dec 14.doi: 10.1002/ajmg.a.62616. Epub ahead of print. PMID: 34907639.IF: 2.802
 - Eliasova H, Dostalova, Urbanova P. A comparison of the precision of 3D images of facial tissues from the forensic point of view. Forensic ImagingVolume 28, March 2022, 200471. ISSN 26662264, DOI:10.1016/j.fri.2021.200471
 - Kříž, P., Dostalova, T.; Smutny, V.; et al. Histo-morphometric analysis of maxillary sinus

lift elevation using the synthetic hydroxyapatite and β -tricalcium phosphate grafting materials *Ceramics-Silicates* 2021, 65 (1), 77-82 doi: 10.13168/cs.2021.0004 IF: 0.940

- Kratochvílová, L., Dostalova, T. Schwarz, M. The options for simplifying the diagnosis and therapy of rare diseases in dentistry using an expert system. *Trilobit*, 2021, 3, 1-15. ISSN 1804-1795
- Poukarova, K., Horacek, M., Moslerova, M., Langova, K. Changes in the soft parts of the face after maxillary expansion. *Ortodoncie*, 2021, 30 (1), 35 - 47. ISSN 1210-4272
- Jelinková, S., Dostálová, T., Dušková, M., Nocar, A., Hrdlička, M. The patient with an autism spectrum disorder - an overview of the three most common treatment methods with a practical guide. *LKS*. 2021; 31(5): 104 – 110. ISSN 1210-3381
- Completion of postgraduate education. Specialization in Orthodontics: MDDr. Nicole Králíčková, MDDr. Veronika Gelnarová, MDDr. Sandra Hilbertová, MDDr. Michal Šimek
- 3.12.2021 Pedostomatology Day was held at the MUH.



Adult Inpatient Part

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

Head - Doc. MUDr. Roman Chmel, Ph.D., MHA

Senior Consultant MUDr. Marek Pluta, Ph.D.

Head Nurse - Iveta Oravcová

Basic description:

The Department of Obstetrics and Gynaecology provides nationwide care in the entire spectrum of gynaecology and obstetrics, including specialized diagnostic examinations and surgical procedures in gynaecological oncology and gynaecological urology, treatment of sexual dysfunctions and treatment of sterility using assisted reproduction techniques. The department is a Perinatology Centre of the highest category, including comprehensive care for delivering extremely premature newborns and delivering foetuses with congenital developmental defects. **In 2020, 6,225 patients were hospitalized at the department and a total of 3,659 surgeries and 71,390 outpatient treatments were carried out. A total of 2,714 births took place at the department, including 43 twin births.**

Specialized outpatient units:

- gynaecological oncology and colposcopy
- gynaecological urology
- outpatient gynaecology for children
- endocrinology
- sexology
- centre of reproductive medicine
- facility for ultrasound diagnostics and fetal medicine

New methods and procedures:

- Since 2015, the department's staff has been taking part in a study to validate a previously unintroduced method of treating infertility in women with absolute uterine factor infertility, i.e. a missing uterus in women with Mayer-Rokitansky-Küster-Hauser syndrome, using experimental uterine transplantation. In 2019 the first two recipients of uterine transplants gave birth to healthy newborns, in one case the pregnancy was from a deceased woman's uterus and in one case from a living donor's uterus.
- Since 2019, there have been over 60 robotic surgeries for gynaecological malignant tumours.

Unique equipment:

- robotic surgical micromanipulator
- laser device for treating benign changes and precancerous lesions of the vulva and vagina

Major events in 2020:

- The department's doctors were authors and co-authors of a total of 10 publications in journals with an IF.

- the most important published scientific papers with first authorship:
- Fronek J, Janousek L, Kristek J, Chlupac J, Pluta M, Novotny R, Maluskova J, Olausson M. Live birth following uterine transplantation from a nulliparous deceased donor. *Transplantation* 2021;105(5):1077-1081 **IF 4.939**
- Balko J, Novackova M, Skapa P, Pastor Z, Chmel R Jr, Zamecnik J, Chmel R. Histopathological examination of the ectocervical biopsy in non-transplanted uteri: A study contributing to the provisional scoring system of subclinical graft rejection after uterus transplantation. *Acta Obstet Gynecol Scand* 2022;101(1):37-45. **IF 3.636**

Part of the Department of Gynaecology and Obstetrics, 2nd Faculty of Medicine, Charles University and MUH is

The Department of Neonatology with Intensive and Resuscitation Care Unit

Senior Consultant doc. MUDr. Jan Janota, Ph.D.

Head Sister Bc. Renata Jungmannová

Basic description:

The Neonatal Unit with an ICU is an integral part of the Type III Perinatology Centre - Perinatology Intensive Care Centre - with a supra-regional scope. The facility provides standard, intermediate and intensive resuscitation care to the full extent, including controlled whole-body hypothermia, nitric oxide administration and all modules of conventional and unconventional artificial pulmonary ventilation. In collaboration with other paediatric fields, it provides comprehensive care for newborns with congenital developmental defects and metabolic disorders. The department provides specialized intensive and resuscitation care for premature babies, in particular to extremely premature babies and all critically ill newborns regardless of their gestational age. Care for physiological newborns, especially under the rooming-in regime, is standard.

In 2021, there were 2,747 live births at the centre, and 40 newborns with birth weights below 1,500g and 230 with birth weights below 2,500g were treated at the department. Intensive, resuscitation or intermediate care was provided to a total of 339 newborns, of which 20% were born outside Motol UH and transported after birth. In 2021 the institutional early neonatal mortality rate without congenital developmental defects was 1.1 per mille. Almost 400 examinations were carried out in the specialized outpatient clinic.

Specialized outpatient units:

- outpatient unit for perinatally endangered children

New methods and procedures:

- A start was made on developing new software and a clinical procedure for optimizing the automatic regulation of inspired oxygen (FiO₂) depending on the needs of the newborn - HbSat (PRICO).
- In cooperation with the Ear, Nose and Throat Department of the 2nd Faculty of Medicine, Charles University and MUH, the programme for early correction of a cleft lip in newborns is ongoing.

Unique equipment:

- Comprehensive equipment for all artificial pulmonary ventilation devices with automatic FiO₂ control depending on HbSat (PRICO)

Major events in 2021:

- Arranging and organizing European Resuscitation Council Neonatal Life Support Courses.
- As part of the cooperation with KARIM Motol UH - concentration of critically ill pregnant women with COVID-19 and deliveries when the pregnant women were critically ill. Births of extremely preterm newborns to mothers with multi-organ failure - artificial pulmonary ventilation and ECMO (2 newborns - both discharged to home care).
- Publications:
 1. Rasmussen MI, Hansen ML, Pichler G, Dempsey E, Pellicer A, El-Khuffash A, A S, Piris-Borregas S, Alsina M, Cetinkaya M, Chalak L, Özkan H, Baserga M, Sirc J, Fuchs H, Ergenekon E, Arruza L, Mathur A, Stocker M, Otero Vaccarello O, Szczapa T, Sarafidis K, Królak-Olejnik B, Memisoglu A, Reigstad H, Rafińska-Ważny E, Hatzidaki E, Peng Z, Gkentzi D, Viellevoe R, De Buyst J, Mastretta E, Wang P, Hahn GH, Bender L, Cornette L, Tkaczyk J, et al. Extremely Preterm Infant Admissions Within the SafeBoosC-III Consortium During the COVID-19 Lockdown. *Front Pediatr*. 2021 Jul 12;9:647880. doi: 10.3389/fped.2021.647880. PMID: 34322460; PMCID: PMC8310995.
 2. Martín-Torres F, Halperin SA, Nolan T, Tapiéro B, Perrett KP, de la Cueva IS, García-Sicilia J, Stranak Z, Vanderkooi OG, Kosina P, Rumlarova S, Virta M, Arribas JMM, Miranda-Valdivieso M, Novas BA, Bozensky J, Ortega MJC, Amador JTR, Baca M, Palomino EE, Zuccotti GV, Janota J, et al. Impact of maternal diphtheria-tetanus-acellular pertussis vaccination on pertussis booster immune responses in toddlers: Follow-up of a randomized trial. *Vaccine*. 2021 Mar 12;39(11):1598-1608. doi: 10.1016/j.vaccine.2021.02.001. Epub 2021 Feb 19. PMID: 33612341.
 3. Miletin J, Stranak Z, Ó Catháin N, Janota J, et al. Comparison of Two Techniques of Superior Vena Cava Flow Measurement in Preterm Infants With Birth Weight <1,250 g in the Transitional Period-Prospective Observational Cohort Study. *Front Pediatr*. 2021 Mar 7;9:661698(12):1002-1011. doi: 10.3389/fped.2021.661698. PMID: 33898366; PMCID: PMC8058217.
 4. Tabery K, Doležalová L, Černý M, Janota J, Zoban P, Štechová K. Feasibility and Safety of Continuous Glucose Monitoring in Infants at Risk of Hypoglycemia in a Rooming-in Setting. *Fetal Pediatr Pathol*. 2021 Jul 5:1-7. doi: 10.1080/15513815.2021.1945716. Epub ahead of print. PMID: 34219588.
 5. Stocker M, van Herk W, El Helou S, Dutta S, Schuerman FABA, van den Tooren-de Groot RK, Wieringa JW, Janota J, et al. Machine Learning Used to Compare the Diagnostic Accuracy of Risk Factors, Clinical Signs and Biomarkers and to Develop a New Prediction Model for Neonatal Early-onset Sepsis. *Pediatr Infect Dis J*. 2021 Sep 9;9(10):2206. doi: 10.1097/INF.0000000000003344. Epub ahead of print. PMID: 34508027.
 6. Stocker M, van Herk W, El Helou S, Dutta S, Schuerman FABA, van den Tooren-de Groot RK, Wieringa JW, Janota J, et al. Cost impact of procalcitonin-guided decision making on duration of antibiotic therapy for suspected early-onset sepsis in neonates. *Crit Care*. 2021 Oct 20;25(1):367. doi: 10.1186/s13054-021-03789-x. PMID: 34670582; PMCID: PMC8529813.
 7. Hayes R, Hartnett J, Semova G, Murray C, Murphy K, Carroll L, Plapp H, Hession L, O'Toole J, McCollum D, Roche E, Jenkins E, Mockler D, Hurley T, McGovern M, Allen J, Meehan J, Plötz FB, Strunk T, de Boode WP, Polin R, Wynn JL, Degtyareva M, Küster H,

Janota J, et al., Infection, Inflammation, Immunology and Immunisation (I4) section of the European Society for Paediatric Research (ESPR). Neonatal sepsis definitions from randomized clinical trials. *Pediatr Res.* 2021 Nov 6;51:107309. doi: 10.1038/s41390-021-01749-3. Epub ahead of print. PMID: 34743180.

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

Head prof. MUDr. Radan Keil, Ph.D. (od 1.7.2020)

Senior Consultant MUDr. Jindra Lochmannová

Head Nurse - Mgr. Kateřina Lisová

Basic description:

The Department of Internal Medicine provides comprehensive diagnostics and therapeutic care in the entire range of internal medicine to hospitalized patients and outpatients from the region and medical consultation services to patients from the entire CR. The department provides pregraduate tuition for Czech and foreign students in grades 3 - 6 at the 2nd Faculty of Medicine, Charles University, and postgraduate tuition in the framework of the specialization. The department is a training centre for physicians prior to postgraduate certification in internal medicine, gastroenterology, diabetology/endokrinology, nephrology, intensive metabolic care and parenteral and enteral nutrition. The department is a teaching centre for candidates of endoscopic methods and also a course of abdominal sonography with the subsequent possibility of being licenced, guaranteed by the ČLK. **In 2021, 57,958 patients were treated in the outpatient section and 5,283 patients were admitted. IK carries out over 6000 endoscopic procedures per year.** In the field of ERCP, our facility has the highest number of procedures among adult and paediatric patients in the entire CR.

Specialized outpatient units:

- general internal medicine (including medical consultation)
- gastroenterology (including endoscopy and sonography)
- 24-hour service for urgent endoscopic procedures (ERCP, gastroscopy, colonoscopy)
- diabetology
- podiatric
- cardiology (including ECHO)
- angiology (including DUS examination of arteries and veins)
- nephrology (including peritoneal dialysis)
- nutritional (including obesitology)
- lipidology
- endocrinology
- Centre for vascular access
- Centre for the biological treatment of non-specific intestinal inflammation
- Centre for treating viral hepatitis

New methods and procedures:

- The IK Endoscopy Centre is developing a new method of spiral motorized enteroscopy. This concerns an endoscopic technique that allows a large part, sometimes even the entire small intestine to be examined and treated endoscopically.
- The endoscopy centre carries out enteroscopic capsule examinations using radially mounted cameras and without the need for a Capsovision recorder for the diagnosis and treatment of diseases of the small intestine.

- We continue to expand the use of Spyglass cholangioscopy in the diagnosis and therapy of diseases of the biliary tract and pancreatic system.
- The centre for treating chronic hepatitis and other liver diseases uses obeticholic acid (Ocaliva) therapy. This financially demanding centric therapy offers a new treatment option for patients with primary biliary cirrhosis.
- JAK inhibitor therapy (Xeljanz) is used to treat non-specific intestinal inflammation. This expands the options for ulcerative colitis patients with no other options for therapy.
- To increase the availability and safety of stool transplantation (fecal bacteriotherapy) performed at the department, an in-house stool bank has been opened.
- An interdisciplinary specific sonographic investigation of carotid artery compliance in patients with diabetes mellitus and renal damage is being developed at the department.
- The centre for vascular access has dramatically increased the number of elective vascular insertions in inpatients and outpatients (a total of 3115 in 2021). There have been no major complications, as all insertions are made using US navigation. The largest number of PICC catheters (1324) was in transplant patients, and then in patients with COVID-19.
- Bronchoscopic diagnosis and treatment of ALV patients is routinely carried out at the MICU, as are bed-side ECHO examinations of patients in intensive care.
- Sonographic investigation of the A-V shunts continues.
- The department uses laptops at each station, which are used to carry out rounds and take notes, at the same time they allow the results of laboratory and auxiliary examinations, incl. X-ray findings, to be viewed directly at the patient's bedside. This replaces rounds using paper documentation.
- Regular sectional multidisciplinary seminars, in association with the MUH's Department of Radiology and the Institute of Pathology, are continuing.
- In the diabetic outpatient clinic, patients with type 1 diabetes have started to use insulin pumps with the hybrid closed loop system - the pump automatically doses insulin according to the glycaemia detected by a subcutaneous glucose sensor. This leads to a significant improvement in offsetting diabetes.
- The Nephrology Department expanded the method of therapeutic rheopheresis to patients with age-related macular degeneration.

Unique equipment:

- The AIRVO 2 nasal high flow system (Fischer-Paykel) is still used – the version offering non-invasive ventilation support for extubation in patients with respiratory insufficiency. It improves the quality of their care, shows a significantly lower risk of reintubation and shortens the unstable state.
- The department makes extensive use of an echocardiography/sonography device from Vivid, aimed at a better examination of the heart and peripheral vascular system.

Major events in 2021:

- For most of the year, the Internal Clinic was fundamentally affected by the epidemic of the new SARS-CoV-2 coronavirus - especially by the allocation of one entire inpatient ward for patients with Covid-19, as well as additional expectoration beds at other stations of the clinic.

- From 24 - 25 September 2021, another annual congress „Prague Autumn Working Gastroenterology Days“ was held in the lecture rooms of Motol University Hospital. The event was attended by more than 200 participants and was organized by the President of the Gastroenterological Association of the CR Prof. MUDr. Radan Keil, Ph.D. and his colleagues from the Department of Internal Medicine.
- MUDr. Denisa Janíčková-Žďárská, Ph.D. was appointed senior lecturer of Internal Medicine. MUDr. Šárka Malá, Ph.D. successfully completed her postgraduate studies.
- MUDr. Martin Souček continues to participate in the study of the T2 system concerning a device for rapid pathogen detection in blood, this is in cooperation with the Institute of Microbiology, the Department of Emergency Admission and the workplace in Vienna.
- MUDr. Jan Masopust was appointed head physician of the nutrition team for the adult section of Motol UH.
- The department's team of doctors prepared to publish the book „Emergencies in Internal Medicine from the Standpoint of an Internist“
- The Diabetes Centre continued its regular re-education courses for patients and continued its cooperation with the CTU, which resulted in several publications on using various mathematical models to predict the development of glycaemia in patients.
- Publications:
 - 1. Bhatt DL, Szarek M, Pitt B, Cannon CP, Leiter LA, McGuire DK, Lewis JB, Riddle MC, Inzucchi SE, Kosiborod MN, Cherney DZI, Dwyer JP, Scirica BM, Bailey CJ, Díaz R, Ray KK, Udell JA, Lopes RD, Lapuerta P, Steg PG; SCORED Investigators (Kvapil M): Sotagliflozin in Patients with Diabetes and Chronic Kidney Disease. *N Engl J Med.* 2021 Jan 14;384(2):129-139. PMID: 33200891. public 1. ISSN 0028-4793. **IF: 74.699.**
 - 2nd Bittnar P, Šťovíček J, Hlava Š, Kolář P, Arlt J, Arltová M, Madle K, Busch A, Kobesová A: Manual Cervical Traction and Trunk Stabilisation Cause Significant Changes in the Upper and Lower Esophageal Sphincter: A Randomized Trial. *J Manipulative Physiol Ther.* 2021 May;44(4):344-351. public 28. PMID: 34090551. ISSN 0167-4754. **IF: 1.437.**
 - 3. Brož J: Hypoglycemia as a medication-related harm identified in patients admitted to geriatric wards. *Polish Archives of Internal Medicine* 2021;131(3):313-314. public 2. ISSN: 0032-3772. PMID 33783175. **IF: 3.007.**
 - 4. Brož J, Campbell MD, Urbanová J, Nunes MA, Brunerová L, Rahelic D, Janíčková Žďárská D, Tainwall A, Brabec M, Berka V, Michalec J, Polák J: Characterization of Individualized Glycemic Excursions During a Standardized Bout of Hypoglycemia – Inducing Exercise and Subsequent Hypoglycemia Treatment – A Pilot Study *Nutrients* 2021;13(11):4165. public 40. ISSN: 2072-6643. PMID: 34836420. Grant 64203. **IF: 5.717.**
 - 5. Brož J, Pelechová B, Vejtasová V, Malinová J: Diabetes and masked hypertension *Prim Care Diabetes* 2021;15(5):890-891. public 31. ISSN: 1878-0210. PMID: 33994154. **IF: 2.459.**
 - 6. Brož J: Lipodystrophy related to insulin injection – an often overlooked disorder *Wien Klin Wochenschr* 2021;133(9-10):511-512. public 11. PMID: 33629170. ISSN 0043-5325. **IF: 1.323.**
 - 7. Brož J, Brožová K: Hypoglycemia Communication in Primary Care *J Gen Intern Med* 2021;36(8):2473. public 19. PMID: 34013469. ISSN:0884-8734. **IF: 5.128.**
 - 8. Brož J, Brožová K: Impaired awareness of hypoglycemia in a study protocol *Res Social*

- Adm Pharm 2021;17(10):1847. public 29. ISSN: 1551-7411. PMID: 33579612. **IF: 3.336.**
- 9. Brož J, Brožová K: Gestational diabetes, metformin, and risk of hypoglycemia. *Am J Obstet Gynecol* 2021 Sep;225(3):351-352. public 30. ISSN: 0002-9378. PMID: 34051166. **IF: 8.661.**
- 10. Brož J: Clinical efficacy of a smartphone-based integrated online real-time diabetes care system in Type 2 diabetes patients. *Internal Medicine Journal* 2021;51:464. public 3. ISSN 1444-0903. PMID 33738933. **IF: 1.677.**
- 11. Brož J, Janíčková Žďárská D, Urbanová J, Piřhová P, Doničová V, Pálová S, Pelechová B, Smrřžová A, Kvapil M: Insulin Management of Patients with Inadequately Controlled Type 2 Diabetes Admitted to Hospital: Titration Patterns and Frequency of Hypoglycemia as Results of a Prospective Observational Study (Hospital Study). *Diabetes Ther* 2021;12(7):1799-1808. public 19. PMID: 34028699. ISSN: 1869-6961. **IF: 2.945.**
- 12. Brož J: Metabolic syndrome and postoperative thyroidectomy outcomes. *Head Neck* 2021;43(6):1971-1972. public 9. ISSN: 1043-3074. PMID: 33634526. **IF: 2.538.**
- 13. Dřevínek P, Hurych J, Antušková M, Tkadlec J, Berousek J, Přikrylová Z, Bureš J, Vajter J, Souček M, Masopust J, Martinková V, Adámková J, Hyšperská V, Běrbrová E: Direct detection of ESCAPEc pathogens from whole blood using the T2Bacteria Panel allows early antimicrobial stewardship intervention in patients with sepsis *Microbiologyopen* 2021 Jun;10(3):e1210. ISSN: 2045-8827. PMID 34180598. public 46. **IF: 3.14.**
- 14. Fejfarová V, Matuška J, Jude E, Piřhová P, Flekač M, Roztočil K, Wosková V, Dubský M, Jirkovská A, Bém R, Husáková J, Lánská V: Stimulation TcPO2 Testing Improves Diagnosis of Peripheral Arterial Disease in Patients With Diabetic Foot. *Front Endocrinol* 2021;12: 744195. public 43. ISSN: 1664-2392. PMID: 34956078. **IF: 5.555.**
- 15. Gonzales-Rivas JP, Mechanick JI, Infante-Garcia MM, Medina-Inojosa JR, Pavlovska I, Hlinomaz O, Zak P, Kunzova Š, Nieto-Martinez R, Skladaná M, Brož J, Hernandez JP, Lopez-Jimenez F, Stokin GB: The Prevalence of Dysglycemia-Based Chronic Disease in a European Population – a New Paradigm to Address Diabetes Burden: The KardioVize Study. *Endocr Pract* 2021;27(5):455-462. public 8. PMID: 33685667. ISSN: 1530-891X. **IF: 3.869.**
- 16. Gonzales-Rivas JP, Mechanick JI, Infante-Garcia MM, Medina-Inojosa JR, Pavlovska I, Hlinomaz O, Zak P, Kunzova Š, Nieto-Martinez R, Skladaná M, Brož J, Hernandez JP, Lopez-Jimenez F, Stokin GB: Prevalence of adiposity-based chronic disease in middle-aged adults from Czech Republic: The KardioVize Study. *Obes Sci Pract* 2021;7(5):535-544. public 36. ISSN 2055-2238. PMID: 34631132. **IF: 2.037.**

The department includes the 6th Unit - Infection

Chief Physician - MUDr. Martin Tulach

Basic description:

The Infection Department provides outpatient and inpatient care to patients suffering from infectious diseases or patients with suspicion of these diseases. The department diagnoses and treats febrile conditions, infections of the respiratory tract, bloodstream, soft tissues, infections of the nerves, acute infections of the gastrointestinal tract, including acute and chronic infectious inflammations of the liver, imported infections, etc. The department provides care for adults and children from three years of age. The department has 23 beds, including one isolation box, and 3 beds for intermediary care. **In 2021, 3,198 patients were treated in the outpatient section and 577 patients were admitted (of which 11 were addicts).**

Specialized outpatient units:

- general outpatient unit for infectious diseases
- centre for treatment of viral hepatitis
- centre for travel medicine (including the inoculation outpatient unit)
- infection centre for drug addicts

New methods and procedures:

- The facility continues interferon-free treatment of chronic viral hepatitis C with direct-acting, new-generation virostatics. In the last year there are 3 new pangenotypic combined preparations (elbasvir + grazoprevir, sofosbuvir + velpatasvir, glecaprevir + pibrentasvir). In 2021, 32 patients were treated and cured, the success rate so far appears to be 100% (no patient has yet to complete follow up).

Unique equipment:

- A UV air scrubber for spatial disinfection - a gift from Blockrs
- 5 AirVo2 high flow nasal oxygenation (HFNO) devices

Major events in 2021:

- The 6th clinic-Infection was converted to a covid oxygenation unit.
- MUDr. Tulach and MUDr. Mesežnikov took part in the international Arcadia study with AZD1615 in diabetic patients with COVID-19.

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

head doc. MUDr. Alan Stolz, Ph.D, MBA
Senior Consultant MUDr. Filip Pazdírek
Head Nurse - Bc. Jitka Kabrnová

Basic description:

The department provides comprehensive care in the field of general surgery, oncosurgery, with a focus on abdominal surgery, coloproctology, endocrinology, breast surgery and reconstructive and plastic surgery. Emphasis is placed on minimally invasive surgery, laparoscopic and robotic surgery. In 2021, the department successfully launched a one-day surgery programme. The department also has a section for plastic and reconstructive surgery. Colorectal surgery has seen a significant increase in minimally invasive procedures compared to previous years. The amount of robotic surgery, laparoscopy and TEM (transanal endoscopic microsurgery) is increasing. Besides rectal tumours, the robotic system is now also used in the surgical treatment of colon tumours. The department takes part in the international system of quality control for care in colorectal surgery as part of the European Society of Coloproctology (ESCP) audits. The facility takes part in training ostomy nurses within the region of the Czech Republic. The surgical department is the only centre in the CR and Slovakia to provide comprehensive surgical treatment including differential diagnosis of lymphatic drainage disorders. The number of breast surgeries, including reconstructive surgeries, is gradually increasing. The department is involved in pregraduate and postgraduate tuition and is actively involved in research projects.

In 2021, 14,234 patients were treated within the outpatient section and 2,025 patients were treated in OUPD, 3,256 patients were hospitalized and surgeries were performed on 3,108 patients.

Specialized outpatient units:

- proctological advisory centre
- advisory centre for ostomates - educational and training centre for ostomates
- advisory centre for diseases of the pancreas and bile duct
- advisory centre for malignant melanomas
- advisory centre for endocrinological surgery
- mammalogical advisory centre
- advisory centre for lymphedema
- endoscopy, anorectal manometry
- plastic surgery

New methods and procedures:

- robotic resection of the rectum for tumour
- robotic resection of the colon for tumour
- the technique of microscopically sutured lymph node anastomosis has been introduced, preparation for lymph node autotransplantation
- the introduction of multimodal perioperative care (ERAS) in the colorectal programme

Unique equipment:

- taking part in using the DaVinci robotic system for surgery on rectal and colon tumours
- LigaSure – use in conventional and laparoscopic surgery
- scintillation probe for identification of the sentinel node during surgeries of the breasts and malignant melanomas
- ultrasonic dissector
- surgical rectoscope with microsurgical instruments
- DG HAL set
- surgical method for anastomotic perfusion control, ICG
- system for functional examination of the anorectum

Major events in 2021:

- The MUH project “Modern Technologies” - nanofibre technology continued
- Adopting a clinical protocol to reduce surgical site infection in for planned operations on the colon and rectum (IMOV protocol)
- Continuation of the ERAS project (protocol for multimodal perioperative care in colorectal surgery). It is planned to extend it to pre-hospital care with the aim of standardizing preoperative preparation. Emphasis is placed on improving nutrition, correcting anaemia, increasing cardiovascular capacity and educating patients before the planned procedure). Following the modification of the ERAS protocol, there is a plan to build a colorectal surgery training centre.
- Grant Erasmus+: 2020-1-ES01-KA203-082681: European perioperative medical networking, 2020-2022, main researcher as. MUDr. Petr Kocián, Ph.D.
- International project ESCP Safe-anastomosis Programme in Colorectal Surgery (EAGLE Study), a multicentre study aimed at reducing the incidence of intestinal anastomosis complications after right-sided resection operations, 2019-2020.

- Publications:
 - Should minimally invasive approaches in rectal surgery be regarded as a key element of modern enhanced recovery perioperative care? Kocián P, Pazdírek F, Přikryl P, Vymazal T, Hoch J, Whitley A. Acta Chir Belg. 2021 Aug 30:1-7

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

Centre for Cardiovascular, Thoracoabdominal and Transplant Surgery, Motol UH

Head - prof. MUDr. Robert Lischke, Ph.D.
Senior Consultant MUDr. Jiří Tvrdoň
Head Sister Mgr. Ida Šmolíková

Basic description:

The department is the largest facility focusing on chest surgery in the CR - a high excellence centre providing comprehensive care in chest surgery (surgery of the lungs, trachea and airways, chest wall and deformities of the chest, oesophagus (the largest centre in the CR), mediastinum, myasthenia gravis, diaphragm). **The department is the only centre in the CR performing lung transplantation. Since 2018, it has been providing lung transplants for the Slovak Republic. It is the only centre with accreditation for grade II chest surgery. The centre provides care in abdominal surgery in the entire spectrum of activities** (surgery of gastroesophageal reflux, diaphragmatic hernia, oesophageal achalasia, surgery on the stomach and small intestine, liver, bile ducts and pancreas, surgery on the large intestine and rectum, hernia surgeries, minimally invasive laparoscopic techniques, traumatology of the chest and abdomen and endocrine surgery). **The department centralizes patients with soft tissue sarcomas. In 2021, 3,141 surgeries were carried out, 3,044 patients were admitted and 25,581 patients were treated in the outpatient section. There were 52 lung transplants (a high-volume centre, of which there are only 6 in Europe).**

Specialized centres:

- National Lung Transplantation Centre for the Czech and Slovak Republics
- Motol UH Pneumo-Onco-Surgery Centre
- Centre for the Treatment of Soft Tissue Sarcomas, Motol UH
- Centre for Cardiovascular, Thoracoabdominal and Transplant Surgery, Motol UH

Specialized outpatient units:

- outpatient unit for lung transplantation
- outpatient unit for one-day surgeries
- outpatient unit for diseases of the bowel and rectum
- outpatient unit for endocrine surgery
- outpatient unit for diseases of lower limb veins
- outpatient unit for diseases of liver, bile duct and pancreas
- outpatient unit for surgery of soft tissue sarcomas
- outpatient unit for diseases of esophagus and stomach
- outpatient unit for diseases of lungs, mediastinum and chest wall
- outpatient unit for diseases of breast
- internal medicine outpatient unit

New methods and procedures:

- Preparation and introduction of the Ex vivo pulmonary perfusion and reconditioning programme in the clinical practice, method leading to increased number of suitable grafts for lung transplantation;
- Lung transplantation programme from DCD donors (donors with circulation failure);
- Heart-lung block transplantation programme in cooperation with IKEM;
- Introduction of endoscopic application of absorbable stents for diseases of esophagus, stomach and airways.
- Robotic surgery of the lungs, thymus and oesophagus - the only workplace in the CR, robotic surgery of the colon and rectum

Unique equipment:

- ECMO and Ex vivo perfusion of the lung
- the DaVinci robotic system
- dissection and electrocoagulation techniques, including harmonic scalpel and LigaSure in conventional and laparoscopic surgery
- 3D instruments – for laparoscopic and video-assisted thoracoscopic surgery
- ICG laparoscopy tower

Major events in 2021:

- In 2021, we continued with an international study led by a Canadian research centre (University of Alberta) that has developed a new diagnostic system, a Molecular Microscope, which can be used to interpret transbronchial biopsies after lung Tx based on molecular phenotype. The results were presented at the Congress of the International Society for Heart and Lung Transplantation and published in prestigious journals.
- 500th lung transplant carried out;
- Awarded an Honorary Recognition by the Director of the Motol University Hospital for developing the National Lung TX Programme;
- The director of MUH made a decision to set up the MUH Centre for Cardiovascular, Thoracoabdominal and Transplant Surgery.

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

Head - prof. MUDr. Josef Veselka, FESC, FSCAI, FICA
Senior Consultant MUDr. Jiří Vejvoda,
Head Nurse - Jana Kovalčíková

Basic description:

The facility provides comprehensive cardiologic care to hospitalized patients and outpatients. It is linked directly to the unit of heart surgery and angiosurgery. **In 2021, more than 17,000 patients were treated in the outpatient section and almost 4,500 patients were admitted. 2,740 selective coronary catheterizations, 909 percutaneous coronary interventions, 610 catheterization examinations of peripheral arteries, 130 catheterization implantations of aortic valves, more than 7,653 echocardiographic examinations, 311 radiofrequency ablations of arrhythmia, 179 catheterization isolation of pulmonary veins, 232 implantations of permanent cardiac stimulators, 125 implantations of ICD and 2,466 duplex ultrasound examinations of peripheral veins were performed.** Even in this exceedingly challenging year, we managed to provide our patients with care at a very high professional level.

Specialized outpatient units:

- outpatient unit for acquired and congenital heart defects
- outpatient unit for heart failure
- outpatient unit for hypertrophic cardiomyopathy
- outpatient unit for electrophysiology and cardiac stimulation
- angiology outpatient unit
- lipidology outpatient unit

New methods and procedures:

- Catheterization implantation of a biological valve into the aortic position without implanting a temporary pacemaker
- The programme for mechanical circulation support (ECMO - extra-corporeal membrane oxygenation) continued
- Optic coherent tomography
- Intravascular spectroscopy
- Alcohol septal ablation - the largest set in the CR
- Carotid stenting - the largest set in the CR
- Use of the proximal protection system in stent implantation into the carotid system
- Catheterization occlusion of ventricular septum defects and patent foramen ovale
- Catheterization closure of the left ventricle
- Catheterization occlusion of paravalvular leaks
- Comprehensive solution of rhythm dysfunctions using 3D electroanatomic mapping
- Selective left brachial artery pacing and His bundle pacing during a permanent pacemaker implantation
- Radiofrequency ablation using catheters with pressure measurement
- Expanding the catheterization programme for atrial fibrillation
- Subcutaneous cardioverter/defibrillator implantation
- Extraction of the stimulation system
- Development of telemedicine, remote monitoring of patients with cardiac stimulators and defibrillators
- Expanding the use of Fractional Flow Reserve assessment in patients
- with stable AP and borderline angiographic findings
- A unique method for a genetic examination of patients with cardiomyopathy using new generation sequencing allowing the simultaneous examination of a large number of genes

Unique equipment:

- Optic coherent tomography
- CARTO, EnSite Velocity – 3D electroanatomic mapping
- Echocardiographic device with the option of 3D oesophageal echocardiography
- Echocardiographic device with the option of intracranial echocardiography
- Intravascular ultrasound with infrared spectroscopy
- A device for measuring peripheral blood pressure Huntleigh Dopplex Ability
- AIRVO 2 Nasal High flow – non-invasive ventilation support
- Continuous renal function replacement - the multiFiltratePRO Fresenius system
- Olympus bronchoscopy device for intensive care
- A modern spiroergometric device

Major events in 2021:

- We published 26 articles, 23 of them in journals with IF (18 times the 1st author from our clinic).
- Prof. Veselka, MUDr. Honěk, MUDr. Horváth, MUDr. Kala, MUDr. Štěchovský, MUDr. Bonaventura a MUDr. Polaková presented their communications at the XXIX Virtual Annual Congress of the Czech Society of Cardiology.
- Doctors from our department presented 6 out of 13 papers entered in the competition The Best of Czech Cardiology held at the XXIXth Annual Congress of the Czech Society of Cardiology. The publication from MUDr. Hoňka "Patent Foramen Ovale Closure Is Effective in Divers: Long-Term Results From the DIVE-PFO Registry" (J Am Coll Cardiol, IF 20,6) was announced the best in this section.
- In the Competition of Young Cardiologists organized within the XXIXth Annual Congress of the Czech Society of Cardiology, MUDr. Kala won first place and MUDr. Štěchovský came third.
- We organized four „HotCardiology“ webinars with lectures and live streams from the catheterization room.
- On 12.6.2021 we organized Prague Intervention XIV, an annual interdisciplinary conference.
- On 3.12.2021 a workshop „Catheterization Treatment of Arrhythmias“ was held at the department.
- MUDr. Bonaventura defended his dissertation.
- 660 patients have been enrolled in the carotid stenting registry and 260 patients have been enrolled in the alcohol septal ablation registry.
- Under the leadership of the head nurse, Mgr. Kovalčíková, a national 14th specialized educational conference of the Czech Cardiological Society, Working Group of Cardiology Nurses and Related Professions Focused on Current Cardiological Issues (Listopadka) with the active participation of the department's nurses.

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

Head - assoc. prof. MUDr. Vilém Rohn

Senior Consultant MUDr. Radovan Fiala, Ph.D. / until 31.10. MUDr. Milan Horn,

Head Nurse: Mgr. Barbora Kolářová, MSc.

Basic description:

The department provides comprehensive care in cardiac surgery and vascular surgery. It provides non-stop surgical emergency service for all urgent diseases of the cardiovascular system, including traumas and thoracic and abdominal aortic surgery. The clinic includes an organ perfusion department that provides extracorporeal circulation including ECMO (extracorporeal membrane oxygenation) for the entire hospital in the adult section.

In 2021, the clinic was assigned to caring for patients with the most severe COVID-19. Forty-two patients with respiratory insufficiency caused by COVID-19 were admitted to the ICU on artificial pulmonary ventilation. Twelve of them needed ECMO support. Caring for these patients took up a large part of the inpatient and staff capacity. 4,940 patients were treated as outpatients in cardiovascular surgery and a total of 836 major operations were carried out, including 342 heart operations (52 for adult congenital heart disease) and 494 vascular operations. In all, the team carried out 132 extracorporeal membrane oxygenations (ECMO) in patients with respiratory insufficiency due to COVID-19 or as a support for lung transplantation.

Specialized outpatient units:

- cardiology
- cardiac surgery
- vascular
- for congenital heart defects in adulthood
- for patients after surgical treatment of infectious endocarditis

New methods and procedures:

- Minimally invasive surgeries of the aortal valve, use of suture free valve replacements;
- Video-assisted minimally invasive surgery of some congenital heart defects (such as the defect of the ventricular septum, resynchronization therapy);
- Reconstructive (salvage) aortic valve surgery including reconstruction using the Ozaki technique;
- Extraaortic stent use in patients with Marfan syndrome;
- Surgery on thoracoabdominal aortic aneurysms;
- Plastic and salvage surgeries on the aortic valve.

Unique equipment:

- devices for ECMO – PLS and HLS devices allowing non-stop mechanical cardiac or pulmonary support

Major events in 2021:

- We have published 13 articles in professional journals and 1 chapter in a monograph. Nine of these papers were published in foreign journals with an impact factor.

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

Head - prof. MUDr. Petr Vlček, MHA

Senior Consultant MUDr. Kateřina Táborská

Head Nurse - Jana Richterová

Basic description:

The Department of Nuclear Medicine and Endocrinology is an interdisciplinary facility of nuclear medicine and endocrinology focusing on standard diagnostics using radioisotope methods, as well as diagnostics, treatment and follow-up of differentiated thyroid carcinoma, serious forms of thyroidal orbitopathy and on therapy of 131I-MIBG from the entire CR. The department is also an educational facility - it is accredited for endocrinology and diabetology and nuclear medicine. The department is a centre for the treatment of thyroidal autoimmune orbitopathy with growth hormone inhibitors, diagnostics and therapy of advanced forms of differentiated carcinoma of the thyroid using human recombinant TSH (Thyrogen) and for the treatment of neuroendocrine tumors using radiopharmaceutical 131I-MIBG (as the only centre in the Czech Republic).

Specialized outpatient units:

- endocrinology specializing in differentiated carcinoma of the thyroid, the unit is following up on more than 18,600 patients (one of the largest sets worldwide)
- advisory centre for micro-carcinomas of the thyroid (MDTC)

- advisory centre for medular thyroidal carcinoma (MTC)
- advisory centre for thyroidal autoimmune orbitopathy (TAO)
- outpatient unit for nuclear medicine

New methods and procedures:

- Diagnostics using the hybrid method combining X-ray (CT) and isotope (SPECT) imaging;
- Implementation of individual dosimetry in diagnostic and therapeutic procedures in paediatric and high-risk patients with advanced carcinoma of the thyroid;
- The department ensures in cooperation with the Department of Oncology, 2nd Faculty of Medicine, Charles University and MUH targeted biological treatment of radio-iodine refractory thyroidal carcinomas;
- Arranging genetic examination for patients with the familial form of the medular carcinoma of the thyroid and patients with papillary carcinoma of the thyroid in cooperation with the Institute of Endocrinology in Prague;
- In cooperation with the Department of Paediatric Haematology and Oncology at MUH and Brno UH, patients with high-risk neuroblastomas were treated with the combination 131I-MIBG according to the MATIN protocol with full-body dosimetry.
- Introduction of the application of alpha emitters in the treatment of patients with castration resistant prostate cancer.
- Reconstructing and modernizing the inpatient ward's storage containers for radioactive waste.

Major events in 2021:

- A new therapeutic method was introduced - administering LUTATHERA 177Lu-DO-TATATE (oxodotreotide) a radiopharmaceutical to treat inoperable or metastatic, progressive and well-differentiated (G1 and G2) gastroenteropancreatic neuroendocrine tumour (GEP-NET) that progresses on treatment with somatostatin analogues.

Department of Otorhinolaryngology and Head and Neck Surgery, 1st Faculty of Medicine, Charles University and MUH

Head - prof. MUDr. Jan Plzák, Ph.D.

Senior Consultant MUDr. Jan Kluh

Head Nurse - Jitka Hovorková

Basic description:

The department provides the full spectrum of examinations and treatments of diseases from the ENT specialization. Surgical procedures are carried out in the full extent, including the most specialized procedures, which are performed in many cases for the entire Czech Republic.

In 2021, 2,526 surgical procedures were performed at the department and 240 of these surgeries were carried out on patients outside the department's operating theatres. Conventional subjective tonal audiometry was carried out on 3,213 patients. Objective audiometry was performed in 186 patients, an examination of the balance system was carried out in 640 cases, an ENG examination and a examination of vestibular myogenous potentials was carried out on 560 patients. The examination for indication of rehabilitation of hearing using hearing aids or alternation of the existing rehabilitation was carried out on 253 patients and 53 hearing aids were issued.

Specialized outpatient units:

- oncology outpatient unit
- cophosurgery outpatient unit
- rhinology outpatient unit
- endocrine surgery outpatient unit
- otoneurology outpatient unit
- outpatient unit for correction of hearing defects - hearing aids
- laryngeal and phonosurgical outpatient unit
- outpatient unit for rehabilitation of voice - voice prostheses
- outpatient unit for sleep disorders and snoring
- sonography outpatient unit
- outpatient unit for diseases of the salivary glands
- outpatient unit for swallowing defects
- outpatient unit of neurosurgery and diseases of the cranial base
- phoniatics outpatient unit

Specialized centres:

- centre for laser surgery
- centre for surgery of the thyroid and parathyroid glands
- centre for cochlear implants
- centre for oncological surgery of the head and neck
- centre for rehabilitation of patients after total laryngectomy
- centre for electronic hearing replacements
- centre for salivary gland diseases
- centre for treatment of sleep insufficiency
- centre for swallowing disorders with multidisciplinary cooperation

New methods and procedures:

- Use of the Montgomery salivary bypass tube after resection and reconstruction procedures following oncological procedures due to tumors in the head and neck;
- Augmentation of the vocal cords with Radiesse;
- Treatment of patients with sleep apnea using the DISE method (Drug Induced Sleep Endoscopy);
- Treatment of the Frey syndrome with botulinum toxin;
- CODACS the first surgery with this type of cochlear implant in the Czech Republic;
- Endoscopic approaches to removal of tumors in the inner ear canal;
- Perioperative neuromonitoring;
- Fiberoptic endoscopic evaluation of swallowing with functional assessment (FEES);
- Extended microsurgery of tumors in secondary nasal cavities and cranial basis using guidance;
- Examination of myogenous vestibular potentials /VEMP/ in patients with balance disorders;
- Endoscopic surgery of esophageal diverticulum;
- Endoscopic diagnostics of tumors in airways and swallowing system using NBI;
- Endoscopic examination of the salivary glands and endoscopic treatment of the sialolithiasis;

- Use of an exoscope in posterior cranial fossa surgery, phonosurgery and traditional ear surgery;
- Rehabilitation of patients after total laryngectomy with synthetic voice recording in cooperation with the West Bohemian University in Pilsen – department of cybernetics.

Unique equipment:

- CO2 Laser, Dioxi Laser, Thulium laser, argon plasma coagulation
- harmonic scalpel, radiofrequency scalpel, shaver
- endoscopic equipment for minimally invasive procedures on the thyroid and in surgeries of the cranial base and the inner ear canal
- video-stroboscopy, video ENG
- NBI in early diagnosis of tumors
- neuronavigation
- video-endoscopy of the salivary glands
- micro-shaver and laser for stapedial ear surgery
- Interacoustics EyeSeeCam vHIT
- the ICS Chartr 200 system allowing examination with infrared glasses (VNG vestibulometry), as well as detecting nystagmus with electrodes (ENG vestibulometry).
- Surgical exoscope

Major events in 2021:

- The clinic organized or co-organized a number of events in which some of those actively taking part were undergraduate and postgraduate students.
- Besides a number of IPVZ courses, the department co-organized, 30.9. - 2.10. 2021, the Znojmo International Conference of the Czech Head and Neck Cancer Cooperative Group. The department took part in its organization and the professional programme.
- Awards/education obtained:
 - MUDr. Zdeněk Čada, Ph.D. was appointed senior lecturer in Otorhinolaryngology.
 - MUDr. Simona Simonidesová, Ph.D. successfully completed her doctoral studies and thus obtained the academic-scientific title “Ph.D.”
 - The Otorhinolaryngology and Phoniatics 2020 Award in the Case Reporting category for the publication: Lazák J., Kalfeřt D., Krsková L., Lisý J., Mrhalová M., Prouzová Z., Plzák J.: Nodular fasciitis of the right cheek with evidence of MYH9-USP6 fusion gene. *Otorinolaryng. and Phoniatic. /Prague/, 69, 2020, No. 1, pp. 40-44.*
 - Kutvirtova Award 2020, under 35 category: Malerova S, Hejtmankova A, Hamsikova E, et al.: Prevalence and Risk Factors for Oral HPV in Healthy Population, in Central Europe. *ANTICANCER RESEARCH, 40: 1597-1604 (2020), doi:10.21873/anticancer.14107, IF = 1.99*
 - Kutvirtova Award for 2020, over 35 category: Kalfeřt D, Ludvíková M, Pesta M, et al.: Multifunctional Roles of miR-34a in Cancer: A Review with the Emphasis on Head and Neck Squamous Cell Carcinoma and Thyroid Cancer with Clinical Implications. *Diagnostics (Basel), 2020;10(8):563. doi:10.3390/diagnostics10080563*

Department of Spinal Surgery, 1st Faculty of Medicine, Charles University and Motol UH

Head - prof. MUDr. Jan Štulík

Senior Consultant - MUDr. Jan Kryl

Head Nurse - Dagmar Šeborová

Basic description:

Specialized department with national operation for the treatment of injuries and diseases of the spine, including consequences in children and adults (acute spinal fractures and addressing their consequences, primary and secondary tumors, degenerative defects, inflammatory diseases, congenital and acquired deformities). **In 2021, 1,416 patients underwent surgery, 1,472 patients were admitted, 13,337 patients were treated in the outpatient unit of spondylosurgery and the Centre for Conservative Therapy treated 2,283 patients.**

Specialized outpatient units:

- outpatient unit for treatment of spinal injuries and diseases
- scoliotic advisory centre for children
- centre for conservative therapy

New methods and procedures:

- total spondylectomy of the second cervical vertebra

Unique equipment:

- operational 3D exoscope with camera system
- Prusa 3D printer

Major events in 2021:

- Publications:
 - Dental anatomy in childhood and its influence on fracture treatment. An anatomical and radiological study. XIXth Annual Congress of the Czech Spondylosurgical Society, Špindlerův Mlýn (dtto 42nd Symposium of the Orthopaedic Dept. of the 1st Faculty of Medicine, Charles University and the IPVZ, Bulovka UH, Prague)
 - Main author: MUDr. Lucie Salavcová, Co-author: MUDr. Gábor Geri
 - Quality of life and sagittal balance after complete reduction and single-level circumferential fusion for high-grade developmental spondylolisthesis in adolescents. XIXth Annual Congress of the Czech Spondylosurgical Society, Špindlerův Mlýn (dtto 42nd Symposium of the Orthopaedic Dept. of the 1st Faculty of Medicine, Charles University and the IPVZ, Bulovka UH, Prague; Main author: MUDr. Gábor Geri
 - Dental anatomy and its influence on fracture treatment. XIXth Annual Congress of the Czech Spondylosurgical Society, Špindlerův Mlýn; Co-author MUDr. Lucie Salavcová
 - Spondylosurgery in the Czech Republic during covid. XIXth Annual Congress of the Czech Spondylosurgical Society, Špindlerův Mlýn; Co-author MUDr. Gábor Geri
 - C2 total spondylectomy: a cohort of 10 patients and a literature review. XIXth Annual Congress of the Czech Society of Spondylosurgery, Špindlerův Mlýn (dtto Eurospine, Vienna, Annual Congress of the Czech Neurosurgical Society 2020 and 2021, České Budějovice and 42nd Symposium of the Orthopaedic department of the 1st Faculty of Medicine, Charles University and the IPVZ, Bulovka UH, Prague); Co-author MUDr. Michal Varga

- Radical resection of spinal tumors in children and young adults. IVth spondylo-oncological symposium, Brno
- Spinal injuries in gerontological patients. XXVIIth Prague Surgical Days; Co-author: MUDr. Michaela Rybářová
- Awards:
 - Prof. O. Vlach Award for the best publication in the field of spondylo-surgery in 2021 ŠTULÍK, J., GERI, G., SALAVCOVÁ, L., BARNA, M., FOJTÍK, P., NAŇKA, O. Pediatric dens anatomy and its implications for fracture treatment: anatomical and radiological study. Eur Spine J, 30 (2): 416-424, 2021. (IF 2.458 Q1)

Department of Long-term Treatment - Aftercare Centre

Senior Consultant MUDr. Martina Nováková

Head Nurse - Lucie Kubová

Basic description:

The Department of Long-term Treatment - Aftercare Centre has 360 beds at 11 inpatient stations. The centre specialized in geriatric issues (wound healing, nutrition, physiotherapy and occupational therapy), and on the issue of patients after traumas, surgeries, long-term internal diseases or strokes. **In 2021, the total number of admissions was 1,134 and the number of procedures in the geriatric outpatient clinic was 273.**

Specifics of the facility:

The Department of Long-term Treatment - Aftercare Centre specializes in wound healing, nutrition, physiotherapy and occupational therapy. Physiotherapy is done both individually and in groups using the most modern methods such as electrotherapy, magnetotherapy, ultrasound, biolamp, vacuum-compression therapy for healing chronic defects, etc. A clinical psychologist, 3 speech therapists, 13 physiotherapists, 2 occupational therapists and 4 social workers help the patients. There is ongoing cooperation with the Volunteer Centre, which organizes entertaining and educational programmes, memory training or dog-assisted therapy. A library for patients is available in the Aftercare Centre. The department has the 1st degree accreditation for tuition in geriatrics and contributes to the postgraduate education for physicians in geriatrics, tuition in internal medicine and bachelor's studies for nurses. Teaching courses are held here, among other things, we cooperate with the CTU to teach paramedics. In 2021 we continued to work with the MUH adult palliative consilience team based at our premises, with 80% of patients being from AC beds.

Unique equipment:

- Extremiter 2010-better future - + CO2 therapy – device for vacuum and compression therapy (for wound healing)
- 2 x exercise machine for strengthening lower limb muscles, combined electrotherapy and magnetic therapy
- ultrasonography device Siemens with color Doppler and probes for USG of the abdomen and DUS of the veins
- a tablet with special speech therapy programs (Afaslovník, Gotalk, Gridplayer)

Major events in 2021:

- For our department, 2021 was mainly marked by caring for Covid-positive patients, of whom over 300 passed through the department during the two Covid waves (spring + autumn). This fact, of course, had a major impact on running the

department. In the spring of 2021, we had 4 Covid stations fully occupied, which came to 120 patients, this, logically, increased the waiting time for a place in our department.

- The whole of 2021 was continuously devoted to tasks related to setting up a new department - the Geriatric Internal Department (GIK), which started operations on 1 February 2022 in the premises of the AC under the leadership of the head Prof. MUDr. Milan Kvapil, CSc., MBA.
- Publications and active participation in congresses:
 - Nováková M.: Acta medicae, Diabetologie, 2/2021, The fragile geriatric patient
 - Nováková M., Kvapil M., Case Histories in Diabetology, 3/2021 volume 19: Geriatric Internal Medicine Dept. of the 2nd Faculty of Medicine, Charles University and MUH
 - Kvapil M., Nováková M.: Case Reports in Diabetology 4/2021, Volume 19, Semaglutide, a simple solution to a common obstacle to intensifying diabetes treatment
 - Nováková M., Kvapil M., Remedia 6/2021: Current status of thioctic acid in the treatment of diabetic polyneuropathy
 - Nováková M., Kvapil M., Acta medicae, Praktický lékař 15/2021: Essential vitamin B 12
 - Kvapil M., Nováková M.: Geriatrie a gerontologie (10/2021): Introducing the new workplace - Geriatric Internal Medicine Clinic of the 2nd Faculty of Medicine, Charles University in Prague and the MUH
 - Břízová L., Kraft M., Geriatrie a gerontologie (10/2021) Cooperation between physician and speech therapist in comprehensive patient care - our experience from AC MUH
 - Gricajev S.: Geriatrie a gerontologie (10/2021): Palliative care at Motol University Hospital
 - Nováková M., Kvapil M.: The Generation Project (launch of a series of on-line lectures, Medical House, March 2021)
 - Nováková M.: Diabetology Congress Poděbrady September 2021: Geriatric syndromes

Department of Neurology, 2nd Faculty of Medicine, Charles University and Motol UH

Head - prof. MUDr. Petr Marusič, Ph.D.

Senior Consultant doc. MUDr. Aleš Tomek, Ph.D., FESO

Deputy for Science and Research prof. MUDr. Jakub Hort, Ph.D.

Head Nurse - Hana Chvátalová

Basic description:

The Department of Neurology provides comprehensive diagnostics and treatment for patients with nervous system diseases. The main programmes developed at the highest achievable level in the CR include the cognitive, epileptological, neurootological, neuromuscular, neuroimmunological and neurovascular programmes. Besides caring for patients from the region, medication consultation is also provided selectively to patients from the entire CR. **In 2021, the department's outpatient section examined more than 40,000 patients. A total of 2,179 patients were admitted.**

Centres providing highly specialized care accredited by the Ministry of Health of the CR:

- Centre for highly specialized cerebrovascular care
- Centre for highly specialized care for pharmacoresistant epilepsies
- Centre for highly specialized care for multiple sclerosis and neuromyelitis optica

Centres of the European Reference Network for Rare Diseases (ERN):

- ERN EpiCARE – European Reference Network for Rare and Complex Epilepsies
- ERNRND – European Reference Network for Rare Neurological Diseases
- ERN EURO-NMD – European Reference Network on Neuromuscular Diseases

Specialized centres accredited by professional societies:

- Cognitive centre
- Neuromuscular centre
- Centre for Parkinson's disease and other extrapyramidal defects
- Centre for hereditary ataxias
- Neuro-otological centre
- Centre for headache

Specialized outpatient units:

- advisory centre for neurocutaneous disorders
- vertebrogenic and myoskeletal advisory centre

New and unique methods and procedures:

- Advanced EEG assessment in intracranial EEG and high-density scalp EEG, as well as implementation of the protocol for examination and mapping of cognitive functions from intracranial electrodes is carried out in cooperation with the Academy of Sciences CR and the Czech Technical University.
- The department cooperates on the international project E-PILEPSY, which has allowed for the introduction of a methodology for assessing sources of EEG signals (Electrical Source Imaging) and postprocessing in neuro-imaging (advanced processing of PET image and its coregistration, 3D Slicer).
- Under the longitudinal study Czech Brain Ageing Study (CBAS), homocysteine, oxidative stress markers, and pathological protein (TDP-43, phosphorylated tau and beta-amyloid) levels in the serum and in the liquor are analyzed. Genetic examination was expanded by determination of polymorphism for TOMM, BDNF-met. and TDP-43.
- The set of samples from patients with limbic encephalitis was further expanded and examination of neutralizing antibodies in patients with MS was carried out. The set of patients treated with donepezil, from whom liquor was collected, was expanded by the set of patients with rivastigmine and memantine.
- In the field of multiple sclerosis, there is a significant increase in patients treated with DMD and their scientific processing, including registries.
- The cognitive centre innovated the tests for examining preclinical and prodromal Alzheimer's disease, including a new examination battery of spacial cognition with testing in virtual reality.
- Liquor laboratory (in cooperation with the Department of Immunology, 2nd Faculty of Medicine and MUH) – introduction of the immunoanalytical methodology for determining intrathecal synthesis of anti-GAD antibodies. The existing diagnostic panel of autoimmune encephalitis - examination of antibodies against well characterized onconeural antigens Hu, Yo, Ri, Ma2 (Ta), CV2 (CRMP5), amphiphysin using the Western Blot method with subsequent automated semiquantitative evaluation; examination of antibodies against membrane and synaptic antigens (NMUDr.AR,

AMPA1R, AMPA2R, GABABR, caspr-2, LGI-1) using indirect immunofluorescence on cells transfected with genes for the relevant antigens was expanded by Zic4, Tr (DNER), SOX1, Ma1.

- A unique electrochemical method of body fluid fingerprinting was introduced in laboratory differential diagnostics of neurodegenerative diseases.
- Routine monitoring of video EEG and brain perfusion using TCD at the Intensive Care Unit;
- Expansion of the personalized medicine program with antithrombotic drugs in secondary prevention of cerebrovascular diseases in cooperation with the Laboratory of Molecular Diagnostics of the Na Homolce Hospital and the Pharmakl laboratory by measurement of the effectiveness of new oral anticoagulants;
- Endovascular treatment of acute ischemic strokes as a routine therapeutic procedure (cooperation with the Department of Radiology, 2nd Faculty of Medicine, Charles University and MUH)
- Method for rehabilitation of patients with chronic vertigo conditions and balance defects during hospitalization unique in the CR continues to be used. The method uses a visual biological feedback with a power platform and a tablet. Our department contributed to the development of this system.
- Creation of programmes for rehabilitation of strabismus, amblyopia and functional programme version of the Hess canvas in cooperation with the Department of Cybernetics of the Czech Technical University and the Department of Ophthalmology for Children and Adults, 2nd Faculty of Medicine, Charles University and Motol UH
- Examination of the otolith system using the cervical myogenic evoked potential method, introduction of the pupillometry method – expansion of the options in examination with the existing equipment for video-oculography (VOG). Introduction of a new methodology for examination of the function of the vestibulo-ocular reflex using the ICS Impulse device by Otometrics. The unique character of this device is in its ability to examine the function of individual semi-circular canals and detect incomplete vestibular lesions.
- Testing thin fibers of the peripheral nerves with thermic threshold determination using the Peltiér cell.
- Introduction of unique neurophysiological diagnostics of thin nerve fiber defects (A delta, C fibers) in patients with peripheral and autonomous neuropathy. Introduction of neurophysiological tests (spectral analysis - frequency and time) for cardiac autonomous neuropathy in diabetics.
- New methodology for quantitative electromyography as part of myopathy diagnostics (computer processing of the EMG signal – power spectrum analysis, peak ratio, number of small segments). The methodology increases the sensitivity from the original 64% to 91%.

Unique equipment:

- Simoa analyser - automated device for detecting immunological markers in cognitive and autoimmune brain diseases
- laboratory for augmented virtual reality
- 256-channel high-density EEG
- ICS Impulse device by Otometrics for examining the function of individual semi-circular canals

- telemetry with central monitor Philips IntelliVue M3150 for 9 patients
- ultrasonography device RIMED Intraview with a helmet for long-term monitoring
- ultrasonography device Toshiba Aplio 500 for examining transcranial and extracranial arteries and peripheral nerves with 3D imaging along with the MR/CT data
- 128-channel EEG system NicoletOne for video-EEG monitoring
- NYDIAK rotating chair for electronystagmography – ENG examination
- FAN Study system allowing comprehensive evaluation of the function of the autonomous nervous system, including test on a sloping surface
- Somedic thermal tester, Sweden - electrodiagnostic device evaluating the function of thin fibres A delta + C fibres
- digital algometer Somedic, Sweden - electrodiagnostic device for research into deep neuropathic pain
- experimental laboratory for examining spacial memory and spacial orientation (Blue Arena)

Major events in 2021:

- A total of 68 professional publications in foreign impact or peer reviewed journals, 47 articles in local impacted journals, 3 in peer-reviewed foreign journals, 6 articles in domestic impacted journals, 6 in peer-reviewed domestic journals and 6 chapters in foreign and local monographies.
- Co-organization of a number of domestic on-line congresses and seminars (Cerebrovascular, Epileptological, etc.);
- Prof. Marusič was elected President of the Czech Neurological Society ČLS JEP

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

Head - prof. MUDr. Ivan Landor

Senior Consultant prof. MUDr. Stanislav Popelka

Senior Consultant MUDr. Jaroslav Kalvach - traumatology

Head Nurse - Jana Sládková

Basic description:

The department provides conservative and surgical treatment for adult patients throughout the entire spectrum of orthopaedic procedures. It provides services under traumatology of the locomotor system with the exception of spine and paediatric orthopaedics. The department has 129 beds in total, of which 14 beds for intensive care for aseptic patients and 2 beds for intensive care for septic orthopaedics, 30 traumatology and 20 septic beds. **In 2021, a total of 3,491 patients were hospitalized and 43,616 patients were treated in the outpatient section. A total of 3,429 surgeries were performed.**

Specialized outpatient units:

- joint replacements
- surgery of large joints
- surgery of the hand and foot
- arthroscopy of the shoulder, wrist, knee and ankle
- sports traumatology
- septic orthopaedics
- rheumatology

- oncology
- general traumatology

New methods and procedures:

- Research and development of new joint implants in cooperation with local and foreign partners;
- New techniques for wrist surgeries;
- Introduction of minimally invasive surgical techniques for addressing hallux valgus;
- Arthroscopic stabilization of ac luxation - dogbone button arthrex;
- Reconstruction of intervened AC luxation with a tendon graft;
- Introduction of laboratory determination of alpha defensin in the diagnostics of joint replacement infection;
- Introduction of fast determination of alpha defensin synovasure (lateral flow test) in the perioperative diagnostics of joint replacement infection;
- Introduction of leukocyte esterase test in the diagnostics of joint replacement infection;
- Introduction of an endoscopic method of medulloscopy in the treatment of chronic osteomyelitis;
- Introduction of the Masquelette technique in therapy of infected pseudoarthrosis;
- Introduction of vacuum therapy in the treatment of infected defective wounds;
- Introduction of the department's own method for coating pins with bone cement in the treatment of infected pseudoarthrosis.

Major events in 2021:

- Prof. MUDr. Ivan Landor, CSc. (1st Faculty of Medicine, Charles University) received the Silver Medal of the Scientific Council of Charles University for his significant lifetime work in the field of orthopaedics and long-standing scientific and pedagogical activities at Charles University.
- As. MUDr. Petr Fulín PhD successfully completed the habilitation procedure by defending his thesis on the topic: "The quality of articulating surfaces and its influence on the process of early joint replacement failure"
- MUDr. Rastislav Ballay received the academic-scientific degree „Ph.D.“ in the doctoral study programme Experimental Surgery "Biological properties of the surfaces of alloplastic materials".
- Completed patent proceedings: Suchý, T., Šupová, M., Denk, F., Rýglová, Š., Žaloudková, M., Sucharda, Z., Ballay, R., Horný, L., Čejka, Z., Pokorný, M., Knotková, K., Velebný, V. Nanokompozitnyj sloj na osnove kollagenovych nanovolokon i sposob jeho izgotovljenija. Patent file RU 2 756 164. 28 September 2021.
- Publications:
Department of Orthopaedics and Rheumoorthopaedic, Centre of Postgraduate Medical Education, Otwock, Poland – Dr.Dariusz Grzelecki – preparation of 2 publications - currently under review;
PETR FULIN, MATEJ DANIEL, JIRI WALDER, DARIUSZ GRZELECKI, DAVID POKORNY: Analysis of the impact of the COVID-19 pandemic on orthopedic and traumatological care in the Czech Republic. In the peer-review process of a journal with IF.
DARIUSZ GRZELECKI, MARTA SZOSTEK, PETR FULIN, DARIUSZ MARCZAK, BARTŁOMIEJ KORDASIEWICZ, JACEK KOWALCZEWSKI: The Usefulness of Calprotectin Kinetics Monito-

ring in the Diagnosis of Surgical Site Infection after Total Hip and Knee Arthroplasties. In the peer-review process of a journal with IF.

- Active participation of pregraduate and postgraduate students at scientific conferences. Pavel Melicherčík, Eva Klapková, David Jahoda, Karel Kotaška, Ivan Landor, Rudolf Horvath, Rastislav Ballay, Tobiáš JUDL: Alpha-defensins determined by HPLC method from joint fluid as a diagnostic marker of prosthesis joint infections and infectious arthritis. 39th Annual Meeting of European Bone and Joint Infection Society, Lublaň, 2021.
- Teaching at clinical workplaces - new programmes and new teaching aids and conditions for teaching, e-learning.

Department of Oncology, 2nd Faculty of Medicine, Charles University and Motol UH

Head - senior lecturer MUDr. Jana Prausová, Ph.D., MBA

Senior Consultant MUDr. Zdeněk Linke

head nurse Renata Limaxová

Senior Radiology Assistant Alena Čuprová

Basic description:

The department provides comprehensive care for oncological patients in antitumor pharmacotherapy and radiation treatment. It is one of the **Comprehensive Cancer Centres** in the Czech Republic, where highly specialized care is provided. The clinic was designated as one of two **National Cancer Centres (NCC)** in the Czech Republic at the end of 2019. The facility is accredited for specialized education in clinical oncology and radiation oncology. **In 2021, a total of 122,997 outpatient check-ups, treatments and examinations were performed at the Oncology Department of the Motol University Hospital, of which 3,622 were newly performed by multi-disciplinary teams and 2,236 lymphatic drainage procedures were newly performed as of April 2021. In 2021, a total of 2,495 new patients were admitted to the Oncology Department of Motol University Hospital.**

A total of 2,175 patients were admitted to the Oncology Department of the MUH in 2021, and this result, comparable to previous years, was achieved despite the COVID 19 pandemic.

In 2021, the parenteral administration of chemotherapy/biological treatment came to 12,558 cycles of anticancer treatment, which is significantly higher than in both 2019 and 2020 (8,544 administrations in 2020). **In 2021, the total number of patients on external beam radiotherapy came to 911. The number of irradiated fields was 59,114, the number of irradiation fractions came to 20,988.** All of these numbers for patients treated are higher than in 2020 and most are higher than in 2019, despite the ongoing COVID 19 pandemic. **In 2021, the brachytherapy department carried out 806 applications to a total of 133 patients.** The number of patients treated was also higher compared to both 2019 and 2020.

Specialized outpatient units:

- outpatient unit for follow-up care for patients after completion of antitumor treatment
- outpatient unit for checking patients during chemotherapy
- outpatient unit for checking patients during teletherapy
- outpatient unit for chemotherapy application
- outpatient unit for checking patients during brachytherapy
- outpatient unit for palliative and symptomatic care
- an outpatient clinic providing lymphatic drainage was newly opened in April 2021

New methods and procedures:

- Full use of IMRT (intensity modulated radiotherapy).
- Use of localization grains (fiducial markers) for more precise targeting of the target volume in patients undergoing radiotherapy of prostate cancer.
- Lymphatic drainage provided as of April 2021.

Unique equipment:

- Three Truebeam linear accelerators, Varian Medical Systems - the third in the series to be put into operation in February 2020, enabling 3D patient imaging with CBCT and Respiratory Management System. Besides IMRT (Intensity Modulated Radiotherapy), they also allow VMAT (Volumetric Modulated Arc Therapy). Two of the accelerators are equipped with a Millennium120 multi-blade collimator with a 5mm blade width in the central part of the irradiation field and the third has a High Definition MLC multi-blade collimator with finer resolution and a 2.5mm blade width. Apart from standard photon beams, the two Truebeam accelerators also produce beams without a homogenizing filter, the so-called FFF beams (Flattening-Filter Free).
- The Acuity EX radiotherapy simulator, Varian Medical Systems, for preparing radiation treatment.
- CT device Brilliance Big Bore, from Philips, for planning treatment.

Major events in 2021:

- Autumn 2021 saw the concept of building a new independent complex of the National Cancer Centre within the Motol University Hospital being put forward
- The Head of the department, senior lecturer MUDr. Prausová, PhD MBA is still the Chairperson of the Czech Society of Oncology under the Czech Medical Association of J. E. Purkyně.
- The department's membership of the OECl (Organization of European Cancer Institute), which brings together just a small number of the highest-quality cancer centres in Europe, was repeatedly confirmed.
- In 2021 the department was an active member of the Sarcoma Group EORTC and contributed to academic clinical studies (such as Survival Outcomes in Adolescent and Young Adults with Colorectal and Pancreatic Cancer).
- The department has become a world leader in defining the role of proton radiotherapy for prostate cancer - the defining article: Kubeš J, Haas A, Vondráček V, Andrlík M, Navrátil M, Sláviková S, Vítek P, Dědečková K, Prausová J, Ondrová B, Vinakurau Š, Grebenyuk A, Doležal T, Velacková B, Rosina J. Ultrahypofractionated Proton Radiation Therapy in the Treatment of Low and Intermediate-Risk Prostate Cancer-5-Year Outcomes. *Int J Radiat Oncol Biol Phys.* 2021 Feb 12:S0360-3016(21)00189-9. doi: 10.1016/j.ijrobp.2021.02.014. Impact factor 7.031 (2021)
- The department organized a unique educational event for oncologists Best of Oncology from 9.12.-10.12.2021 in Prague.
- The department took part in organizing and giving lectures at the 12th Prague Onco Colloquium in January 2021 and at other important Czech symposia, although, due to COVID 19, in most cases it was virtual.
- Physicians actively took part in international ASCO, ESMO and ESTRO events with expert communications, abstracts and posters, again mostly in a distant form.

- The department contributed to the EU Health Programme in 2021: Joint Action on Rare Cancers.
- From 2021, the MUH Oncology Department, together with the 3rd Surgical Department of MUH, will form the Centre for Sarcoma Treatment in the CR.
- in 2021 the department contributed to the work on the Czech Science Foundation grant: Nanofibre Systems for Local Release of Drugs in the Treatment of Oncological Diseases with the Institute of Macromolecular Chemistry of the Academy of Sciences of the CR.
- Continuation of the pilot study in 2021 on the influence of genetic factors on the effect of therapy and the survival of patients with pancreatic cancer (together with SZÚ, Surgical Clinic 1st and 2nd Faculty of Medicine, Charles University and MUH).

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

Head of Department doc. MUDr. Libor Fila, Ph.D.

Senior Consultant - MUDr. Lucie Valentová Bartáková

Departmental Manager MUDr. Dmitry Rakita, CSc.

Head Nurse - Jana Zelenková

Basic description:

The Department of Pneumology focuses on diagnostics, treatment and research of diseases of the lower respiratory tract and the lungs. The department has three inpatient stations with a total of 76 standard beds and an ICU with 14 beds. Due to the SARS-CoV-2 pandemic, some of the standard beds were transformed into oxygen therapy units for COVID-19 patients during 2021. The main programmes focus on lung transplantation, pneumooncology, adult cystic fibrosis, interventional bronchology and intensive care in pneumology. The department is part of the Prague Lung Transplantation Programme, the Centre for Highly Specialized Pneumo-Onco-Surgical Care at Motol UH and the CF Centre at Motol UH (in the framework of ERN-LUNG and ECFS-CTN). The department is accredited at level 3 for postgraduate education in pneumology and phthysiology and organizes IPVZ courses in bronchology for beginners and in cystic fibrosis in adulthood; the department houses the Sub-department of Pneumology and Phthysiology of the IPVZ (headed by prof. MUDr. Miloslav Mareš, CSc.).

In 2021, a total of 1,860 patients were admitted, 12,265 were treated in the outpatient section, 1,101 bronchoscopies were carried out and 903 chemotherapies were administered. There were 315 patients admitted to the ICU, 183 (58.1%) of whom had COVID-19. Instrumental respiratory support by HFNO, NIV or IMV was provided to 199 (63.2%) patients.

Specialized outpatient units:

- pneumology outpatient unit
- transplantation outpatient unit
- outpatient unit for cystic fibrosis
- outpatient unit for interstitial pulmonary diseases
- outpatient unit for poorly treatable asthma
- outpatient unit for breathing disorders in sleep
- outpatient unit for treatment of tobacco addiction

New methods and procedures:

- The treatment of COVID-19 patients with new antivirals (remdesivir, favipiravir and

- molnupiravir), monoclonal antibodies (balmanivimab and casirivimab/indevimab) and high-flow nasal oxygen (HFNO)
- Biological treatment of bronchogenic carcinoma (lorlatinib, durvalumab and ipilimumab), cystic fibrosis (elexacaftor/tezacaftor/ivacaftor) and bronchial asthma (reslizumab and benralizumab)
- Examination using radial EBUS and an ultra-thin bronchoscope with the option of biopsy of peripheral pulmonary lesions, which is a method allowing us to avoid surgical lung biopsy carried in many patients
- Cooperation with ResMed in the field of telemedicine - home monitoring for patients with sleep-disordered breathing
- Treatment using a tunneled pleural effusion catheter, which reduces the risk of infectious complications and allows administration of chemotherapy

Unique equipment:

- bronchoscope with EBUS Olympus MAJ-1720 with a radial probe
- Olympus BF-MP190F ultra-thin bronchoscope
- Olympus ESG-300 argon plasma coagulation device
- Airvo 2 devices for high-flow nasal oxygen therapy
- Simeox devices for effective airway clearance in patients with bronchiectasis

Major events in 2021:

- The publication „Ivacaftor in adults with cystic fibrosis: lung function and nutritional status during a 10-year follow-up“ by Fila L., Grandcourtova A., Bílková A., Doušová T. and Dřevínek P. was awarded as the best published paper in the category of original communications in *Studia Pneumologica et Phthiseologica* in 2020
- The CF Centre at Motol UH received the Creative Achievement Award 2021 for the paper „The most advanced drug in treating cystic fibrosis and its availability for patients in the Czech Republic“
- In 2021, in cooperation with Surgical Clinic III, a record 52 patients were able to receive lung transplants.
- Notable publications:
 - Doubkova M, Kriegova E, Littnerova S, Schneiderova P, Sterclova M, Bartos V, Plackova M, Zurkova M, Bittenglova R, Lostakova V, Siskova L, Lisa P, Suldova H, Doubek M, Psikalova J, Snizek T, Musilova P, Vasakova M. DSP rs2076295 variants influence nintedanib and pirfenidone outcomes in idiopathic pulmonary fibrosis: a pilot study. *Ther Adv Respir Dis.* 2021;15:17534666211042529. IF 4.031
 - Modrák M, Bürkner PC, Sieger T, Slisz T, Vašáková M, Mesežnikov G, Casas-Mendez LF, Vajter J, Táborský J, Kubricht V, Suk D, Horejsek J, Jedlička M, Mifková A, Jaroš A, Kubiska M, Váchalová J, Šín R, Veverková M, Pospíšil Z, Vohryzková J, Pokrievková R, Hrušák K, Christozova K, Leos-Barajas V, Fišer K, Hyánek T. Disease progression of 213 patients hospitalized with Covid-19 in the Czech Republic in March-October 2020: An exploratory analysis. *PLoS One.* 2021;16(10):e0245103. IF 3.240
 - Svaton M, Bratova M, Fischer O, Krejci J, Koubkova L, Cernovska M, Hrnčiarik M, Zemanova M, Coupkova H, Porzer B, Dolezal D, Tuzova T, Hurdalkova K, Barinova M, Skrickova J. Real-life Effectiveness of Afatinib Versus Gefitinib in Patients With Non-small-cell Lung Cancer: A Czech Multicentre Study. *Anticancer Res.* 2021;41:2059-2065. IF 2.480

Department of Urology, 2nd Faculty of Medicine, Charles University and MUH

Head - prof. MUDr. Marek Babjuk
 Senior Consultant MUDr. Marek Schmidt, FEBU
 head nurse Mgr. Sandra Dvořáková

Basic description:

The Department of Urology provides therapeutic and preventive care in the entire spectrum of adult urology nationwide and internationally. The site specializes in surgical treatment of cancers of the urogenital tract including the subsequent oncological treatment. It is one of the top facilities for the treatment of lithiasis and laparoscopy. The facility is the only site for surgical gender conversion in the CR. As of 2018, it has had the da Vinci robotic operating system. In 2021, there were 335 robotic surgical procedures in all, of which 264 were urological. In 2021, there were 24,111 outpatient examinations, 1,856 admissions and 1,735 surgical operations.

Specialized outpatient units:

- oncology outpatient unit
- outpatient unit for treatment and metaphylaxis of lithiasis and chronic infection
- andrology outpatient unit
- outpatient unit for dysfunction of lower urinary tract
- centre for treatment and research of prostate cancer (in cooperation with the Department of Radiotherapy and Oncology and the Department of Immunology)
- centre for surgical treatment of transsexualism
- Centre for Robotic Surgery of the MUH

New methods and procedures:

- Advanced laparoscopic procedures - cystectomy, radical prostatectomy, reconstructive surgeries, retroperitoneal lymphadenectomy, kidney resection, solution of vesicovaginal fistulas, Boari reconstruction;
- Improvement of endoscopic treatment of lithiasis – percutaneous mini-nephrolithotomy technique, percutaneous nephrolithotomy in supine position, flexible ureteroscopy, etc.;
- Improvement of derivative surgeries after cystectomy;
- Use of new imaging methods for diagnostics of tumors of the bladder (NBI = “narrow band imaging”) in regular practice;
- Percutaneous neurostimulation in the treatment of urgent symptomatology of the bladder
- Introduction of surgical implantation of sacral neuromodulator for the treatment of idiopathic hypoactivity of the bladder;
- Intradetrusor application of neurotransmitter blockers in the treatment of hyperactive bladder;
- Use of Ho:YAG laser in surgical procedures;
- Transurethral enucleation of the prostate using a morcellator;
- MRI/USG fusion prostate biopsies;
- Implantation of artificial urethral constrictor in severe incontinence.
- Robotic operations - radical prostatectomy, kidney resection, pyeloplasty, radical cystectomy, nephroureterectomy, robotic occlusion of vesicovaginal fistula.

Unique equipment:

- Ho:YAG laser
- instruments for NBI ("narrow band paging"), fluorescence cystoscopy
- instruments for miniPNL
- 3D laparoscopic system Einstein Vision
- endoscopic morcellator Piranha
- Toshiba Aplio 500 sonographic device for MRI/USG fusion biopsies of the prostate
- da Vinci Xi robotic system
- COMBAT BRS /COMBined Antineoplastic ThermoTherapy Bladder Recirculation System/ for hyperthermic intravesical chemotherapy of bladder tumours.

Major events in 2021:

- Organization of the ESU - ESOU Masterclass EAU 4.2.-5.2.2021, Prague
- Organization of the conference Comprehensive News in Onco-urology 13.5 or 20.5.2021, Prague;
- The Head of the Urology Department of the 2nd FM of CU and Motol UH was elected Dean of the 2nd FM of CU on 24.11.2021.



Common Examination and Therapeutic Units

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

*Head - prof. MUDr. Miloslav Roček, CSc., MBA, FCIRSE, EBIR
Senior Consultant of the adult section MUDr. Radek Pádr
Senior Consultant of the children's section MUDr. Helena Dvořáková
Senior Radiological Assistant of the adult section Mgr. Tomáš Schilla
Senior Radiological Assistant of the children's section Alice Jará*

Basic description:

In 2021, a total of 226,635 patients were screened in the adult section of the Department of Radiology and 323,394 examinations were made. Overall, this is about a 10% increase in the number of examinations. There was a higher number of CT scans and MRI scans. The number of conventional skiagraphs was also slightly higher compared to 2020. The number of interventional procedures also increased.

In 2021, a total of 57,538 patients were examined in the children's section of the Department of Radiology (DoR) and 78,548 examinations were carried out, which is a growth of 10%. There was a 6% increase in CT, a 10% increase in ultrasound, an 11% increase in MRI and a 12% increase in dental X-rays. The DoR underwent an internal clinical audit, the clinic successfully passed the SAK re-accreditation as well as an external clinical audit (EKA), which was carried out in a regular 5-year cycle and the DoR subsequently received the EKA Certificate.

Unique equipment:

- the latest CT device Somatom Force allowing examination with a low dose of radiation, also used for children
- additional CT – 2 devices with 64 rows of detectors, CT Toshiba Aquilion One with 320 rows
- magnetic resonance – 4 devices: examination in the full range of spectroscopy, including a 3T MR MAGNETOM Vida
- Toshiba Infinix, Ultimix-i (DREX-UI80/E2) for angiographies
- mammography, mammary sonography, stereotaxis, vacuum bioptome
- sonography for children and adults, doppler sonography
- 6x fully digitized skiagraphy, 2 state-of-the-art skiagraphs for traumatology Adora from Canon
- Hologic, Horizon QDR densitometer

New methods and procedures:

- CT angiography, 3D VR visualization, CT cardio, CT coronarography;
- CT generation of Vol data for neuronavigation, ENT navigation and stomatology;
- MR – new options for examination of the veins, functional examination of the heart, tractography, T2 relaxometry, examination of non-cooperating patients, spectroscopy;
- Thanks to the new Siemens VIDA 3T MRI, the DoR's capacity for MRI examinations has expanded by approximately 220 adult and child patients per month. This has led to a certain shortening of waiting times for some examinations. The main benefit of the new device, apart from better quality images, is the introduction

of advanced techniques (MRS, fMRI, whole body MRI) that can be used both in routine practice and for research purposes. The accuracy of diagnosing pelvic tumours and pathologies of the musculoskeletal system has also seen great progress. With the delivery of a mobile MR-compatible ventilator, patients requiring general anaesthesia can now also be examined on 3T MR;

- Prenatal US and MR diagnostics;
- MAMO SONO site – ductography, puncture of cysts and core cut biopsy under US control, puncture with the Vacora device;
- Radiofrequency ablation and chemoembolization of metastasis in the liver, lungs;
- Implantation of aortic stent grafts (also fenestrated), brain thrombectomy, subintimal recanalization of the peripheral arteries, treatment of acute and chronic deep vein thrombosis, treatment of vascular accesses for hemodialysis;
- Treatment of brain malformations in children and adults;
- Intervention in the bile duct, spondyloplasty and vertebroplasty;
- Intervention under CT skiascopy;
- US devices Toshiba Aplio with SW allowing diagnostics with the use of contrast medium, in particular for dynamic diagnostics of focal lesions especially in the liver, we also examine the liver with elastography;
- Expanded use of dictation systems;
- Conferences and consultations also take place outside the CR;
- Conference system allowing for monitoring surgical procedures was involved;
- Arterial spin labeling as a recent method for imaging brain perfusion;
- Software for Toshiba Aplio 500. SMI (Super Microvascular Imaging) allowing precise detection of the microvascular architecture of the tissue.
- Catheter treatment of retinoblastoma introduced for the first time in the CR;
- The Horizon QDR densitometer has expanded the range of services offered by the DoR. The device can also be used by other clinics at MUH.

Major events in 2021:

- The examination room for densitometry has expanded its operations.
- The MR workstation with a 3T magnet from Siemens MAGNETOM Vida has expanded its operations.
- A new state-of-the-art angiograph from Siemens - ARTIS ZEE MP - was put into operation in the children's section.
- With regards to the situation with Covid-19, once again the clinic had to cancel the two-week Prague European Tutorial of Radiology and the Motol Day of Paediatric Radiology.
- The close scientific cooperation with the Department of Radio-diagnostic and Interventional Radiology at IKEM, the spectroscopy group and the CAS was expanded.
- MOST 2021 took place: 19.6. 2021- interdisciplinary symposium on MRI and CT of the heart
- The Department of Radiology actively participated in the CSIR Working Symposium in Mikulov 17-19 October 2021.
- Active participation at the 42nd Czech Radiological Congress 12-16 October 2021
- Tenders were prepared for devices in the REACT programme.
- After being the president of the Section of Paediatric Radiology of the ČRS JEP, the Czech Society of Interventional Radiology of the ČLS JEP, Prof. MUDr. Miloslav Roček, CSc. also became president of the Czech Radiological Society of the ČLS JEP.

Institute of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and Motol UH

Head - prof. MUDr. Milan Macek, DrSc., MHA
 Senior Consultant MUDr. Markéta Havlovicová
 Head Nurse Mgr. Hana Strouhalová
 Economist Ing. Ivana Funková, MBA

Basic description:

The department (further the DBMG) provides a wide spectrum of preventive and diagnostic medical care in medical and molecular genetics also through medical consultations throughout the Czech Republic. The DBMG diagnoses selected congenital defects, hereditary tumors, neurodegenerative diseases in children and adults, rare diseases including mental development disorders in prenatal and postnatal period. **In 2021, there were 13,500 consultations for patients in the outpatient units of our department under postnatal and prenatal care. The DBMG laboratories carried out 6,940 molecular genetic tests of various types, ranging from targeted testing for a single gene variant to testing for a clinical exome.**

The DBMG laboratories are accredited by the Czech Institute for Accreditation and registered in the Register of Clinical Laboratories of the National Authorization Centre for Clinical Laboratories at the ČLS JEP (NASKL.cz) and hold a Certificate of Compliance with the Conditions of Audit I for Expertise in Clinical Biochemistry and Medical Genetics.

The National Coordination Centre for Rare Diseases, Centre for Diagnostics and Treatment of Paediatric and Adult Patients with Cystic Fibrosis was established under the DBMG and the site is also part of the national research infrastructure - "National Centre for Medical Genomics".

The DBMG works on a number of European Commission projects (Horizon 2020 - Solve-RD.eu, RD-code.eu; Horizon Europe - Screen4Care), Norway Grants (second call for the National Coordination Centre for Rare Diseases - www.nkcv.cz), and coordinates 16 European Reference Networks for Rare Diseases at the Motol UH.

Specialized outpatient units:

- prenatal genetic advisory centre
- neurogenetic advisory centre
- oncogenetic advisory centre
- genetic advisory centre for sensory defects and non-syndrome deafness
- cardiogenetic advisory centre
- genetic advisory centre focusing on dysmorphology
- genetic advisory centre for couples with reproduction problems
- genetic advisory centre for patients with intellect insufficiency and defects of the autistic spectrum
- genetic advisory centre for thrombophilia
- genetic advisory centre for gastroenterology and hereditary pancreatitis
- genetic advisory for CF/CF screening in newborns in cooperation with the Centre for Cystic Fibrosis of the MUH
- genetic counselling for hereditary nephropathy

New methods and procedures:

- The diagnosis of new microdeletion syndromes using the FISH and aCGH methods as well as diagnosis without the need for direct culture of amniotic/chorionic cells continues has been further expanded.

- The “custom” platform (4x180K CGH+SNP) is introduced under the array CGH method for examination of patients with isolated heart defects or severe combined complex congenital heart defects.
- The SNP array method has been implemented on the Illumina platform in a non-accredited mode.
- A new cytogenetic database has been created.
- Classification of variants is improved by using new database instruments and updating the evaluation algorithms of the software for data analysis including taking part in creating the international Decipher variant database.
- Accreditation of ČIA 15189 is granted for all cytogenetic and molecular cytogenetic methods and international EQA is carried out regularly.
- A national Czech array group for the improving chip diagnostics has been set up. Our colleagues hold expert positions in it.
- DNA diagnostics using the DNA sequencing method according to Sanger or using the fragmentation analysis method on more than 120 genes responsible for genetically conditioned syndromes with intellectual impairment, defects of the autistic spectrum, ataxia, dystonia, muscular dystrophy, myopathy, growth defects, osteochondrodysplasia, craniosynostosis, defects of gender development, syndromes with a cancer predisposition, organ and sensory defects, thrombophilia, rare diseases and genetic syndromes are still ongoing.
- We also examine for imprinting defects in PWS/AS and BWS/RSS syndromes.
- Gene deletions/duplications or microdeletion syndromes are examined using the MLPA.
- In diagnostic practice, we use gene panel testing using NGS methods. In 2021, we routinely used these methods to screen patients with suspected hereditary breast and ovarian cancer, patients with suspected HNPCC, neurofibromatosis, RASopathy, and some other selected hereditary diseases: familial multiple cerebral cavernous malformations, Gorlin syndrome, holoprosencephaly, Treacher-Collins syndrome, and Duchenne/Becker muscular dystrophy.
- We introduced the Clinical Exome Solution (CES) by Sophia into our diagnostic practice and replaced the previously used Kardio and CID panels with virtual panels.
- On the basis of CES, we have newly designed, tested and launched our own virtual diagnostic panels responsible for all types of cardiomyopathies (387 genes), arrhythmogenic syndromes (326 genes), aortopathies and collagenopathies (369 genes), which allows a more accurate and faster diagnosis of genetically determined heart diseases. We examined some of the panels from 383 individuals and did a targeted examination on 325 relatives.
- On the basis of CES, we introduced germline mutation testing into diagnostic practice in a virtual panel of 601 genes associated with mental retardation and autism. We examined 144 individuals and did a targeted examination on 82 relatives.
- For rare, unclear and diagnostically complex cases of genetically conditional diseases, the CES data are filtered according to the proband’s clinical symptoms. 152 subjects were examined for clinical exome.
- Once again, we successfully met the requirements of an external interlaboratory quality control for molecular genetic EMQN and RfB laboratories for 14 different diagnoses, Sanger’s DNA sequencing and NGS.
- We are continuously improving filtering and prioritization of NGS data and the ever

preciser interpretation of a priori variants of uncertain significance using VarAFT, VarSome Clinical and Genoox.

- We screen newborns for cystic fibrosis throughout the Czech Republic in cooperation with the University Hospital in Vinohrady and the General University Hospital in Prague (approx. 50,000 newborns).
- In the field of assisted reproduction, in cooperation with the Department of Paediatric Haemato-Oncology and the Gynaecology and Obstetrics Department, we offer the cryopreservation of ovarian tissues for oncology patients prior to treatment and we have started using the Fertile Plus microfluidic chip for sperm selection for IVF and IUI and the LAISS (Laser Assisted Immotile Sperm Selection) method.

Unique equipment:

- dna microarray scanner, Agilent G5761A SureScan Microarray
- Special platform Agilent Technologies for evaluation of array CGH profiles
- Thermocycler Peltier PTC 100
- NanoDrop Thermo Scientific (assessing the quantity and quality of DNA)
- Accuris SmartBlue Transilluminator (for gel elfo)
- Licence for GENA (Sivotec Bioinformatic) (evaluating the results of array methods)
- SZS 902 LED Stereomicroscope (CVS preparation)
- Hanabi - device for preparation of evenly spread metaphases for cytogenetics
- MagCore Nucleic Acid Extractor for DNA/RNA isolation
- Applied Biosystems 3500 Genetic Analyzer
- HiSeq 550 by Illumina for NGS
- Veriti 96-Well Thermal Cyclers
- Cryptor Compact Plus by Thermo Scientific for biochemical screening in pregnant women
- 4200 Tape Station from Agilent Technologies

Major events in 2021:

- Clinical applications of NGS in neurogenetics, cardiogenetics and dysmorphology, often associated with intellectual disability and autism spectrum disorders, and also in hearing disorders.
- 3D scanning of patients’ faces for digital phenotyping - the project continued. Here population norms for boys and girls aged 3 to 18 years were created in cooperation with the Faculty of Science of Charles University. In 2021, a GAUK student grant was received for endophenotyping PAS patients in predefined age categories. This method consists of identifying clinically distinctive subgroups of autism by methods of geometric morphometry based on cluster analyses. The GAUK grant continued: “Facial assessment of patients with a proven pathogenic variant in the PKD1 and PKD2 genes using 3D facial morphometry”, which concerns individuals diagnosed with polycystic kidney disease. Preliminary results show some differences in the facial morphology of polycystic patients compared to the norm.
- The head of the DBMG, as the coordinator of the National Coordination Centre for Rare Diseases, guarantees a large part of the departments at the MUH are included in the European Reference Networks (ERN) for rare diseases.
- In 2021, a new Platform for Ultra-rare and Undiagnosed Patients and Their Families was set up.

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

Head prof. MUDr. Richard Průša, CSc., EuSpLM

Senior Consultant MUDr. Jana Čepová, Ph.D., MBA

Head laboratory technician Mgr. Martina Bunešová, MBA

Basic description:

The laboratory of the DMCCB provides more than 222 different laboratory examinations. Every year we process biological material from 94,696 unique personal ID numbers. Every day (including Saturdays, Sundays and bank holidays) the laboratory examines an average of 2,413 biological samples, i.e. 753,000 examinations per month, in a non-stop three-shift operation. Many examinations (MTX, cyclosporine A, tacrolimus, sirolimus, lead, platinum, antimycotics, busulfan, IGF-1, gentamycin, α defensin, etc.) are also carried out for other external medical facilities. Examinations are also carried out for self-payers and veterinary medicine. **In 2021, a total of 8,820,000 laboratory tests were performed.** The DMCCB has specialized outpatient units focusing on the issues related to hyperlipoproteinemia, bone metabolism defects, nutritional defects in the sense of obesity and malnutrition. **In 2021, there were 4,000 patients treated in the outpatient section.**

Specialized outpatient units:

- outpatient unit focusing on the treatment of hyperlipoproteinemia
- outpatient unit focusing on bone metabolism issues
- outpatient unit focusing on nutritional issues

New methods and procedures:

- 2019 - MTX transferred from Integra to Architect (automatic dilution)
- 2019 - busulfan routinely transferred to LC/MS
- 2019 – Lp(a) routinely to Advii
- 2019 - AMH - change of reference limits
- 2019 - 17-OH progesterone - method changed due to restandardization
- 2020 - ganciclovir
- 2020 - α defensin
- 2021 - determining isavuconazole in plasma by LC-MS
- 2021 - converting a-Tg, a-TPO from chemiluminescence to electrochemiluminescence
- 2021 - converting procalcitonin and NT-forBNP methods from electrochemiluminescence to chemiluminescence
- 2021 - converting the myoglobin method from immunoturbidimetry on chemiluminescence to microparticles
- 2021 - AAS:
 - For the method of copper and zinc in serum on flame AAS, adjusted the ratio of serum to dilution solution to accommodate the use of the autosampler and also the need for repeat analysis of the sample/control/calibrator.
 - For the urinary copper method, the method and calibration settings were adjusted to more accurately measure low concentrations ($<1 \mu\text{mol/l}$).
 - For the serum selenium method on AAS with a graphite cuvette, the amount of sample and reagents pipetted into the cuvette were optimized to refine individual measurements.

Unique equipment:

- 2019 - installation of Stat Strip a new network glucose meter from Nova Biomedical for ward 2 inpatient station/ICU I. orthopaedic clinic of the 1st Faculty of Medicine, Charles University
- 2019 - 2 new OsmoPRO osmometers
- 2019 - electrothermal atomization absorption spectrometer and flame atomization absorption spectrometer Agilent 200 Series AA Spectrometer 240FS AA
- 2019 - Cobas Integra 400plus analyzer (replaced the old one)
- 2020 - POCT- installation of a new network glucose meter
- 2020 - Stat profile Prime, Ca⁺⁺, Mg⁺⁺ analysis
- 2020 - POCT –installation and subsequent responsibility for 6 x ABR analysers
- 2020 - new biochemical analyser - Atellica - 3, fundamental change in basic biochemical operation
- 2021 - 2 new AtellicaIM1600 immunochemical analyzers, a major change in laboratory operation
- 2021 - the existing Cobas6000 was replaced with a new one
- 2021 - the number of osmometers was expanded by a new OsmoPRO osmometer
- 2021 - 2 new, cooled, large capacity BeckmanCoulter centrifuges
- 2021 – 2 new decappers
- 2021 - replacing the biochemical AtellicaDL with AtellicaSH (+sample handler)

Major events in 2021:

- Online professional seminars broadcast from DMCCB: The role of proteins in the human body Covid_19 and lab - very high participation;
- Active participation in the CSCB congress;
- By their active participation, the DMCCB employees managed to cope with both major analytical changes and the demanding pandemic situation in the CR with an impact on hospital operations
- Total number of publications: 13
 - of which with IF: 9
 - peer-reviewed articles: 2
 - educational articles for the general public: 1
 - chapters in monographs: 1

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

Head - prof. MUDr. Jiřina Bartůňková, DrSc., MBA

Senior Consultant prof. MUDr. Anna Šedivá, DSc.

Head laboratory technician Mgr. Jarmila Grecová

Basic description:

The Department of Immunology provides comprehensive care for paediatric and adult patients with immunopathological conditions, including clinical and laboratory examination and follow-up care. Besides outpatient examinations and treatment in the full range of allergology and clinical immunology, the Department of Immunology also provides a specialized outpatient clinic for vaccinating patients at risk, as well as regular therapy and application by infusion for indicated drugs for severe immune disorders in the daycare centre for children and adults. Clinical

trials in the field of immunotherapy are also conducted in the outpatient clinics and laboratories of the Department of Immunology. The department is the base for pregraduate and postgraduate tuition in immunology and carries out research in the same field. The Department of Immunology provides highly specialized care in immune disorders, immunodeficiencies and autoimmune diseases, including neuroimmunology, severe forms of allergic diseases and focuses on immunology of tumorous diseases. The department operates nationally in these areas of highly specialized care, sometimes even internationally. **In 2021, there were 16,511 patients examined in outpatient clinics, 292,180 examinations were performed in laboratories on 51,38 patients, and a further 26,282 examinations were performed in the liquorological laboratory.**

Specialized outpatient units:

- outpatient unit for immunodeficiency
- outpatient unit for allergies, autoinflammatory and autoimmune diseases
- daycare unit for therapy of immunopathological conditions for children and adults
- outpatient unit for application of antitumor vaccines under clinical studies
- Vaccination Centre outpatient unit

Centres:

- centre for the treatment of difficult-to-treat asthma (Omalizumab, Xolair, monoclonal antibody against IgE, and Mepolizumab, Nucala, monoclonal antibody against IL-5/R)
- centre for the treatment of hereditary angioedema (C1 inhibitor substitution, bradykinin inhibition, from 2019 and in 2020 biological therapy Lanadelumab, Takhzyro, monoclonal antibody against kallikrein), since 2021, new clinical trials with monoclonal anti-Factor XIIIa antibody
- Centre for diagnostics and treatment of immunopathological conditions of the Department of Immunology, 2nd Faculty of Medicine of Charles University and MUH in the framework of the Federation of Immunological Societies' Centres of Excellence

Specialized laboratory:

- liquor laboratory (under clinical cooperation with the Department of Neurology)

New methods and procedures:

- Extended options for diagnosis of severe immune disorders especially in methods for examining cell immunity;
- Functional examination of parameters of congenital and acquired immunity;
- Intracellular examination of anti-inflammatory cytokines;
- Extension of the cell immunity panel (proliferation test ki-67, examination of Th17 and T regulating lymphocytes);
- Introducing new methods in the context of the COVID-19 pandemic, determination of IL-6, sIL2R and antibodies against SARS-CoV-2 virus, new comprehensive solution of COVID-19 immunology with a KleeYa chemiluminescence-based analyzer
- Extended daycare units in supervision of home application of subcutaneous immunoglobulins
- Clinical studies of immunoglobulin preparations
- Clinical studies of modern targeted treatment of immunopathological conditions
- Clinical trials to treat hereditary angioedema
- Clinical studies of immunopathology of tumors.

Unique equipment:

- comprehensively equipped laboratory for flow cytometry including a sorter
- microscopic facility including a confocal microscope and scanning cytometer
- automated equipment for ELISA methods
- introducing Bio-flash methods in the field of autoantibodies
- equipped with automated chemiluminescence apparatus for antibody detection

Major events in 2021:

- Continued individual administration of unregistered preparation DCVAC under the hospital exception for modern therapy pharmaceuticals Sections 49b) and 49c) of the Act on Pharmaceuticals;
- Operation of an immunodeficiency centre as part of the global network of centres of the Jeffrey Modell Foundation, USA; a grant was obtained from this foundation
- Continuing the work of the FOCIS (Federation of Clinical Immunology Societies, USA, EU) Centre of Excellence
- Work on projects of Institutional Support of the MUH and work on grants from the Czech Health Research Council
- Work on the project Response of Innate Immunity to SARS-CoV-2 Infection and PID Diagnostics - companion web app in the scheme of Modern Therapies; in the same scheme, work on the project Testing Antibodies Against SARS-CoV-2 in MUH Employees
- Clinical study of a rare disease Activated PI3 Kinase Syndrome with a Specific Inhibitor CCDZ173X2201; including the inclusion of a patient from Germany in this study;
- Publications:
40 foreign impacted publications with a total impact of 360.859 8 publications in Czech, 5 chapters in the book Immunodeficiency.



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

Head - prof. MUDr. Pavel Dřevínek, Ph.D.

Senior Consultant MUDr. Otakar Nyč, Ph.D.

Senior Laboratory Technician - Bc. Vilma Klemensová

Basic description:

The department provides laboratory diagnostics of bacterial, viral, mycotic and parasitic infections. It provides consultation in ATB therapy, differential diagnostics of infections and infection complications. The department cooperates on monitoring the occurrence of nosocomial infections and monitors the occurrence of extraordinary profiles of ATB resistance. Takes part in the activities of the Quality Management Department by preparing, implementing and evaluating audits focused on the rational use of ATB and other drugs in the hospital. It is connected to the European system of surveillance of ATB resistance and a European study for monitoring the incidence of infections caused by *Clostridium difficile*. Through its representatives in the Central Coordinating Group of the National Antibiotic programme, Subcommittee for Antibiotic Policy of ČLS JEP and the committee of the Society for Medical Microbiology ČLS JEP, the department participates actively in the implementation of the antibiotic policy in the CR. Special emphasis is placed on evaluation of the latest diagnostic procedures and their implementation in the clinical practice with the aim to improve microbiological diagnostics. Since the beginning of the COVID-19 pandemic, the department has been providing basic and specialized PCR laboratory diagnosis of this infection. In the person of the departmental head, the facility is represented in the Laboratory Group of the COVID of the Ministry of Health of the Czech Republic; four departmental workers are on the committee of the Society for Medical Microbiology of the ČLS JEP.

New methods and procedures:

- Complex diagnostics based on extrahuman genome analysis - PCR diagnostics of respiratory infections, causative agents of sexually transmitted diseases, mycotic infections including zygomycetes and dermatophytes, causative agents of gastroenteritis including enterohemorrhagic *E. coli*, causative agents of meningitis, quantitative determination of herpetic agents;
- MALDI-TOF identification of bacterial agents and filamentous fungi using the international MSI database;
- Detection of virulence factors and resistance genes: MRSA and PVL in *S. aureus*, detection of *mcr* genes in clinical isolates Enterobacteriaceae with confirmed resistance to colistin; presence of carbapenemase detected;
- Molecular standardization: *C. difficile*, *S. aureus* (for the purposes of the CR including national surveillance), *P. aeruginosa* and complex *B. cepacia* (chronic infections in patients with cystic fibrosis);
- Proof of neutralizing antibodies against beta-interferon type of medication for MS centres in the CR;
- Cooperation with the Department of Internal Medicine of the MUH in preparing faecal transplantation in patients with recurrent colitis caused by *Clostridium difficile*;
- Rapid diagnosis of *Clostridium difficile* antigens and other intestinal pathogens in a closed system (using the MARIPOC device);
- Preparing and testing a method for PCR detection of hepatitis B virus that will be released for routine laboratory diagnostics in early 2022;
- Comprehensive PCR-based diagnosis of COVID -19 with a determination of basic point mutations.

Unique equipment:

- anaerobic boxes JOUAN and BENTLEY
- 2 devices from MALDI-TOF (used for weight spectrometry for fast and highly reliable identification of bacteria and fungi)
- PCR cyclers with high resolution melting analysis
- GeneXpert and Easy-Plex 384, automated systems for fast and highly reliably PCR detection of a range of viral and bacterial pathogens
- system for extracting bacterial and fungal DNA (NA Select)
- BiofireFilmArray to rapidly detect the causative agents of lung infections
- 4 x Abbott IDNow, these devices enable rapid and highly sensitive detection of SARS-CoV-2
- 3 x Zybio EXM 3000 nucleic acid isolators, 1 x MagCore for
- dg. COVID-19

Major events in 2021:

- At the end of the year, the management of the MUH awarded the Creative Achievement Award to Prof. MUDr. Dřevínek, Ph.D. (availability of the most modern drug for CF patients in the Czech Republic) and the Junior Creative Achievement Award to Mgr. Eva Smělíková (publication in a prestigious journal focused on detecting a new type of severe antibiotic resistance);
- In 2021, due to the epidemiological situation, the diagnostics for SARS-CoV-2 (COVID-19) was further developed; the detection of virus variants and the sequencing of the Spike protein gene were introduced;
- Taking part in preparing faecal bacteriotherapy and putting it into practice as a standardized preventive and therapeutic procedure introduced at MUH, including setting up a bank for storing donor stool samples;
- Monitoring the prevalence of plasmid-encoded colistin resistance (*mcr-1* gene) in inpatients and outpatients with a travel history
- Mgr. Krůtová took part in developing updated European recommendations for treating infections caused by *Clostridoides difficile* published in a prestigious scientific journal (Clinical Microbiology and Infection);
- Participation in preparing specialized seminars held by the Society for Medical Microbiology;
- Prof. MUDr. Pavel Dřevínek, Ph.D: member of the Committee of the European Cystic Fibrosis Society (ECFS), chairman of the SLM ČLS JEP;
- Mgr. Marcela Krůtová, Ph.D: member of the European ESCMID Study Group for *Clostridium difficile* – ESGCD;
- Publications:
27 foreign impacted publications

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

Head prof. MUDr. Josef Zámečník, Ph.D./until 31.8. prof. MUDr. Roman Kodet, CSc.

Senior Consultant MUDr. Daniela Nováková Kodetová

Senior Laboratory Technician Vladimíra Kratinová

Basic description:

The department deals with the laboratory diagnostics of diseases at the microscopic and molecular level. It uses biopsy and cytology methods with the related additional special laboratory investigation methods (immunohistochemistry, fluorescence in situ hybridization, enzyme histochemistry, molecular analysis of nucleic acids, electron microscopy and flow cytometry). One of the department's essential service functions is peroperative biopsies, where the histopathological diagnosis is communicated to the clinician during the surgical procedure. An important part of the department's work is the constantly developing area of predictive pathology, which is a group of immunohistochemical and molecular methods, on the basis of which targeted anticancer treatment with monoclonal antibodies or low molecular weight inhibitors is indicated. The department has specialized working groups focused on diagnosing the pathological conditions of individual organ systems. The department provides consultation services to other pathology departments in the CR, their primary purpose is to correct and supplement the biopsy findings of patients who will subsequently be treated at the MUH. The autopsy operation is no longer the department's dominant focus, however, it does have an educational and control function within the hospital. The department is an undergraduate and postgraduate training facility and teaches pathology for medical and non-medical students of the 2nd FFM CU, it takes part in the doctoral programme in biomedicine and specialization training in Pathology.

In 2021, the department carried out 18,355 biopsy examinations, 1,667 peroperative biopsies, 2,609 cytological examinations, 7,508 special laboratory examinations, 574 consultation examinations and 238 autopsies.

Specialized laboratories:

- biopsy laboratory
- cytological laboratory
- laboratory for immunohistochemistry
- laboratory for in situ hybridization
- laboratory for molecular pathology
- laboratory for flow cytometry
- laboratory for electron microscopy
- laboratory for neuropathology and muscle biopsies
- laboratory for pulmonal cytology

New methods and procedures:

- The introduction of new immunohistochemical methods for cancer diagnosis (MUC4, MCPyV large T-antigen, PHH3)
- The standardization of immunohistochemical methods for PD-L1 marker detection and HER2 overexpression analysis (HercepTest) with certified kits and optimizing them for the Agilent Dako Autostainer Link 48.
- The standardization of immunohistochemical methods for detecting ROS1 and ALK markers and optimizing them for Agilent Dako Autostainer Link 48.
- Developing diagnostic procedures and special immunohistochemical methods in

patients after kidney, heart, lung and uterus transplantation. This primarily concerns a rapid immunohistochemical detection of CD3, CD4, CD8, CD20, CD45RO, CD68 and C4d markers optimized for the Agilent Dako Autostainer Link 48.

- Introduced the examination of the BCOR gene break by fluorescence in situ hybridization (FISH).
- Developing a next-generation sequencing (NGS) methodology for cancer and introducing new diagnostic panels. This particularly concerns point mutation analysis kits (Archer VariantPlex HS kit) and fusion gene detection kits targeting a wide range of cancers (Archer FusionPlex Pan Solid tumor V2 kit).
- The introduction of new predictive tests on the NGS platform for the indication of targeted biological therapy in oncology.
- Development of „liquid biopsy“ methodology and detection of circulating tumour DNA (c+DNA) using the NGS method - kit for detecting point mutations from liquid biopsy (Archer LiquidPlex ctDNA 28).
- Developing immunohistochemical and molecular diagnostics in neuro-oncology and soft tissue tumours.

Unique equipment:

- Agilent Dako Autostainer Link 48 and Agilent Dako PT Link Pre-Treatment Module for immunohistochemistry examinations
- MiSeq Illumina sequencer for NGS methodology
- Cobas Roche and Idylla Biocartis analysers for detecting specific gene changes and microsatellite instability (MSI)
- Beckman Coulter DxFLX flow cytometer
- JEOL JEM-1400plus electron microscope
- Sakura Tissue-Tek staining and mounting machine for making histological slides
- NovaVoice dictation software for converting speech to text

Major events in 2021:

- There was a change in the departmental head - the long-time head, Prof. MUDr. Roman Kodet, CSc. was replaced by Prof. MUDr. Josef Zámečník, Ph.D.
- The department became part of the new Centre of Paediatric Neuro-oncology at Motol UH.
- The department contributed to 33 peer-reviewed publications in journals with an IF and 4 publications in domestic peer-reviewed journals. Sum total IF 234.544.

Department of Clinical Haematology

Senior Consultant MUDr. Jitka Segethová

Senior Laboratory Technician - Blanka Hájková

Basic description:

The department provides extended haematological care according to the criteria of the Czech Haematological Society ČLS JEP. It is divided into two sections - the laboratory and the clinical section. The laboratory performs routine and special haematological examinations for the MUH and for requests from outside the region. **In 2021, the laboratory performed almost 976,900 procedures.** The laboratory is a reference laboratory for diagnostics of acute leukemias and myeloproliferative conditions in children. The attention in adults' haematology is focused on precise morphological diagnostics of the myelodysplastic syndrome. The laboratory provides practical

training for students in the fields of Medical Laboratory Technician and Laboratory Diagnostics in Healthcare. The clinical section includes an outpatient unit for the children's and the adults' section. **40,650 procedures were carried out at the outpatient section in 2021.** The adult outpatient unit also focuses on treating multiple myeloma and low malignant lymphoproliferative diseases, including administering transfusion products and chemotherapy.

New methods and procedures:

- Examination of the function of thrombocytes;
- Introducing a methodology for examining the levels of new antithrombotic medicines;
- Introduction of the methodology for the examination of fibrin monomers;
- Introduction of a methodology for determining f. XIII;

Unique equipment:

- SYSMEX XN 3000 - automated line for examining the blood count including digital morphology
- coagulometers (ACL) for the examination of routine and special coagulation tests.
- an ACL TOP 750 CTS coagulometer with preanalytical phase control
- STA-R Evolution – analyzer for examining fibrin monomers.
- device for functional analysis of thrombocytes (Innovance PFA 200)
- Bactec satellite incubator for receiving haemocultures
- The DCH manages the AQT90 Flex radiometer PCT machine in the Adult Emergency Department, which processes D-dimers in acute patients.

Major events in 2021:

- In 10/2021 we successfully passed the NASKL Audit R3.
- The morphological laboratory participates in international studies of treatment of acute leukemias in children.
- The department is actively involved in the activities of the Czech MDS Group.
- Active participation in the Czech Myeloma Group including entries in the register of monoclonal gammopathies CMG.
- The COVID 19 pandemic has meant an increase in the number of coagulation tests in the haematology laboratory, especially those performed multiple times a day in critically ill patients (e.g. antiXa, fibrin monomer tests have increased by 25-30%).

Department of Clinical Psychology of MUH

Head of Department Mgr. Markéta Mohaplová /until 23.11. Mgr. Zuzana Kocábová, Ph.D.

Basic description:

The Department of Clinical Psychology (DCP) is made up of 37 clinical psychologists in various positions who provide psychodiagnostic and psychotherapeutic care to adult and paediatric patients at the MUH. The department provides care for paediatric and adult patients before and after organ transplantation, paediatric haemato-oncology patients and patients with chronic pain. The psychologists are involved in complex diagnostic and therapeutic care for paediatric patients with autism spectrum disorders, eating disorders and other psychiatric diagnoses. DCP psychologists are also part of multidisciplinary teams caring for paediatric patients with chronic renal failure, cystic fibrosis and diabetes. They also care for paediatric and adult patients in the epilepsy surgery programme, patients in the Aftercare Centre, and are also part of the teams focused on research and treatment for neurodegenerative diseases. Currently, the DCP

also works closely with support and palliative care teams for children and adults. There is also a Family Therapy Centre within the department. The DCP provides psychological services to MUH employees, including regular interviews. The department is accredited by the Ministry of Health of the Czech Republic for the theoretical-practical and practical part of specialization training in Clinical Psychology and Child Clinical Psychology.

New methods and procedures:

- The DCP psychologists have joined the team caring for patients with Covid-19, who need intensive care, and their families.
- We have also expanded the team to include a psychologist specializing in child patients requiring rehabilitation care.
- We have expanded psychotherapeutic care for children with IBD by introducing psychotherapy groups.
- In collaboration with the University of Southampton, we took part in developing the Czech version of the Quality of Life questionnaire for PCD patients.
- We received a TAČR grant, which includes creating developing original methods for the neuropsychological diagnosis of paediatric patients.

Blood Bank Department

Senior Consultant MUDr. Eva Linhartová

Senior Laboratory Technician - Martin Matějček

Basic description:

The Blood Bank Department is one of the common examination and therapeutic units of the MUH. It ensures purchasing, storage and issue of all types of transfusion preparations for patients in the MUH. **In 2021, the department issued a total of 28,338 T.U. of all types of transfusion preparations**, 19,054 T.U. of erythrocytic preparations, 5,736 T.U. of plasma, 3 548 T.U. of thrombocytic preparations. The consumption of transfusion products was lower than in 2020. What's more, pathogen inactivated apheresis derived recuperative plasma for patients with COVID-19 and granulocyte preparations for patients of the Department of Paediatric Haematology and Oncology were administered during the year. The Blood Bank Department carries out the basic and specialized immunohaematological examinations as requested by medical facilities, prenatal examinations for the pregnancy advisory centre of the Department of Gynaecology and Obstetrics and provides transfusion preparations for intrauterine and exchange transfusion as needed. **In 2020, 10,107 blood group examinations, 21,038 antibody screening tests, and 35,000 compatibility tests were carried out as part of the basic pre-transfusion examinations.** The number of specialized immunohaematological examinations was similar in 2021. Prenatal examinations are without any major changes. The number of transfusion product irradiations was higher than in 2020 - 9,807 in all.

At the autotransfusion and apheresis section, autologous full blood is collected mainly for patients from the Departments of Orthopaedics of the MUH, Department of Urology of the 2nd Faculty of Medicine and MUH, and for patients of the Na Homolce Hospital. **In 2020, a total of 567 autologous whole blood donations, 19 leukapheresis donations and 107 extracorporeal photochemotherapy procedures were performed.** The department provides tuition under the 2nd Faculty of Medicine, Charles University and for pregraduate and postgraduate students in transfusion medicine for physicians and NGO.

Specifics of the department:

- laboratory section
- section for autotransfusion and apheresis
- irradiator for irradiation of transfusion products

New methods and procedures:

- Separation of autologous peripheral stem cells (PBPC) is carried out for paediatric patients from the Department of Paediatric Haematology and Oncology of the 2nd Faculty of Medicine, Charles University and MUH (DPHO)
- An extracorporeal photochemotherapy method was applied to patients of III. surgical clinic 1. FM and MUH after lung transplantation and for paediatric patients and DPHO patients after bone marrow transplantation.

Unique equipment:

- automated immunohaematological analyser Erytra + Eflexis
- The MacoGenic G2 irradiation device for UVA irradiation of blood cells according to the THERAFLEX ECP protocol using the “off line” technique.

Major events in 2021:

- In cooperation with the DPHO, international accreditation was again obtained from The Joint Accreditation Committee ISCT-EBMT (JACIE) for sampling from the peripheral stem cell separator.

Department of Rheumatology for Children and Adults

Senior Consultant doc. MUDr. Rudolf Horváth, Ph.D.

Charge Nurse Indira Jankovičová

Basic description:

The Department of Rheumatology for Children and Adults provides comprehensive diagnostics, treatment and follow-up treatment of paediatric and adult patients suffering from inflammatory rheumatic diseases, focusing on juvenile idiopathic arthritis, rheumatoid arthritis, ankylosing spondylitis and other forms of spondyloarthritis, psoriatic arthritis, system diseases of the connective tissue and primary vasculitis. Other cooperating fields and laboratory services contribute to the care for patients. The department actively participates in the medical advice activities of the MUH and provides medical consultancy also to other facilities nationwide.

In 2021, the department carried out 6,569 collections and 6,378 outpatient examinations 3,730 minimum contacts, 712 telephone consultations, 537 specialized ultrasound examinations and 303 specialist consultations at the MUH's inpatient clinics. There were 146 outpatient examinations at the Department of Clinical Osteology.

Specialized outpatient units:

- specialized outpatient unit of rheumatology for adults
- specialized outpatient unit of rheumatology for children
- specialized outpatient clinic for primary vasculitis
- specialized outpatient clinic for the dg. and treatment of autoinflammatory syndromes
- outpatient unit of musculoskeletal ultrasonography
- centre for biological treatment of children and adults in rheumatological indications
- clinical osteology outpatient unit

New methods and procedures:

- The portfolio of biological drugs used was expanded by IL-17 blockers in indications of ankylosing spondylitis, non-radiographic spondyloarthritis and psoriatic arthritis.
- The portfolio of biologics used has been expanded to include IL-6 inhibitors in the indications of GCA (giant cell arteritis) and PMR (polymyalgia rheumatica)
- The drug portfolio has been expanded to include small targeted synthetic molecules (JAK inhibitors) to treat RA and PsA (psoriatic arthritis).
- The portfolio of biologic drugs has been expanded to include new IL-1 in indications of rare autoinflammatory syndromes.
- Bedside diagnostics and dynamic monitoring of the activity of inflammatory rheumatological diseases with musculoskeletal ultrasonography have been established.
- In collaboration with the Department of Imaging Methods of the 2nd FFM CU and Motol UH whole-body MRI (magnetic resonance imaging) is carried out in specific indications (e.g. CRMO - chronic recurrent multifocal osteomyelitis).
- As part of the MUH's institutional support projects, ultrasound examination of a wide portfolio of inflammatory and non-inflammatory rheumatic diseases has been set up.

Unique equipment:

- two ultrasound devices (Esaote Mylab Class C, Esaote Mylab Seven) fitted with high frequency probes
- capillaroscope for examining pathology in patients with SSc, SLE, MCTD and system autoimmunity

Major events in 2021:

- Setting up a clinical osteology outpatient unit
- The department's employees regularly contributed to local specialized congresses organized by the Czech Rheumatological Society ČLS JEP and foreign congresses EULAR and ACR with their lectures.
- The centre actively presents the outcomes of the ATTRA registry in the Czech Republic and at the international congresses EULAR and ACR.
- Departmental employees regularly publish in domestic and foreign periodicals. 10 foreign publications with an IF, 6 peer-reviewed publications and book chapters were published.
- In 2021, the work on the internal grant, with institutional support from the MUH, entitled “Use of Musculoskeletal Ultrasonography in Detecting Cartilage Damage in Patients with Rheumatoid Arthritis and Osteoarthritis” continued successfully. This project was extended to investigate enthesitis in patients with spondyloarthritis.

Department of Central Operating Theatres for Children

Head Nurse - Bc. Alice Podařilová

Supervising Physician senior lecturer MUDr. Vladimír Mixa, Ph.D., KARIM

Basic description:

The Department of Central Operating Theatres for Children concentrates all surgical procedures for all surgery and other fields from the paediatric part of the hospital, except for cardiac surgeries. This concerns the fields of paediatric surgery, ENT, orthopaedics (also adult surgery), dental surgery, neurosurgery and ophthalmology. Bone marrow sampling, trepanobiopsy, PICC and Midline are also carried out here. Pregraduate and postgraduate tuition for physicians and other medical staff is carried out in the premises of the central operating theatres for children.

A total of 7,037 surgical procedures were carried out in 2021.

New methods and procedures:

- In the field of KARIM, children undergo the insertion of central venous catheter, PICC and Midline catheters at the COT. In 2021, the total number of operations was 314.
- In the field of transplantology, there were 6 kidney transplants and 3 cadaveric harvests.
- CLEFT operations on the laryngitis trachea-oesophageal area were performed on a child with oesophageal atresia.
- Coordinated multidisciplinary surgical procedures in paediatric oncosurgery.

Unique equipment:

- equipment for minimally invasive surgery with 3D imaging from B Braun
- LS instruments for the smallest children 3.5 mm and 5.0 mm
- Aeris balloon catheter – used for gentler dilation of stenosis of the respiratory tract in children
- operating table accessories were upgraded- head support mechanism for NCH operations
- Duet Encompass device – modern video equipment for urology and EMG of the pelvic floor with simultaneous interconnection to X-ray devices
- cystoscope with EndoResector for the smallest children allowing minimally invasive surgery in small children (by Olympus/ Wolf)
- Stelaris optic system for cataracts and front and rear segment
- Biom optic system, addition to the microscope for rear segment surgeries
- complete equipment of the central operating theatres for children with premium anaesthesiology devices by GE, series Aisys, Avance and Carestation
- Radix (Storz) 4K endoscopic tower, Olympus and B Braun
- Olympus mini ETD2 automatic endoscope disinfectant

Major events in 2021:

- The COT for children is a very sought-after training venue.
- It was possible to increase the total number of procedures performed in the COT department for children to 7,037 compared to 6,300 in 2020. It manages to keep fully operational even in today's unpropitious staffing and hygiene-epidemiological situation, which is caused by the long-term shortage of nurses and orderlies and the COVID 19 pandemic.

Department of Central Operating Theatres for Adults

Senior Consultant MUDr. Zbyněk Jech

Head Nurse - Vladana Roušalová

Basic description:

The COT department for adults is the background for surgical treatment at eight surgical departments in the adult part of the MUH. Surgical Department, Department of Paediatric and Adult Orthopaedics and Traumatology, Department of Cardiovascular Surgery, Neurosurgical Department for Children and Adults of the 2nd FFM CU and the 3rd Surgical Department, 1st Orthopaedic Department, Department of Otorhinolaryngology and Head and Neck Surgery, Department of Spondylosurgery of the 1st 2nd Faculty of Medicine, Charles University.

Anaesthetic care at the COT is provided by the Department of Anaesthesiology, Resuscitation and Intensive Medicine of the 2nd 2nd Faculty of Medicine, Charles University. The 24 operating theatres perform operations ranging from routine to highly specialized. Of all the specialized procedures, these are primarily lung transplantation, operations in multidisciplinary teams for cancer patients and close cooperation when treating polytrauma patients. In the framework of the surgical facilities, the COT employees took part in running the MUH Robotic Surgery Centre. Since September 2021, the COT department for adults has been operating on the second da Vinci Xi robotic operating system, which is used by five Motol departments: 1st and 3rd Surgical Department, Gynaecological Department, Department of Paediatric Surgery and recently the Department of Otorhinolaryngology and Head and Neck Surgery. The COT provides undergraduate and postgraduate training for medical and non-medical health professionals. **In 2021, there were 16,046 operations performed at the COT for adults.**

New methods and procedures:

- Robotic surgery on the da Vinci Xi robotic operating system for surgery, gynaecology, paediatric surgery and ENT
- Microsurgery with an operating microscope - Exoscope with a 3D display;

Unique equipment:

- da Vinci Xi robotic operating system
- Aeos DSM operating microscope (Exoscope in 3D view) - B.Braun
- Stealth Station S8 neuronavigation device - Medtronic
- Novaerus-Defend 1050 - two disinfection units to disinfect the air at the COT
- High-End laparoscopic tower - Olympus with 4K image resolution
- Olympus bronchoscopic tower
- replacement of coagulation devices, surgical instruments, accessories and suction devices

Major events in 2021:

- As a result of repeated waves of Covid-19 and the related restrictive measures, there were 2,760 fewer operations in 2020 and 1,726 fewer operations in 2021 than in 2019. By 2019, the total number of operations performed differed by only a few dozen.
- One nurse completed the second level of higher education in nursing; two nurses completed the first level of higher education in nursing; two orderlies completed the accredited qualification course - general orderly
- Publications: Jech Z., Hoch J.: Tumours of the Anus (chapter 16.18.6) in Mařatka's Gastroenterology, (Editor: Zavoral M.), Karolinum, 2021, ISBN 978-80-246-5002-9

Department of Transplantations and Tissue Bank

Senior Consultant MUDr. Jan Burkert, Ph.D.
head nurse Anna Habrmanová, CETC, CTBS

Basic description:

The Department of Transplantations and Tissue Bank (DTTB) as the only facility in the CR provides a programme for collection and transplantation of organs (TC), as well as collection and transplantation of tissues (tissue facility – TF).

Specifics of the facility:

1) DTTB - TC creates the organizational prerequisites so that individual departments of MUH can indicate potential organ and tissue donors and, when necessary, organ and tissue donations and individual national organ transplant programmes can be implemented. These are:

- National programme of kidney transplantation in children (head physician MUDr. Jakub Zieg, Ph.D. from the Paediatric Department)
- National programme of lung transplantation in children and adults (lead physician prof. MUDr. Robert Lischke, Ph.D. from III. surg. dept.)
- National programme of heart transplantation in children (chief physician senior consultant MUDr. Roman Gebaurer from the Children's Cardiac Centre)
- MUH Organ and Tissue Donation Programme - coordinator, prof. MUDr. Karel Matoušovic, DrSc. died in 2021

2) The DTTB – TF ensures operation of the Specialized Tissue Bank (STB 85). It is engaged in procuring, processing, storing and distributing cardiovascular tissue from cadaveric donors, bone tissue from living and cadaveric donors and amniotic membrane from living donors. The National Bank of Allogeneic Valve Grafts also operates nationwide. The aim is to perform as many multi-organ harvests (MOH) from cadaveric donors as possible, either in the central operating theatres of Motol UH or in other TCs in the CR or abroad (mainly in Slovakia). In some situations, we perform MOH at Motol UH from a donor indicated in another TC and transported to Motol UH.

In 2021, there were **15 multiorgan harvests (MOH) from cadaveric donors, which was the best donation activity in the Czech Republic in 2021! Furthermore, 1 remote collection from a donor after circulatory death (DCD) during remote lung transplantation in Pilsen UH was performed. 7 kidney transplantations in children (all from cadaveric donors) were carried out. 52 lung transplantations were carried out (100% of which were bilateral and 94% on ECMO) as were 4 heart transplants in children. 97 hearts were received in the cardiovascular tissue bank and 127 grafts for transplantation of heart valves and conduits were issued, 122 of which were transplanted. Two vascular grafts were harvested fresh, 15 grafts were accepted and 6 grafts were transplanted. 45 bone grafts were taken from living donors, 60 from cadaveric donors and 61 grafts were transplanted. 53 calvarial bone grafts were taken from living donors for autologous use and 22 cranioplasty procedures were carried out. Amniotic membrane grafts from the placenta were collected from 25 living donors and 462 grafts were issued for transplantation.**

Major events in 2021:

- The number of lung transplants increased again, to a record 52, i.e. 4.8 pmp (number per 1 million population), and Motol UH thus became one of the 20 centres worldwide that transplant on more than 50 patients per year (only 6 of them are in Europe).
- We continue to increase the number of transplanted valve grafts, and for the 6th

year we have transplanted more than 10 valve grafts pmp.

- The human amniotic membrane processing programme is now running smoothly. Thanks to grant support, the programme continues to expand (AZVCR, internal number 5,368, ministry number NV18-04-00106).



Outpatient sector

Emergency Department and Medical First Aid Service for Children

Senior Consultant MUDr. Jitka Dissou, MBA
Head Nurse - Monika Vilímová

Basic description:

The Emergency Department and Medical First Aid Service for Children cares for A+E paediatric patients aged 0- 17 years + 364 days. The department has the following 3 parts: Urgent admission - acute boxes, Urgent admission - ambulance and Urgent admission - expectoration. From 4:00 p.m. to 7:00 a.m. on weekdays and on weekends, the emergency room works non-stop as a children's emergency room. Priority 1 and 2 patients and patients received from the ambulance service are treated in the acute emergency boxes. The department also has the "expectoration", where it is possible to provide acute infusion therapy, analgesic treatment or observe patients for up to 8 hours. POCT ABR, ECG, ultrasound, statim PCR are available directly in the department. CT, ultrasound, X-ray and MRI are located in the immediate vicinity of the emergency room.

In 2021, there were 24,808 children treated at the Emergency and Medical First Aid Service Department, of which 5,337 children were treated in acute boxes.

Major events in 2021:

- On 9.9.2021, to mark the 10th anniversary of setting up the Children's Emergency Intake, we organized the 1st Motol Day of Children's Emergency Medicine conference and the Tips and Tricks in Securing a Child in Pre-hospital Care workshop.

Department of Dermatovenerology for Adults

Senior Consultant MUDr. Alena Machovcová, Ph.D., MBA
Head Nurse - Helena Janoušková

Basic description:

This is an outpatient unit without a link to an inpatient unit within the MUH. The department provides basic and specialized care in dermatology and venerology focusing on dermatoallergology and occupational skin defects, prevention and treatment of skin tumors and treatment of psoriasis. **In 2021, more than 7,486 patients were treated in outpatient care and almost 22,483 treatments were carried out.**

Specialized outpatient units:

- outpatient unit of venerology
- outpatient unit for pigment nevi and skin tumors
- outpatient unit of dermatology and outpatient unit for occupational skin defects
- corrective dermatological outpatient unit
- lymphological outpatient unit
- acne advisory centre
- outpatient unit for patients after organ transplantation
- nail advisory centre
- outpatient unit for diagnostics and treatment of nail diseases
- centre for biological treatment of psoriasis, chronic hives, hidradenitis suppurativa and atopic eczema
- lymphological daycare centre
- daycare centre for phototherapy

New methods and procedures:

- laser interventions in dermatology
- surgical procedures on nails (such as ingrown nails, nail plate deformation)

Unique equipment:

- digital dermatoscope MoleMax I plus
- high-performance laser Fotona XS Erb: YAG and Nd: YAG
- device for photodynamic treatment of skin tumors

Department of Paediatric Dermatology

Senior Consultant MUDr. Jana Čadová
charge nurse Alena Kurešová

Basic description:

The Dermatology Department for Children provides outpatient services in 3 outpatient clinics and a surgery room. It is involved in the diagnosis, treatment and observation of paediatric patients with all skin diseases. It also provides consultation services to patients in the inpatient wards of the hospital's children's section. It acts as the CR's super-consultation workplace for serious or rare diseases. It takes part in training doctors in the fields of dermatovenerology, allergology or paediatrics in the framework of postgraduate education. **In 2021, there were 10,583 outpatient procedures and 321 medical consultations were provided at the inpatient beds of the hospital's children's section.**

Specifics of the facility:

Doctors provide expert advice for patients with severe atopic eczema, nevi, genodermatosis and hemangiomas. Working in close cooperation with the Children's Hospital's clinics (Paediatric Clinic, Clinic of Paediatric Haematology and Oncology, Department of Paediatric Surgery, Department of Paediatric Neurology, Department of Rheumatology, Institute of Biology and Medical Genetics, Department of Immunology), they take part in diagnosing rare diseases and setting up adequate treatment. Since 2020 we have been a centre for the biological treatment of atopic eczema with dupilumab.

New methods and procedures:

- BTL-4110 Premium bio-stimulation laser - which is used to treat scars and acne;
- Illuco IDS-3100 (Magnum+) dermatoscopic magnifier with integrated polarization; with a Wood's lamp is now used to improve the diagnosis of vitiligo and superficial mycoses;
- DermoGenius ultra (Dermoscan) - continues to improve the examination of high-risk pigmented lesions with a digital dermatoscope.

Major events in 2021:

- Employees contribute with lectures at domestic professional events, take part in postgraduate education for the ČLK and IPVZ courses
- Publications
 - MUDr. Štěpánka Čapková: Cutaneous manifestations of allergy, pp. 231-279. (in Czech) Chapters in monographs Vít Petrů et al., Paediatric Allergology, 2nd revised and updated edition, Maxdorf 2021, 453 pages (in Czech)
 - Čapková Š.: Seborrheic dermatitis in infancy. (in Czech) Dermatol. praxi 2021; 15(1): 37-41
 - Čadová J.: Exanthema in a paediatric dermatologist's clinic. Alergie 3/2021: 158-162

Primary Care Department

Senior Consultant MUDr. Jaroslava Kulhánková
Head Nurse - Alena Kašajová

Basic description:

The department provides acute and long-term preventive care for the staff, patients from outside the Motol hospital registered under individual payments, foreigners with or without insurance from the local health insurance companies, and non-standard care for persons with Czech health insurance. In 2021, we took blood to test for antibodies to Covid 19. In addition, there were 1,198 vaccinations in 2021, including 172 mandatory tetanus vaccinations, 279 hepatitis B vaccinations for employees and 747 other vaccinations. The department is a pregraduate and postgraduate tuition site accredited in general practice. **24,465 patients were treated at the Primary Care Department in 2021.**

Department of Emergency Admission and Medical First Aid Service (LSPP) for Adults

Senior Consultant MUDr. Lenka Kozlíková, MBA
Head Nurse - Bc. Lucie Vacková

Chief Physician of Medical First Aid Service - MUDr. Aleš Ducháček

Basic description:

The Department of Emergency Admission for Adults (DEAA) specialized in basic examination, stabilization of vital functions, treatment of acute problems and decision on admission or release for all patients seeking the services of this department. The department has an inpatient section of emergency admission equipped with 17 monitored beds, (60% of patients in this section are brought by ambulance, 25% come without a referral and 15% on the recommendation of an outpatient specialist, most often a general practitioner), as well as acute outpatient departments for surgery, traumatology, neurology, urology and the A+E outpatient section, which together have another 12 examination beds. The DEAA also has a triage room with one bed and an ARO box with one bed, where patients in critical condition with various aetiologies are admitted in cooperation with KARIM. A total of 31 beds is available.

The total number of patients treated at the Adult Emergency and Medical First Aid Service Department in 2021 was 62,791, of which 23,397 patients were treated in the inpatient part of the department, 3,882 and 3,949 patients were treated in the acute outpatient department of Surgery 1 and Surgery 3, i.e., 17,187 patients were treated in the acute trauma outpatient department, 4,297 patients were treated in the acute neurological outpatient department and 10,082 patients were treated in the Medical First Aid Service Department.

Department of Hospital Hygiene and Epidemiology

Senior Physician - epidemiologist MUDr. Jarmila Rážová, Ph.D., MUDr. Vilma Benešová - until April 2021

Senior Hygiene Assistant - Jana Hrončeková

Basic description:

The department's activities meet the legislative requirements of the acts on health services and protecting public health, namely the obligation of health service providers to establish and implement a programme to prevent and control healthcare-associated infections. In practice, this means carrying out measures to reduce the occurrence or spread of all infections in the medical and non-medical areas of the hospital depending on the specific conditions of each workplace. In 2021, this represented a major activity.

Specifics of the facility:

The ongoing Covid-19 epidemic and the adoption of a number of anti-epidemic measures had an immediate impact on the running of the entire healthcare facility and fundamentally affected the activities of the Department of Hospital Hygiene and Epidemiology. Priority was given to anti-epidemic measures in connection with the Covid-19 outbreak, in particular quarantine and isolation measures, routing, contact tracing and providing staff with protective equipment and devices, as well as carrying out emergency anti-epidemic measures in all areas of healthcare provision. **During 2021, there were 572 quarantine measures (2,798 in all as of March 2020), 770 employees were diagnosed with a Covid-19 infection (1,913 in all as of March 2020), and 2,297 patients were admitted to dedicated inpatient units with this diagnosis (3,498 in all as of March 2020).**

Data from the reporting of healthcare-associated infections (HAIs), called incidence rates, were continuously monitored and analysed. In 2021, **the incidence of HAI was recorded as 0.74 with a significant prevalence of uroinfections.** Barrier measures, including isolation if multidrug-resistant strains were found, and follow-up monitoring were imposed and monitored in all patients with HAI. It should be noted that the HAI analysis was not carried out as in previous years (i.e. searching in databases other than the mandatory reporting in UNIS) due to the epidemic situation. Legislative requirements (Ministry of Health of the CR, SÚKL) were met, even during the epidemic, in the area of **checking the bacterial cleanliness of the environment** (306 measurements with an air sampler, or 87 control reports, 2,252 environmental swabs), **endoscopic techniques, sterilization and disinfection techniques** (206 control reports) and water quality control (including prevention of Legionella - 285 water samples were taken, of which 230 tested negative for Legionella spp.) There was a significant cut in the number of **audits on the hygiene and epidemiological regime (190 compared to 219 in 2020)**, 932 epidemiological investigations were carried out (without covid-19). The severity of the epidemic situation also manifested in the number of **room disinfections** (1,168, compared to 877 in 2020) and was reflected in the **consumption of hand sanitizers, which was 31.5 litres per 1 000 treatment days** (in 2020, this consumption reached a record 60 litres per 1 000 treatment days).

Regular services to ensure daily reporting to the ÚZIS/ ISIN (information system on infectious diseases) registry have been set up in the department, as have case tracing, the imposition of isolation and quarantine and other anti-epidemic measures and an ongoing analysis of staff vaccination rates. Individual cases of isolation and quarantine measures and the PCR investigation strategies for the presence of SARS-CoV-19 in epidemiologically serious situations were continuously consulted upon.

Hospital Pharmacy of the MUH

Senior Pharmacist - PharmDr. Petr Horák

Deputy Senior Pharmacists - Mgr. Milan Vegerbauer and PharmDr. Markéta Petrželová

Senior Pharmaceutical Assistant - Helena Bohabojová

Basic description:

The main task of the Hospital Pharmacy of the MUH is to provide effective and safe drugs for hospitalized patients and outpatients and generally to set up and inspect all steps required in handling of drugs with an impact of the safety of patients and the outcomes of their treatment. The Hospital Pharmacy ensures the issue of drugs, as well as individual and mass production of drugs including sterile (cytotoxic substances, parenteral therapeutic preparations without antimicrobial additives and other drugs) and non-sterile drugs (individual preparations, especially for paediatric patients), acquisition of unregistered drugs and obtaining drugs for clinical studies and clinically pharmaceutical care. The pharmacy provides consultation service to patients and medical professionals and theoretical and practical tuition including internships for pregraduate

and postgraduate students. The hospital pharmacy takes part in formulating MUH's drug policy by its methodological guidance of and participation in the Commission for Effective Pharmacotherapy. It also develops the MUH's internal regulations in the area of handling pharmaceuticals and takes part in auditing activities within the pharmaceutical quality management system.

In 2021, the Hospital Pharmacy - Department for Preparation of Cytostatic drug prepared 32,850 ready-to-use doses of cytotoxic drugs. The IPMP department's work included preparing 246,000 capsules and 18,500 children's suppositories and 4,500 adult suppositories. The individual preparation of medicinal products (IPMP) containing medicinal cannabis is being further expanded, the annual consumption has exceeded 2,800 g altered to the oral form for administration in capsules, and the reconstitution of selected products in the laboratory for preparing medicines containing dangerous drugs has been expanded, e.g. by the preparation of risdiplam for treating spinal muscular atrophy.

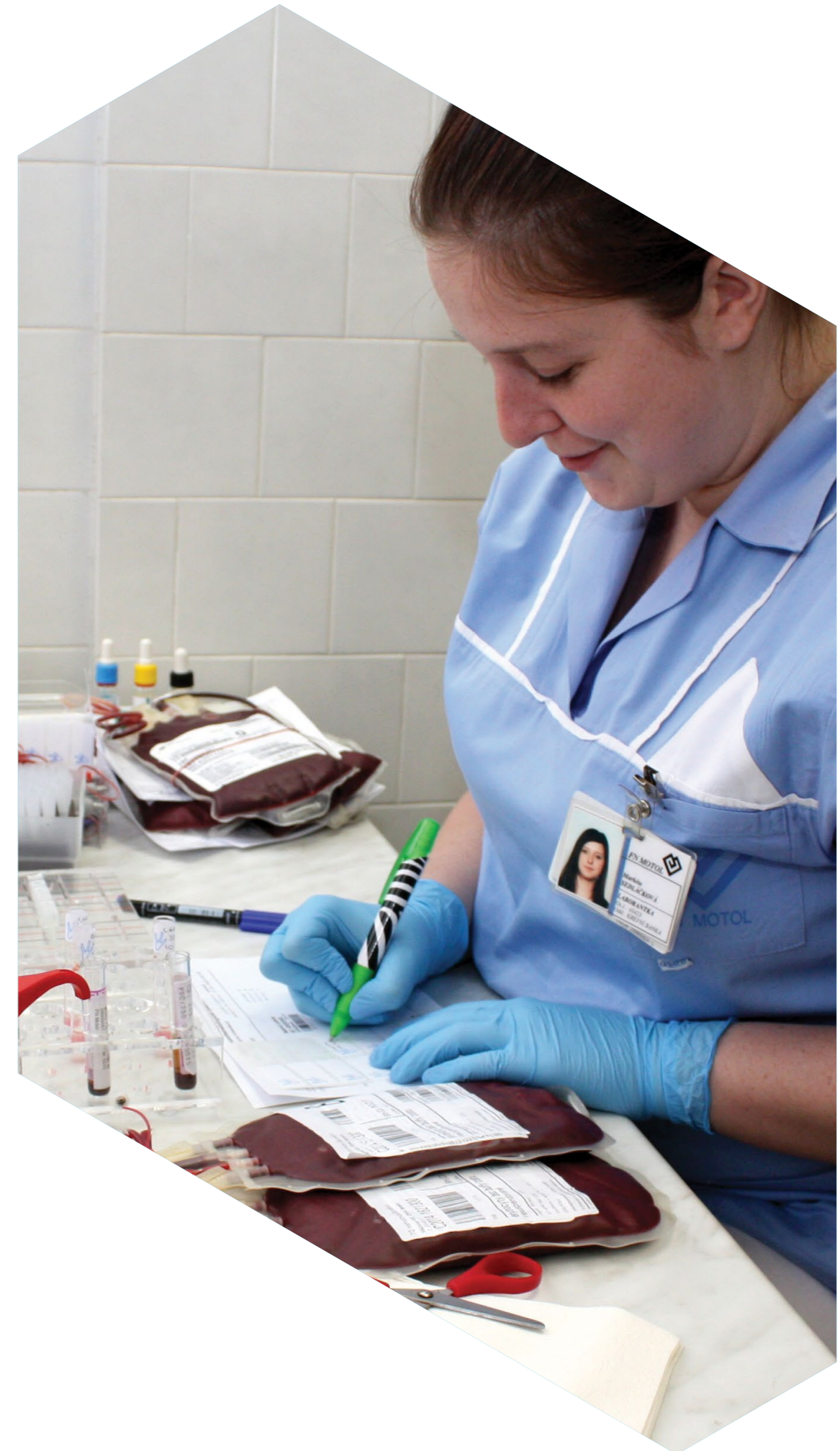
The Sterile Medicines Preparation Dept. (OPSL) prepared a range of products not available in the form of mass-produced medicinal product for stock (antidotes, etc.), cardioplegic solutions, etc., hydration and neonatal bags (over 10,000 in all), sterile eye ointments and drops. The hospital pharmacy has also prepared more than 1,500 products for in vitro diagnostics. **Roughly 920,000 packs of medicines (excluding infusion solutions) prescribed on more than 48,000 requests were dispensed to the hospital. A total of 1.13 million units of medicines, medical devices and the supplementary range, prescribed on 280,000 prescriptions or vouchers, were issued to the public, and in addition to this, almost 9,000 units of the most expensive drugs were issued to patients.** The pharmacy participates in all clinical assessments of drugs that are in progress at the MUH in accordance with the good clinical practice principles and good pharmacy practice principles. In all, almost 9,000 packs of medicines have been issued in clinical trials. **Our clinical pharmacists carried out 3,482 assessments of pharmacotherapy of hospitalized patients and provided 794 medical consultations upon request.** In the scientific and publication activities, the pharmacy focused on individual preparations for patients of specific age groups, especially paediatric patients, development of new customized formulas with suitable recipes and stability verified by validated methods, as well as research on shortages of drugs and staffing needs in the hospital pharmacy. The outputs from these activities are regularly published and presented at specialized fora in Europe and in peer-reviewed and impacted magazines.

New methods and equipment:

- A new preparation of sterile DEXTROGEL 1% for neonates was developed and introduced.

Major events in 2021:

- National coordination for the supply of monoclonal antibodies casirivimab-imdevimab.



NURSING CARE

The Covid - 19 pandemic continued in 2021. The non-medical staff, however, had experience with it and handled the difficult situation better. It turned out that the staff likes a challenge and enjoys learning new things. Ensuring the covid inpatient wards, the collection centre, the vaccination centre, patient transfers, isolation, interdisciplinary assistance all ran smoothly was the order of the day. The pandemic and the experience gained inspired innovation in the concept of nursing care.

Quality Indicators

Monitoring nursing care indicators /pressure ulcers and falls/ is an integral part of nursing. In 2021, we continued to objectify the reporting of risks and the occurrence of pressure ulcers and chronic wounds in hospitalized patients thanks to an integrated system in UNIS. The outputs are an incentive to continuously improve the quality of patient care. We are putting increasingly greater emphasis on preventive measures. We focused on monitoring the occurrence of pressure ulcers related to surgical procedures. The way to success is the preventive use of medical devices and equipment.

For the seventh time the MUH has participated in the international "Stop Pressure Ulcers" day on 18. 11. 2021. This public event aims to bring the issue of preventing and treating pressure ulcers to the lay and professional public. There were video projections, presentations of medical materials by pharmaceutical companies, demonstrations of patient positioning, and tastings of dietary supplements, which are an important part of preventing and healing pressure ulcers. The public and employees were interested in the event. As with pressure ulcers, with falls too we have objectified risk reporting and focused on prevention. Although the number of patients at risk increased in 2021, the number of patient falls fell.

PICC team

The PICC team provides comprehensive vascular insertion care for inpatients and outpatients. One team works under the auspices of the Internal Medicine Clinic and the other for the children's section under the auspices of KARIM. The team is the guarantor of continuous quality improvement in vascular insertion care. During 2021, the nurses made a total of 2,840 vascular insertions in the adult section / PICC 1319, Midline 229, Minimidline 372, Long PIC 920/.

Part of patient care is also dressings and managing complications from all vascular insertions. The team treated 2,252 patients with these insertions. In the paediatric section, where doctors also do the insertions, the team made 172 vascular insertions / PICC 59, Midline113/. In the second half of the year we gradually started courses on the issue of caring for vascular insertions. In the previous year, we had to limit the courses due to the pandemic.

Department of Medical Nutrition

As part of their work at the clinical workplaces, nutritional therapists regularly visited patients diagnosed with a nutritional risk or where our intervention was requested. Upon consultation, we recommended the most suitable clinical enteral nutrition formulas. They were tailored to the patients' requirements, as concerns their religious or other specific needs, so as to provide them with the necessary nutrient and energy intake. Due to the

ongoing situation with Covid- 19 in 2021, the number of written consults did not increase as about 840 bedside consults were written. The number of outpatients seen in 2021 was roughly 1,300, the same number as in 2020. Our work with patients also included providing education and nutritional plans.

Milk Kitchen Department

The department prepares dairy-based food for newborns and children up to 2 years of age. Milk, teas and food intended for young patients are prepared here. In 2021, the kitchen staff prepared an average of 60 litres of dairy food, i.e. 21,900 litres per year, and 15 litres of fennel tea, i.e. 5,500 litres per year. The HACCP system is strictly followed, this guarantees infant food is safely prepared.

Department of Central Sterilization

The department ensures the entire process from pre-sterilization preparation of medical devices, washing, surgical net setting, packing, preparation, the actual sterilization and subsequent distribution to the original workplaces for further use. In 2021, we carried out 8,558 cycles in steam sterilizers, 2,527 in plasma sterilizers and 70 in chemical sterilizers. Automated washing machines carried out 25,637 cycles.

Social Care

The Social Department provided social care to 5,589 adult patients in 2021 (588 more than in 2020). Social care was provided to 4,010 patients in acute beds and to 1,579 patients at the Aftercare Centre (AC). 884 patients from all inpatient departments were released with the provision of home healthcare and 58 patients were released to home hospice care. 341 patients were released into inpatient rehabilitation aftercare and inpatient hospice care was arranged for 15 patients. 1,084 patients requested long-term inpatient treatment and 812 of these were transferred to AC. 244 patients were released from the Centre to go into homecare and 145 patients were transferred to residential facilities - nursing homes and homes with assisted living.

Once again social work with children and their families (including newborns and children in the Children's Psychiatric Clinic) saw an increase of 269 children compared to 2020, so the total number of paediatric patients and their families was 1,368. The families were provided with social and legal counselling, psychosocial support and, last but not least, foundation assistance. Furthermore, in the interests of the children, there was collaboration as part of the social and legal protection for children. The social department's employees continued to take part in pregraduate and postgraduate education for healthcare professionals. They also continue to teach medical students at the 2nd MF CU, including students doing the bachelor's degree in paediatric nursing. Participants of the Accredited Qualification Course - Health and Social Worker continued with their practical training.

Psychosocial Intervention Service

The Psychosocial Intervention Service (SPIS) team has been working at the MUH since the end of 2019. It is composed of medical interveners who provide one-off support and psychological first aid to relatives or survivors of patients, and, rarely, to the patients themselves, and healthcare peers who provide psychosocial support to colleagues - hospital staff. In total, the team has 25 active members (hospital employees) including the coordinator. In 2021, healthcare interveners provided 62 supportive interventions

to patients' families, of which 42 were to parents of paediatric patients and 20 were to families of adult patients, including to Covid 19 patients (6 interventions).

The team began providing peer support to colleagues in May 2021, after 11 health workers gained special competence after passing the certified course "Peer Care and Support Programme for Health Workers - Strategies for Coping with Mentally Challenging Situations". In the period from May to December, health peers provided colleagues with 15 individual sessions, 9 in person, 5 by telephone and 1 online. This year, the SPIS team continued its activities related to the Prevention II project - „Mitigating the Negative Impact of Mental and Physical Stress on Non-medical Healthcare Workers Through Systemic Measures“, in cooperation with the National Centre for Nursing and Non-Medical Healthcare Professions in Brno. Thanks to the project, for example, new team members were trained, opportunities for team and individual supervision were expanded (for the SPIS team and other employees), and several workshops and professional seminars were held for hospital employees.

Spiritual Care

Providing spiritual care has become an integral part of supportive care for hospitalized patients. It is administered in both the children's and adult sections of the hospital. **In 2021, hospital chaplains provided care for 3,095 patients. The chaplains also attended to 420 employees and provided care to relatives too. The total number of consultations was 7,984.**

Healthy Hospital

In 2021, activities related to the idea of the Health Promoting Hospital were kept to a minimum due to the Covid 19 pandemic. Extensive use was made of our libraries, even patients and visitors to the hospital provided books. The stairs were used more, which was motivated thanks to the active movement slogans. Our beautiful motto "Patient Activation or Neurons on Alert". has remained and will continue to do so for some years to come. We received additional materials as part of our cooperation with STOB. They were distributed to the individual departments' outpatient units. In 2022, we will finally embark on education that patients can access via the spoken word from an MP3. This project was suspended by the epidemic.

Volunteer Centre

Not even the volunteer programme managed to escape the huge impact of Covid-19 and its associated measures. Nevertheless, 181 volunteers managed to work for 1,726 hours. Volunteer activities included individual visits to patients, creative and play activities. They started a "baby cuddlers" programme in the children's ward and now also visit patients wearing Kaleido glasses. In the paediatric section, they organized mass activities such as painting plant pots, musical performances Discos and an accompanying programme at the Nedopiknik event/ in cooperation with the neonatal ward. Due to the pandemic, volunteers came up with a new form of volunteering i.e. remote volunteering. Here they involved the public and other volunteers, created gifts, letters, photographs and then handed them over to the hospitalized patients via the staff.

The hospital is involved in the MoHCR project "Improving Efficiency in the Hospital Care System in the CR Via Volunteer Activities".

HOSPITAL OMBUDSMAN

The Hospital Ombudsman has been working at Motol University Hospital since January 2012, now as the **Independent Department of the Hospital Ombudsman and Complaints (SONOS)**.

The Department's main objectives are to protect the patients' rights, improve communication among patients, their relatives and hospital staff, and increase the quality of the medical services provided and thus patient satisfaction. The Hospital Ombudsman addresses complaints, requests, initiatives and other submissions against the Motol University Hospital's course of action while providing medical services or carrying out activities relating to the medical services provided. The ombudsman's services are especially available when a patient or a third party believe that their rights have been violated or threatened or when a conflict has or may occur and communication between the parties involved is failing and the matter needs to be addressed objectively.

A total of 356 submissions were addressed during 2021. Furthermore, **539 enquiries**, which often represented a precursor to a potential complaint, were addressed and responded to. A vast majority of the complaints were assessed as **unjustified complaints; there were 46 partially justified complaints and 39 justified complaints.** Corrective measures, mainly involving educating employees, were applied in the case of justified or partially justified complaints.

The most frequent submitters are patients (**148 submissions**) and a person close to the patient (**101 submissions**). As regards the subject of complaints, most of the submissions involved unsuitable communication (reported in **172 cases**) and the medical services provided (**109 submissions**).

All submissions are always dealt with by the pertinent management of individual facilities. Where suitable, in view of the character of a complaint, complaints are discussed orally with the participation of the management of the workplaces involved to find a suitable resolution. In the case of urgent matters, complaints are resolved with the participation of the Hospital Ombudsman directly at the medical facility.

Detailed records of all processed submissions are kept in accordance with the valid legislation. Outputs of the department's activities along with proposals for adopting necessary measures are regularly presented at meetings of the hospital management and at meetings of managing staff.

SONOS deals with requests under the Freedom of Information Act. The Hospital Ombudsman carries out legal training in current areas of medical law according to the requirements of medical workplaces. The department regularly cooperates with hospital ombudsmen from other medical facilities and participates in national meetings for exchanging experience. It takes an active part in events organized by the Association of Health Care Ombudsmen. The department's agenda also includes resolving the issue of whistleblowing.

SCIENTIFIC RESEARCH ACTIVITIES

The Motol University Hospital supports scientific research activities as an integral part of its activities as stipulated in the hospital's articles of association. In this sense, the Motol University Hospital is also on the national list of research organizations, <http://www.msmt.cz/vyzkum-a-vyvoj-2/fakulni-nemocnice-v-motole>. Scientific research projects are conducted throughout the entire range of specializations and the vast majority of the university hospital's departments and institutes are involved. The close interconnection with the 2nd Faculty of Medicine, Charles University and the 1st Faculty of Medicine of the Charles University and other research organizations in the Czech Republic and abroad is reflected in these activities. The MUH supports innovation and integration of research outcomes in practice in accordance with new trends in the application of outcomes of scientific research activities.

Science, research and innovation (SRI) is supported in the Motol UH through combined financing using institutional and special purpose funds obtained mainly in the form of grants. Research teams at the Motol UH take part in international projects, especially within the EU, where they work on projects in the Horizon 2020 programme and other EU schemes. The Motol University Hospital's teams are also significantly involved in the European Reference Networks for Rare Diseases (ERN).

Institutional Support for Research and Grants

- The MUH has received institutional support administered by the Ministry of Health of the CR since 2012.
- Institutional support of the research organization is organized at the MUH through a system of internal grants at the hospital's individual departments and institutes. 2021 was the tenth year of applying to this scheme.
- In 2021, the hospital carried out 15 projects of the Czech Health Research Council of the Ministry of Health of the CR as the principal researcher and 43 projects as the cooperating researcher. 30 internal grant projects and 2 "Junior" projects were conducted in 2020 as part of the institutional support. The hospital also worked on TAČR and GAČR projects and was significantly involved in the Horizon 2020 system within the EU. Activity also took place within the European Reference Networks Centres.
- Support of research activities is directly conditional on the outputs of scientific assessments reported to the national databases of the Research, Development and Innovation Council. The outcomes of the RIR outputs are used for comparisons within the CR and for distributing funds in the Internal Grant system to ensure that individual research facilities are supported in accordance with their performance. In 2021, which, like the previous year, was still significantly affected by the COVID-19 pandemic, the Motol UH increased its performance and for the first time exceeded 500 outputs in the RIR database. It also achieved another significant increase in the total impact factor, which came to 3,762 points, as well as an increase in the average impact factor, which reached 7.2, reflecting the higher quality of the papers published. Many of these papers, especially during COVID-19, were international in nature, reflecting the involvement of the MUH's collectives in international networks.

- In 2021, the Motol UH managed the following allocated and distributed funds in science and research (in CZK):

Agency	number of projects	amount
institutional support		78 296 573,00
AHR-main researcher	15	37 871 000,00
AHR - cooperating researcher	43	29 308 000,00
GAČR - cooperating researcher	3	2 549 000,00
TAČR - main researcher	1	251 167,00
TAČR - cooperating researcher	4	3 114 470,00
Horizon 2020 Vision DMD	2	0,00
Horizon 2020 Nisci	1	0,00
Czecrin	1	480 000,00
Chiltern	1	0,00
Clip	1	0,00
EEA Norway- Increasing access to targeted prevention.	1	1 051 664,44
OPZA Programme to support volun. work at health providers.	1	475 000,00
OPZA Prevention II Alleviating Negative Impacts...	1	255 140,50
Grant FV Trio	1	595 200,00
Grant MoH CR Education	1	379 677,55
Palliative Care MoH CR	2	398 792,11

- In 2021, another assessment was carried out according to Metodika 17+. The Motol University Hospital took the leading positions, especially in the assessment of the quality of the scientific results with a significant representation of the hospital's outputs in the first decile of medical sciences.
- Priorities of the scientific research activities were gradually defined at the Motol University Hospital. Paediatric specializations appear to be the strongest directions in research. The Department of Paediatric Haematology and Oncology with its laboratory and research facility at the CLIP site is the dominating actor in research. Traditionally, paediatrics and its branches, gastroenterology, endocrinology, pneumology, nephrology, paediatric neurology and others are also strongly represented. Cardiology, neurology and urology stand out the most as concerns adult medicine. The hospital's main research activities mainly take place in the laboratory facilities of the Department of Paediatric Haematology and Oncology, the Department of Biology and Medical Genetics, the Department of Pathology and Molecular Medicine, the Department of Microbiology and the Department of Immunology.

Modern Therapies Projects

- The MUH has introduced a system of projects entitled “Modern Therapies”. It offers support for innovation and integrating scientific research into practice. Under this scheme, 13 projects were conducted in 2021 and practical output in the form of new diagnostic or therapeutic options is expected from all the projects.
- In 2017, together with the Institute of Organic Chemistry and Biochemistry, an invention application was submitted for a national patent: A method for detecting joint disease, a device for detecting joint disease, a substance for determining the cause of joint disease, its monitoring and the use of this method, substance and device. A European patent was subsequently applied for. Utility model number 32064 was granted in 2018 under the title: Equipment for Detecting a Joint Defect and/or Determining Suitable Treatment of the Joint System and a Substance for Determining the Cause of a Joint Defect and its Monitoring and the conclusion of a licence agreement with I.T.A. - Intertact s.r.o. in 2019. The validity of the utility model registration is extended until 2024.
- In 2019, the project “Development and Clinical Application of the AndroidAPS Hybrid Artificial Pancreas Software” was continued into 2020 with the support of TAČR and further continued into 2021.
- In 2021, a new Patent was filed, based on the work of the Orthopaedic Department of the 1st FM and Motol UH and the Institute of Biochemistry of the 2nd FM and Motol UH, entitled Use of Vitamin K2 form MK-7 for Treating and Preventing Calcifications in the Musculoskeletal System, Especially for Treating and Preventing Calcific Tendinitis of the Shoulder and Knee.

Combined programme for educating physicians MD/Ph.D. programme

The combined MD/Ph.D. programme has been running at the MUH since 2004. A total of 125 students have been educated through the 18 years of the programme’s operation and 37 students have obtained the Ph.D. title and postgraduate certification in their specializations. 35 active students are enrolled in the programme.

International Activities

The hospital continued to develop its international research activities especially at the level of individual departments and institutes, which is reflected in excellent publication outputs presented in the Register of Information on Results (RIR). As regards international activities, the Motol University Hospital was also actively involved in the system of European Reference Networks for Rare Diseases, ERN. In 2021, it was included in 11 ERNs, which confirms Motol UH’s dominance in the entire field of rare diseases. A further 4 facilities were added to the scheme at the end of the year.

Creative Act

The Motol University Hospital monitors and appreciates quality and success in medicine and scientific research. In 2021, the best creative achievement for the previous year was awarded for the fourteenth time, this time to the team from the Institute of Medical Microbiology of the 2nd FFM CU and MUH, the CF Centre at Motol UH for the paper “The most advanced drug in treating cystic fibrosis and its availability for patients in the Czech Republic” The winner of the Creative Achievement Junior category was the project from the Institute of Medical Microbiology of the 2nd FM CU and Motol UH for the recently published paper “How to: screening for mcr-mediated resistance to colistin”.

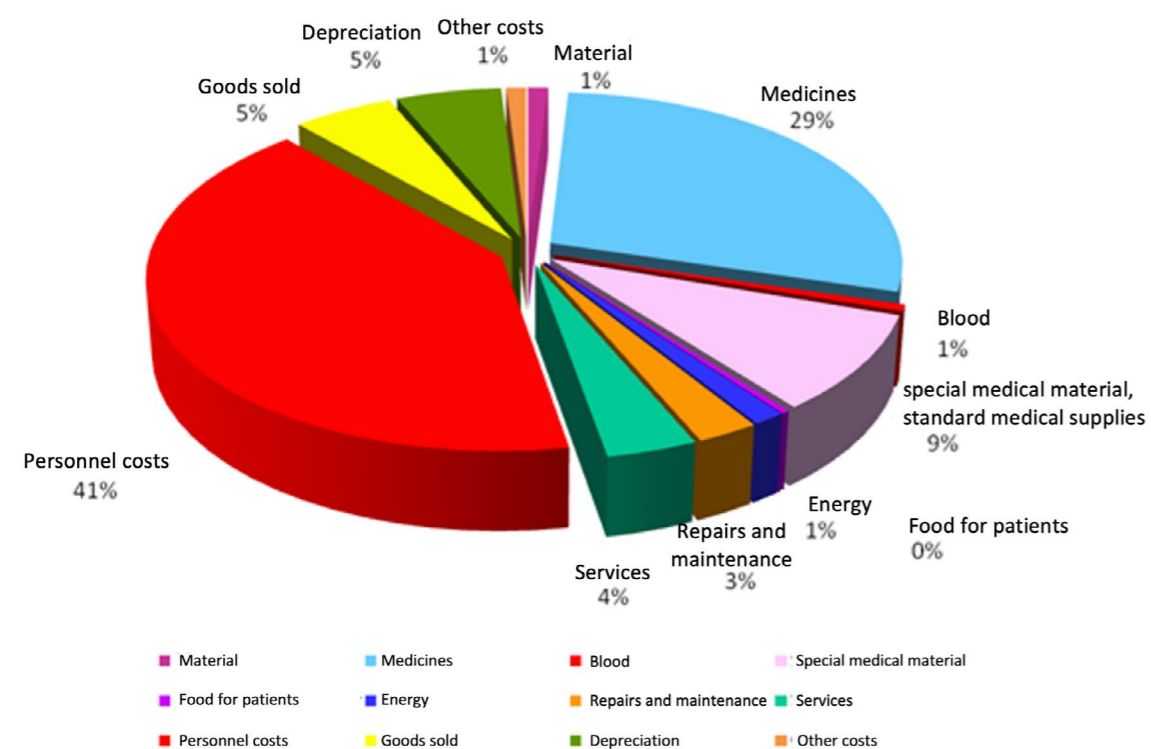


ECONOMIC ACTIVITY

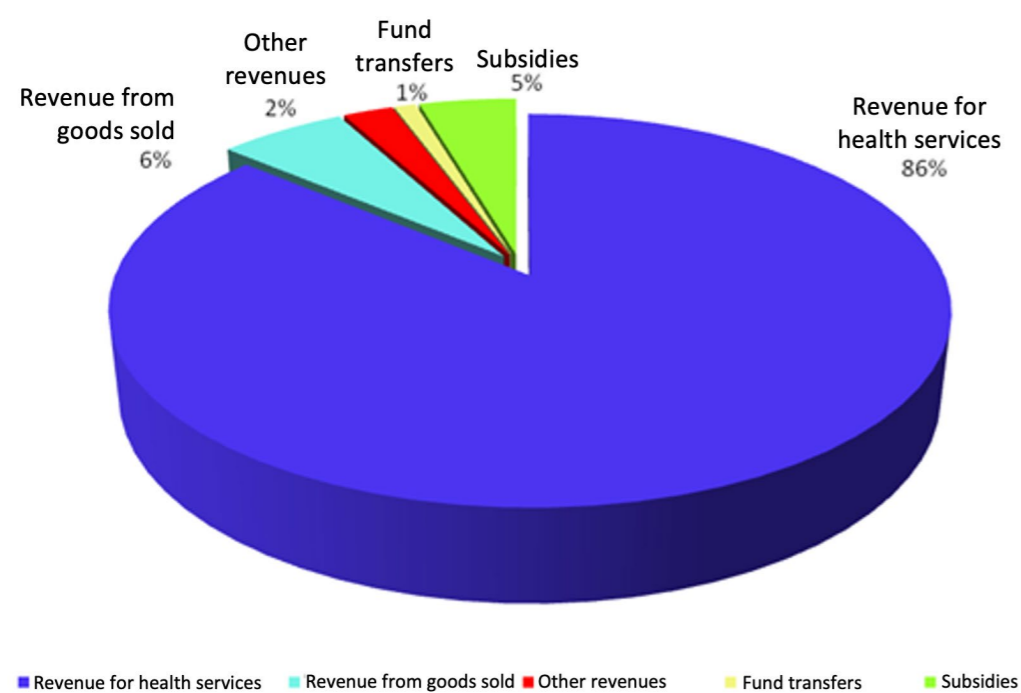
BALANCE SHEET (abbreviated balance sheet in thous. CZK)	status as of 01/01/2021	status as of 31/12/2021
ASSETS	11 496 406,98	11 682 037,95
Permanent assets	9 185 186,26	8 946 005,53
Long-term intangible assets	24 351,51	19 120,67
Long-term tangible assets	9 145 408,53	8 908 108,83
Long-term financial assets	0,00	0,00
Long-term claims	15 426,22	18 776,03
Current assets	2 311 220,72	2 736 032,42
Stock	243 779,79	263 737,88
Claims	705 654,87	653 901,60
Financial assets	1 361 786,06	1 818 392,94
LIABILITIES	11 496 406,98	11 682 037,95
Own resources	10 098 643,20	10 214 634,38
Assets of unit of account	9 202 103,40	8 961 644,55
Property funds	2 268 674,31	2 566 583,40
Profit/loss for current accounting period	12 848,23	58 540,93
Accumulated loss of previous years	-1 384 982,74	-1 372 134,50
Profit/loss in licensing procedure	0,00	0,00
Foreign resources	1 397 763,78	1 467 403,57
Reserves	0,00	0,00
Long-term liabilities	205 818,29	111 215,77
Short-term liabilities	1 191 945,49	1 356 187,80
Bank assistance and loans	0,00	0,00

STATEMENT OF PROFIT AND LOSS (abbreviated - in thousands CZK)	status as of 31/12/2021
Material cost	6 537 789,24
Cost for repairs and services	884 515,48
Personnel costs	5 839 033,04
Taxes and fees	272,96
Other costs	87 474,20
Depreciation, Assets sold, Reserves, Adjustments, Low value long-term tangibles, Low value long-term intangibles	815 992,33
Financial costs	6 670,98
Costs for uncontested claims on SR, USC and SF resources	0
Total costs	14 171 748,23
Revenue from own performance and goods	13 259 095,73
Other revenues	328 200,15
Financial returns	168,62
Revenues from undisputed claims on SR, USC and SF resources	642 824,66
Total revenue	14 230 289,16
Pretax profit	58 540,93
Income tax	0,00
Additional income tax deductions	0,00
Profit or loss after tax	58 540,93

2021 cost overview for Motol University Hospital



2021 revenues overview for Motol University Hospital



Summary of economic indicators					thous. CZK
indicator	2018	2019	2020	2021	21/20 (%)
Revenues	9 509 016	10 348 373	11 765 066	14 230 289	120,95
Costs	9 502 217	10 317 786	11 752 218	14 171 748	120,58
Profit or loss	6 799	30 587	12 848	58 541	455,64
Unreimbursed loss from previous years	-1 415 569	-1 384 983	-1 372 134	-1 313 593	95,73
Tangible fixed assets	9 383 965	9 293 006	9 145 408	8 908 108	97,40
Stock	142 348	171 673	243 779	263 747	108,19
Claims	720 767	1 261 307	705 655	653 901	92,66
Debts	1 103 022	1 240 473	1 191 945	1 356 187	113,77
Financial assets	1 014 874	816 279	1 361 786	1 818 392	133,52
Remuneration Fund	0	0	0	0	0
Cultural and Social Needs Fund	60 004	73 126	93 122	78 081	83,84
Reserve fund	50 385	54 456	66 419	51 210	77,10
Asset Replacement Fund	1 822 409	1 942 049	2 109 132	2 437 291	115,55

As of 31 December 2021, the Motol University Hospital's financial position was balanced and the accounting period for this year ended with a profit of CZK 58.54 million.

The economic result for the period was most affected by the global SARS-Cov2 pandemic, which affected the running of the hospital. The Motol University Hospital was entrusted with providing bed capacity for patients with COVID and, in connection with the Ministry of Health regulation, elective care was limited. Although there was an increase in the hospital's overall performance compared to 2020, there was an 8.3% decrease in medical procedures and an 8.4% decrease in total hospital admissions compared to the 2019 reference year pursuant to the reimbursement decree.

Due to the epidemiological situation, more medical equipment was purchased for the COVID workplace (e.g. ventilators, suction units, anaesthesia machines, mobile X-ray). Throughout the year, the hospital vaccinated adults and, from the 3rd quarter, children too. The Czech Ministry of Health ordered the Motol University Hospital and the Brno University Hospital to purchase and ensure further distribution of 6,000 doses of REGN-COV2 amounting to CZK 360 million each. The Motol University Hospital negotiated with health insurance companies about the partial coverage of financing in the form of an advance payment of CZK 238.50 million, however, this had to be settled by the end of 2021. Despite the immediate division of the regions for further distribution/sales and maximum activity, Motol UH initially managed to resell only

one percent of the obligatory amount of REGN-COV2. This negatively affected the hospital's cash flow. Due to another wave of the pandemic that spread rapidly, stocks were eventually depleted by rapidly distributing the product. In December, however, the hospital received a free donation of 10 000 doses of REGN-COV2 through the Ministry of Health for redistribution around the CR. Due to the high need, the hospital purchased additional doses for CZK 30.12 million, however, it turned out that with the spread of the new "Omicron" mutation of the virus, this REGN COV 2 preparation no longer had an effect. As of 31. 12. 2021, there was a reserve of CZK 23.85 million. In January 2022, the preparation was no longer applied.

The hospital's turnover in the area of medicines is further affected mainly by the costs of core medicines provided in the hospital's centres and the reimbursement of medicines pursuant to Section 16 of Decree No. 45/1997 Coll., on Public Health Insurance (e.g. Zolgensma - 1 pack = CZK 56.8 million)

At the same time, the hospital's finances were also affected by a 10% increase in personnel costs for healthcare workers pursuant to Government Decree No. 603/2020 amending Government Decree No. 341/2017. The increase in personnel costs was partly due to increased remuneration for COVID 19, and partly due to an increase in overtime caused by the lack of healthcare workers. Personnel costs were also partially increased by signing work contracts to ensure antigen and PCR tests were taken and vaccinations were given.

Motol University Hospital has been economically stable on a long-term basis and has no tax arrears. The hospital's cash flow is still influenced by the investments it has financed from its own sources, primarily for renewing medical equipment, and, at the same time, the installments to pay off the reconstruction of the hospital's paediatric section and polyclinic. However, the hospital needs to ensure asset replacement, as investing in modern technology will currently reduce the costs for repairing and maintaining outdated equipment. The financing of the EU REACT projects will be a major benefit for the hospital in 2022.

Even in this crisis situation the hospital management is trying to balance the hospital's financial inputs and outputs and to secure the nursing staff. The changes that the entire national economy underwent during the year were also reflected in the management of the Motol University Hospital. Motol University Hospital tried to minimize costs by adopting operational cost-saving measures and at the same time ensure the necessary health care. Motol University Hospital endeavours to efficiently manage the ratio of individual costs whilst providing patient care as its main priority. The rise in costs due to COVID 19 has yet to fully taken into account. Negotiations are underway with health insurance companies and the health authority to take into account or possibly adjust the reimbursement decree for the upcoming period or to compensate for the economic impact. The hospital's most important task is still making sure we provide comprehensive health care and the full range of medical procedures with high quality health care for all of the hospital's patients and to ensure patient safety during the pandemic.

Motol University Hospital is the largest hospital in the country, it has high-quality, modern equipment and its staff are experts in their fields who provide healthcare on a daily basis. The Motol University Hospital's management will continue to ensure it complies with the measures to maintain a balanced economy and effective management to maintain a state-of-the-art medical workplace that provides comprehensive health care for all patients from all over the CR in the entire range of medical disciplines that the hospital offers. Together with the professional care provided by the highly erudite medical staff, the hospital is also equipped with modern operating theatres, devices and technologies that allow it to shorten the time patients spend in the hospital.

HUMAN RESOURCE ACTIVITIES

In 2021, the Motol University Hospital employed:

in converted numbers 5 573 employees, of which 4 406 were medical staff

in natural persons: 6 276 employees, of which 5 075 were medical staff

Structure of employees' professions

	2019	2020	2021	2019	2020	2021	INDEX 21/20	
	FO	FO	FO	PP	PP	PP	FO	PP
Total	6 041	6 134	6 276	5 380	5 461	5 573	1,02	1,02
PHYSICIANS	1 293	1 297	1 311	972	992	1 005	1,00	1,02
PHARMACISTS	36	40	41	34	37	39	1,11	1,09
NURSES	2 033	2 006	1 997	1 841	1 809	1 794	0,99	0,98
QUALIFIED MEDICAL STAFF	656	695	714	622	656	666	1,06	1,05
SPECIALIZED MEDICAL STAFF	261	271	271	206	211	210	1,04	1,02
SUPERVISED MEDICAL STAFF	613	634	663	590	607	633	1,03	1,03
OTHER QUALIFIED STAFF	59	62	78	47	52	59	1,05	1,11
TECHNICAL AND ECONOMIC STAFF	785	801	858	769	776	833	1,02	1,01
WORKERS	305	328	343	299	321	334	1,08	1,07

(NP) average number of natural persons (CN) average converted number

Qualification structure - status as of 31/12/2021

Achieved education among nurses and midwives	Total	%	of which with specialization	%
Secondary medical	1074	53,59	935	87,06
Higher medical	247	12,33	76	30,70
Tertiary bachelor's	461	23	100	21,69
Tertiary master's	222	11,08	62	27,93
Total	2004	100	1 136	58,53

Employees by education and gender - status as of 31/12/2021

education achieved	men	women	total	%
basic	129	157	286	4,52
vocational certificate	267	281	548	8,66
vocational secondary	43	8	51	0,81
completed general secondary	24	51	75	1,19
completed vocational secondary education	318	1968	2286	36,13
higher vocational	61	276	337	5,33
tertiary	913	1830	2743	43,37
of which bachelors	102	560	662	-
masters	811	1270	2081	-
total	1755	4 571	6326	100,00

Employees according to age and gender - status as at 31/12/2021

age	men	women	total	%
20	7	40	47	0,74
21 - 30	322	836	1158	18,31
31 - 40	438	839	1277	20,19
41 - 50	427	1319	1746	27,59
51 - 60	303	1053	1356	21,44
61+	258	484	742	11,73
total	1755	4571	6326	100,00
%	27,75	72,25	100,00	

1) Medical staff pursuant to Act No. 95/2004 Coll. = physicians, dentists and pharmacists: total 1,352

Of the 1,311 physicians in total, 378 (29%) only have a professional qualification and 933 (71%) physicians have a specialized qualification (i.e. 2nd level of postgraduate certification, additional certification, Czech Medical Chamber licence, certification from the Ministry of Health of the CR).

2) Medical staff pursuant to Act No. 96/2004 Coll. = medical professions other than physicians: 3,723 in total, of which 1,997 general nurses and midwives.

WAGES

A total of **CZK 4,219,639,841** (excluding other personnel expenses - remuneration for work performed outside employment) was expended on wages in 2021. This was an increase by **CZK 461,590,491**, i.e. by 12.28% compared to 2020.

The increase in wages was caused by the salary adjustment from 1 January 2021 in accordance with Government Regulation No.603/2020 Coll. In addition, the amount spent was significantly affected by the emergency pay provided to employees for working when dealing with the COVID-19 pandemic, as well as the increase in the qualification structure and the ageing of employees.

The average gross salary in the hospital as of 31 December 2021 was **CZK 63,100**. This is a 10% increase compared to 2020.

Development of average salary over the last 10 years

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
TOTAL	35016	34364	34893	36302	38529	42111	46657	50237	57346	63100
PHYSICIANS	67464	65564	66478	68962	71753	76316	81758	85284	92394	101553
NURSES	32853	32079	32035	33425	36390	40317	45637	50681	59221	66641



DONORS AND FOUNDATIONS

Donors and Foundations - donations over CZK 100,000

Ackee, s. r. o.

B. Braun Medical s.r.o.

Curaden Czech, s.r.o.

CHEIRÓN a.s.

Ing. Jan Juna

McCANN-ERICKSON Prague spol. s r.o., International Advertising Agency

Nadace Crocodile

Kapka naděje Foundation

Nahnedcrew z.s.

M unchained SE

POLYMED medical CZ, a.s.

REPROMEDA s.r.o.

Rotary Satellite Club of Telč - Prague Golf / NGW, z.s.

Rythm & Keys HElp through ART z. s.

TIGRA s.r.o.

VIF, s.r.o.

Vuch s.r.o.

ZNAKON, a.s.

Donors and Foundations - donations over CZK 500,000

BellaSalute s.r.o.

"Národ dětem" foundation

Vertex Pharmaceuticals (Europe) Limited

Motol University Hospital would like to thank all the donors who contributed last year. Their donations improved the conditions of care for the patients in our hospital, but also those of our employees in connection with their work in the context of the ongoing Covid-19 pandemic. At the same time we thank all other donors, whose names could not be listed here for technical reasons, but are listed on our web pages.

We care for generations!



FN MOTOL

www.fnmotol.cz