



ANNUAL REPORT 2023

MOTOL UNIVERSITY HOSPITAL



FN MOTOL

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Dear Friends,

I would like to take this opportunity to review the most important events of 2023 from the perspective of the Director of Motol University Hospital.

Covid-19, the war in Ukraine and high inflation - these were the most important factors of the past 4 years, which affected the world, Europe, the Czech Republic and, of course, the healthcare sector. With the exception of the ongoing military conflict, 2023 has seen a gradual stabilisation, but the economy is still heavily impacted by the high prices of energy, services and medicines. Another factor is the almost unpredictable rise in so-called centre drugs and Section 16 drugs, which are increasingly eating into the hospital's

drug budget; this situation must be addressed conceptually so that we can plan the hospital budget.

One extremely important task for the medical part of the hospital in 2023 was to provide care to the maximum extent possible, as the reference year for reimbursement of acute inpatient care was the pre-Covid year 2019 with a high reimbursement base. In addition, last year our hospital continued in the extensive renovation of the Blue Pavilion, mainly related to the insulation of the façade and replacement of windows, as well as extensive internal renovations of the Department of Pneumology and Department of Long-term Treatment - Aftercare Centre buildings, followed by replacement of windows and insulation of the façades of these buildings. I am very pleased and I would like to thank in particular all the medical staff affected by this building work for managing to comply with the reimbursement decree without any major disruption to operations. Once again, the hospital ended in the black, with a high accounting profit.

In the last quarter of 2023, the health sector was once again the focus of media attention thanks to the protest of the Young Doctors' Association "Don't be a raccoon", which was triggered by an amendment to the Labour Code increasing the limit for overtime work to 832 hours per year. The young doctors argued that they were being overloaded and poorly paid, and denounced overtime work above the 416-hour limit. Hospital managements, including ours, addressed this protest through many negotiations with the doctors. It has ended, for the time being, after an agreement between the Ministry of Health, the VZP and the medical unions with the participation of Prime Minister Fiala resulting in an increase in personal remuneration on three levels for doctors and with a 5% increase in the tariff salary for all other employees from 1.1.2024. In 2024, hospitals are facing wage bills that have risen in an almost geometric progression and are confronted with the huge problem of making enough money to cover the increasing wages in years to come.

I do not want to end my opening remarks on a pessimistic note. I am very pleased to confirm that, as part of the strategic development plan, the Motol University Hospital has received funding from the National Recovery Plan for the construction of the Motol Oncology Centre (MOC), where the tendering process was successfully completed in 2023, and construction started officially at the end of that year. Supported by The Kellner Family Foundation and the Ministry of Health, the MOC and the associated Scientific and Diagnostic Oncology Centre are guaranteeing the continued highly specialised diagnostic and therapeutic care and scientific and research development of Motol University Hospital for the years to come.



JUDr. Ing. Miloslav Ludvík, MBA
hospital director

MANAGEMENT OF MOTOL UNIVERSITY HOSPITAL

hospital director	JUDr. Ing. Miloslav Ludvík, MBA
Deputy Director for Operations and Technical Matters	MUDr. Pavel Budinský, Ph.D., MBA
Deputy Director for Medical Preventive Care	MUDr. Martin Holcát, MBA
Deputy Director for Nursing Care	Mgr. Jana Nováková, MBA
Deputy Director for Economy	Ing. Jiří Čihař
Deputy Director for Human Resources	Ing. Marie Románková
Deputy Director for Science and Research	prof. MUDr. Anna Šedivá, DSc.
Deputy Business Director	Ing. Jana Bašeová

HOSPITAL'S SCIENTIFIC BOARD

Prof. MUDr. Anna Šedivá, DSc. – Chair of the SC

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

Doc. MUDr. Vladimír Beneš, Ph.D.

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

Prof. MUDr. Ondřej Cinek, Ph.D.

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

Doc. MUDr. Jan Bouček, Ph.D.

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

Prof. MUDr. Pavel Dřevínek, Ph.D.

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

Doc. MUDr. Lucie Šrámková, Ph.D.

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

MUDr. Markéta Havlovicová

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

MUDr. Martin Holcát, MBA

Deputy for Preventive Therapeutic Care at MUH

Prof. MUDr. Jakub Hort, Ph.D.

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

Prof. MUDr. Alan Stolz, Ph.D., MBA

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

Prof. MUDr. Tomáš Kalina, Ph.D.

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

Prof. MUDr. Radan Keil, Ph.D.

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

MUDr. Adam Klocperk, Ph.D.

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

Prof. MUDr. Pavel Kršek, Ph.D.

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

Prof. MUDr. Zdeněk Šumník, Ph.D.

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

Prof. MUDr. Robert Lischke, Ph.D.

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

Doc. MUDr. Štěpánka Průhová, Ph.D.

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

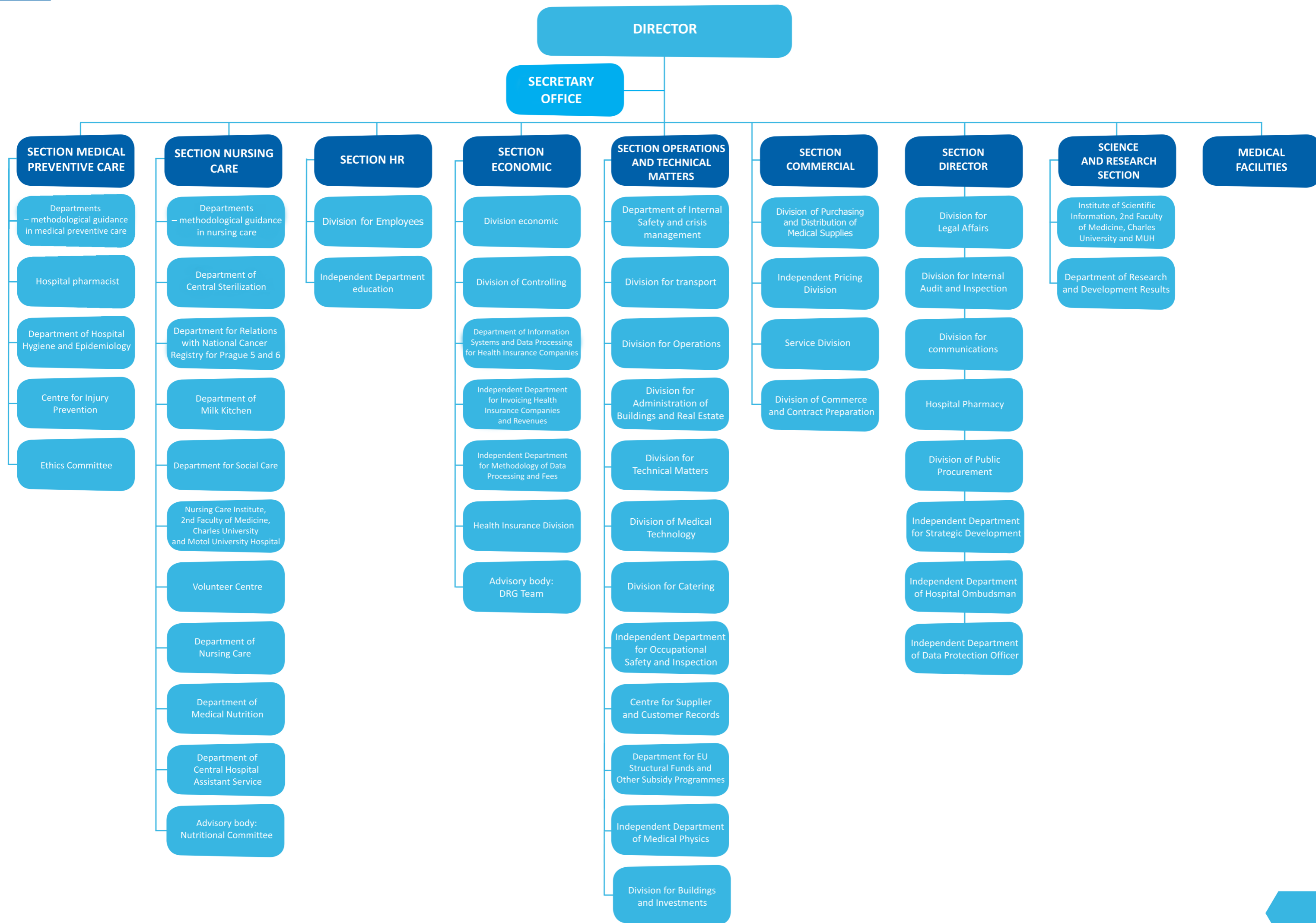
Prof. MUDr. Josef Zámečník, Ph.D.

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

doc. MUDr. Michal Zápotocký, Ph.D.

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

BASIC ORGANIZATIONAL STRUCTURE AS OF 31.12.2023



BASIC DETAILS AS AT 31. 12. 2023

Area of premises /m2/	348 000
Assets /in thous. CZK/	12 661 061
Total turnover /in thous. CZK/	16 409 280
Employees/natural persons/	6 493
Employees/converted numbers/	5 712

BEDS	Children	Adults	Total
Acute standard	466	1072	1538
Acute intensive	137	217	354
Acute total	603	1289	1892
Aftercare intensive	4	10	14
Long-term	-	315	315
Long-term intensive	-	20	20
Beds total	607	1634	2241

Number of hospitalisations	77 710
Number of outpatient treatments	871 910*
Number of treatment days /+ Department of Long-term Treatment - Aftercare Centre/	499 783
Number of anaesthesiology procedures	34 584
Number of births	2 220
Death rate /+ Department of Long-term Treatment - Aftercare Centre/	1,6

* Since 2022 outpatient care is recorded without complements

LIST OF DEPARTMENTS

Paediatric Inpatient Part

Children's Heart Centre, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head MUDr. Ondřej Materna, 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 Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head prof. MUDr. Michal Rygl, Ph.D.

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
Senior Consultant prof. MUDr. Petr Sedláček, CSc.

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 doc. MUDr. Zdeněk Čada, Ph.D.

Department of Paediatrics, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head prof. MUDr. Zdeněk Šumník, Ph.D.

Adult Inpatient Part

Department of Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head prof. 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 Internal Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head prof. MUDr. Radan Keil, Ph.D.

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

Head prof. MUDr. Petr Ošťádal, Ph.D.

Department of Infectious Diseases and Travel Medicine 2nd Faculty of Medicine, Charles University and Motol University Hospital

Head MUDr. Milan Trojánek, Ph.D.

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

Head MUDr. Štěpán Černý, CSc, MBA

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

Head prof. MUDr. Petr Vlček, CSc.

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.

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

Head prof. MUDr. Tomáš Büchler, Ph.D.

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

Head prof. MUDr. Ivan Landor, CSc.

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

Head doc. 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 Inpatient Sites of Paediatric and Adult Sections

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

Head prof. MUDr. Roman Chmel, Ph.D.

Department of Neonatology

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

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

Head doc. MUDr. Tomáš Vymazal, Ph.D., MHA

- Department of Subsequent Intensive and Long-term Intensive Nursing Care

Senior Consultant MUDr. Kateřina Čadová

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 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 Kövári

- Department of Pain Research and Treatment

Senior Consultant MUDr. Jiří Kozák, Ph.D.

- Spinal Unit

Senior Consultant doc. MUDr. Jiří Kříž

- Department of Sports Medicine

Senior Consultant doc. 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 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. Taťjana Dostálová, DrSc., MBA

Common Examination and Therapeutic Units

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

Head prof. MUDr. Miloslav Roček, CSc.

Department of Clinical Haematology

Senior Consultant MUDr. Jitka Segethová

Blood Bank Department

Senior Consultant MUDr. Eva Linhartová

Department of Clinical Psychology

Senior Consultant Mgr. Markéta Mohaplová

Department of Rheumatology for Children and Adults

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

Department of Transplantations and Tissue Bank

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

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

Head prof. MUDr. Milan Macek, DrSc.

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

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

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 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.

Outpatient sector

Department of Paediatric Dermatology

Senior Consultant MUDr. Jana Čadová

Department of Dermatovenerology for Adults

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

Department of Central Operating Theatres for Children

Head Nurse Bc. Alice Podařilová

Department of Central Operating Theatres for Adults

Senior Consultant MUDr. Zbyněk Jech

Primary Care Department

Senior Consultant MUDr. Jaroslava Kulhánková

Emergency Department and Medical First Aid Service for Children

Senior Consultant MUDr. Jitka Dissou, MBA

Emergency Department and Medical First Aid Service for Adults

Senior Consultant MUDr. Jiří Karásek, Ph.D.

Department of Hospital Hygiene and Epidemiology

Senior Physician MUDr. Jarmila Rážová, Ph.D.

Hospital Pharmacy

Senior Pharmacist PharmDr. Petr Horák

MEDICAL PREVENTIVE CARE

Paediatric Inpatient Part

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

Head MUDr. Ondřej Materna, Ph.D.

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

Senior Consultant of Cardiovascular Surgery MUDr. Roman Gebauer

Head Nurse Mgr. Jana Matušíková

Basic description:

Children's Cardiac Centre 2nd Faculty of Medicine, Charles University and 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 2023, 494 surgeries (including 2 heart transplants) were performed with 30-day mortality of 0%, and 12 ligation procedures for patent ductus arteriosus for newborns with low birth weight were performed at different sites, 373 catheterizations were performed (of which 282 were intervention procedures), 932 patients were hospitalized (+641 accompanying persons) and 4,072 patients were treated in the outpatient service.

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. The department is also a member of the **ERN GuardHeart** for rare cardiovascular diseases in childhood.

In 2023, we took part in two foreign humanitarian and development missions to Nairobi, Kenya, organized by the Ministry of Foreign Affairs of the Slovak Republic and MEDEVAC of the Ministry of Interior of the Czech Republic with the cooperation of MUH and NUSCH a.s. in Bratislava. The surgical team also took part in a charity mission to Fiji under the auspices of Healing Little Hearts.

Specialized outpatient units:

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

New methods and procedures:

- Long-term implantable mechanical heart support programme since 2014. In 2021, a beating heart transported from Slovakia in a special Transmedics transport box was successfully transplanted for the first time. In 2023, we also started using the Paragonix Sherpapak transport system for remote retrievals. These systems significantly affect the quality of the donor organ.
- Heart transplantation in children - since the introduction of the programme in 2014, a total of 32 paediatric patients have had transplants. The 5-year survival rate after transplantation is 93%.
- Tracheal plastics programme for congenital tracheal malformations in cooperation with the tracheal team of MUH.
- Programme for molecular and genetic examination of families with occurrence of hereditary arrhythmias and cardiomyopathies using the new generation sequencing method (NGS) in cooperation with the Institute of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and Motol University Hospital
- Programme of minimally invasive cardiac surgery including vascular ring surgery using the thoroscopic technique.
- Foetal intervention programme for congenital heart disease in collaboration with the Department of Paediatric Cardiology at the Kepler University Hospital in Linz.

Unique equipment:

- Thoratec CentriMag/PediVas centrifugal pump for short- and medium-term mechanical cardiac support.
- Ensite Precision 3D electrophysiology navigation and mapping system.
- KIPS clinical information and planning system with related modules for catheterization (KatAp) and echocardiography (Echolog) connected to a KIS DKC.

Major events in 2023:

- MUDr. Ondřej Materna, Ph.D. was appointed the new head of department as of 1.7.2023.
- In cooperation with the Children's Heart Centre 2nd Faculty of Medicine, Charles University, Department of Cardiovascular Surgery 2nd Faculty of Medicine, Charles University, and Department of Cardiology 2nd Faculty of Medicine, Charles University, in December 2023 the Centre for Congenital Heart Defects in Adulthood MUH was founded.

Publications (11 articles in international journals with an impact factor):

- Votýpka P, Krebsová A, Norambuena-Poustková P, Peldová P, Pohlová Kučerová Š, Kulvajtová M, Dohnalová P, Bílek M, Stufka V, Rücklová K, Grossová I, Wünschová H, Tavačová T, Hašková J, Segeťová M, Štoček J, Gřegořová A, Zoubková V, Petřková J, Dobiáš M, Makuša M, Blanková A, Vajtr D, Řehulka H, Šubrt I, Pilin A, Tomášek P, Janoušek J, Kautzner J, Macek M Jr. Post-mortem genetic testing in sudden cardiac death and genetic screening of relatives at risk: lessons learned from a Czech pilot multidisciplinary study. *Int J Legal Med.* 2023 Nov;137(6):1787-1801. doi: 10.1007/s00414-023-03007-z. Epub 2023 May 13. PMID: 37178278; PMCID: PMC10567875. IF 2.7
- Materna O, Tax P, Tomek V, Koubský K, Chaloupecký V, Janoušek J, Reich O. Long-Term Results of Congenital Aortic Stenosis Treatment in the Era of Percutaneous Balloon Valvuloplasty: Up to 33 Years Follow-Up. *J Am Heart Assoc.* 2023 Jun 20;12(12):e028837. doi: 10.1161/JAHA.122.028837. Epub 2023 Jun 10. PMID: 37301755; PMCID: PMC10356031. IF 6.1
- Kaski JP, Kammeraad JAE, Blom NA, Happonen JM, Janousek J, Klaassen S, Limongelli G, Östman-Smith I, Sarquella Brugada G, Ziolkowska L. Indications and management of implantable cardioverter-defibrillator therapy in childhood hypertrophic cardiomyopathy. *Cardiol Young.* 2023 May;33(5):681-698. doi: 10.1017/S1047951123000872. Epub 2023 Apr 27. PMID: 37102324. IF 1.0
- Jičínský M, Kubuš P, Pavlíková M, Ložek M, Janoušek J. Natural History of Nonsurgical Complete Atrioventricular Block

in Children and Predictors of Pacemaker Implantation. JACC Clin Electrophysiol. 2023 Aug;9(8 Pt 1):1379-1389. doi: 10.1016/j.jacep.2023.02.016. Epub 2023 Apr 19. PMID: 37086232. IF 6.1

- Gebauer R, Chaloupecký V, Hučín B, Tláškal T, Komárek A, Janoušek J. Survival and Freedom From Reinterventions in Patients With Repaired Tetralogy of Fallot: Up to 42-Year Follow-Up of 917 Patients. J Am Heart Assoc. 2023 Oct 17;12(20):e024771. doi: 10.1161/JAHA.121.024771. Epub 2023 Oct 12. PMID: 37823375. IF 6.1
- Koubský K, Gebauer R, Poruban R, Vojtovič P, Materna O, Melenovský V, Hošková L, Netuka I, Burkert J, Janoušek J. Establishing a nationwide pediatric heart transplantation programme with mid-term results comparable to worldwide data - The Czech experience. Pediatr Transplant. 2023 Oct 19:e14626. doi: 10.1111/petr.14626. Epub ahead of print. PMID: 37853942. IF 1.5
- Bergeman AT, Lieve KVV, Kallas D, Bos JM, Noguier FRY, Denjoy I, Zorio E, Kammeraad JAE, Peltenburg PJ, Tobert K, Aiba T, Atallah J, Drago F, Batra AS, Brugada R, Borggreffe M, Clur SB, Cox MGPI, Davis A, Dhillon S, Etheridge SP, Fischbach P, Franciosi S, Haugaa K, Horie M, Johnsrude C, Kane AM, Krause U, Kwok SY, LaPage MJ, Ohno S, Probst V, Roberts JD, Robyns T, Sacher F, Semsarian C, Skinner JR, Swan H, Tavacova T, Tisma-Dupanovic S, Tfelt-Hansen J, Yap SC, Kannankeril PJ, Leenhardt A, Till J, Sanatani S, Tanck MWT, Ackerman MJ, Wilde AAM, van der Werf C. Flecainide Is Associated With a Lower Incidence of Arrhythmic Events in a Large Cohort of Patients With Catecholaminergic Polymorphic Ventricular Tachycardia. Circulation. 2023 Oct 27. doi: 10.1161/CIRCULATIONAHA.123.064786. Epub ahead of print. PMID: 37886885. IF 39.9
- Tomek V, Jicínská H, Pavlíček J, Kovanda J, Jehlicka P, Klásková E, Mrázek J, Cutka D, Smetanová D, Brešťák M, Vlačín P, Pavlíková M, Chaloupecký V, Janoušek J, Marek J. Pregnancy Termination and Postnatal Major Congenital Heart Defect Prevalence After Introduction of Prenatal Cardiac Screening. JAMA Netw Open. 2023 Sep 5;6(9):e2334069. doi: 10.1001/jamanetworkopen.2023.34069. PMID: 37713196; PMCID: PMC10504618. IF 13.8
- Koblizek M, Golas W, Krskova L, Kovanda J, Bukovsky P, Zamecnik J. Primary cardiac lipoblastoma of the right atrium. Cardiovasc Pathol. 2023 Jul-Aug;65:107542. doi: 10.1016/j.carpath.2023.107542. Epub 2023 Apr 29. PMID: 37127061. IF 3.9
- Chaloupecký V Jr, Gebauer R, Kovanda J, Koubský K, Sus I, Janoušek J. Electrophysiology and surgery intertwined in complex treatment of Ebstein's anomaly in childhood. HeartRhythm Case Rep. 2022 Sep 30;9(1):17-22. doi: 10.1016/j.hrcr.2022.09.014. PMID: 36685680; PMCID: PMC9845553. IF 4.4
- Zieg J, Tavačová T, Balaščíková M, Peldová P, Fencel F, Kubuš P. Sudden cardiac arrest in a child with Gitelman syndrome: a case report and literature review. Front Pediatr. 2023 Jun 7;11:1188098. doi: 10.3389/fped.2023.1188098. PMID: 37351317; PMCID: PMC10282639. IF 3.5

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 Department of Paediatric Psychiatry 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 disorders on the autistic spectrum, eating disorders, psychotic disorders, and suicidal behaviour in children and adolescents. The department also operates as a undergraduate and postgraduate educational institution. **In 2023, the total number of hospital admissions was 543, of which 277 were acute admissions via paediatric urgent admissions dept. or children's emergency department of MUH. 97 children were admitted by transfer from the Department of Paediatrics, 2nd Faculty of Medicine, Charles University and Motol University Hospital,**

another 19 children from other paediatric clinics. There were roughly 1,600 psychiatric consultations and outpatient examinations for adults, and 3400 psychiatric consultations and outpatient examinations for children. At the Dept. of Urgent Paediatric Admissions and Medical First Aid Service (MFAS) there were nearly 1,000 children who underwent an acute psychiatric examination. After years of significant increase in the number of children and adolescents admitted following attempted suicide and serious self-harm, the numbers stagnated in 2023 (141 hospitalisations following attempted suicide; with serious self-harm 353).

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 maternal autoantibodies and their effect on the development of autism spectrum disorders.
- Comprehensive therapy and research into 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 2023:

- The clinic got involved in the project "ZD_ZDOVA1-016 – Mental Health Care of Children Born Preterm" supported from the funds of the EEA/Norway 2014-2021 – doc. MUDr. Iva Dudová, Ph.D. (coordinator of psychiatric part) and MUDr. Jakub Kerner.

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

Head doc. MUDr. Lucie Šrámková Ph.D.

Senior Consultant MUDr. Petra Keslová Ph.D.

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 anaemias, bleeding disorders and congenital coagulation disorders (haemophilia). Allogeneic and autologous transplantation of hemopoietic stem cells in the treatment of high-risk leukaemias, selected solid tumours, 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, caring for approximately 2/3 of paediatric haematology and oncology patients in the CR, either completely or by sharing with other centres. It provides consultation examinations of patients for Bohemia and, for other countries (Slovakia, Croatia, Poland...).

In 2023, there were 14936 examinations and treatments performed in outpatient clinics. A total of 3472 patients were hospitalised.

176 children with malignant solid tumours and 45 children with leukaemia and myelodysplastic syndrome were diagnosed, 7 patients received innovative CAR T cell treatment.

33 allogeneic bone marrow transplantations were carried out, of which 28 patients received bone marrow from unrelated donors from registers, 4 from sibling donors, 1 haploidentical transplantation, and 25 patients received autologous grafts.

Specialized outpatient units:

- oncology outpatient unit and daycare centre
- outpatient unit for late consequences
- outpatient unit for haemangiomas 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 Paediatric Neuro-oncology Centre (in cooperation with the Department of Neurosurgery and other MUH departments) provided a full range of cutting-edge comprehensive diagnostics and treatment for children with CNS tumours. Last year 64 children from the CR and other countries (Slovakia, Poland, Croatia) were diagnosed and/or treated for CNS cancer.
- International studies for the treatment of acute lymphoblastic leukaemia relapse and studies for the treatment of low grade gliomas were opened.
- In 2023 the Department of Paediatric Haematology and Oncology took into care 9 more Ukrainian paediatric cancer patients with refugee status.

Unique equipment:

- Oxygraph-02k - a research instrument used to study the metabolism of cancer cells and their changes during treatment.

Major events in 2023:

- We published 81 articles in journals with IF (19 of them first or last author), total IF 1020.6.
- Award of title Associate Professor - 2 doctors;
- Successful completion of Ph.D. - 1 doctor;
- The clinic became a co-researcher of 2 large European grants (IntReALL, MonaLisa) dealing with the diagnosis and treatment of acute lymphoblastic leukaemia relapse and diagnosis of neuroblastoma in children.

Awards

- Prof. MUDr. Jan Starý DrSc. received an important Czech Medical Association award – Czech Medical Association Gold Medal.
- Prof. MUDr. Tomáš Kalina Ph.D. received the František Běhounek Award 2023, awarded by the Minister of Education in the field of research, experimental development and innovation for

popularization of his scientific field and for spreading the good name of the Czech Republic in Europe.

- MUDr. Adéla Mišová received the Vlasta Adamová Award for outstanding work in the field of oncology and haematology, which is dedicated to genomic analysis looking for targetable therapeutic lesions in childhood spinal cord tumours - low grade gliomas.
- Prof. MUDr. Jan Starý, M.D., DrSc. received the Jesenius Prize for the project: Biology and immunopathology of bone marrow failure and combined autoimmune cytopenia (Evans syndrome) in children, which led to the elucidation of new genetic causes of hematopoietic failure and anaemia in children.

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

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

Senior Consultant MUDr. Luboš Zeman

Head Nurse Mgr. 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 – ensures 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 workplace in the CR with European UEMS accreditation for specialisation training in paediatric surgery. Since 2022, the Department of Paediatric Surgery has been a centre for highly specialized care in the European network for rare diseases ERNICA. **In 2023 a total of 2,815 patients were hospitalized at the department, of which 197 children were hospitalized at the surgical intensive care unit for newborns. Surgeries were performed on 2,091 children. Specialized outpatient units treated 17,972 children, and the emergency outpatient unit provided care for 6,405 children.**

Specialized outpatient clinics/advisory centres:

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

New methods and procedures:

- Perineum sparing repair of vestibular fistula
- Percutaneous laparoscopic endoscopic jejunostomy (PLEJ)
- Urethroplasty of sub-coronary hypospadias according to Maceda

- “Nursing - wash-out” in patients with Hirschsprung's disease
- Primary laparoscopic procedures in patients with Hirschsprung's disease
- Laparoscopic surgery for anorectal atresia
- Single incision minimally invasive surgery
- ERAS in paediatric surgery
- KEDA in post-operative care, including newborns
- Wound prevention and healing

Unique equipment:

- mini surgical instrument set for thoracoscopic and laparoscopic surgery of the smallest children (newborns, infants)
- equipment for minimally invasive surgery with 3D images audiovisual instrumentation in the operating room - online conferencing
- laparoscopic simulators for training and simulation of minimally invasive surgery

Major events in 2023:

- The Department of Paediatric Surgery was accepted as a member of the European network caring for children with anorectal malformations ARM - NET
- Prof. MUDr. Michal Rygl, Ph.D. was elected to the executive board of the World Federation of Associations of Pediatric Surgeons (WOFAPS).
- Prof. MUDr. Richard Škába, Csc. was knighted by the Czech Medical Chamber as a Knight of the Czech Medical Estate.
- MUDr. Barbora Kučerová, Ph.D. was elected to the Executive Council of Paediatric Surgery of the Union of European Medical Specialists (UEMS).
- Prof. MUDr. Michal Rygl, Ph.D. , MUDr. Vojtěch Dotlačil and MUDr. Lucie Poš, Ph.D. were elected members of the Committee of the Czech Paediatric Surgical Society Czech Medical Association for the period 2024-2027 and MUDr. Barbora Kučerová, Ph.D. was elected a member of the Review Committee.
- MUDr. Vojtěch Dotlačil completed a foreign internship in Amsterdam and MUDr. Natália Newland in Wrocław as part of the ERNICA European Network Scholarship Programme
- A bilateral training programme Amsterdam - Prague took place, focusing on the stay and involvement of parents in the care of children in hospital.
- Lucie Hůrková, DiS completed a foreign internship in London focusing on Biofeedback and Urotherapy.
- Mgr. Lenka Rubešová and Ivana Nečasová completed their certified training in Wound Prevention and Healing. Mgr. Romana Tichá successfully completed the study "Management in Healthcare".
- MUDr. Jiří Trčka successfully passed the attestation exam in paediatric urology and MUDr. Omar Zeinedine in paediatric surgery

Scientific and educational activity:

7 publications in magazine with IF
 2 publications in a local magazine
 4 chapters in monograph
 42 expert lectures

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

Head prof. MUDr. Pavel Kršek, Ph.D.

Senior Consultant doc. MUDr. Jana Haberlová, Ph.D.

Head Nurse Gabriela Pavlová

Basic description:

The Department of Paediatric Neurology (DPN) is a reference super 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 now 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 units, a fully equipped Electrophysiology Laboratory and a Neurogenetics Laboratory offering molecular genetic diagnostics for some neurological diseases of childhood. The Department of Paediatric Neurology is also an undergraduate and postgraduate educational institute and a scientific and research centre involved in many interdisciplinary and international projects.

In 2023, the department had a total of 1,104 hospitalized children with total hospitalization accounts coming to 1,432. A total of 19,022 outpatient examinations were performed on 7,657 patients (unique personal ID numbers). A total of 5,397 procedures were performed in the electrophysiological laboratory. 37 resection surgeries, 7 long-term intracranial video/EEG studies, 4 primo-implantations and 2 reimplantations of a vagus nerve stimulator were performed under the epilepsy surgery programme. Neurogenetics laboratory: 698 samples (unique) samples received.

Specialized outpatient clinics/advisory centres:

- 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/recognised by Ministry of Health of the CR/other:

- Centre for highly specialized care for pharmacoresistant epilepsies
- Centre for highly specialized care for multiple sclerosis and neuromyelitis optica
- ERN for rare and complex epilepsies (ERN EpiCARE)
- ERN for rare neuromuscular diseases (ERN NMD)
- Centre for hereditary ataxias (under ERN RND)
- Centre for sleep disorders in children
- Epilepsy Research Centre Prague (EpiReC) - a consortium of the 2nd Faculty of Medicine, Charles University, the MUH, the Czech Academy of Sciences and the Czech Technical University in the field of translational epileptology research

New methods and procedures:

- International collaboration in the field of gene therapy for AADC deficiency with the University Hospital of Montpellier, France (aromatic L amino acid decarboxylase deficiency) gene therapy;
- New clinical trial in patients with spinal muscular atrophy with talgrefdobep alfa (antimyostatin human antibody);
- New methods introduced by the Department of Paediatric Neurology Neurogenetics Laboratory:
 - tissue whole-exome sequencing
 - amplicon sequencing to validate somatic variants in brain tissue
 - Amplicon sequencing of DNA from blood in trios of proband-parent patients with cortical malformations to validate low-level mosaicism.

Major events in 2023:

- Organization of the largest ever paediatric neurology congress in Prague 15th Congress of the European Paediatric Neurology Society (EPNS), 20-24.6.2023 with more than 2000 participants from all over the world, of which Prof. Dr. Pavel Kršek was the president; The congress included a very successful pre-congress epileptology symposium "Drug-resistant epilepsy in the 21st century: from molecular mechanisms to precision therapies".
- Minister of Health Award for Medical Research and Development 2023 for the team of Prof. Dr. Pavel Kršek for the project AZV NV19-04-00369 "Stratification of patients with focal cortical dysplasia to optimize epilepsy surgery".
- Prof. MUDr. Pavel Kršek, Ph.D. was elected as the President of the Czech League against Epilepsy Czech Medical Association for the period 2023-2027.
- The Clinic received a new grant NU23-04-00209 "Elucidation of new genetic causes of focal malformations of cortical development" (principal investigator: dr. Barbora Straka).
- The team of the Neurogenetics Laboratory under the leadership of doc. Dr. Petra Laššuthová joined the UNCE project (University Centre for Research on Neuronal Excitability Disorders - EXCITE, principal investigator prof. Přemysl Jiruška).
- Involvement of the clinic in the academic research project coordinated by Centre Hospitalier Universitaire de Liège, Belgium on the development of a new digital biomarker for genetic myopathies - ActiMyo device, ActiLiège Next Study NCT05982119.

Publications:

- 25 primary publications in journals with a cumulative IF of 113.8, 6x first and 7x last authors of the paper, 4xD1, 3xQ1, 10xQ2; 2 publications in peer-reviewed journals.



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

Head doc. MUDr. Zdeněk Čada, Ph.D.

Senior Consultant MUDr. Petra Dytrych, Ph.D.

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 super 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 at MUH.

In 2023, the clinic continued its stable performance as in 2022. A total of 2,464 operations were performed and 2,534 patients were hospitalized.

The Department of **Phoniatrics 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, a clinical psychologist is also involved in the work of the CCIC (the psychologist is organized under the Department of Clinical Psychologists of the MUH, where he reports his activities) and clinical engineers (contracts for work).

In 2023, a total of 1,954 examinations were performed in outpatient units and 3,272 examinations were conducted by clinical speech therapists at our department.

The clinic includes a new **Centre for highly specialised care for paediatric patients with permanent hearing loss - the so-called Pedaudiology Centre.**

Specialized outpatient units:

- otosurgical outpatient unit
- otoneurology 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
- phoniatrics outpatient unit
- thyroidology outpatient unit
- oncological outpatient unit for treating lymphangiomas and haemangiomas of the head and neck
- outpatient unit for GERD diagnostics
- outpatient unit of plastic surgery
- outpatient unit for swallowing defects
- somnology outpatient unit
- USG outpatient unit

Unique equipment:

- plasma generator – plasma coblation
- AeriS balloon catheter – used for gentler dilation of stenosis of the respiratory tract in children
- 24h pH impedance meter
- microinstrumentarium for laryngeal surgery in children
- microinstrumentarium for FESS in children
- high-frequency tympanometer Maico MI 34
- 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 – gentle tissue preparation, ultrasound 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
- Lumify Phillips diagnostic ultrasound system - portable ultrasound device
- Synapsys VHIT Evolution - SY.VHITIII_EVOLUTION Instrument for measuring the vestibular system by the vHIT Ulmer method in young children (version allows complete examination of all 6 semicircular canals).
- ICS Impulse Mono. Ocu. Ltd., Lateral Head Imp, LARP/RALP Head Imp, Mono. Pos., Tors for examination of the vestibular system by the vHIT method using glasses - contains all examination modules (video frenzel, oculomotor Limited, Lateral Head Impulse, LARP/RALP Head Impulse, monocular positional, torsional module).
- Saegeling Medizintechnik's polygraphic system for sleep monitoring in apneics (PSG)
- 2 X of 70*, 4 mm, 18 cm optics worth CZK 124,792 and a clinical audiometer with free field accessories and VRA support from the ENT Foundation.

Major events in 2023:

- **Grants:**
Ministry of Health project for the conceptual development of a research organisation
Charles University Grant Agency No.196123, Charles University Grant Agency No.192121, Charles University Grant Agency No.194123, AZV 5399, NU21-01-00448 ;
Doc. MUDr. Zdeněk Čada - Institutional support of Modern Therapy No.9774 " Vestibular rehabilitation using virtual reality";
MUDr. Michal Jurovčík - Internal grant No.6023 - Improvement of accurate and timely diagnosis and comprehensive rehabilitation of children with severe congenital and acquired hearing loss

Publication activity:

- Publication - Balance disorders in childhood - by the author team led by the head of the department Zdeněk Čada.
- Borský J., Jurovčík M., Novotná K., Dytrych P., Janota J. Jaklová L., Velemínská J., Čada Z.: Cleft lip surgery in newborns - our eighteen-year experience. *Otolaryngology-Head and Neck Surgery* 2023; 169(S1):.201-202, DOI: 10.1002/ohn.447, IF 3,4
- Jurovčík M., Pohunek P.: chapter in monograph Pohunek P., Kofátko P, Tuková J.: Paediatric Pneumology, 2nd, revised and supplemented edition, pp. 581-589, Grada Publishing, 2023

- Jurovčík M.: Rigid bronchoscopy from the point of view of an ENT physician, chapter in the monograph Pohunek P., Kofátko P., Tuková J.: Paediatric Pneumology, 2nd, revised and supplemented edition, pp.245-255, Grada Publishing, 2023
- Jurovčík M., Doušová T., Bodlákova M., Pohunek P., Čada Z. : Biodegradable polydioxanone stents in the treatment of severe airway obstruction in children. *Otolaryngology-Head and Neck Surgery* 2023; 169(S1):.306, DOI: 10.1002/ohn.447, IF 3,4
- Jurovčík M., Borský J., Novotná K. et al.: Hyaluronic acid level in relation to OME severity - cleft patients. *Otolaryngology-Head and Neck Surgery* 2023; 169(S1):.314, DOI: 10.1002/ohn.447, IF 3,4
- Jurovčík M: Chapter in monograph Janota J., Straňák Z.: Neonatologie 3rd edition, p. 556 – 581, EEZY 2023
- Murgašová, L., Hůlková, H., Barešová, V., Jurovčík M., Stříteský J., Juričková K., Magner M., Sikora J.: Adenotonsillar pathology in mucopolysaccharidoses – lysosomal storage predominates in paracortical CD63+ cells. *Virchows Arch* (2023). <https://doi.org/10.1007/s00428-023-03662-y>, IF 4,548

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

Head prof. MUDr. Zdeněk Šumník, Ph.D.

Senior Consultant MUDr. Jana Tejnická, MBA

Head Nurse Mgr. Jana Boháčová

Basic description:

The Paediatric Department provides diagnostics, treatment and follow-up care for paediatric patients from various places in the Czech Republic in almost all internal medicine specializations. The clinic has 6 inpatient stations, each of which has its own specialized focus. The department also includes a department of elimination methods with 5 beds for acute and chronic procedures.

A total of 5,400 patients were hospitalized and 41,822 outpatient examinations were carried out at the department during 2023.

Specialized outpatient clinics/advisory centres:

- 21 specialized clinics, including outpatient clinics for children after organ transplants - kidney, liver, lung.

New methods and procedures:

- The Nephrology Work Group provides comprehensive care for children with kidney failure and other nephrological diseases. 16 children have successfully undergone renal Tx. The team cares for 10 patients on home peritoneal dialysis (the only unit in the Czech Republic treating infants with this method). It provides elimination methods - plasmapheresis, immunoabsorption, etc. to paediatric and adult patients
- During the year, the pneumology team admitted a number of children with severe pulmonary inflammation, several of them underwent chest cavity drainage or even resection of lung tissue. This team is the only unit in the Czech Republic dedicated to the diagnosis and treatment of patients with primary ciliary dyskinesia. It provides very demanding care for 172 patients with cystic fibrosis. The team cares for children on home non-invasive pulmonary ventilation - these are most often patients with severe neurological problems (SMA), chronic lung disability, obesity, etc. The department provides endoscopic examinations for the entire children's section of the hospital, including children of neonatal age.

- The gastroenterological team successfully continues an intensive endoscopy programme,, including the introduction of percutaneous endoscopic gastrostomies combined with jejunal nutrition (PEG-J), and performs endoscopic balloon dilatations of oesophageal and small bowel strictures. It cares for 9 patients with complicated gastrointestinal diseases on home parenteral nutrition. It is the only institution in the Czech Republic to have initiated a new method of treatment with Revestive in 11 paediatric patients with short bowel syndrome.
- The diabetes and endocrinology team successfully continued to introduce 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, the site is among the top 3 centres in the world! The diabetes team was included in the prestigious INNODIA centre, an organisation dedicated to research into the early stages of type 1 diabetes. This working group has been very successful in addressing the issue of bone metabolism disorders in children, and has incorporated new drug treatments in indicated cases
- Infant Unit - admits children from neonatal age to 2 years. It deals with common and highly specialized problems of children of that age. These include acute infectious and non-infectious diseases or long-term management of chronically ill children often with various congenital defects. It introduces non-invasive ventilatory support and monitoring of nocturnal capnometry/oxymetry in newborns and young infants with respiratory disorders. The department also includes an outpatient clinic - the Comprehensive Care Centre
- Over the year the Intensive Care Unit admitted patients with severe disintegrating pneumonia (on chest drainage), renal failure, liver failure, heart failure, autoimmune diseases and multi-organ failure. These patients required non-invasive mechanical ventilation, elimination methods, intensive monitoring of vital signs, etc. Children are also admitted to the department after extensive spondylo-surgical procedures and other surgical interventions.

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 Department is the only paediatric unit in the CR equipped with a simulator for endoscopic operations in the field of gastroenterology and pneumology.

Major events in 2023:

- All of the above working groups have actively participated in a number of international projects focused on their particular areas of expertise.
- The teams are part of the European Reference Networks (EU-ERN). They have been involved in a number of Czech and international grants.
- The department's staff have published a number of original works in both international and Czech literature. The department's young doctors have received a number of important foreign and domestic awards for their research and publication activities.
- Doctors of the department were organizers of several international and domestic congresses.

Common Inpatient Sites of Paediatric and Adult Sections

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

Head doc. 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 Mgr. Taťána Maňasová

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

Basic description:

The department provides anaesthesiologic 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 anaesthesiologists and physicians with other specializations. The facility has been repeatedly granted type II accreditation. The departmental head holds the position of Chairman of the Accreditation Commission at the Ministry of Health CR and Head of the AIM Department at the Institute for Postgraduate Medical Education (IPME). The Department of Anaesthesiology, Resuscitation and Intensive Medicine provides tuition to students of medicine and students in bachelor's programmes at the 2nd Faculty of Medicine, Charles University in the range of more than 1,500 hours/year and in the framework of IFMSA and ERASMUS international educational and research projects.

In 2023, 1,261 patients requiring resuscitation care were admitted to the department's acute beds, of whom 696 were adults and 565 were children. In 2023, the FIC/LINC department admitted 59 patients, despite a dramatic reduction in the number of beds due to the reconstruction of the MUH. In 2023, anaesthesia was administered to 39,609 patients, of whom 12,981 were children. ECMO support was provided to 117 critically ill patients, and anaesthesia and intensive care was provided to 67 patients as part of the national lung transplant programme. 222 children received one type of long-term peripheral vascular access, making our department a leader in the Czech and Slovak Republics

New methods and procedures:

- In 2023, the ECMO centre at Motol University Hospital for adult and paediatric patients was significantly strengthened, and the establishment of an ECLS centre with registration in the European database was initiated.
- The Department of Anaesthesiology, Resuscitation and Intensive Medicine is one of 3 centres in the e-CPR project, including registration in the European database
- Discussion initiated at the level of the Ministry of Health on the creation of a mobile ECMO team, extension of cooperation with the Prague Rescue Service.
- Introduction of emergency thoracotomy procedures in primary treatment of major chest trauma, including organization of educational courses.
- With a unique PFA device for functional platelet analysis - part of the robust implant research at the clinic - we provide service to all MUH departments.

- Simulation Medicine Laboratory - we train doctors and nurses at MUH and hold elective courses for undergraduate students; in 2023 the laboratory will be expanded to include additional high-fidelity models.
- In 2023, 222 long-term paediatric catheters - PICC - were introduced, making our clinic one of the leaders in this field not only in the Czech Republic but also in Slovakia.
- In cooperation with the Department of Surgery of the 2nd Faculty of Medicine, Charles University and Motol University Hospital, consistent application of ERAS procedures in large abdominal procedures with a clear impact on the quality of hospital admissions including publication of the results in the form of papers and workshops was introduced;
- In 2023, a record 67 lung transplant patients were admitted to the Department of Anaesthesiology, Resuscitation and Intensive Medicine, virtually all with organ-supported ECMO and no 30-day mortality.
- Extended application of regional anaesthesia with routine use of sonographic navigation.
- 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;
- modernization of the equipment in anaesthesiology theatres, including the use of the latest anaesthetics, is ongoing;
- 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 paediatric and adult patients with ultrasound navigation;
- Routine use of the possibility of reliable reversal of the neuromuscular block following anaesthesia;
- 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 2023:

- The clinic celebrated its 70th anniversary. There was a celebratory series of lectures.
- All CRRT (continuous renal replacement therapy) technologies are becoming part of routine therapy in the paediatric resuscitation unit
- The comprehensive ECLS centre with registration in the European database is consolidating its position within the country.
- There are 2 ongoing grants at Department of Anaesthesiology, Resuscitation and Intensive Medicine (TACR and MUH), 2 local academic studies (both approved by the Ethics Committee of MUH) and 3 multicentre international studies organised by ESA (European Society of Anaesthesiology).
- Appointment as professor of 1 physician;
- Defence of dissertation by 1 physician;

- Organization of pre-testing and core course including relevant examinations;
- Publication of 2 monographs, one of which was awarded the Kalenda Prize as the best publication in the field.
- Publication of 28 original papers in peer-reviewed (9) and impact journals (19) of which one was awarded the Dvořáček Award as the best original paper in a journal with Impact Factor in the field.
- Upgraded texts for medics including English language version published.

The clinic includes:

Follow-up intensive care department (FIC) and long-term intensive nursing care department (LINC)

Senior Consultant MUDr. Kateřina Čadová

Head Nurse Mgr. Soňa Hájková

The workplace is one of the most modern in the country and provides medical and nursing services of the highest possible quality. The interest in admissions significantly exceeds the unit's capabilities and capacity. **In 2023 we admitted 59 patients for hospitalisation.**

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

Head prof. PaedDr. Pavel Kolář, Ph.D.

Senior Physiotherapist Mgr. Kateřina Míková

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

1. Department of Rehabilitation

Senior Consultant MUDr. Martina Kóvári, MHA (adult section)

Senior Consultant MUDr. Olga Dyrhonová (children's section)

Head Nurse Mgr. Hana Jirků

Basic description:

The Department of Rehabilitation provides physiotherapy and therapeutic rehabilitation to adults and children across all medical fields. We provide care to outpatients (adults' and children's section) and hospitalized patients (at individual departments and units of the hospital's sections for adults and children). The clinic includes a section for acute inpatient rehabilitation care, both adult and paediatric. **During 2023, a total of 559 patients were admitted to the inpatient section of the department, a total of 4,501 patients were treated in the outpatient section, and 17,913 patients received rehabilitation care in other departments.**

Specifics of the facility:

Respiratory physiotherapy is one of the department's dominant activities. We are now gaining new experience in respiratory physiotherapy for patients with COVID-19, and in 2023 our adult inpatient unit also accepted patients with post-covid syndrome for rehabilitation. Additional specific procedures

include treatment of spastic paresis in the Spacity Centre (including applying botulinum toxin under sonographic or electrostimulation navigation and prescription of cannabis preparations), therapy of pelvic floor disorders, therapy of vestibular disorders, visceral rehabilitation, therapy and diagnosis of swallowing disorders, a lymphology programme and care for amputees.

The department also runs other 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).

New methods and procedures:

- A diagnostic and therapeutic concept Dynamic and Neuromuscular Stabilization (DNS) based on the principles of developmental kinesiology was created within the department and introduced 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.
- Outpatient project in cooperation with the ENT Department of the 1st Faculty of Medicine, Charles University and Motol University Hospital in the care of patients after total laryngectomies and oncological patients after radiation treatment in the cervical region and in rehabilitation care of patients with facial paresis after surgery of facial nerve tumours.
- Collaboration with the Department of Neurology in the testing of patients with SMA in Spinraza therapy and providing comprehensive care for patients with ALS.
- Outpatient project in cooperation with the Pneumology Clinic of the 2nd Faculty of Medicine, Charles University and Motol University Hospital and the 3rd Surgical Clinic of the 1st Faculty of Medicine, Charles University and Motol University Hospital, in the care of patients before and after lung transplantation.
- Extension of speech therapy care at Motol University Hospital - provision of speech therapy care including auditory rehabilitation for adult patients after cochlear implantation and establishment of a speech therapy group for people with dg. Parkinson's disease. There is also a speech therapy advisory centre for parents in the neonatology ward dedicated to eating and a specialised outpatient clinic for children with cleft defects.
- In 2023, the Neurovisual Rehabilitation Project was created, which is dedicated to the diagnosis and therapy of neuro-visual functions in adult and paediatric patients.
- We are newly collaborating in the process of induced sputum blending in patients who are unable to expectorate spontaneously (e.g., cystic fibrosis patients).

Unique equipment:

- BTL 6000 FSWT device - high energy shock wave, whose use promotes healing of acute and chronic myoskeletal disorders and has a significant analgesic effect.
- Dynamic walkway with virtual reality
- devices for functional electrical stimulation for lower or upper limb paresis

Major events in 2023:

- Successful continuation of the doctoral study programme in Kinesiology and Rehabilitation (prof. MUDr. Alena Kobesová, Ph.D. is the guarantor of the programme). In 2023, the following successfully completed studies: as. PhDr. Petr Bitnar, Ph.D., prim. MUDr. Martina Kövári, Ph.D., MHA, as. MUDr. Jakub Jačisko, Ph.D.
- Prof. PaedDr. Kolář and prof. MUDr. Kobesová organized the professional conference Dynamic Neuromuscular Stabilization. Chateau Šanov and MUH 19.-25.8.2024. There were more than 100

participants from 11 countries.

- International scientific project Erasmus + "COVIDMOVE" . The project included a scientific article by Liška D, Rutkowski S, Oplatková L, Sýkora J, Pupiš M, Novák J, Urbářová E, Rutkowska A, Busch A, Kobesova A. Comparison of the level of physical activity after the COVID-19 pandemic in Poland, Slovakia and the Czech Republic. *BMC Sports Sci Med Rehabil.* (2024). <https://doi.org/10.21203/rs.3.rs-3192881/v1> **IF 1.9**
- Organization of the international workshop Ultrasound navigation botulinumtoxin course for foreign physicians - 3/23 (Spasticity Center physician collective).
- 5th Motol Neurootology Day: Defects of the Vestibular System - organiser doc. PhDr. O. Čákr, Ph.D. 3.8.2023;
- Co-organization of the 28th Congress of the Society of Rehabilitation and Physical Medicine, Luhačovice, 25.-27.5.2023
- Prof. MUDr. A. Kobesová, Ph.D. invited key note speaker of professional conference "Neurophysiological aspects of DNS". Organiser: Taiwan Institute of Fascia Research (TIFAR). Taipei City, Taiwan, 9.9. 2023;
- Prof. MUDr. A. Kobesová, Ph.D. invited key note speaker at expert summit in Warsaw: Medical Trainer Summit. Warsaw, 23.-25.6.2023.
- Prof. MUDr. A. Kobesová, Ph.D. invited key note speaker at international conference: i International Conference Movement and Health. Opole, Poland. 17.-18.5-2023.
- Prof. Kobesová hosted the expert podcast SF Talk: DNS for athletes with physical disability. 1396 views: <https://www.youtube.com/watch?v=8o8yMhCqEnA>

Publications:

- Sembera, M., Busch, A., Kobesova, A., Hanychova, B., Sulc, J., & Kolar, P. (2023). The effect of abdominal bracing on respiration during a lifting task: a cross-sectional study. *BMC Sports Science, Medicine and Rehabilitation*, 15(1), 112. **IF 1.9**.
- Vlčková, B., Halámka, J., Müller, M., Sanz-Mengibar, J.M., & Šafářová, M. (2024). Can Clinical Assessment of Postural Control Explain Locomotive Body Function, Mobility, Self-Care, and Participation in Children with Cerebral Palsy? *Healthcare*, 12, 98. <https://www.mdpi.com/2227-9032/12/1/98>
- Čada, Z., Balatková, Z., Černý, R., et al. (2023). Vestibular rehabilitation. In *Balance disorders in childhood*. Maxdorf.
- Čákr, O., Slabý, K., Kučerová, K., Balatková, Z., Jeřábek, J., & Bouček, J. (2023). Subjective visual vertical and postural control in patients following cochlear implantation. *Journal of Vestibular Research*. doi: 10.3233/VES-220136. Online ahead of print. PMID: 37574747.
- Čákr, O., & Jeřábek, J. (2023). Stability disorders in patients with benign paroxysmal positional vertigo. *Neurology for practice*, 24(4), 294-298.
- Fabičovic, K., Novák, J., Angerová, Y., Machač, S., & Kobesová, A. (2023). Functional examination and therapy of primary coccygeal syndrome. *Rehabilitation and Physical Medicine*, 30(3), 120–132. doi: 10.48095/ccrhfl2023120
- Jevič, F., Vlčková, B., Pavliňáková, K., & Kobesová, A. (2023). Vojta reflex locomotion therapy is not contraindicated in paediatric haematooncology and oncology patients. *Rehabilitation and Physical Medicine*, 30(2), 72–78. doi: 10.48095/ccrhfl202372
- Šnajdrová, T., Králová, V., Šafářová, M., & Kobesová, A. (2023). Motor testing in children. *Rehabilitation and Physical Medicine*, 30(2), 90–97. doi: 10.48095/ccrhfl202390
- Plešková, J., Irving, A., Stehová, T., & Kobesová, A. (2023). Comprehensive respiratory physiotherapy of chronic respiratory diseases in childhood. *Rehabilitation and Physical Medicine*, 30(2), 105–113. doi: 10.48095/ccrhfl2023105

2. Spinal Unit

Senior Consultant doc. MUDr. Jiří Kříž, Ph.D.

Head Nurse Mgr. 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 2023, 56 patients with acute spinal lesion and 39 spinal patients at the chronic stage with acute complications were hospitalized, approx. 320 patients were treated in the outpatient unit as part of follow-up or due to newly developed health problems.

New methods and procedures:

- Baclofen pump implantation in another patient after spinal cord injury with severe spasticity in collaboration with the Department of Neurosurgery for Children and Adults.
- Treatment of chronic skin defects with an amniotic membrane;
- Treatment of chronic neuropathic pain using medical cannabis;
- In cooperation with the Paraple Centre, the Charles University Grant Agency supported project "Managing Sleep Apnoea in People with Spinal Cord Injury, Treatment Options with Oral Correctors" continued.
- In cooperation with FBMI CTU, the project "Designing and Developing a Method to Prevent Autonomic Dysreflexia in Individuals Following Spinal Cord Injury" continued.

Unique equipment:

- voice assistant for communicating with the surroundings and controlling equipment for patients with upper limb paralysis, with addition of module for controlling various types of hospital bed tablet and communicator for baclofen pump programming
- CoughAssist device for supporting cough in patients with neck spinal lesion
- Pony FX device for spirometry examination of lesions
- Misonic SonicOne device for removing necrotic material and devitalized tissue from skin defects
- Finapres NOVA device for assessing defects of the autonomous nervous system
- ABPM device – pressure Holter monitor
- Conformat for a seated pressure map examination in individuals with spinal cord injury

Major events in 2023:

- Co-organisation of a day-long seminar to mark International Spinal Cord Injury Day, Paraple Centre, 5 September 2023;
- Successful completion of 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;
- Continued work on the European project "European Multicenter Study about Spinal Cord Injury (EMSCI)". IFP 2001/P 66;
- Active participation in the 62nd ISCoS Annual Scientific Meeting, Edinburgh, Scotland, 8-11 October 2023

3. Department of Pain Research and Treatment

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

Head Nurse Soňa Bašová

Basic description:

The Department for Pain Research and Treatment has a multidisciplinary character in the care for chronic painful conditions. It is one of the 11 neuromodulation centres in the CR, an undergraduate and postgraduate teaching institution in algology and neuromodulation techniques.

In 2023 there were 5,713 outpatient treatments, 108 patients were hospitalised due to chronic pain, and there were 361 consultations.

New methods and procedures:

- Extension of radiofrequency methods and indications for RF to nociceptor and peripheral neuropathic pain;
- Nerve blocks guided by USG and neurostimulator, one-time, continuous with catheter during hospitalization
- Pain testing using the Dolosys - Pain Tracker;
- Continued peripheral nerve stimulation and spinal cord stimulation programme.
- The use of cannabis and the introduction of Methadone into pain pharmacotherapy;
- Applying Capsaicin pl. (Qutenza) in neuropathic pain and creating a new code in the List of Medical Procedures;
- Creating a new telemetry procedure during distance monitoring of neuromodulation-patients.

Unique equipment:

- Pain Tracker - Dolosys - 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, programming equipment
- Pasha - RF system non-coaxially tied to the inserted electrode

Major events in 2023:

- Publication of books: Algology or pain treatment in case studies, doc. MUDr. Jiří Kozák et al;
- Re-edition of Methodological Guidelines for Pain Pharmacotherapy under the auspices of the professional society SSLB Czech Medical Association (main-editor doc. Kozák);
- Creating CHOPIN, a registry of neuromodulation methods - coordination of NM centres;
- Clinical study "Fascigel" for patients with LBP -, interfacial blockade (ESP approach) - MUDr. Petrová, doc. MUDr. Kozák
- Participation in the organization of the international congress - Ostrava "Dialogues on pain " 19.-21.10.23, with active participation (doc. MUDr. Kozák);
- Doc. MUDr. Jiří Kozák, CsC. - active participation in the European Congress of Algology (EFIC) Budapest 2023;

- Co-organization of Postgraduate Interventional Training (pain treatment centre MUH + pain treatment centre Královské Vinohrady University Hospital + pain treatment centre Plzeň University Hospital + Institute for Postgraduate Medical Education), organization of training courses + Cadaver Workshops with the practical application of interventional methods.

4. Department of Sports Medicine

Senior Consultant doc. MUDr. Jiří Radvanský, CSc.

Head Nurse Mgr. Hana Jirků

Basic description:

The Department of Sports Medicine is one of the department's outpatient units. It focuses mainly on functional diagnostics at the regional level (in the case of congenital heart defects at the national level) and the subsequent mobility recommendations. The department conducts functional stress diagnostics of the circulatory system even in patients in wheelchairs. 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 2023, approximately 2000 athletes were examined during preventative sports check ups as were 2,420 patients with exertional complaints and pre-operative examinations. 426 patients underwent controlled movement therapy and we provided 3,898 interventions, including individually tailored movement therapy and dietary interventions, during this therapy.

Major events in 2023:

- Active participation in multidisciplinary conferences across the country including presentations.

Publications:

- "Subjective visual vertical and head position in patients with idiopathic scoliosis Klára Kučerová, Marcela Šafářová, Vojtěch Illinger, Sára Koutná, Kristýna Šonská, Kateřina Levínská, Ondřej Čakrt. Journal of Vestibular Research, June 2023, IOS Press
- Muscle Excitability Scale for the Assessment of Spastic Reflexes in Spinal Cord Injury: Development and Evaluation. Kriz J., Nasincova Z., Gallusova V., Vyskocil T., Gregor Slaby K., Sediva K. Preprint
- Diagnosis and treatment of obesity across specialties - physical medicine Richterová Sylvie, Hrušková Štrégl Sylvie, Radvanský Jiří

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

Head: MUDr. Martin Hložánek, Ph.D., FEBO

Senior Consultant MUDr. Milan Odehnal, MBA

Head Nurse Mgr. 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 has 25 beds. Part of the complement are operating theatres, organizationally falling under the Department of Central Operating Theatres. The department ensures the operation of an outpatient unit for adults and an outpatient unit for children; the outpatient units have operating rooms for minor surgical procedures and intravitreal injections. In addition, the department provides a consultation service for both parts of the hospital.

In 2023, the department performed 1,498 surgeries (+35% yoy) and 424 minor procedures in the operating room (-21% yoy). The most common surgical procedures were cataract surgery (513), strabismus surgery (140) and examination under general anaesthesia (177). 850 patients were hospitalised over the course of 2023.

A total of 14,266 patients were examined in the paediatric outpatient unit (+22% yoy), 14,494 patients in the adult outpatient unit (+15% yoy) and 4,522 patients in the emergency department (+1% yoy). 1,569 examinations were made at the orthoptic clinics (-28% yoy). The department performed a total of 2614 consultation examinations within the MUH (-7% yoy).

Specialized outpatient units and counselling centres:

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

New methods and procedures:

- Assessing retinal findings in uncooperative children using handheld, optical coherence tomography, especially in patients with retinoblastoma and retinopathy of prematurity and congenital glaucoma;
- Intravitreal treatment (application to the vitreous body) in paediatric patients with retinal cancer (retinoblastoma) in collaboration with the Department of Radiology and the Department of Paediatric Haematology and Oncology;
- Resolution of subluxation and luxation of the lens by pars plana with implantation of iris-claw intraocular lens retropupillary, or new procedures of intrascleral fixation by flange technique;
- Intravitreal biological therapy in children and adults;
- Introduction of new procedures into the spectrum of antiglaucoma surgery (360° trabeculotomy);
- Implanting toric intraocular lenses to correct astigmatism and introducing extended focus lenses during cataract surgery.

Unique equipment:

- OCT Envisu (Leica) - manual OCT (optical coherence tomography) for a detailed examination of individual retinal layers in uncooperative children and patients under general anaesthesia; the standard examination is performed in sitting position, so it cannot be used for patients under GA. It is the only device of its kind in the CR, it is mainly used in young children with retinoblastoma. The Národ dětem Foundation contributed 70% to the purchase of the device.
- Nd:YAG laser for supinated position (Meridian MRQ)

Major events in 2023:

- MUDr. Česká Burdová, MUDr. Hložánek, MUDr. Kožner, were authors of papers in journals with a total IF of over 10.0.
- Authors from the department contributed a total of seven chapters to the book Ophthalmology in Case Reports
- MUDr. Odehnal is the author of a chapter in the 3rd edition of the book Neonatology (authors Jan Janota, Zbyněk Straňák)
- MUDr. Hložánek represented Czech ophthalmology as one of 4 surgeons at Live Surgery at the European Ophthalmology Congress 2023 (SOE 15.-17.6.2023, Prague)

- Doc. MUDr. Pochop et al. successfully continued intravitreal chemotherapy in children with retinoblastoma, working on the development of a hydrogel implant for local depot effect of chemotherapy

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.
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 2023, 1,603 children and 2,266 adult patients were hospitalized, which is 3,869 patients in total. 1,329 surgeries were performed on children and 2,307 on adult patients (of which 990 endoprostheses), which is 3,636 surgeries in total.**

The difference between the number of hospital admissions and the number of operations performed on adult patients is due to patients operated on as outpatients (i.e. without admission), patients who were treated conservatively, and patients in the transitional age group of 18-19 years who are often admitted to the children's ward and then operated on in the adult operating theatre.

In the children's outpatient unit, 31,214 children were treated, and 18,670 adults were treated in the outpatient unit for adults, i.e. 49,884 patients in total. The number of consultation examinations performed in the MUH is 363 in the paediatric section and 829 in the adult section, i.e. a total of 1,192 consultations were performed.

Specialized outpatient clinics/advisory centres:

- orthopaedic oncology outpatient unit
- scoliosis outpatient unit
- outpatient unit of sports traumatology for children and adults
- specialized outpatient unit for arthroscopic procedures
- specialized outpatient unit for hip joint arthroscopy
- outpatient unit for neurogenic defects
- outpatient unit for congenital skeleton defects
- outpatient unit for primary and revision endoprosthesis of the large joints
- outpatient unit for comprehensive surgeries of the shoulder joint
- adult musculoskeletal sonography
- sonography of hips of newborns

New methods and procedures:

- Utility model (36 430, 2022) and patent - Device and Kit for Preparing a Therapeutic Preparation Based On a Cell-seeded Carrier. Authors: Yuriy Petrenko, Irena Vacková, Vojtěch Havlas, Eliška Vavřínová. Owner: Institute of Physiology Czech Academy of Sciences, Institute of Experimental Medicine Czech Academy of Sciences, Charles University
- Developing the use of magnesium implants in the treatment of fractures and osteotomies

- Completion and publication of the results from a clinical study on the safety of stem cells in the treatment of chondral defects
- assessing a unique cohort of patients and publication of the results - the use of Magnezix magnesium implants in the treatment of chondral defects of the knee in children
- national standards - Replacement surgery of the anterior cruciate ligament in children with an open growth gap using a technique without disturbing the growth plate.
- the clinic is one of the two high-volume centres in the Czech Republic for the development of hip arthroscopy
- wider use of minimally invasive approaches to hip TEP implantation
- use of a new robotic navigation system for knee joint TEP implantation

Unique equipment:

- 2 Canon Xario 100 Platinum and Xario 200 Platinum ultrasound machines
- SIMBIONIX ARTHRO surgical simulator for ASK operations
- ultramodern arthroscopic mobile unit used in the department's paediatric and adult sections
- optical PC navigation - used for knee joint replacement

Major events in 2023:

- Prof. Dr. Havlas was elected President of the ESSKA 2026 Congress held in Prague
- Doc. Dr. Kautzner was elected President of the Society for Sports Traumatology and Arthroscopy.
- Organization of the Spring Orthopaedic Symposium, March 2023 - theme "Complications of Treatment in Paediatric Orthopaedics and Traumatology", 140 participants;
- Doc. Dr. Kautzner was president of the congress of the Society for Sports Traumatology and Arthroscopy held in České Budějovice
- Completion of multicentre clinical study: OA-orMSCp-02vfáze I/IIa Autologous bone marrow-derived mesenchymal stem cells seeded on a 3D scaffold in treatment of knee cartilage defects. Prospective open-label study to assess safety and feasibility. Study coordinator - prof. MUDr. Havlas.
- Prof. Dr. Havlas became chairman of the Fellowship Committee World Orthopaedic Organisation SICOT.
- Prof. Dr. Havlas and Doc. Dr. Kautzner organized the SICOT Travelling Fellowship - a one-week internship for doctors from abroad at our department.
- Grant project completed in cooperation with Czech Academy of Sciences - Health Research Council, NV19-06-00655, Havlas et al.: The safety and efficacy of allogeneic mesenchymal stem cells isolated from umbilical cord tissue in knee cartilage defect repair.
- A new grant was obtained in cooperation with CTU - Health Research Council, NU23-08-00043, Additive manufacturing of an NiTi alloy for applications in orthopaedics and traumatology

Notable publications:

- Neckar P, Potockova H, Branis J, **Havlas V**, Novotny T, Lykova D, Gujski J, Drahoradova I, Ruzickova K, Kaclova J, Skala P, Bauer PO. Treatment of knee cartilage by cultured stem cells and three dimensional scaffold: a phase I/IIa clinical trial. *International Orthopaedics*. 2023, 47(10), 2375-2382. ISSN 0341-2695. DOI: 10.1007/s00264-022-05505-y **IF 2,7**
- **Berounský K**, Vacková I, Vištejnová L, Malečková A, Havráková J, Klein P, Kolinko Y, Pražák Š, **Hanák F**, **Přidal J**, **Havlas V**. Autologous Mesenchymal Stromal Cells Immobilized in Plasma-Based Hydrogel for the Repair of Articular Cartilage Defects in a Large Animal Model. *Physiological Research*. 2023, 72(4), 485-495. ISSN 0862-8408. DOI: 10.33549/physiolres.935098. **IF 2,103**

- **Hanák F, Havlas V.** Fixation of Knee Osteochondral Lesions in Pediatric Patients with Magnesium-Based Implants. Acta Chirurgiae Orthopaedicae et Traumatologiae Čechoslovaca. 2023, 90(2), 100-107. ISSN 0001-5415. DOI: 10.55095/achot2023/014. **IF 0,4**
- Štulík J, Salavcová L, Trč T, Havránek P, Peší T, Barna M. Compression fractures of the thoracolumbar spine in children. Acta Chirurgiae Orthopaedicae et Traumatologiae Čechoslovaca. 2023, 90(3), 168-173. ISSN 0001-5415. DOI: 10.55095/achot2023/020. **IF 0,4**
- **Hladký V,** Kaplan A, **Smetanová J, Havlas V.** Assessing Knee Stability in Adolescent Athletes with Osgood-Schlatter Disease Using the Y-Balance Test. Acta Chirurgiae Orthopaedicae et Traumatologiae Čechoslovaca. 2023, 90(2), 108-115. ISSN 0001-5415. DOI: 10.55095/achot2023/015. **IF 0,4**
- Popelová E, Svatková M, **Přidal J, Kotaška J,** Kynčl M, **Havlas V.** Femur fractures in children under two years of age. Should we consider the possibility of abuse?. Acta Chirurgiae Orthopaedicae et Traumatologiae Čechoslovaca. 2023, 90(6), 375-382. ISSN 0001-5415. DOI: 10.55095/achot2023/045 **IF 0,4**
- **Summary IF for 2023: 6.4**

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

Head doc. MUDr. Vladimír Beneš, Ph.D.

Senior Consultant prof. MUDr. RNDr. Ondřej Bradáč, Ph.D.

Head Nurse Bc. Tereza Drbohlavová

Basic description:

The department focuses on specialized acute and planned neurosurgery care for children and adults and provides medical consultation in its field. Above all in paediatric neurosurgery, it represents the most productive facility in the country. It also provides undergraduate 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 2023, we managed to maintain the trend for an increase in the volume of surgery for both parts of the department, above all in the field of neuro-oncology, in spite of the limitations associated with reconstruction of the hospital. We also maintained the growth in inpatients and outpatients.

Together with the Department of Paediatric Neurology and the Neurology Department 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, Charles University, MUH, the Czech Academy of Sciences and the Czech Technical University. In collaboration with the Neurology Department, it is part of the Centre for Highly Specialized Cerebrovascular Care. In cooperation with the Department of Paediatric Haematology and Oncology, Department of Paediatric Neurology and other departments and institutes, especially the hospital's paediatric section, we established a Paediatric Neuro-oncology Centre, the first in the country, and successfully promoted it in professional forums and in the media.

Specialized outpatient clinics/advisory centres:

- outpatient unit of neurosurgery for children
- neurosurgical outpatient clinic for adults with a focus on cranial and 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 complicated deformities are treated in the presence of a maxillofacial surgeon - in recent years emphasis has been put on minimally invasive endoscopic procedures contingent on early diagnosis.
- Focus on minimally invasive approaches to the treatment of degenerative spinal defects—endoscopic spinal surgery;
- 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 programme.
- Fine tuning and standard use of frame and frameless stereotactic procedures - application during insertion of deep brain electrodes and during brain biopsies;
- 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 pharmacoresistant 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:

- new Zeiss Kinevo microscope
- endoscopic CUSA - Sornic - tumour extirpation during endoscopic procedures
- exoscope - a digital microscope - Aesculap, allows 3D surgery
- Medtronic electromagnetic neuro-guidance with no need to immobilize the head (including frameless stereotactic procedures) used at central operating theatres for children
- brain neuro-guidance Brain Lab integrated with the Pentero microscope by Zeiss.
- perioperative ultrasound machine
- M-Turbo Ultrasound System from Sonosite
- InVent endoscope (Aesculap) including instruments, endoscopic instrumentation with a wide working channel

Major events in 2023:

- Accreditation of neurosurgery for habilitation and appointment procedures;
- Continuation in the international cerebellar mutism syndrome study (CMS Study);
- Award of 2 Health Research Council grants (Comprehensive Multidomain Diagnostic Battery for NPH; PediTuMRI).
- Allocation of organization of the working days of the Czech Neurosurgical Society for the year 2028

Notable publications:

- Publication of monograph "Normal pressure hydrocephalus" prof. Bradáč in publishing house Springer
- Trková K., Sumerauer D., ..., Beneš V. III, Zápotocký M. Clinical and molecular study of radiation induced gliomas. Sci Rep 14, 3118 (2024). DOI: 10.1038/s41598-024-53434-0 **IF 4.6**
- Táborský J., Táborská J., Vaculík M., Maratová K., Kodýtková A., Beneš V., Libý P. Selection of appropriate surgical technique in the treatment of the most common craniosynostosis. Cesk Slov Neurol N 2023;86:310-321. **IF 0.5**
- Haratek K., Bubeníková A., Entenmann Ch.J., Tomášek M., Zápotocký M., Sumerauer D., Kynčl M., Koblížek M., Libý P., Tichý M., Bradáč O., Beneš V.3rd* Predictors of postoperative complications and functional outcomes in pediatric patients with surgically treated fourth ventricle tumors Acta Neurochirurgica 2023. DOI: 10.1007/s00701-023-05729-w **IF 2.4**
- Sedlák V., Bubeníková A., Skalický P., Vlasák A., Whitley H., Netuka D., Beneš V., Beneš V. 3rd, Bradáč O. Diffusion tensor imaging helps identify shunt-responsive normal pressure hydrocephalus patients among probable iNPH cohort Neurosurgical Review 2023. DOI: 10.1007/s10143-023-02078-1 **IF 2.8**
- Entenmann, Ch.J., Mišove A., Holub M., Zápotocký M., Sumerauer D., Tomášek M., Koblížek M., Bradáč O., Beneš V. 3rd Current management in the treatment of intramedullary ependymomas in children. Child's nervous system 2023. DOI: 10.1007/s00381-022-05814-y **IF 1.532**
- Entenmann Ch.J., Bubeníková A., Blažková J.jr., Zápotocký M., Kruseová J., Sumerauer D., Trková K., Sochová V., Koblížek M., Kynčl M., Malinová B., Bradáč O., Beneš V. 3rd Evaluation of the growth rates and related prognostic factors in radiation-induced meningiomas. J Neurooncol 2023. DOI: 10.1007/s11060-022-04209-y **IF 4.506**

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

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

Senior Consultant MUDr. Milan Hubáček

Head Nurse Mgr. Václava Kolomazníková

Basic description:

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

In 2023, 16,863 outpatient treatments and 655 one-day treatments were performed / 412 tooth rehabilitation under general anaesthesia and 243 surgical procedures/, treatment under analgosedation

351. 721 patients were hospitalized at the inpatient department and 733 surgeries were performed, of which 252 were tooth rehabilitation for handicapped patients under general anaesthesia. There were 1,728 consultation examinations at MUH, and 2357 X-ray examinations.

Specialized outpatient units/counselling centres:

- 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
- for children with rare diseases

New methods and procedures:

- augmentation of maxillary bone defects using a 3D modelled Ti-mesh
- care for patients with a cleft - /comprehensive stomatological care/
- orthognathic surgical procedures including specialized counselling centre and 3D modelling, planning and reconstruction
- dental implantology and controlled bone regeneration focusing on young handicapped patients
- care for 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 intraoral and facial scanner
- generation of mathematical models for facial skeleton reconstruction in cooperation with the Department of Mathematics of the Faculty of Applied Sciences;
- analysis of 2D and 3D image stacking, X-ray and working models in the creation of virtual treatment planning, including printing of individual components in collaboration with the Department of Computer and Control Engineering of the Faculty of Chemical Engineering;
- evaluation of laser and ultrasound-based micro-repair techniques in collaboration with the Faculty of Nuclear and Physical Engineering of CTU;
- We are preparing special obturation plates in cooperation with the ENT department and monitor their effect on functional reconstruction in patients with defects in the orofacial area in the form of monitoring the act of swallowing and during phonation.
- Collaboration with the Institute of Biology and Medicine in long-term monitoring and remediation of children and adolescents with rare diseases using 3 D analyses.
- In clinical practice, we generate 3D models of the dental arch and jaw relationships for orthodontic, surgical and prosthetic treatment.

Unique equipment:

- 3D imaging system CBCT I-CAT
- KAVO 2D and 3D imaging system
- Orthopantomograph OP 3D Pro
- Intraoral scanner 3SHAPE Trios

- Stereolithographic 3D printer

Major events in 2023:

- In the framework of European cooperation, participation in the following studies:
 - a/ Rare congenital and developmental diseases of the orofacial system ERN CRANIO
 - b/ Congenital and Developmental Defects of the Orofacial System (Centre for the CR within the EU) Completed post-graduate education in specialisation MDDr. Jaroslava Trojanová/ Jindrová and MDDr. Eva Míšová, PhD. MBA. Completed doctoral study Ph.D.: MDDr. Lenka Kratochvílová
- On 1. 12. 2023 the Children's Stomatology Day was held at MUH.
- 5.- 6. 5. 2023 the European Academy of Paediatric Dentistry /EAPD/ held a workshop in Prague with the active participation of the department.
- Drawing up of Guidelines for Paediatric and Adolescent Stomatological Care based on EAPD, AAPD a IAPD recommendations with focus on multicultural society.

Publications:

A total of 5 papers in international publications with an IF: and 7 articles in peer-reviewed magazine, of which 3 in Scopus.

Adult Inpatient Part

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

Head prof. MUDr. Milan Kvapil, CSc., MBA

Head Nurse Vladimíra Kotvová

Basic description:

The Geriatric Internal Department provides diagnostic and therapeutic care to elderly patients in the whole range of geriatric and internal medicine, both inpatients and outpatients

It provides undergraduate teaching of geriatrics for Czech and foreign students of the 5th year of the 2nd Faculty of Medicine, Charles University, and for the 2nd year of general nurses.

In 2023, 288 patients were hospitalized in the Department of Standard Geriatric Care, 77% of whom returned to their home environment after hospitalization.

In 2023, a total of 1,648 patients were treated as outpatients in specialised outpatient units

Specialized outpatient units:

- geriatric outpatient unit
- diabetology outpatient unit
- urology outpatient unit
- angiology outpatient unit
- echocardiography outpatient unit

Equipment:

- ultrasound, spirometry, audiometry, SudoScan, Fundus camera
- BSM monitor
- ECG and pressure holter

New methods and procedures:

- The Geriatric Internal Department implemented comprehensive functional tests assessing the competence and performance of seniors into routine operation in 2023.
- The department initiated the creation of the Lipodystrophy Diagnostic and Therapy Center.
- The department, in collaboration with the Department of Radiology, initiated a project to establish standards for USG testing of sarcopenia, assessing muscle volume and structure in the elderly

Major events in 2023:

- In April 2023, the Czech Diabetological Society awarded the Prof. Syllaby Prize for the best publication to the book Diabetologie 2022 by Prof. Milan Kvapil, MD, MBA.
- The Board of the Czech Union of Freedom Fighters awarded the Cross of Merit to Prof. Milan Kvapil, MD, CSc., MBA in 2023 for his long-standing cooperation.

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

Head prof. MUDr. Roman Chmel, Ph.D., MHA

Senior Consultant MUDr. Marek Pluta, Ph.D.

Head Nurse Mgr. 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 2023, 6,088 patients were hospitalized at the department and a total of 3,603 surgeries and 58,826 outpatients treatments were carried out. A total of 2,485 births took place at the department, including 46 twin births.

Specialized outpatient clinics/advisory centres:

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

New methods and procedures:

- Participation in a multidisciplinary study to validate a non-established treatment for sterility using uterine transplantation in women with uterine agenesis and a neovagina;
- More than 100 robotic surgeries for gynaecological malignancies have been performed since 2019.

Unique equipment:

- robotic surgical micromanipulator surgery
- surgical laser to treat premalignant epithelial lesions of the vulva

Major events in 2023:

- Doctors of the clinic were authors and co-authors of a total of 16 publications in IF journals.
- The head of the clinic was appointed professor for the field of gynaecology and obstetrics.
- The Clinic organized the 10th National Conference of Gynaecological Sexology.
- Termination of the grant TA ČR (TL05000144), 2021-2023: Quality and sustainability of body part donation programmes in the Czech Republic.

One part of the Department of Obstetrics and Gynaecology, 2nd Faculty of Medicine, Charles University and Motol University Hospital, is the

Department of Neonatology with IRCU

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

Head Nurse Bc. Renata Jungmannová

Basic description:

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

In 2023, there were 2291 live births in the centre, 75 newborns with birth weight below 1500g and 212 with birth weight below 2500g were treated in the centre. Intensive, resuscitation or intermediate care was provided to a total of 430 newborns, of which 21% were born outside MUH and transported after birth.

Specialized outpatient clinics/advisory centres:

- specialized outpatient clinic for perinatally endangered children

New methods and procedures:

- Initiation of procedure to optimize ventilatory support in patients with oxygen therapy modification by PRICO method - a series of studies to optimize the settings.
- In cooperation with the Ear, Nose and Throat Department of the 2nd Faculty of Medicine, Charles University and Motol University Hospital, the programme for early correction of a cleft lip in newborns is ongoing.

Unique equipment:

- Comprehensive equipment of all artificial pulmonary ventilation devices with automatic FiO₂ control depending on HbSat (PRICO).
- Special comprehensive transport system (2 x Giraffe Omnibed Carestation and GE Healthcare

Shuttle module) with life support and comprehensive monitoring of vital signs implemented for postpartum and all transports within the framework of multidisciplinary cooperation at MUH

Major events in 2023:

- Publication of book by Janota J. Straňák Z. et al. Neonatology, EEZY Publishing s.r.o., 2023, ISBN 978-80-88506-07-2 (main editor, 24 chapters Neonatal Department, MUH),
- Holding and organisation of European Resuscitation Council Neonatal Life Support Courses.

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

Head prof. MUDr. Radan Keil, Ph.D.

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 undergraduate tuition for Czech and foreign students in years 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/endocrinology, 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 Czech Medical Chamber (CMC).

In spite of the ongoing reconstruction, in 2023 37,762 outpatients and 4,659 inpatients were treated at our hospital. The department performed more than 600 endoscopic procedures over the year. In the field of ERCP, we are the department with the highest number of procedures in adult and paediatric patients in the whole country.

Specialized outpatient clinics/advisory centres:

- 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
- lipidology
- endocrinology
- centre for vascular access
- centre for the biological treatment of non-specific intestinal inflammation
- centre for treatment of viral hepatitis
- outpatient unit for the treatment of obesity

New methods and procedures:

- EFTRD of the stomach (endoscopic full-thickness resection) - in our clinic we were the first in the country to perform this method in the stomach area
- Introduction of pancreatic pseudocyst drainage and peripancreatic fluid collections (WON) under EUS using a positional stents. Instrumentation used - Hot Axios.
- We continue to use the unique project "Jesenius", allowing online transmission of an autopsy.
- Weekly multidisciplinary seminars (oncoboards) are organized to effectively manage the care of complex patients.
- In cooperation with the Pneumology Clinic, we are involved in a programme of comprehensive screening of patients before they are placed on the waiting list for lung transplantation.
- In collaboration with the Department of Ophthalmology, we continue our programme of therapeutic reoperation for patients with age-related macular degeneration (AMD).
- In collaboration with the Department of Radiology, we provide inpatient facilities, preparation and post-procedural care for patients with absent or malfunctioning vascular access to haemodialysis. This includes new methods (Wavelinq, Surfacer) and transumbilical catheters.
- In 2023, treatment with immunoadsorption was initiated. The method is provided to neurological patients who have pharmacologically intractable demyelinating diseases, also this method will certainly be beneficial for patients with specific types of lung transplant rejection and other patients with autoimmune diseases.

Unique equipment:

- In Body 970 - perfectly determines not only the amount of skeletal muscle and subcutaneous fat in the body, but also accurately measures visceral fat content, distinguishes intra and extracellular water
- BCM (Body Composition Monitor) - a device that allows precise analysis of the patient's hydration
- Canon Aplio i 800 sonographic device, which allows, in addition to standard two-dimensional and Doppler examination, also the so-called multiparametric examination of the liver

Major events in 2023:

- The Endoscopy Department of Internal Medicine has the status of a Digestive Endoscopy Centre granted by the Ministry of Health of the Czech Republic.
- On 14. – 15. 11. 2023, another congress "Prague Autumn Gastroenterology Days" was held at the Clarion Hotel under the auspices of the Gastroenterology Association of the Czech Republic, with Prof. Radan Keil, M.D., Ph.D., President.
- 3/2023 approval and establishment of the Obesity Treatment Centre at the Department of Internal Medicine at the MUH and the 2nd Faculty of Medicine of the Charles University
- Publication of a monograph by doc. MUDr. Iva Hoffmanová: Abdominal sonography of the gallbladder and biliary tract
- Publication of a book of our clinic with the main author MUDr. M. Souček Urgent Conditions from an Internist's Perspective (nominated by Grada Publishing House for the Josef Hlávka Prize for 2022);
- MUDr. Jan Brož, Ph.D. successfully completed his postgraduate studies in Human Physiology and Pathophysiology at the 2nd Faculty of Medicine of Charles University by defending his dissertation on Hypoglycaemia as a limitation of treatment of diabetes mellitus (IX/2022).

Significant publications - Monographs:

- Hoffmanová I. Abdominal sonography of the gallbladder and biliary tract, Prague, Grada 2023, 978-80-271-3022-1
- Brunerová L, Urbanová J, Brož J. Diabetes in endocrinopathies and endocrinopathy in diabetes, Prague, Grada 2023, 978-80-271-3700-8
- Pichlerová D. et al. (Kašparová L., Málková I., Obermannová R., Pastor Z., Prázný M., Šístková K., Větrovský T.), -- Treatment of obesity in a clear and practical way Axonite 2021. ISBN: 978-80-88046-24-0. Awarded by the Czech Diabetological Society the Professor Syllaba Award as the best professional monograph of the year.
- SOUČEK, Martin, Jan MASOPUST and Dana MOKRÁ. Emergencies from the perspective of an internist: practical procedures. Prague: Grada, 2022, 239 pages: ISBN 978-80-271-3336-9
- Brož J, Urbanová J: How to treat hypoglycaemia ing. Slávka Wiesnerová; 2022, 1st ed., 22 p. ISBN 978-80-904-809-5-7.

Articles:

- Brož J, Campbell MD, Souček M, Masopust J, Hloch O: Re: Hyperkalaemia in the emergency department: Epidemiology, management and monitoring of the treatment outcomes. Emergency Medicine Australasia 2022;34(5): 843-845. ISSN: 1742-6723. IF: 2,279. publik 19. PMID: 35760579.
- Wasserbauer M, Hlava Š, Trojánek M, Šťovíček J, Milota T, Drábek J, Koptová P, Čupková A, Pichlerová D, Kučerová B, Coufal Š, Keil R: Efficacy and safety of SARS-CoV-2 vaccination in patients with inflammatory bowel disease on immunosuppressive and biological therapy: Prospective observational study. PLoS ONE 2022;17(9):e0273612. publik 21. PMID: 36054100. IF: 3.608. ISSN: 1932-6203. Grant 64203.
- Wasserbauer M, Hlava Š, Drábek J, Šťovíček J, Minaříková P, Nedbalová L, Drašar T, Zádorová Z, Dolina J, konečný Š, Kojecký V, Koželuhová J, Černíková P, Pichlerová D, Kučerová B, Coufal Š, Keil R: Adalimumab biosimilars in the therapy of Crohn's disease and ulcerative colitis: Prospective multicentric clinical monitoring. PLoS ONE 2022;17(8):e0271299. publik 20. PMID: 35939424. IF: 3,608. ISSN: 1932-6203. Grant 64203.
- Kral J, Selucka J, Waloszko K, Buzga M, Spicak J, Machytka E. Cutting-edge novel device in the treatment of obesity. Endoscopy. 2023 Dec;55(S 01):E1124-E1125. doi: 10.1055/a-2173-7560. IF 9,3 Q1
- Romanová A, Lustigová M, Urbanová J, Keil R, Krollová P, Šťovíček J, Wasserbauer M, Hlava Š, Malinová J, Drábek J, Brož J. Factors affecting participation in the colorectal cancer screening program: a cross-sectional population study. J Cancer Res Clin Oncol. 2023 Jun 22. doi: 10.1007/s00432-023-04972-z. IF 3,6 / Q2
- Wasserbauer M, Malá Š, Štečková K, Hlava Š, Černíková P, Šťovíček J, Drábek J, Brož J, Kučerová B, Lísková P, Král J, Bartušková L, Keil R. Dysfunction of peripheral somatic and autonomic nervous system in patients with severe forms of Crohn's disease on biological therapy with TNFα inhibitors – a single center study. Plos One 2023; in print IF 3,7 / Q2

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

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

Senior Consultant MUDr. Filip Pazdírek, Ph.D.

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, and now bariatric surgery. Emphasis is placed on minimally invasive surgery (for rectal tumours 85%), laparoscopic and robotic surgery. The department is an international training centre for robotic colorectal surgery. Since 2023, the department has been one of the first in the country to perform robotic

surgery in the treatment of obesity. The Department of Surgery is the only centre in the Czech and Slovak Republic providing comprehensive surgical treatment including differential diagnosis of lymphatic drainage disorders.

The department provides a non-stop surgical emergency service for all urgent surgical diseases including thoracic and abdominal trauma. The department includes a plastic surgery division.

The department is involved in undergraduate and postgraduate tuition and was actively involved in the implementation of research tasks.

In 2023, the department's outpatient section examined more than 21,058 patients. In 2018, 5,097 patients were treated in the Adult Emergency Department, 3,630 patients were hospitalized, and surgeries were performed on 3,597 patients. The number of patients treated in the Adult Emergency Department was 9% higher than in 2022. 540 patients were provided with consultations at MUH.

Specialized outpatient units:

- proctological advisory centre
- advisory centre for patients with surgical openings – educational and training centre for patients with surgical openings
- 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 surgery in the treatment of obesity
- 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 auto-transplantation
- new method of sentinel node detection using iodine contrast grain
- ERAS in the care of patients in the colorectal programme

Unique equipment:

- participation in use of 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
- Detection of axillary nodules using iodine grain
- 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 2023:

- Robotic Colorectal Surgery WorkShop with Prof. Parvaiz
- Robotic Colorectal Surgery Training Center
- Continuation of the MUH project "Modern Technologies" - nanofibre technology
- 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 standardising preoperative preparation. Emphasis is placed on improving nutrition, correcting anaemia, increasing cardiovascular capacity and educating patients prior to elective surgery). Following the modification of the ERAS protocol, a colorectal surgery training centre is planned.

Publications:

- Bockova M, Pazdírek F, Šťovíček J, Stolz A. Acute hemorrhagic cholecystitis as a rare cause of hemobilia. *Rozhl Chir.* 2023 Spring;102(2):80-84. English. doi: 10.33699/PIS.2023.102.2.80-84. PMID: 37185030.
- Khadanovich, A., Herma, T., Al-Redouan, A., Kaiser, R., Kachlik, D. (2023). The communication patterns between the lateral antebrachial cutaneous nerve and the superficial branch of the radial nerve. *Annals of Anatomy-Anatomischer Anzeiger*, 249, 152110.



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

Centre for Cardiovascular, Thoracoabdominal and Transplant Surgery, MUH

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

Senior Consultant MUDr. Jiří Tvrdoň

Head Nurse 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.

It provides care in abdominal surgery in the entire spectrum of activities (surgery of gastroesophageal reflux, diaphragmatic hernia, oesophageal achalasia, surgery of the stomach and small intestine, liver, bile ducts and pancreas, surgery of the large intestine and rectum, hernia surgeries, minimally invasive laparoscopic and robotic techniques, traumatology of the chest and abdomen and endocrine surgery).

The department centralizes patients with soft tissue sarcomas.

In 2023, 2,935 surgeries were carried out, 3,339 patients were hospitalized, and 32,648 patients were treated in the outpatient section. There were 67 lung transplants. We are a high-volume centre, of which there are only 6 in Europe.

Specialized centres:

- National Lung Transplantation Centre for the Czech and Slovak Republics
- Centre for Highly Specialized Pneumo-onco-surgical Care
- Centre for the treatment of sarcomas of soft tissues
- Centre for cardiovascular, thoracoabdominal and transplant surgery
- Joint participation in Laryngotracheal Centre with ENT Department and Department of Pneumology

Specialized outpatient units:

- outpatient unit for lung transplantation
- outpatient unit for diseases of lungs, mediastinum and chest wall
- outpatient unit for diseases of oesophagus and stomach
- outpatient unit for surgery of soft tissue sarcomas
- outpatient unit for diseases of liver, bile duct and pancreas
- 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 endoscopy of the upper GIT
- internal outpatient unit

New methods and procedures:

- Preparation and introduction of the Ex vivo pulmonary perfusion and reconditioning programme into clinical practice, method leading to increased number of suitable grafts for lung transplantation;
- Programme for lung transplantation from DCD donors (donors with circulation failure);
- Heart-lung block transplantation programme in cooperation with Institute for Clinical and Experimental Medicine;
- Introduction of endoscopic application of absorbable stents for diseases of oesophagus, stomach and airways;
- Robotic surgery of the lungs, thymus and oesophagus - the only workplace in the CR, robotic surgery of the colon and rectum;
- Introduction of minimally invasive laparoscopic neurostimulation of the diaphragm in cooperation with the spinal unit of the MUH.

Unique equipment:

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

Major events in 2023:

- In 2023, we continued to collaborate in an international study led by a Canadian research centre (University of Alberta) that has developed a new diagnostic system, the so-called Molecular Microscope, which can be used to interpret transbronchial biopsies after lung Tx based on molecular phenotype. Results presented at the International Society of Heart and Lung Transplantation Congress and published in prestigious journals.
- Standardization of unique robotic programs within the Czech Republic was performed.
- Inclusion in the international registry for minimally invasive (robotic) pancreatic surgery: E-MIPS

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

Head prof. MUDr. Petr Ošťádal, Ph.D.

Senior Consultant MUDr. Jiří Vejvoda, MHA

Head Nurse Mgr. Jana Kovalčíková

Basic description:

The Department of Cardiology, 2nd Faculty of Medicine, Charles University and Motol University Hospital, is a part of the comprehensive Cardiovascular Centre for Adults at MUH and provides highly specialised therapeutic and preventive care to inpatients and outpatients with heart and vascular diseases.

In 2023, 27,551 patients were treated in the outpatient section and 4,223 patients were hospitalized.

At the Department of Intervention Cardiology, 2,983 catheterization procedures were performed, including 658 percutaneous coronary interventions, 463 peripheral artery catheterizations,

109 transcatheter aortic valve implantations (TAVI), and 15 mitral insufficiency corrections (MitraClip). Arrhythmology interventions performed included 388 catheterization ablations of arrhythmias, 129 ICD implantations, and 240 permanent pacemaker implantations.

Specialized outpatient clinics/advisory centres:

- Centre for congenital heart defects in adulthood
- 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:

- mechanical circulatory support for conditions with critical circulatory failure -synchronized pulsatile extracorporeal membrane oxygenation (i-cor) and percutaneous mechanical left ventricular support (Impella);
- catheterised aortic valve implantation (TAVI);
- catheterised mitral valve valvuloplasty (MitraClip);
- development of other structural heart interventions;
- coronary interventions;
- coronary artery flow assessment and coronary microcirculation assessment;
- ablation of atrial fibrillation by pulsed field (Farapulse);
- electrodeless (leadless) pacing;
- methods of physiological pacing;
- implantation of a subcutaneous cardioverter/defibrillator;
- endovascular monitoring of body temperature;
- new methods of 3D electroanatomical mapping;

Unique equipment:

- synchronized pulsatile extracorporeal membrane oxygenation (i-cor) - the second in the Czech Republic
- percutaneous mechanical left ventricular support (Impella CP SmartAssist) - among the first in the Czech Republic
- CARTO, EnSite Velocity - 3D electroanatomical mapping
- extracorporeal ultrafiltration system (Aquadex SmartFlow) - among the first sites in the Czech Republic
- Hemosphere systems for advanced hemodynamic monitoring - among the first workplaces in the Czech Republic
- Thermogard for endovascular body temperature monitoring - unique in the Czech Republic

Major events in 2023:

- Dr. Bonaventura published the monograph Bonaventura J. Contemporary Cardiology. A manual for practice. Galén 28.8.2023. ISBN 9788074926730.
- Dr. Kala won the Young Investigator Award at the Czech Cardiovascular Research and Innovation Days 2023.
- Under the leadership of the head nurse Mgr. Kovalčíková, the 16th specialized educational conference of the Czech Cardiological Society, Working Group of Cardiology Nurses and Related

Professions was held focused on current cardiological issues (Listopadka) with the active participation of the department's nurses.

- Prof. Ost'adal took up the position of the President of the Czech Society of Cardiology in 2023
- Prof. Ost'adal was elected Fellow of the International Academy of Cardiovascular Sciences.
- 17 articles published in magazines with IF (of which 10x 1st author from Department of Cardiology, 2nd Faculty of Medicine, Charles University and Motol University Hospital).

Department of Infectious Diseases and Travel Medicine 2nd Faculty of Medicine, Charles University and Motol University Hospital

Head: MUDr. Milan Trojánek, Ph.D.

Senior Consultant: MUDr. Martin Tulach

Head Nurse: Mgr. Milena Chybová

Basic description:

The department provides comprehensive medical and preventive care in the field of infectious and travel medicine. The department provides acute and specialized outpatient care in the whole range of infectious medicine and has a 23-bed capacity. The professional focus of the department is based on the modern concept of the field and is inspired by the position of infectious medicine abroad with an emphasis on outpatient care and consultation services. The services provided are based on interdisciplinary cooperation with selected clinical departments at the Motol University Hospital and the Institute of Medical Microbiology of the 2nd Faculty of Medicine of Charles University and Motol University Hospital. The main areas of expertise include rational antibiotic therapy of community and nosocomial infections, travel medicine, infections in at-risk patient groups, febrile and inflammatory conditions of unclear aetiology, respiratory infections, bone, joint and spine infections, viral hepatitis and Lyme borreliosis. The department participates in teaching students of bachelor and master study programmes at the 2nd Faculty of Medicine of Charles University and serves as a teaching unit of the Institute for Postgraduate Medical Education.

In 2023, the number of hospital admissions reached 646 (115.4% year-on-year increase). The number of outpatient appointments increased to 16,784 (303.6% year-on-year increase!). The total number of all patients treated (including covid-19 vaccination and risk groups) in the Vaccination Centre reached 13,340.

Specialized outpatient clinics/advisory centres:

- Vaccination Centre
- Travel Medicine Centre
- Infection centre for drug addicts
- Centre for treatment of viral hepatitis

New methods and procedures:

- Expanding the range of care provided in travel medicine, introducing methods for rapid detection of malaria, dengue, chikungunya and Zika;
- Introduction of pre-exposure and post-exposure HIV prophylaxis in collaboration with the hospital pharmacy;
- Pre-exposure and post-exposure vaccination against monkeypox, shingles and RSV vaccination,

introduction of a vaccination programme for at-risk patient groups, including organ transplant patients and hospitalized patients;

- Outpatient lumbar punctures and OPAT (parenteral administration of antibiotics to outpatients);
- Mobile vaccination teams for vaccination of Motol Hospital employees (influenza, covid-19, whooping cough...);
- Continuing the programme of antibiotic consultation at the bedside of the patient, guaranteed by MUDr. Štefan, MBA

Major events in 2023:

- The Vaccination Centre of Motol University Hospital was moved to new and more accessible premises for the public.
- The outpatient wing of the department was reconstructed, including an extension of the facilities for OPAT (parenteral administration of antibiotics to outpatients).
- Cooperation with the NIMS University in Jaipur, India, was established and internships of Czech doctors and students in travel and tropical medicine were arranged at this department.
- Scientific and research cooperation in travel medicine was developed (participation in the GeoSentinel programme of the American CDC, introduction of molecular epidemiology methods for the most important tropical infections in cooperation with the Institute of Medical Microbiology of the 2nd Faculty of Medicine of Charles University and Motol University Hospital and the Faculty of Tropical Agriculture of the Czech University of Life Sciences).

Publications:

- Trojaneček M., Grebenyuk V., Mandakova Z., Sojkova N., Zelena H., Rohacova H., Stejskal F. Epidemiology of dengue, chikungunya and Zika virus infections in travellers: A 16-year retrospective descriptive study at a tertiary care centre in Prague, Czech Republic. *PLoS One*. 2023,18(2):e0281612.
- Grebenyuk V., Stejskal F., Nohynkova E., Zicklerova I., Richterova L., Rohacova H., Rozsypal H., Trojaneček M. Artemether-lumefantrine, mefloquine and atovaquone-proguanil in the treatment of uncomplicated *Plasmodium falciparum* malaria in travellers: A retrospective comparative study of efficacy and treatment failures. *Travel Med Infect Dis*. 2023,52:102549.

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

Head: MUDr. Štěpán Černý, CSc., MBA

Senior Consultant Vascular Surgery: MUDr. Radovan Fiala, Ph.D.

Head Nurse: Mgr. Barbora Kolářová, MSc.

Basic description:

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

The department is further developing a programme to treat critical limb ischemia by means of vascular graft transplantation during vascular reconstructive surgery in cooperation with the Department of Transplantations and at the MUH tissue bank and the Tissue Centre Hradec Králové. In close cooperation with the Department of Radiology, it is increasing the number of combined (hybrid) revascularizations. The department cooperates with the Department of Neurology in the management of carotid artery disorders, and in cooperation with the Third Surgical Department, the Department of Paediatric Surgery

and both orthopaedic departments, the department is involved in the comprehensive care of oncology patients and sarcoma centre patients.

5,916 patients were treated as outpatients in cardiovascular surgery and a total of 1,002 operations were carried out, including 287 heart operations (including congenital heart disease in adults) and 601 vascular operations (401 arterial reconstructions, 160 lower limb varix operations, 40 other). Surgeons and perfusionists were involved in 67 lung transplants.

The perfusion team of the department performed a total of 354 extracorporeal supports (including 255 extracorporeal circulations in cardiac surgery procedures, 57 extracorporeal circulations in lung transplantations and 42 ECMO).

Specialized outpatient units:

- cardiology outpatient unit for valvular defects
- cardiology referral outpatient unit
- vascular outpatient unit
- paediatric vascular outpatient unit (in cooperation with the Children's Heart Centre)
- outpatient unit for dialysis AV shunts

New methods and procedures:

- robotic cardiac surgery - robotic-assisted myocardial revascularization, mitral valve surgery, robotic surgery for congenital heart disease
- minimally invasive approaches in full-spectrum cardiac surgery (selected congenital defects, valve surgery)
- reconstructive (salvage) surgery of the aortic and mitral valves
- Ross operation
- aortic arch and thoracic aortic surgery (frozen elephant trunk)
- surgical and endovascular treatment of abdominal aortic aneurysms, including complex morphologies
- complex treatment of critical limb ischemia, vascular graft transplantation
- hybrid revascularisation
- establishment of dialysis AV shunts with artificial vascular prosthesis and v. basilica transposition
- larvotherapy and application of amniotic membrane to chronic non-healing defects

Unique equipment:

- devices for ECMO – PLS and HLS devices allowing non-stop mechanical cardiac or pulmonary support
- latest generation echocardiographic and vascular DUS devices
- instrumentation for ablation therapy of atrial fibrillation

Major events in 2023:

- MUDr. Štěpán Černý, CSc., MBA became the new head of the Center for Highly Specialized Complex Cardiovascular Care.
- A unique Centre for Congenital Heart Defects in Adulthood was established, in cooperation with the Department of Cardiology, the Department of Cardiovascular Surgery and the Children's Heart Centre.
- In December 2023, the first robotic heart surgery took place at Motol University Hospital.
- We published 8 articles in peer-reviewed journals, including 5 articles in impact factor journals abroad.

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

Head prof. MUDr. Petr Vlček, CSc., MHA

Senior Consultant MUDr. Kateřina Táborská

Head Nurse Ladislava Novotná

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 tumours using radiopharmaceutical ¹³¹I-MIBG (as the only centre in the Czech Republic).

In 2023, the centre provided outpatient care to 11,000 endocrinology patients, mostly as part of long-term follow-up of patients with thyroid cancer, of whom 1,100 were hospitalized. The nuclear medicine outpatient unit performed almost 5,400 procedures for outpatients and over 1,200 for inpatients.

Specialized outpatient units:

- endocrinology specializing in differentiated carcinoma of the thyroid, the unit is following up on more than 19,850 patients (one of the largest sets worldwide)
- advisory centre for micro-carcinomas of the thyroid (MDTC)
- advisory centre for medullar 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 Motol University Hospital, targeted biological treatment of radio-iodine refractory thyroidal carcinomas;
- Providing genetic testing in patients with rare forms of familial medullary thyroid carcinoma (over 100 samples in our database) and patients with papillary thyroid carcinoma (over 1000 samples) in cooperation with the Institute of Endocrinology in Prague
- In cooperation with the Department of Paediatric Haematology and Oncology of Motol University Hospital and Brno University Hospital, treatment of patients with high-risk neuroblastomas with the combination ¹³¹I-MIBG according to the MATIN protocol with full-body dosimetry performed.
- More than 90 treatment applications with the radiopharmaceutical Lutathera (¹⁷⁷Lu- Dotatate) have been performed in rare tumours, namely inoperable or metastatic, progressive and well-differentiated (G1 and G2) gastroenteropancreatic neuroendocrine tumours (GEP-NET) that progress on treatment with somatostatin analogues.

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.

Senior Consultant MUDr. Jan Kluh

Head Nurse Mgr. 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 highly specialized procedures, which are performed in many cases for the entire Czech Republic.

In 2022, 2,656 surgical procedures were performed at the department and 277 of these surgeries were carried out on patients outside the department's operating theatres.

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
- phoniatrics 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
- centre for robotic assisted surgery in head and neck oncology therapy

New methods and procedures:

- Use of the Montgomery salivary bypass tube after resection and reconstruction procedures following oncological procedures due to tumours in the head and neck;
- Augmentation of the vocal cords with Radiesse;
- Treatment of patients with sleep apnoea using the DISE method (Drug Induced Sleep Endoscopy);

- Endoscopic approaches to removal of tumours in the inner ear canal;
- Perioperative neuromonitoring;
- Fiberoptic endoscopic evaluation of swallowing with functional assessment (FEES);
- Extended microsurgery of tumours in secondary nasal cavities and cranial basis using guidance;
- Examination of myogenous vestibular potentials /VEMP/ in patients with balance disorders;
- Endoscopic surgery of oesophageal diverticulum;
- Endoscopic diagnostics of tumours in airways and swallowing system using NBI;
- Endoscopic examination of the salivary glands and endoscopic treatment of the sialolithiasis;
- Use of 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 Plzeň – department of cybernetics.
- Introduction of robotic assisted surgery in head and neck oncology therapy and cochlear implantation.

Unique equipment:

- CO2 Laser, Dioxo 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 tumours
- 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 2023:

- The department hosted or co-hosted a number of events, including international events in which undergraduate and postgraduate students actively participated

Awards/publications:

- Award of the Czech Society of Otorhinolaryngology and Head and Neck Surgery Czech Medical Association for the best publication: Kutvirt Prize in the category of publications under 35 years
- Votava M, Bartolini R, Čapkova L, Smetanova J, Jiri V Jr, Kuchař M, Kalfeřt D, Plzák J, Bartunkova J, Strizova Z. The expression profiles of CD47 in the tumor microenvironment of salivary gland cancers: a next step in histology-driven immunotherapy. *BMC Cancer*. 2022 Sep 28;22(1):1021. doi: 10.1186/s12885-022-10114-4. **IF = 4,638**
- Winner of Kutvirt Prize in the category of publications under 35 years: Bonaventurová M, Bandúrová V, Čada Z, Plzák J, Balatková Z. Middle ear myoclonus as a cause of objective tinnitus. *Česk Slov Neurol N*. 2022; 85(6): 506-508, **IF = 0,411**.
- Červený K, Janoušková K, Vaněčková K, Zavázalová Š, Funda D, Astl J, Holý R. Olfactory Evaluation in Clinical Medical Practice. *J Clin Med*. 2022 Nov 8;11(22):6628. doi: 10.3390/jcm11226628. **IF=4.964**.
- Lazák J, Betka J, Čada Z, Chovanec M, Kraus J, Plzák J, Zvěřina E, Fík Z. Results of facial nerve reconstructive surgery. *Cesk Slov Neurol N*, 2022; 85(5): 382–388. doi: 10.48095/ccsnn2022382. **IF = 0,411**.

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

Head prof. MUDr. Jan Štulík, CSc.

Senior Consultant as. MUDr. Jan Kryl

Head Nurse Bc. Lenka Šípulová

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 tumours, degenerative defects, inflammatory diseases, congenital and acquired deformities).

In 2023, 1,542 patients underwent surgery, 1,643 patients were hospitalized, 14,433 patients were treated in the outpatient unit of spondylosurgery, and the Centre for Conservative Therapy treated 2,332 patients.

Specialized outpatient clinics/advisory centres:

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

Unique equipment and new methods and procedures:

- total spondylectomy of the second cervical vertebra
- 3D preparations
- AEOS exoscope
- EOS full-body scanning
- mini drill - a drill for working on small bones and spines

Major events in 2023:

- 4th May Spondylosurgical Symposium, Prague (26.5.2023)
- Internship at Universitätsklinik für Orthopädie und Traumatologie, Salzburg, Austria (November 2023, 1 week, MUDr. Lucie Salavcová)
- Factfinding excursion at the Department of Spinal Surgery, 1st Faculty of Medicine, Charles University in Prague and MUH (30.6.2023)
- 16th Spinal Cadaver Workshop, Brno (23.1.- 24.1.2023)
- Tumour and Infection Days, Budapest, Hungary (31.3.- 1.4.2023)
- Sagittal Balance (seminar), Brno (13.4.2023)
- Symposium on Paediatric Fractures, Zbiroh (10.5.- 11.5.2023)
- 21st Congress of the Czech Spondylosurgical Society, Brno (17.9.- 19.9.2023)
- International Congress of Oncology, 18th year, Znojmo (5.10.- 7.10.2023)
- Zahradníček Prize 2022 - Nesnídal P., Štulík J., Štulík J.Jr., Kryl J., Vyskočil T., Barna M.: Complications in Spine Surgery: Prospective 13-year follow-up of unplanned revision spinal surgeries
- Skull base to sacrum, New York (November 2023)
- Anterior plating system, Aesculap, Berlin (May 2023)
- Spine days, Berlin (May 2023)

Department of Long-term Treatment - Aftercare Centre

Senior Consultant MUDr. Martina Nováková

Head Nurse Mgr. Lucie Kubová

Basic description:

The Department of Long-term Treatment - Aftercare Centre specializes in geriatric issues and in aftercare for patients following traumas, surgeries, prolonged internal diseases, strokes, etc., with no age restrictions. It specializes in wound healing, nutrition, physiotherapy and occupational therapy. Within the department there is an outpatient department and a geriatric outpatient department. It has 293 beds, but 143 are temporarily closed due to building renovation. The 14th inpatient ward has been relocated to the main building of the adult section, it mainly focuses on the follow-up care of patients in the chronic haemodialysis programme and works closely with the Fresenius haemodialysis centre.

In 2023, the total number of admissions was 587 and the number of procedures in the geriatric outpatient ward was 432.

Specifics of the facility:

The department works closely with the Geriatric Internal Department. Within the department there is an outpatient department and a geriatric outpatient department. The department also runs training courses for paramedics, social work students and massage therapists. Cooperation with the CTU is underway to teach paramedics. Close cooperation with the palliative care consultation team for the adult part of the Motol University Hospital (PCCT) continues.



Unique equipment:

- Ultrasonography device Siemens with colour Doppler and probes for USG of the abdomen and DUS of the veins
- Extremiter 2010-better future - + CO2 therapy for vacuum and compression therapy (for wound healing)
- 2x weight machine - resistance training to prevent and treat sarcopenia
- combined electro and magnet therapy
- Siemens ultrasound machine with colour Doppler and probes for abdominal USG and DUS
- a tablet with special speech therapy programs (Alfaslovník, Gotalk, Gridplayer)
- hydraulic lifts, positioning chairs and baths for immobile patients

Major events in 2023:

- Continued collaboration with the Geriatric Internal Department (GID) enabled the use of the department's new instrumentation. The possibility of using the acute geriatric beds in case of deterioration of the patient's condition, need for blood derivatives, etc. has significantly increased the comfort for patients.

Publications/lectures:

MUDr. Martina Nováková:

- Geriatrie a Gerontologie, 2/2023, pp. 55-58, Mental and physical state of patients in follow-up hospital care - analysis of the results of a review of Czech literature - lead author
- Geriatrie a Gerontologie, 2/2023, pp. 72 - 75, Description of care for elderly patients with diabetes in the Czech Republic: results from the Diabetes Registry - co-author
- Diabetologie, 2023, pp. 57-70, Gliptins not only for old men and women - lead author
- Diabetologie, 2023, pp. 123 - 129, New data from the Diabetes Registry of the Czech Republic - co-author
- Acta Medicinæ, Diabetologie, 3/2023, pp.70 - 71, Current epidemiological characteristics of the population of patients with diabetes in the Czech Republic
- Acta Medicinæ, Diabetologia, 3/2023, pp. 76 - 78, Specifics of care for elderly diabetics: can we influence muscle strength?
- Farmakoterapeutická revue, 1/2023, pp.1 - 5, Treatment of diabetes in elderly patients

Mgr. Michal Kraft:

- Kraft M. Presbyphagia versus dysphagia - the role of the speech therapist in the management of swallowing disorders. Geriatrie a Gerontologie, 2023, vol.12, pp. 94-96. ISSN 1805-4684
- Chapter in publication:
Kraft M. Comprehensive speech therapy care in the diabetic patient in Kvapil et al. Diabetologie 2023. Prague: Triton, 2023. ISBN 978-80-7684-196-3.

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

Head prof. MUDr. Petr Marušič, 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 programs developed at the highest achievable level in the CR include

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 2023, the department's outpatient section examined more than 40,000 patients. 2,404 patients were hospitalized.

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 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).
- First national centre for CADASIL -Autosomal dominant cerebral arteriopathy with subcortical infarcts and leukoencephalopathy established
- 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 to include determination of polymorphisms 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.
- Significant increase in the number of patients treated for DMD and their scientific processing including registers is occurring in multiple sclerosis.

- The cognitive centre innovated the tests for examining preclinical and prodromal Alzheimer's disease, including a new examination battery of spatial 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 (NMDAR, AMPA1R, AMPA2R, GABABR, caspr-2, LGI-1) using indirect immunofluorescence on cells transfected with genes for the relevant antigens was expanded to include Zic4, Tr (DNER), SOX1, Ma1.
- A unique electrochemical method of body fluid fingerprinting was introduced in laboratory differential diagnostics of neurodegenerative diseases.
- Endovascular treatment of acute ischemic strokes as a routine therapeutic procedure (cooperation with the Department of Radiology, 2nd Faculty of Medicine, Charles University and Motol University Hospital).
- 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.
- 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).
- Testing thin fibres of the peripheral nerves with thermic threshold determination using the Peltier cell.
- Introduction of unique neurophysiological diagnostics of thin nerve fibre defects (A delta, C fibres) 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 helmet for long-term monitoring
- three ultrasonography device for examining transcranial and extracranial arteries and peripheral nerves
- 128-channel EEG system NicoletOne for videoEEG 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

Major events in 2023:

- A total of 51 scientific publications, 45 of them in foreign imputed journals
- Organization of national congresses and seminars (Cerebrovascular, Epileptology, etc.)

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

Head prof. MUDr. Ivan Landor, CSc.

Senior Consultant prof. MUDr. Stanislav Popelka, CSc.

Senior Consultant MUDr. Jaroslav Kalvach - traumatology

Head Nurse Petra Sklenářová, Dis

Basic description:

The department provides conservative and surgical treatment for adult patients throughout the entire spectrum of orthopaedic procedures. It ensures 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 2023, a total of 4,181 patients were hospitalized and 45,144 patients were treated in the outpatient section. 4,171 surgeries were performed.

Specialized outpatient units/counselling centres:

- 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;
- new ankle joint replacement - new surgical technique
- Introduction of minimally invasive surgical techniques for addressing hallux valgus;
- Laboratory determination of alpha defensin in the diagnostics of joint replacement infection;
- Introduction of leukocyte esterase test in the diagnostics of joint replacement infection;
- Endoscopic methods of medulloscopy in the treatment of chronic osteomyelitis;
- Masquelette technique in therapy of infected pseudoarthrosis;
- Vacuum therapy in the treatment of infected defective wounds;

Major events in 2023:

Publications:

- Melicherčík, P., Kotaška, K., Jahoda, D., Landor, I., & Čeřovský, V. (2022). Antimicrobial peptide in polymethylmethacrylate bone cement as a prophylaxis of infectious complications in orthopedics—an experiment in a murine model. *Folia Microbiologica*, 1-7. **IF 2.629, Q 3**
- Melicherčík, P., Klapková, E., Nyč, O., Kotaška, K., Neščáková, M., Landor, I., & Jahoda, D. (2022). Antimicrobial efficacy and activity perseverance in arthroplasty of calcium sulfate beads containing vancomycin prepared ahead of time and stored in ready-to-use formula. *Folia Microbiologica*, 67(1), 63-69. **IF 2.629, Q 3**
- Fulin, P., Daniel, M., Walder, J., Grzelecki, D., & Pokorny, D. (2022). Impact of the COVID-19 pandemic on orthopaedic and traumatological care in Prague, the capital of the Czech Republic. *PloS one*, 17(6), e0269164. **IF 3.752, Q 1**
- Mazura, M., Kachlik, D., Blankova, A., Malikova, H., Whitley, A., Landor, I., & Dzupa, V. (2022). A Morphologic Analysis of the Pubic Symphysis Using CT and MRI. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*, 10-5435. **IF 3.545, Q 1**
- Barták, V., Heřt, J., Štědrý, J., Popelka Jr, S., Popelka, S., & Hromádka, R. . Long-term results of total joint arthroplasty and phalangeal hemiarthroplasty of the first metatarsophalangeal joint using the ToeFit Plus™ system. *Foot and Ankle Surgery*, 28(1), 56-61. **IF 2.84 Q 2**
- Mazura, M., Goldman, T., Stanislav, P., Kachlik, D., & Hromádka, R. (2022). Calcaneal osteotomy due to insertional calcaneal tendinopathy: preoperative planning. *Journal of Orthopaedic Surgery and Research*, 17(1), 1-5. **IF 2.359, Q 2**
- Daniel, M., Eleršič Filipič, K., Filová, E., Judl, T., & Fojt, J. (2022). Modelling the role of membrane mechanics in cell adhesion on titanium oxide nanotubes. *Computer Methods in Biomechanics and Biomedical Engineering*, 1-10. **IF 2.188, Q 3**
- Grzelecki, D., Grajek, A., Dudek, P., Olewnik, Ł., Zielinska, N., Fulin, P., ... & Kowalczewski, J. (2022). Periprosthetic Joint Infections Caused by Candida Species—A Single-Center Experience and Systematic Review of the Literature. *Journal of Fungi*, 8(8), 797. **IF 5.724 Q 1**
- Gajdosova, V., Strachota, B., Strachota, A., Michalkova, D., Krejčikova, S., Fulin, P., ... & Slouf, M. (2022). Biodegradable Thermoplastic Starch/Polycaprolactone Blends with Co-Continuous Morphology Suitable for Local Release of Antibiotics. *Materials*, 15(3), 1101. **IF 3.682, Q 2**
- Teaching at clinical sites - new programmes and new teaching aids and conditions for teaching, e-learning.

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

Head prof. MUDr. Tomáš Büchler Ph.D.

Senior Consultant Clinical Oncology MUDr. Zdeněk Linke

Senior Consultant Radiation Oncology MUDr. Michaela Jirkovská Ph.D.

Head Nurse Renata Limaxová

Senior Radiology Assistant - Alena Čuprová

Basic description:

The facility provides comprehensive care for oncological patients in antitumour 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 2023, a total of 247,136 procedures were performed within the MUH Department of Oncology - namely outpatient checkups, treatments and examinations, including 2,696 procedures performed by multidisciplinary teams and 2,770 lymphatic drainage procedures.

A total of 2,790 new patients were admitted to the MUH Department of Oncology and 1,423 patients were hospitalised.

In 2023, parenteral administration of chemotherapy/biological treatment/immunotherapy reached 13,057 cycles of antitumour treatment. 1,025 new patients were treated with external beam radiotherapy (153 more year-on-year). The number of irradiated fields was 69,098, the number of irradiation fractions reached 22,597.

In the brachytherapy unit, 608 applications were performed in 2023 on a total of 106 patients.

Specialized outpatient units:

- outpatient unit for follow-up care for patients after completion of antitumour 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
- outpatient unit for lymphatic drainage
- outpatient unit for observation of genetic mutation carriers

New methods and procedures:

- Periodic adjustment of standard protocols for the treatment of malignant tumours with the introduction of new biological treatment molecules, new cytostatic drugs, and new combinations of cytostatic drugs and biological treatment. Major share in the creation of therapeutic outcomes, including drug registries in the CR;
- Update of local radiology standards (in 2023 prostate, breast, rectal, sarcomas, NSCLC, SCLC, cervical and endometrial tumours);
- Introduction of central vascular accesses (ports) and peripheral PICCs or midline practically in all patients with application of parenteral chemotherapy some of the patients with the application of biological treatment or immunotherapy;
- Cooperation with genetic facilities in searching for families with a genetic high risk with regard to the occurrence of malignant tumours, recommended prophylactic therapeutic measures and follow up of healthy carriers of high-risk mutations with regard to the origination of oncological diseases;
- Cooperation with the Department of Immunology and the Department of Urology of the MUH in the application of the SNP01 preparation – Centre for Treatment of Prostate Cancer;
- Full use of the IMRT (intensity modulated radiotherapy) or VMAT (volumetric modulated arc therapy) technique allowing for a higher dose of radiation in the target volume while avoiding irradiating healthy tissue. 70 % of patients are irradiated with this technique
- Standard performance of the IGRT (image guided radiotherapy) technique based on checking the current settings of the patient's position during radiotherapy and option of correcting this position according to the reference position;
- Increase of SRT (stereotactic radiotherapy) indications allowing targeted radical radiotherapy of primary tumours and oligometastatic diseases. In 2023, 92 patients with 132 plans were irradiated (in 2022, 62 patients with 85 plans);

- Full use of FFF (Flattening-Filter Free) beams on all linear accelerators, leading to a reduction of the actual irradiation time.
- Introduction of a regular system of off-line adaptive radiotherapy for head and neck cancer using Velocity software.

Unique equipment:

- Three Truebeam linear accelerators, Varian Medical Systems, enabling 3D patient imaging with CBCT and Respiratory Management System and movement equipment with modulated intensity VMAT.. Two accelerators are equipped with Millenium 120 collimator, the third accelerator with HD MLC collimator. In addition to photon beams, all accelerators produce so-called FFF beams.
- stereotactic body radiotherapy (SBRT)
- Visual coaching during breathing for respiration-controlled radiotherapy - 4D radiotherapy
- MR image-based adaptive brachytherapy for cervical cancer - MR based IGABT (Image-Guided Adaptive Brachytherapy)
- irradiator with automatic afterloading for HDR brachytherapy Gammamed Plus iX, Varian Medical Systems
- CT simulator Brilliance Big Bore, Philips for treatment planning

Major events in 2023:

- In the autumn of 2023, the construction of the new Motol Oncology Centre complex was started within the NPO.
- Active membership in OECl (Organisation of European Cancer Institute), Sarcoma Group EORTC and EURACAN continues.
- The department is actively participating in the EU project IDEA4RC (idea for rare cancer) - it is a pilot project of a centralized EU database which brings together 25 cancer centres in 12 EU countries with coordination by the Milan Cancer Center.
- The department is one of the 46 members so far of the prestigious European Commission's CraNE Joint Action project in the fight against cancer.
- The department is a member of the European JANE project, which aims to create seven new networks of new specialist approaches in cancer diagnosis and treatment.
- Doctors actively participated in international ASCO, ESMO and ESTRO events with expert communications, abstracts and posters.
- The department organized a unique educational event for oncologists, namely the 2nd annual event of Best of Oncology, held 14.12.-15.12.2023 in Prague.
- The department participated in the organization and lectures at the 14th Prague Onco Colloquium in January 2023, the Urooncology Symposium and other important Czech symposia.

Notable publications:

Hadoux J, Elisei R, Brose MS, Hoff AO, Robinson BG, Gao M, Jarzab B, Isaev P, Kopeckova K, Wadsley J, Führer D, Keam B, Bardet S, Sherman EJ, Tahara M, Hu MI, Singh R, Lin Y, Soldatenkova V, Wright J, Lin B, Maeda P, Capdevila J, Wirth LJ; LIBRETTO-531 Trial Investigators. Phase 3 Trial of Selpercatinib in Advanced RET-Mutant Medullary Thyroid Cancer. *N Engl J Med*. 2023 Nov 16;389(20):1851-1861. doi: 10.1056/NEJMoa2309719. Epub 2023 Oct 21. PMID: 37870969.

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

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

Senior Consultant MUDr. Lucie Valentová Bartáková

Departmental Manager MUDr. Dmitry Rakita, CSc.

Head Nurse Mgr. 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 two inpatient stations with a total of 48 standard beds and an ICU with 8 beds. The main programmes focus on lung transplantation, pneumooncology, adult cystic fibrosis, and interventional bronchology. The department is part of the Prague Lung Transplantation Programme, the Centre for Highly Specialized Pneumo-Onco-Surgical Care at MUH and the CF Centre at MUH (in the framework of ERN-LUNG and ECFS-CTN). The department is accredited at level 3 for postgraduate education in pneumology and phthiology and organizes Institute for Postgraduate Medical Education courses in bronchology for beginners and in cystic fibrosis in adulthood. The department houses the Sub-department of Pneumology and Phthiology of the Institute for Postgraduate Medical Education (headed by Prof. MUDr. Miloslav Marel, CSc.).

In 2023, a total of 1,783 patients were hospitalized, 275 of them in the ICU. 16,605 patients were treated as outpatients, 1,436 bronchoscopies were performed and 1,826 chemotherapy treatments were administered

Specialized outpatient units:

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

New methods and procedures:

- A new specialised outpatient department has been set up as part of the Lung Cancer Early Detection Programme.
- Biological treatment of bronchogenic cancer (durvalumab, ipilimumab, sotorasib, tepotinib and others), cystic fibrosis (elexacaftor/tezacaftor/ivacaftor) and bronchial asthma (dupilumab, tezepelumab);
- Treatment of tumour pleural effusions using a tunnelled catheter, which reduces the risk of infectious complications and allows administration of chemotherapy;
- Neoadjuvant chemoimmunotherapy with nivolumab for bronchogenic carcinoma

Unique equipment:

- Olympus ESG-300 argon plasma coagulation device

Major events in 2023:

- Dr. Andrea Zajacová received grants from the European Respiratory Society (Clinical Training Fellowship) and the European Society for Organ Transplantation (Transplant Fellowship) allowing young physicians to gain clinical and scientific experience at prestigious European sites
- Dr. Dmitry Rakita organized the Bronchoscopy fellowship for ICU and Anaesthesiology and Resuscitation Department physicians, a new Institute for Postgraduate Medical Education educational event for intensivists.
- Doc. Libor Fila was elected Chairman of the Committee of the Cystic Fibrosis Working Group of the Czech Academy of Medical Sciences
- In cooperation with the Third Surgical Clinic, a record 67 patients were brought for lung transplantation

Notable publications:

- Bos S, Pradère P, Beeckmans H, **Zajacova A**, Vanaudenaerde BM, Fisher AJ, Vos R. Lymphocyte depleting and modulating therapies for chronic lung allograft dysfunction. *Pharmacol Rev.* 2023 Jun 9:PHARMREV-AR-2023-000834. **IF 21.1 (D1)**
- Gauthier PT, Mackova M, Hirji A, Weinkauff J, Timofte IL, Snell GI, Westall GP, Havlin J, Lischke R, Zajacova A, Simonek J, Hachem R, Kreisel D, Levine D, Kubisa B, Piotrowska M, Juvet S, Keshavjee S, Jaksch P, Klepetko W, Halloran K, Halloran PF. Defining a natural killer cell-enriched molecular rejection-like state in lung transplant transbronchial biopsies. *Am J Transplant.* 2023 Jun 7:S1600-6135(23)00527-0. **IF 8.7 (D1)**
- Pradère P, **Zajacova A**, Bos S, Le Pavec J, Fisher A. Molecular monitoring of lung allograft health: is it ready for routine clinical use? *Eur Respir Rev.* 2023 Nov 22;32(170):230125. **IF 7.5 (Q1)**
- **Fila L, Grandcourtova A, Bilkova A**, Drevinek P. Elexacaftor-tezacaftor-ivacaftor in patients with cystic fibrosis ineligible for clinical trials: a 24-week observational study. *Front Pharmacol.* 2023 Jun 2;14:1178009. **IF 5.6 (Q1)**
- Stastna N, Pokojova E. Case report of two adults with F508del/3849+10 kb C > T genotype regaining exocrine pancreatic function following treatment with elexacaftor/tezacaftor/ivacaftor. *J Cyst Fibros.* 2023: S1569-1993(23)01725-3. **IF 5.2 (Q1)**
- Gramegna A, Aliberti S, Amorim A, Blasi F, Bourke S, Burgel PR, Diamantea F, Durieu I, Fila L, Moreno RMG, Messori B, Pokojová E, Taccetti G, Verhulst S, Dugac AV, Wege S, Duff A, Southern KW, Castellani C. Monitoring of ECFS quality standards for the clinical management of adults with cystic fibrosis. *J Cyst Fibros.* 2023 Nov 8:S1569-1993(23)01672-7. **IF 5.2 (Q1)**

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

Head prof. MUDr. Marek Babjuk, CSc.

Senior Consultant MUDr. Marek Schmidt, FEBU

Head Nurse František Kubíček

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 largest site for surgical gender conversion in the CR. It has had the daVinci robot surgery system since 2018.

In 2023, 375 robotic urological surgeries were performed. In 2023, 27,012 outpatient examinations, 2,412 hospitalizations and 2,229 surgeries were performed.

Specialized outpatient clinics/advisory centres:

- 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 - adrenalectomy, cystectomy, radical prostatectomy, reconstructive surgeries, retroperitoneal lymphadenectomy, kidney resection, solution of vesicovaginal fistulas, Boari plasty; ureteral deliberation in Ormond's disease;
- Improvement of endoscopic treatment of lithiasis – percutaneous mininephrolithotomy technique, percutaneous nephrolithotomy in supine position, flexible ureteroscopy, laser lithotripsy etc.;
- Improvement of derivative surgeries after cystectomy;
- Use of new imaging methods for diagnostics of tumours of the bladder (NBI = “narrow band imaging”) in regular practice;
- Percutaneous neurostimulation in the treatment of urgent symptomatology of the bladder;
- 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 surgery - radical prostatectomy, renal resection, pyeloplasty, radical cystectomy with complete intracorporeal urinary diversion, nephroureterectomy, vesico-vaginal fistula occlusion, ureteral reimplantation, retroperitoneal lymphadenectomy;
- Laser ablation of superficial bladder tumours;
- Extensive surgical procedures for locally advanced renal tumours, including inferior vena cava procedures for tumour thrombosis;
- Endoscopic procedures for lithiasis in paediatric patients;

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
- daVinci Xi robotic system
- COMBAT BRS /COMBined Antineoplastic ThermoTherapy Bladder Recirculation System/ for hyperthermic intravesical chemotherapy of bladder tumours

Major events in 2023:

- Organization of the conference Comprehensive News in Oncology 19.5 - 20.5.2023, Prague;
- Pavel Dušek, MD, PhD - appointed honorary member of the Czech Urological Society
- 5th anniversary of the Centre for Robotic Surgery, Motol University Hospital;
- Doc. MUDr. Antonín Brisuda, PhD - habilitation;

Unikátní přístrojové vybavení:

- Laminární box biohazard Labogene Scanlaf Mars pro sterilní práci s tkáňovými kulturami
- Laminární box Safe Fast Light pro zpracování tkáňových kultur
- Inkubátor s řízenou atmosférou PHCbi pro dlouhodobé kultivace tkání
- Karusel k fluorescenčnímu mikroskopu Zeiss Axioskop
- Stereomikroskop SZS 902 LED (preparace CVS)
- Světelný mikroskop Leica DM 2500LED (karyotypování, ZCA)
- Applied Biosystems 3500 Genetic Analyzer
- Applied Biosystems SeqStudio Flex 8
- NextSeq 550 firmy Illumina pro NGS
- Veriti 96-Well Thermal Cycler
- Nová centrifuga do andrologické laboratoře

Common Examination and Therapeutic Units

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

Head prof. MUDr. Miloslav Roček, CSc., MBA, FCIRSE, EBIR

Senior Consultant of the adult section MUDr. Vojtěch Suchánek

Senior Consultant of the paediatric section Irena Buksakowská, M.D., Ph.D.

Senior Radiological Assistant of the adult section Mgr. Tomáš Schilla

Senior Radiological Assistant of the children's section Alice Jará

Basic description:

In 2023, a total of 238,882 patients were examined in the adult part of the Department of Radiology Overall, this is a further increase in examinations performed. The number of CT scans and MRI scans was higher. The number of conventional skiagrams was also slightly higher compared to 2022. The number of interventional procedures was also increased. **The number of outpatients was 170,708 and inpatients 68,174.**

In 2023, a total of 63,671 patients were examined in the children's section of the Department of Radiology and 86,394 examinations were carried out, which is a drop of 1.04%. The largest increase was in CT scans by 17.8%. There was a 5.2% increase in inpatient skiagrams and a 1% increase in ultrasound. There was a decrease on the dental machine, on the outpatient department, on the MR by 2.8%, when the machine was renewed. Paediatric patients are also examined for two days on the 3T MR machine in the adult part. **The number of inpatients was 19,628, an increase of 14.8%** **The number of outpatients was 46,263**, a slight decrease of 2.4%.

Unique equipment:

- 6 new skiagraphs, including EOS machine, which greatly improved the diagnosis of spinal defects, especially in paediatric patients.
- upgrade MR Siemens Avanto
- MR Achieva 1.5T Philips in the paediatric section with the implementation of a new ambient system;
- new mobile skiagram
- Commissioning of CANON - Alphenix Biplane, BP vascular system, especially for neurointerventions and interventions in children.
- CT CANON – Aquilion ONE Prism;
- 4 Syngovia reconstruction stations;
- the latest CT device Somatom Force allowing examination with a low dose of radiation, used also for children
- another Toshiba CT in the adult emergency department, Toshiba Aquilion One CT with 320 rows (4 CT machines in total);
- 3T MR MAGNETOM Vida

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 Department of Radiology'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 aortal 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 haemodialysis;
- Treatment of brain malformations in children and adults;
- Intervention in the bile duct, spondyloplasty and vertebroplasty;
- Intervention under CT sciascopy;
- 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 using elastography;
- Expanded use of dictation systems;
- Conferences and consultations even outside the CR are carried out;
- Conference system allowing for monitoring surgical procedures was involved;
- Arterial spin labelling 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;
- With the QDR densitometer the Department of Radiology expanded the range of services offered. Other MUH departments can also use the device.

Major events in 2023:

- Prof. Miloslav Roček, M.D., CSc. is the President of the Czech Radiological Society of the Czech Medical Association, Chairman of the Section of Paediatric Radiology of the CRS JEP, Deputy Chairman and Scientific Secretary of the Czech Society of Interventional Radiology of the Czech Medical Association.
- The spectrum of pelvic oncology diagnostics has been expanded by the protocol evaluating the extent of bladder cancer (VI-RADS) and the protocol for prostate cancer examination has been improved in cooperation with the Department of Urology in preparation for the planned screening programme.
- E-book/publication "Paediatric Radiology in your pocket", teaching material/scripts
- Article in Pediatric Radiology collective Máslová D, Holubová Z, Poš L, Newland N, Pavlíková M, Škába R, Kynčl M. *The comparison of magnetic resonance and fluoroscopic imaging options in the preoperative assessment of boys with anorectal malformations and a colostomy. (IF 3.005).*
- MUDr. Zuzana Holubová received the European Diploma of Paediatric Radiology.
- Irena Buksakowská, M.D., Ph.D. received the European Diploma of Neuroradiology.
- The department hosted the 10th Prague European School of Radiology Prague / Czech Republic, June 19th – 30th, 2023.
- Active participation in the 44th Czech Congress of Radiology at the O2 Universum in Prague, 8.-10.10. 2023. The congress president was Prof. MUDr. Miloslav Roček, CSc. The congress was declared the best organized congress of the year in this centre.

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

Head prof. MUDr. Milan Macek, DrSc., MHA

Senior Consultant MUDr. Markéta Havlovicová

Head Nurse Mgr. Hana Strouhalová

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 super consultations throughout the Czech Republic. The Institute of Biology and Medical Genetics diagnoses selected congenital defects, hereditary tumours, neurodegenerative diseases in children and adults, rare diseases including mental development disorders in prenatal and postnatal period.

In 2023, the institute's outpatient units provided specialized consultations to 5,981 families as part of postnatal and prenatal care, there were a total of roughly 12,000 outpatient examinations. The Institute of Biology and Medical Genetics laboratories carried out 7,150 molecular genetic tests of various types, ranging from targeted testing for a single gene variant to testing for a clinical exome.

The Institute of Biology and Medical Genetics 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 Czech Medical Association (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 acts under the Institute of Biology and Medical Genetics and the site is also part of the national research infrastructure - "National Centre for Medical Genomics".

Specialized outpatient clinics/advisory centres:

- 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 advisory centre for hereditary nephropathy

New methods and procedures:

- We are continuing to expand the diagnosis of new microdeletion syndromes using the FISH and aCGH methods. We are also expanding diagnostics not requiring direct cultivation of amniotic / chorionic cells.
- A "custom" platform (4x180k CGH+SNP) for the investigation of patients with isolated heart defects or severe combined/complex congenital heart defects is introduced in the array CGH method, which features higher probe coverage in gene regions associated with congenital heart and aortic defects compared to the standard 4x180k chip, as well as a "custom" platform for epilepsy patients, which, compared to the standard 4x180k chip, features exon coverage of genes associated with the development of epilepsy, epileptic encephalopathies and cortical developmental disorders (MCD) and which are included in two NGS panels (DEE and MCD). The platform maps to a novel version of the hg38 genome.
- In a partially accredited mode, the SNP array method is implemented on the Illumina platform (due to the use of instruments on CLIP, it cannot be fully accredited).
- Additional features have been added to the new cytogenetics database in 2023.
- Classification of variants is improved by the use of new database instruments and updating evaluation algorithms of the software for data analysis. In addition to the passive use of the international Decipher variant database, the results of the CGH array have also been fed into it since last year, i.e. we are participating in the creation of this database.
- Accreditation of ČIA 15189 is granted for cytogenetic and molecular cytogenetic methods and international EQA is carried out regularly.
- Our colleagues hold expert positions in the national group Czech array, which was established to improve chip diagnostics.
- 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 deficiency / defects of the autistic spectrum, ataxia, dystonia,

muscular dystrophy, myopathy, growth defects, osteochondrodysplasia, craniosynostosis, defects of gender development, syndromes with cancer predisposition, organ and sensory defects, thrombophilia, rare diseases and genetic syndromes continues to be expanded.

- We also continue to perform examination of the defect of imprinting in PWS/AS a BWS/RSS a MLID syndrome.
- Gene deletions/duplications or microdeletion syndromes are investigated using MLPA, with an increasing proportion of CE IVD kits.
- We are increasingly using NGS gene panel testing in our diagnostic practice. In 2023, we routinely screened patients with suspected hereditary breast and ovarian cancer, patients with suspected HNPCC, neurofibromatosis, RASopathy, and certain other selected inherited diseases: familial multiple cavernous malformations of the brain, Gorlin syndrome, holoprosencephaly, Treacher-Collins syndrome, and Duchenne/Becker muscular dystrophy using these methods.
- We have introduced exome testing using Sophia Genetics' Clinical Exome Solution (CES) and Whole Exome Solution (WES) into our diagnostic practice and replaced the previously used Cardio and CID panels with virtual panels. Clinical Exome Screening (CES) was performed on 330 individuals.
- Based on the CES and WES, we have redesigned, validated and launched our own virtual diagnostic panels of genes responsible for all types of cardiomyopathies, arrhythmogenic syndromes, aortopathy and collagenopathies, allowing for more accurate and faster diagnosis of genetic heart diseases. We performed panel testing in 649 individuals and targeted testing in 452 relatives.
- Based on CES and WES, we introduced germline mutation testing in a virtual panel of genes associated with intellectual disability and autism into our dg. practice. We performed the examination in 187 individuals and targeted testing in 137 relatives.
- For rare, unclear and diagnostically complex cases of genetically conditional diseases, the CES data are filtered according to the proband's clinical symptoms - according to HPO terms, according to type of hereditary and other parameters.
- We performed WES (Whole Exome Sequencing) in 202 subjects. In the most diagnostically complex cases, we performed a trio examination, i.e. simultaneous examination of the parents and the sick child.
- We have again successfully met the requirements of the external international inter-laboratory quality control of molecular genetic laboratories EMQN and RfB for 14 different diagnoses, Sanger DNA sequencing and NGS.
- We continue to improve the filtering and prioritization of NGS data and more accurate interpretation of variants of a priori unclear significance, using Sophia DDM, VarAFT, VarSome Clinical and Franklin (Genoox) software.
- 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), we cooperate with the Department of Paediatric Neurology MUH and General University Hospital in early detection of SMA in newborns for the needs of the earliest biological treatment.

Unique equipment:

- Labogene Scanlaf Mars laminar biohazard box for sterile tissue culture work
- Safe Fast Light laminar box for processing tissue culture
- PHCbi controlled atmosphere incubator for long-term tissue cultivation
- Carousel for Zeiss Axioscope fluorescence microscope

- SZS 902 LED Stereomicroscope (CVS preparation)
- Leica DM 2500LED light microscope (karyotyping, ZCA)
- Applied Biosystems 3500 Genetic Analyzer
- Applied Biosystems SeqStudio Flex 8
- NextSeq 550 of firm Illumina for NGS
- Veriti 96-Well Thermal Cycler
- New centrifuge for the andrology laboratory

Major events in 2023:

- Clinical application of NGS in neurogenetics, cardiogenetics and dysmorphology, often associated with intellectual disability and autism spectrum disorders, and also in the field of hearing disorders. A significant number of patients with rare diseases have been investigated using next-generation exome sequencing within the National Coordination Centre for Rare Diseases.
 - Section 3D facial morphometry is used at the MUH Institute of Biology and Medical Genetics as a tool for objective description of the facial phenotype and its digitization. By the end of 2023, the 3D database of facial models at MUH consisted of 7,152 individuals.
 - Other clinical applications of 3D facial models include comparison of patients' faces with healthy controls, comparison and description of phenotypic deviations from the norm, and currently the publication "BMI is an overlooked confounding factor in existing clustering studies of 3D facial scans of children with autism spectrum disorder" is under review in the journal Scientific Reports.
 - Second Charles University Grant Agency grant project to monitor the development of facial asymmetry or to monitor changes before and after surgery in collaboration with a number of departments.
 - A Charles University Grant Agency project on endophenotyping of PAS patients was completed in 2023.
 - The facial assessment of patients with a proven pathogenic variant in the PKD1/PKD2 genes (ADPKD), was conducted through data collection and the first results are planned to be presented as a poster at the ESHG conference in June 2024
- Last but not least, a paper was published on the evaluation of facial shape and size changes in children with facial cleft defects using 3D facial models and geometric morphometry methods (Kožeřová Jaklová, L., Kočandrlová, K., Dupej, J., Borský, J., Černý, M., & Velemínská, J.(2023). Morphometric assessment of facial morphology in infants with unilateral cleft lip/palate up to two years of age using 3D stereophotogrammetry. Cleft Palate Craniofacial Journal, <https://doi.org/10.1177/10556656231163970>)
- Professor Macek, the Head of the Institute of Biology and Medical Genetics, in his position of the coordinator of the National Coordination Centre for Rare Diseases continues to guarantee inclusion of a large number of the departments at the MUH in the European Reference Networks (ERN) for rare diseases. On behalf of the National Coordination Centre for Rare Diseases, Prof. Milan Macek organised the international conference Solve-RD on undiagnosed rare diseases, <https://solve-rd.eu/solve-rd-final-meeting-2023/>.

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

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 Department of Medical Chemistry and Clinical Biochemistry provides more than 195 different laboratory examinations. Annually we process biological material from 97,953 unique birth numbers. Every day (including Saturdays, Sundays and holidays) the laboratory examines an average of 3,000 biological samples, i.e. 798,000 examinations per month in a continuous three-shift operation. Outside of basic working hours, analyses are performed by medical laboratory technicians, laboratory assistants, analysts and physicians. The analysts and physicians on duty also provide consultation for the clinics. A number of tests (MTX, cyclosporine A, tacrolimus, sirolimus, lead, platinum, antifungals, busulfan, IGF-1, gentamycin, α defensin, ganciclovir, isavuconazole, vitamin K, etc.) are also performed for outside medical facilities, self-payers and veterinary medicine.

In 2023, 9,088,751 laboratory tests were performed, of which 60% in statim mode. The results of statim analyses are available to the physician online within an average of 65 minutes from the receipt of the biological sample by the laboratory. The Department of Medical Chemistry and Clinical Biochemistry has specialized outpatient units focusing on the issues related to dyslipoproteinemias, bone metabolism defects, nutritional defects in the sense of obesity and malnutrition.

In 2023, 9,458 patients were 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:

- 2021 - introduced method for determining isavuconazole in plasma by LC-MS
- 2021 - converting a-Tg, a-TPO methods from chemiluminescence to electrochemiluminescence
- 2021 - converting procalcitonin and NT-proBNP methods from electrochemiluminescence to chemiluminescence
- 2021 converting the myoglobin method from immunoturbidimetry to chemiluminescence on microparticles
- 2021 - AAS - for the method of copper and zinc in serum on flame AAS, the ratio of serum to dilution solution was adjusted 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 μ 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
- 2022 Conversion of methods: PSA, free PSA from Roche (electrochemiluminescence) to Siemens (chemiluminescence)
- 2022 biobanking introduced in the AQUA system - monitoring the archiving of biol. material processing

- 2022 – isavuconazole
- 2023 Conversion of PSA, free PSA from Siemens (chemiluminescence) to Beckman Coulter (chemiluminescence) PHI index on Dxl800 introduced
- 2023 - Converted insulin, C-peptide, Folic Acid/Folate, Vitamin B12 methods from Roche (electrochemiluminescence) to Beckman Coulter (chemiluminescence).
- 2023 – transfer of AMH Elisa to Dxl800 analyser
- 2023 - Determination of catecholamine metabolites VMA and HVA in urine and 5HIA by LC-MS
- 2023 - development of a new method for determination of 3-methoxytyramine in urine by LC-MS

Unique equipment:

- 2020 - new biochemical analyser - Atellica - 3, fundamental change in basic biochemical operation
- 2021 - 2 new AtellicaIM1600 immunochemical analyzers, fundamental change in laboratory operation
- 2021 - the existing Cobas6000 was replaced with a new one
- 2021 - the number of osmometers was expanded with a new OsmoPRO osmometer
- 2021 - 2 new, cooled, large capacity BeckmanCoulter centrifuges
- 2021 – 2 new decappers
- 2021 - replacement of the biochemical AtellicaDL with AtellicaSH (+sample handler)
- 2021 - At Anaesthesiology and Resuscitation Department five acid-base analysers replaced with the newer type ABL800 FLEX PLUS.
- 2021 - Two AQT90 FLEX immunochemical analyzers were replaced at the Adult Emergency Department.
- 2021 - A new ABL800 FLEX PLUS replaced the acid-base analyzer at the Department of Paediatric Surgery.
- 2021 - New ABL800 FLEX PLUS acid-base analyzer installed at the Dept. of Surgery.
- 2021 - Stat Profile pHox Ultra acid-base analyzer installed at the Paediatric Dept.
- 2021 - Stat Profile pHox Ultra acid-base analyzer installed at the Paediatric Sampling Centre.
- 2021 - Throughout the MUH departments a total of 33 net strip glucose meters were replaced with new StatStrip glucose meters of the same type
- 2022 - Two new Siemens Rapidlab 1245 acid-base analyzers installed
- 2022 - New ABL90 FLEX PLUS acid-base analyzer installed at the Adult Emergency Department
- 2022 - Two carousel glucose meters replaced with new SensoStar GL30 Touch at the Paediatric Department
- 2022 - Throughout the MUH departments a total of 42 net strip glucose meters were replaced with new StatStrip glucose meters of the same type.
- 2022 - New immunochemical analysers installed:
- 2022 - Architect 4000 in i2000SR+i2000SR configuration (Abbott)
- 2022 - installation of the AQUA system - pre-analytical phase of the lab examination;
- 2022 - 2 new, cooled, large capacity BeckmanCoulter centrifuges
- 2022 - the number of osmometers was expanded with a new OsmoPRO osmometer
- 2022 - the number of LC - MS increased
- 2022 - HPLC system Agilent Technologies Agilent 1260
- 2022 - ELISA reader SUNRISE RC
- 2022 – air conditioning in ceiling
- 2022 - Installation of AU 480 (Beckman Coulter), replaced with Cobas Integra 400 from

- Roche s.r.o.
- 2023 - Replacement of two ABR analyzers at Adult Emergency Department with StatProfile Prime Plus type.
- 2023 - Acid-base analyser StatProfile Prime Plus installed in the Department of Internal Medicine
- 2023 - Dxl800 analyzer installed
- 2023 - Installation of two ceiling mounted air conditioning units
- 2023 - Installation of a deep freeze box
- 2023 - purchase of 2 Tecan Elisa readers
- 2023 - purchase of Hydroflex Plus8/4 microplate washer
- 2023 - Multiwave 5000 modular sample preparation system

Major events in 2023:

- Spring educational seminar for all MUH staff, POCT;
- May 2023 - European Congress of Clinical Biochemistry, Rome - with active participation;
- September 2024- National Congress of Clinical Biochemistry - active participation - three lectures.

Publications: 40, of which 6 with IF, 9 articles in professional journals, 1 book and 1 chapter in a monograph

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

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 ensures a specialized outpatient unit for vaccination of high-risk patients and provides regular therapy and infusion application of indicated drugs for serious immune disorders at 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 undergraduate 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 neuro-immunology, autoinflammatory disorders and severe forms of allergic diseases and focuses on the immunology of tumorous diseases. The department operates nationally in these areas of highly specialized care and sometimes even internationally.

In 2023, 17,363 patients were examined in the outpatient units, 255,753 examinations were carried out in the laboratories on 46,943 patients, and a further 26,685 examinations were carried out in the liquor laboratory

Specialized outpatient units/laboratories:

- 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
- outpatient unit for vaccinating children at risk

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

Centres:

- Centre for the treatment of difficult-to-treat asthma
- Centre for the treatment of hereditary angioedema
- Centre for diagnostics and treatment of immunopathological conditions - part of Centres of Excellence of The Federation of Clinical Immunology Societies (FOCIS)
- Member of ERN RITA, the European Reference Network for Rare Immunological Diseases

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;
- Introduction of diagnostic algorithms for immune disorders as part of a pilot SCID screening project in the Czech Republic, diagnostic process of recorded newborns
- Intracellular examination of anti-inflammatory cytokines;
- Extension of the cell immunity panel (proliferation test ki-67, examination of Th17 and T regulating lymphocytes, B and T detailed cytometric panel);
- Optimization of autoantibody investigation panel - introduction of Bio-flash methods;
- Introduction of a new multiplex method ALEX for allergy diagnosis which allows simultaneous measurement of total IgE and specific IgE;
- Extended daycare units in supervision of home application of subcutaneous immunoglobulins.

Unique equipment:

- comprehensively equipped laboratory for flow cytometry including a sorter with another new cytometer in 2022
- microscopic facility including a confocal microscope and scanning cytometer
- automated equipment for ELISA methods including new automatic device
- equipped with automated chemiluminescence apparatus for antibody detection
- equipment with a fully automated IFA microscope - in combination with an intelligent digital imaging system - that reads images of slides.

Major events in 2023:

- Continued individual administration of unregistered preparation DCVAC under the hospital exception for modern therapy pharmaceuticals Sections 49b) and 49c) of the Act on Pharmaceuticals;
- Management of the Immunodeficiency Center within the global network of centres of the Jeffrey Modell Foundation, USA, resolving the scientific grant from this foundation;
- Work on projects of Institutional Support of the MUH; work on Health Research Council grants
- Solution of projects for diagnosis of immunopathological conditions in the Modern Therapies scheme
- Clinical studies of immunopathology of tumours;
- Clinical study of the rare disease PI3 kinase activated syndrome with the specific inhibitor CCDZ173X2201;
- Clinical study of treatment of hereditary angioedema with factorXIIA inhibitor CSL312_3002;

- Clinical trial of Pfizer B1971060 meningococcal vaccination;

Publications - 34 original foreign impacted publications,

- Werner von Siemens Prize for the most significant basic research result The prize was awarded to Markéta Bloomfield, M.D., Ph.D. , and Zuzana Paračková, RNDr, Ph.D. Title of work: Diagnostics by research in rare congenital immune disorders.
- RNDr. Zuzana Paračková, Ph.D. received the Creative Achievement Award of Motol University Hospital - Junior for a set of research publications clarifying the role of innate immunity and autoimmune diseases

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

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

Senior Consultant MUDr. Otakar Nyč, Ph.D.

Senior Laboratory Technician Vladimír Kryll

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. 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 Program, Subcommittee for Antibiotic Policy of Czech Medical Association and the committee of the Society for Medical Microbiology Czech Medical Association, 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 clinical practice with the aim to further 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.

New methods and procedures:

- Comprehensive diagnostics based on extrahuman genome analysis;
- MALDI-TOF identification of bacterial agents and filamentous fungi using the international MSI database;
- Detection of virulence factors and resistance genes: MRSA, PVL and TSST in *S. aureus*, mcr genes in Enterobacteriaceae isolates; carbapenemases;
- Whole genome sequencing of bacterial strains with unusual resistance or virulence;
- Molecular typing of *C. difficile*, *S. aureus*, vancomycin-resistant Enterococcus sp. (for the needs of the Czech Republic including national surveillance), *P. aeruginosa* and *B. cepacia* complex (chronic infections in cystic fibrosis patients; CF);
- Cooperation with the Internal Medicine Clinic of the Motol University Hospital in the functioning of the donor bank for the need of faecal transplantation in patients with recurrent colitis caused by *Clostridium difficile*;
- Direct PCR detection of hepatitis B virus;
- Selective culture of *Scedosporium*, a filamentous fungus of the order Onygenales, in patients with CF or primary ciliary dyskinesia;

- POCT of respiratory infections on an ID Now (Abbott);
- Detection of hepatitis E virus (HEV), using antibodies and direct detection by PCR
- Detection of human papillomavirus risk genotypes;
- PCR screening for travel fever agents in collaboration with the Department of Infectious Diseases and Travel Medicine;
- Determination of 1,3-beta-D-glucan for diagnosis of invasive mycoses.

Unique equipment:

- BENTLEY anaerobic box
- 2 MALDI-TOF instruments (Bruker; mass spectrometry equipment for rapid and highly reliable identification of bacteria and fungi)
- IR Biotyper (Bruker) for bacterial subtyping
- GeneXpert and Easy-Plex 384, automated systems for rapid and highly reliable PCR detection of a wide range of viral and bacterial pathogens
- system for bacterial and fungal DNA extraction (NA Select, Molzym)
- BiofireFilmArray (bioMerieux) for rapid detection of pathogens of lung infections and purulent meningitis
- IDNow (Abbott)
- Zybio EXM 3000 nucleic acid isolators (3 pcs)

Major events in 2023:

- In the person of the Head of the Institute, Prof. Dr. Dřevínek, Ph.D. , the Institute is represented in the National Institute for Pandemic Management at the Ministry of Health of the Czech Republic.
- 4 employees of the institute are on the committee of the Society for Medical Microbiology of the Czech Medical Association.
- Participation in the preparation of professional seminars organized by the Society for Medical Microbiology;
- Prof. MUDr. Pavel Dřevínek, Ph.D: member of the Committee of the European CF Society (ECFS), also chairman of the SLM of the Czech Medical Association;
- Mgr. Marcela Krůtová, Ph.D: member of the European ESCMID Study Group for Clostridium difficile - ESGCD; contributor to the update of European and national recommended practices for the treatment of infections caused by *C. difficile*.

Publications: 32 international impacted publications

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

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

Senior Consultant MUDr. Petr Škapa, Ph.D.

Senior Laboratory Technician Vladimíra Kratinová

Basic description:

The department is involved in tissue and cellular diagnostics of diseases at the microscopic and molecular level. It uses biopsy and cytology methods that tie into other specialized laboratory examination 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 perioperative biopsies, where the histopathological diagnosis is determined 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 biological anticancer treatment with monoclonal antibodies or low molecular weight inhibitors is indicated within the personalized medicine concept. The department has several 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, whose primary purpose is to correct and supplement the biopsy findings of patients who will subsequently be treated at the MUH.

The department is an undergraduate and postgraduate training facility and teaches pathology for medical and non-medical students of the 2nd Faculty of Medicine, Charles University, it takes part in the doctoral programme in biomedicine and specialization training in Pathology.

In 2023, the department carried out 19,058 biopsy examinations, 2,616 peri-operative examinations, 1,890 non-gynaecological cytology examinations, 652 pulmonary cytology examinations, 2,239 molecular and hybridization examinations, 844 flow cytometry examinations and 192 autopsies.

Specialized laboratories:

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

New methods and procedures:

- The use of automated biological material processing and automated operation control systems both in the routine biopsy laboratory environment and in specialized laboratories.
- The biopsy laboratory is moving to automated operations using the Perseus (Steiner) system to accurately record laboratory processes with maximum use of barcodes. The Biopsy Laboratory has commissioned an automated line for the production of Tissue-TEK AutoTEC a120 paraffin blocks (Sakura).
- The Biopsy Laboratory uses automated production of special histological stains using Benchmark Special Stains Stainer (Roche Diagnostics).
- The immunohistochemistry and in situ hybridization laboratory is transitioning to fully automated operation using Dako Omnis systems (Agilent Technologies) that interoperate with the Perseus system.
- The department is involved in the development and management of a shared sequencing centre using the NovaSeq 6000 high throughput sequencer (Illumina) for next generation sequencing (NGS) methodology. Continuous development of NGS methodology in a wide range of cancers and the introduction of new diagnostic panels for diagnostic and predictive pathology purposes is ongoing.
- An innovative stimulated Raman histology system, the NIO Laser Imaging System (Invenio), which enables histological visualization of a sample by non-destructive laser spectroscopy methods in minutes, is in test operation.

Unique equipment:

- Dako Omnis automated systems (Agilent Technologies), Dako Agilent Autostainer link 48 and Dako Agilent PT Link Pre-Treatment Module for immunohistochemistry and in situ hybridization,
- NovaSeq 6000 Illumina and MiSeq Illumina sequencers for NGS methodology,
- EZ2 Connect MDx nucleic acid isolator (Qiagen),
- Digital LightCycler (Roche Diagnostics) for digital PCR (dPCR) technology,
- Avenio Millisect System (Roche Diagnostics) for high-precision dissection of tumour tissue to prepare biopsy material for molecular diagnostics,
- Covaris M220 ultrasonicator for library preparation in NGS methodology,
- Roche Cobas Z480 and Biocartis Idylla analysers for the detection of specific gene changes and microsatellite instability (MSI),
- Applied Biosystems 3500 genetic analyser for Sanger sequencing, a Qubit fluorimeter for measuring the concentration of NGS libraries and a cfDNA isolator from plasma or fluid,
- Beckman Coulter DxFLX flow cytometer,
- JEOL JEM-1400plus electron microscope,
- fully automated filling line for the production of Sakura Tissue-TEK AutoTEC a120 paraffin blocks,
- Sakura Tissue-Tek staining and mounting machine for histological slide production,
- Myr M-250 fully automatic robotic rotary microtomes,
- automatic tissue microarray TMA Grand Master (3DHistech),
- VENTANA DP600 virtual histology scanners (Roche Diagnostics) with Navify Digital Pathology software enabling intrapreparation of predictive immunohistochemistry and in situ hybridization using diagnostic algorithms with artificial intelligence features,
- NovaVoice dictation software for speech-to-text conversion.

Major events in 2023:

- The department contributed to 34 scientific publications in impacted journals with IF (5 articles are first-authored, 6 articles are senior-authored), 2 publications are in D1, 6 publications in Q1 and 14 publications in Q2 journals
- MUDr. Hamaňová and MUDr. Balko received the award for the best presentation at the OMI seminar in Salzburg.
- Another award in 2023 was the best poster at the 2nd Faculty of Medicine Scientific Conference.

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 Czech Medical Association.

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 2023, the laboratory performed 954,116 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 clinical section includes an outpatient unit for the children's and the adults' section. 38,387 procedures were carried out in the outpatient section in 2023. In the adult outpatient clinic, treatment

at the centre with extended haemato-oncology care also focuses on treating multiple myeloma and low grade malignant lymphoproliferative diseases. The adult outpatient clinic includes application rooms used for the application of transfusion preparations and chemotherapy.

New methods and procedures:

- Examination of the function of thrombocytes.
- Introduction of the methodology for examination of levels of new antithrombic medicines.
- Introduction of the methodology for the examination of fibrin monomers.
- Introduction of a methodology for determining f. XIII.
- 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.
- The department's physicians actively participate in the Czech Myeloma Group including entries in the register of monoclonal gammopathies CMG.
- The laboratory provides practical training for students in the fields of Medical Laboratory Technician and Laboratory Diagnostics in Healthcare.

Unique equipment:

- SYSMEX XN 3000 - automated line for examination of blood count including digital morphology
- coagulometers (ACL) for the examination of routine and special coagulation tests.
- 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 Department of Clinical Haematology manages the AQT90 Flex radiometer POCT machine in the Adult Emergency Department, which processes D-dimers in acute patients

Department of Clinical Psychology of MUH

Senior Consultant Mgr. Markéta Mohaplová

Basic description:

The Department of Clinical Psychology has 42 employees in various positions who provide psychodiagnostic and psychotherapeutic care to adult and paediatric patients at the MUH.

In addition to the care of patients from the core wards, 2023 saw more than 2,500 consultant-requested procedures.

Specifically, 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 further involved in complex diagnostic and therapeutic care for paediatric patients with autism spectrum disorders, eating disorders and other psychiatric diagnoses. Department of Clinical Psychology psychologists are also part of multidisciplinary teams caring for paediatric patients with chronic renal failure, cystic fibrosis and diabetes. They are also involved in caring for paediatric and adult patients in the epilepsy surgery programme, patients of the Aftercare Centre, and are part of the teams focused on research and treatment for neurodegenerative diseases. Currently, the Department of Clinical Psychology also works closely with support and palliative care teams for children and adults. There is also a Family Therapy Centre within the department. The Department of Clinical Psychology also provides psychological services for MUH employees; we offer individual consultations, team interviews, we provide help during

the arrangement of long-term care.

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, Child Clinical Psychology and Psychotherapy.

New methods and procedures:

- The team under the Paediatric Clinic was expanded by taking on another half-time staff member, the strengthening is related to the increasing number of monitored patients.
- Psychology posts were filled in the Neurology Clinic in connection with the opening of the centres for patients with multiple sclerosis and ataxia.
- We cooperate with the support teams of Motol University Hospital, especially with the Psychosocial Intervention Service.
- The standardisation of the Children's Neuropsychological Diagnostic Battery continues within the framework of the TACR grant

Publications:

Publications by Department of Clinical Psychology staff were included in the annual report for the internal grant.

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 2023, the department issued a total of 29,391 T.U. of all types of transfusion preparations.

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 2023, 10,317 blood group examinations, 22,114 antibody screening tests, and 37,458 compatibility tests were carried out as part of the basic pre-transfusion examinations. The number of specialized immunohaematological examinations remains the same as in 2023. Prenatal examinations are without any major changes. The number of transfusion product irradiations was higher than in 2022 - 11,735 irradiations 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 2023, a total of 462 autologous whole blood donations, 28 leukapheresis donations and 29 extracorporeal photochemotherapy procedures were carried out.

The department provides tuition under the 2nd Faculty of Medicine, Charles University and for undergraduate and postgraduate students in transfusion medicine for physicians and non-medical staff.

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) and collection of mononuclear cells for the production of a medicinal product (PBMC) is carried out for paediatric patients from the Department of Paediatric Haematology and Oncology of the 2nd Faculty of Medicine, Charles University and Motol University Hospital (DPHO);
- An extracorporeal photochemotherapy method was applied to patients of 3rd Surgical Department 1st Faculty of Medicine and MUH after lung transplantation and for paediatric patients and Department of Paediatric Haematology and Oncology patients after bone marrow transplantation.

Unique equipment:

- automated immunohaematological analyzer Erytra + Eflexis
- MacoGenic G2 irradiation device for UVA irradiation of blood cells according to the THERAFLEX ECP protocol using the "off line" technique

Major events in 2023:

- In cooperation with the Department of Paediatric Haematology and Oncology, 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 2023, the department carried out 10,169 samplings and 6,551 outpatient examinations, 3,884 minimum contacts, 745 telephone consultations, 312 specialized ultrasound examinations and 336 specialist consultations at the MUH's inpatient clinics.

Specialized outpatient units/centres:

- specialized outpatient unit of rheumatology for adults
- specialized outpatient unit of rheumatology for children
- specialized outpatient unit for primary vasculitis
- specialized outpatient unit for the dg. and treatment of autoinflammatory syndromes

- clinical osteology outpatient unit
- outpatient unit of musculoskeletal ultrasonography
- capillaroscopy outpatient unit
- centre for biological treatment of children and adults in rheumatological indications

New methods and procedures:

- The portfolio of biological drugs used was expanded to include new 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) and AxSpA.
- The portfolio of biologic drugs has been expanded to include new IL-1 inhibitors 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 Radiology of the 2nd Faculty of Medicine, Charles University and Motol University Hospital 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
- new VIDEOCAP 3.0 D1 capillaroscope for examining pathology in patients with SSc, SLE, MCTD and system autoimmunity

Major events in 2023:

- The department's employees regularly contributed to local specialized congresses organized by the Czech Rheumatological Society Czech Medical Association 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.
- 5 foreign publications in IF journals and 1 peer-reviewed domestic publication were published.
- The internal grant of the institutional support of the Motol University Hospital entitled "Use of Musculoskeletal Ultrasonography in Detecting Cartilage Damage in Patients with Rheumatoid Arthritis and Osteoarthritis" was successfully continued. This project was extended to the investigation of entheses 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., Department of Anaesthesiology, Resuscitation and Intensive Medicine

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, dental surgery, neurosurgery and ophthalmology. It also carries out bone marrow harvesting, trepanobiopsy, the introduction of central venous and peripheral catheters PICC, Midline and SSEP examinations. Undergraduate and postgraduate tuition for physicians and other medical staff is carried out in the premises of the central operating theatres for children.

8,222 surgical procedures were carried out in 2023. In the field of transplantology, 12 kidney transplants and 1 cadaveric harvest were performed. In the field of the Department of Anaesthesiology, Resuscitation and Intensive Medicine, CVC, PICC and Midline are being introduced. A total of 222 procedures were performed.

New methods and procedures:

- Focus of all facilities on minimally invasive approaches during surgery

Unique equipment:

- Equipment for minimally invasive surgery with 3D imaging from B Braun
- mini surgical instrument set for thoracoscopic and laparoscopic surgery of the smallest children (newborns, infants)
- 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 unit, Olympus and B Braun
- Olympus mini ETD2 automatic endoscope disinfectant
- ultramodern arthroscopic unit used in paediatric orthopaedics
- plasma generator – plasma coblation
- microinstrumentarium for laryngeal surgery in children
- microinstrumentarium for FESS in children
- B Braun high speed bone cutter
- Clarity ultrasonic aspirator

Major events in 2023:

- Performing a unique surgery on a patient with extensive chondrosarcoma of the femur - growing total femur component of hip, femur and knee arthroplasty;
- CLEFT laryngo-tracheo-esophageal cleft operations were performed in a child with esophageal atresia;
- Continued coordinated multidisciplinary surgical procedures in paediatric oncosurgery;
- Central operating theatres for children is a highly sought after training site.

Department of Central Operating Theatres for Adults

Senior Consultant MUDr. Zbyněk Jech

Head Nurse Mgr. Vladana Roušalová

Basic description:

The twenty-four operating theatres at the Department of Central Operating Theatres for Adults is the background for surgical treatment at eight surgical departments in the adult part of the MUH. Anaesthetic care at the Central Operating Theatres is provided by the Department of Anaesthesiology, Resuscitation and Intensive Medicine of the 2nd Faculty of Medicine, Charles University. Technical support for Central Operating Theatres is provided by the MUH Department of Biomedical Engineering.

At the Central Operating Theatres for Adults, individual departments perform not only highly specialized surgeries, but also routine surgical procedures. Of all the specialized procedures, these are primarily lung transplantation, operations in multidisciplinary teams for cancer patients and there is close cooperation when treating polytrauma patients.

The Central Operating Theatres provide undergraduate and postgraduate training for medical and non-medical health professionals.

three facilities: 1st and 3rd Surgical Department, and Department of Otorhinolaryngology and Head and Neck Surgery. In 2023, the number of robotic operations increased to 422.

In 2023, there were 18,387 operations performed at the Central Operating Theatres for Adults. 422 operations were performed on the second robot operating system daVinci Xi located at the Central Operating Theatres for Adults.

New methods and procedures:

- Robotic surgery on the second da Vinci Xi robotic operating system for surgical departments, gynaecology and ENT has been expanded since December 2023 to include robotic cardiosurgery.

Unique equipment:

- New PAL – 650 liposuction device
- AJA Helo Plus recording equipment for robotic system Da Vinci
- DaVinci Xi robotic operating system
- XVIVO perfusion system (XPS tm)
- New Aesculap/B operating instruments. Braun for the 1st and 2nd orthopaedic depts. and traumatology
- Three Maquet OTEUS 1160 operating tables were replaced
- Replacement of coagulation devices, including accessories.

Major events in 2023:

- One nurse completed the first degree in nursing; one nurse completed the post-secondary specialisation course (PSS) in perioperative care; one paramedic completed accredited qualification course - general paramedic.
- Thirty-five 3rd year nursing students underwent nursing practice as part of the BcSP General Nursing studies in the Central Operating Theatres for Adults Department.
- Filipová, L., Smolařová V.: DaVinci surgery from the perspective of a perioperative nurse 12th Congress of Perioperative Nurses, České Budějovice 2.6.-3.6.2023

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) The 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 3rd surg. dept.)
- National programme of heart transplantation in children (chief physician senior consultant MUDr. Roman Gebauer (Children's Cardiac Centre)

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 MUH or in other TCs in the CR or abroad (mainly in Slovakia). In some situations, we perform MOH at MUH from a donor indicated in another TC and transported to MUH.

In 2023, 12 multi-organ harvests (MOH) from cadaverous donors were carried out. Calculated per million population (pmp), this is 38.51 pmp donors (the MUH region has 311,608 inhabitants), which is the highest harvesting activity in 2023 in the CR! Overall in the CR it is 28.43 pmp. Furthermore, last year we finally moved forward at our hospital and managed to harvest organs from 3 donors after circulatory arrest (so called DCD donors).

A record 16 kidney transplants were performed in children, 10 from cadaveric donors and 6 from living donors.

A record 67 lung transplants were performed (including 5 lungs from DCD donors) in a programme that is the most logistically challenging, most complicated in terms of coordination, and also the most expensive organ transplant programme (94% of which were bilateral and 83.6% on ECMO).

Hearts were successfully transplanted in 2 children.

The cardiovascular tissue bank received 116 deceased donor hearts for processing and a record 179 grafts and conduits were released for transplantation. The National Valve Bank saw a record number of 167 valve grafts transplanted.

4 vascular grafts were accepted for transplantation (in "fresh" mode) and all 4 were transplanted.

There were 85 bone grafts from living donors, 13 from cadaverous donors and 42 grafts transplanted.

Placentas from 11 living donors were processed and 549 amniotic membranes were prepared. 228 grafts were released for transplantation.

Major events in 2023:

- 2023 was a record year in many ways. A record 348 lung offers were processed as part of the most demanding national lung transplant programme! On the basis of an intergovernmental agreement with the Slovak Republic, the number of lung transplants for Slovak patients, which totalled 5 in 2023, was increased under carefully monitored mutual balance.

Outpatient sector

Emergency Department and Medical First Aid Service for Children

Senior Consultant MUDr. Jitka Dissou, MBA

Head Nurse Ing. Mgr. Monika Vilimová, Dis.

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 booths, Urgent admission - outpatient unit. From 4:00 p.m. to 7:00 a.m. on weekdays and on weekends, the emergency outpatient unit 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 booths.

POCT ABR, ECG, ultrasound, instant PCR, ID now are available directly in the department. CT, ultrasound,

X-ray and MRI are located in the immediate vicinity of the emergency room.

In 2023, 31,860 children were treated at the Emergency Department and MFAS for Children, of which 5,863 children through the emergency admissions.

Major events in 2023:

- Our department contributed to the 3rd revised and expanded edition of the book by doc. Mixa "Children's prehospital and emergency care".
- Doctors actively participated in the congresses Brno Days of Emergency Medicine, SDAIM 2023 in Mikulov. Under the Department of Emergency Medicine at the Institute for Postgraduate Medical Education we organize a course on Acute Conditions in Childhood

Department of Dermatovenereology for Adults

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

Head Nurse Mgr. 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 dermatology and occupational skin diseases, prevention and treatment of skin tumours and treatment of psoriasis.

In 2023, more than 8,304 patients were treated in the outpatient care and almost 22,930 treatments were carried out.

Specialized outpatient units/counselling centres:

- outpatient unit of venerology
- outpatient unit for pigment nevi and skin tumours
- outpatient unit of dermatology and outpatient unit for occupational skin diseases
- 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, atopic eczema, skin lymphomas
- lymphological daycare centre
- daycare centre for phototherapy

New methods and procedures:

- surgical procedures on nails (such as ingrown nails, nail plate deformation)
- full-body body mapping to search for pigmented nevi at risk

Unique equipment:

- high-performance laser Fotona XS Erb: YAG and Nd: YAG
- Canfield IntelliStudio gen 3

Department of Paediatric Dermatology

Senior Consultant MUDr. Jana Čadová

Charge Nurse Veronika Brabcová

Basic description:

The Department of Paediatric Dermatology provides outpatient services in 3 outpatient units 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 site for serious or rare diseases. It takes part in training doctors in the fields of dermatovenereology, allergology or paediatrics in the framework of postgraduate education.

In 2023, 9,792 patients were treated, and 247 medical consultations were provided on beds of paediatric part of the hospital.

Specifics of the facility:

As part of the general outpatient units, the facility is dedicated to the diagnosis and treatment of common dermatoses, most often atopic eczema. Since 2020 we have been a centre for biological treatment. An integral part of the outpatient units are the advisory centres for genodermatoses, pigmented nevi (digital dermatoscopy), hemangiomas and vascular anomalies, acne treatment, hair and nail clinics, treatment of verrucae, and in the surgery theatre we perform probatorial excisions and total excisions of small skin formations, including electrocautery.

New methods and procedures:

- BTL-4110 Premium bio-stimulation laser, which is mainly used to treat scars and acne
- Illuco IDS-3100 (Magnum+) dermatoscopic magnifier with polarization integrated with a Wood's lamp is now used to improve the diagnosis of vitiligo and superficial mycoses
- DermoGenius ultra (Dermoscan) for examination of high-risk pigmented lesions
- Electrocauter Hyfrecator 2000 – to remove minor skin lesions

Major events in 2023:

- Staff contribute by lecturing at national professional events and participates in postgraduate training courses at the Czech Medical Chamber and the Institute for Postgraduate Medical Education

Primary Care Department

Senior Consultant MUDr. Jaroslava Kulhánková

Head Nurse Mgr. 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, preventive check-ups for secondary school and university students, foreigners with or without insurance from the local health insurance companies, and non-standard care for persons with Czech health insurance. We screen registered patients for colorectal cancer, diabetes mellitus and hypertension, and we provide follow-up for patients with type II DM and hypertension. We work with the MUH Department of Hygiene and Epidemiology to examine and vaccinate employees in current epidemiological situations. The department is an undergraduate and postgraduate tuition site accredited in general practice.

In 2023, the Primary Care Department treated 20,388 patients, 1,059 vaccinations were

administered, and 3,187 adult patients and 4,839 children were also treated at the UA Point. 1,113 children were vaccinated.

Adult Emergency Department

Head MUDr. Jiří Karásek, Ph.D.

Head Nurse Bc. Lucie Vacková

Basic description:

The Adult Emergency Department (AED) has 28 beds. It is equipped with 1 bed in the crash room, 17 monitored beds in the booths, and 10 beds in the acute outpatient departments of surgery, traumatology, neurology and urology. The Adult Emergency Department also includes a medical first aid service (MFAS). The basic task of the department is to receive patients with acute and life-threatening problems from the catchment area of Motol University Hospital and patients indicated for central care (AIM, icts, polytraumas). We perform stabilization of the patient's condition, differential diagnosis using a wide range of examination methods and decide on admission to

In 2023, 20,545 patients were treated at the Adult Emergency Department, of which 7,759 were subsequently hospitalized.

Major events in 2023:

Lectures:

- Kroftová KM: Pelhřimovský Evening
- Dvořák M.: Akutně.cz
- Karásek J.: Acute Cardiology Days, Karlovy Vary
- Karásek J.: 30th Annual gathering of Czech Cardiologic Society, Brno
- Karásek J.: European resuscitation council Congress, Barcelona

Publications:

- Dusík M, Rob D, Smalcová J, Havranek S, **Karasek J**, Smid O, Lahoda Brodská H, Kavalková P, Huptych M, Bakker J, Belohlavek J. Serum Lactate in Refractory Out-of-Hospital Cardiac Arrest: Post-hoc Analysis of the Prague OHCA Study. Resuscitation. 2023 Aug 11:109935. doi: 10.1016/j.resuscitation.2023.109935. **IF 6.251**

Department of Hospital Hygiene and Epidemiology

Senior Physician - epidemiologist MUDr. Jarmila Rážová, Ph.D.

Senior Scientific Officer in Public Health Protection Mgr. Jana Hrončková

Basic description:

The activity of the Department of Hospital Hygiene and Epidemiology (DHHE) meets the legislative requirements of the Act on Health Services and Protection of 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 2023, this represented the department's main activity.

Specifics of the facility:

The ongoing epidemic of covid-19 and the continued obligation of inpatient health care providers to take anti-epidemic measures continued to impact the operations of the entire health care facility in 2023 and

affected Department of Hospital Hygiene and Epidemiology activities. During 2023, 212 employees were diagnosed with covid-19 infection (3,942 total from March 2020 to 31.12.2023), and 852 patients were hospitalized with this diagnosis (6,220 total from March 2020 to 31.12.2023).

Data from the reporting of healthcare-associated infections (HAIs), so-called incidence rates, were continuously monitored and analysed. In 2023, the incidence of HAI was recorded as 1.00 %, with a prevalence of uroinfections. Barrier measures were ordered and monitored for 589 patients, including isolation if multidrug-resistant strains were found and follow-up monitoring.

In 2023, Motol University Hospital participated in the "European Prevalence Study of Healthcare Associated Infections (HAI) and Approaches to Antibiotic Use in Hospitals" organised by the European Centre for Disease Control and Prevention, and a prevalence of HAI of 7.00% was found, which corresponds to the situation in the Czech Republic. An increased proportion of multidrug-resistant strains of microbiological agents among HAI causative agents was observed.

Legislative requirements (Ministry of Health, SIDC) were fulfilled by the Department of Hospital Hygiene and Epidemiology in the field of control of bacterial cleanliness of the environment (343 measurements by aeroscope, or 103 control protocols, 194 measurements by particle counter, 1,977 environmental swabs were performed), endoscopic technology, sterilization and disinfection technology (462 control protocols) and water quality control (including prevention of Legionella - 303 water samples were taken, of which 292 without finding Legionella sp.). In view of the calming down of the epidemic situation of covid-19, the number of audits of the hygiene and epidemiological regime has increased again (289 compared to 183 in 2022, 194 in 2021), 1,982 epidemiological investigations were carried out (excluding covid-19) and 508 spatial disinfections were carried out (in 2021, 1,982 in 2022). The consumption of hand disinfectants was also reduced to 27.3 litres per 1,000 treatment days (30.3 litres in 2022, 31.5 litres in 2021 and a record 60 litres per 1,000 treatment days in 2020).

Regular services continued to be established in the department to ensure daily reporting of patients hospitalized with COVID-19 to the Ministry of Health/Institute of Health Information and Statistics/ISIN registry, imposing isolation and quarantine and other anti-epidemic measures. Individual cases of isolation in other epidemiologically important situations were discussed on an ongoing basis.

Department of Hospital Hygiene and Epidemiology staff continuously communicated with public health authorities, in particular with the Hygiene Station of the Capital City of Prague, especially in the reporting of infectious diseases in the performance of state health surveillance and in the issue of operating rules.

There were ongoing consultations concerning project documentation for planned reconstructions of buildings and new constructions on the premises of the Motol University Hospital.

Hospital Pharmacy of the MUH

Senior Pharmacist PharmDr. Petr Horák

Deputy Senior Pharmacist 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 undergraduate and postgraduate students.

The Hospital Pharmacy contributes to the drafting of the drug policy of the MUH and provides methodological guidance to the Committee 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.

The Hospital Pharmacy has the following specialist workplaces:

- Specialist workplace for preparing sterile medicinal products:
 - containing cytotoxic substances
 - others - without antimicrobial additives
- specialist workplace for preparing medical gases
- specialist workplace to check medicinal products and the preparation of test tubes
- specialist workplace providing information on medicines
- specialist workplace for dispensing medical devices

In 2023, the Hospital Pharmacy - Department for Preparation of Cytostatics prepared 33,987 ready-to-use doses of cytotoxic drugs.

The work of the Department for Individual Preparation of Therapeutic Preparations included preparing 310 thousand capsules and 28,000 children's suppositories and 8,000 adult suppositories. 3.775 g of medicinal cannabis were processed into capsules, and preparation using liquid extracts of medicinal cannabis was introduced.

Last year, we saw a significant increase in the individual preparation of oral cytostatics in the isolator, and the portfolio of medicinal preparations was expanded to include a group of targeted oncology drugs (dasatinib, alpelisib, palbociclib, sunitinib, etc.) for paediatric patients. The trend of addressing shortages of authorised medicines by individual preparation continues. These include products from the group of topical antiseptics and antibiotics, systemic corticosteroids or prokinetics

The Department for Central Preparation of Cytostatics prepared a total of 35,805 doses of parenteral cytostatics ready for administration, including more than 3,000 continuous pumps.

The Sterile Medicines Preparation Dept. (SMPD) prepared a range of products not available in the form of a mass-produced medicinal product for stock (antidotes, etc.), cardioplegic solutions, etc., hydration and neonatal bags (12,137 in all), sterile eye ointments and drops. The Hospital Pharmacy prepares and provides parenteral nutrition for 24 paediatric and 23 adult outpatients

The OLAB department dispensed 17,734 diagnostics, and 335 various diagnostics were individually prepared in the production laboratory using recipes in line with the requirements of the hospital's laboratory facilities.

Roughly 922,000 packs of medicines (excluding infusion solutions) prescribed on more than 47,000 requests were dispensed to the hospital. A total of 1.17 million units of medicines, medical devices and the supplementary range were issued to the public, prescribed on 317,000 prescriptions or vouchers. 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, 8,290 packs of medicines were issued in clinical trials.

Our clinical pharmacists carried out 1,283 initial medication reviews and 890 additional rechecks with the need for intervention, as well as 1,374 requested consultations.

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, peroral supplementation of ions in individual preparation of medicines, as well as research on shortages of drugs and staffing needs in the hospital pharmacy. We cooperate with Prague hospital pharmacy departments on the recommended procedure for the preparation of hazardous drugs. 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:

- All isolators in the Department for Preparation of Cytostatics have been replaced.

Major events in 2023:

- At the end of 2023, a new public dispensing department was opened, which, in addition to increasing the capacity for dispensing patient medicines, will concentrate the dispensing of central medicines on so-called prescription requests and will also focus on consultation activities.
- The pharmacy is actively involved in national coordination to ensure the availability of alteplase, a life-saving drug for a range of acute conditions.
- Senior Pharmacist PharmDr. Petr Horák was co-opted to the committee of the European Association of Hospital Pharmacists at the end of 2023.



NURSING CARE

Quality Indicators

Monitoring nursing care indicators (pressure ulcers and falls) is a long-term priority.

With regard to pressure ulcers, preventive measures, adherence to wound healing procedures according to international recommendations and monitoring of other influenceable factors, such as the occurrence of pressure ulcers during surgical procedures or the use of medical equipment, remain the highest priority in patient care.

A team of consultants has been conducting consultations throughout the hospital since 2022. The Chronic Wound Healing Outpatient Unit has been in operation since February 2023 and has treated over 80 patients over the year of its existence. The outpatient clinic is the realisation of the idea of continuity of care for our patients, where we offer patients the opportunity to have their wounds treated and healed on an outpatient basis following discharge from acute care.

For the tenth time, the Motol University Hospital took part in activities for the International STOP Pressure Ulcer Day, which aims to bring the issue of preventing and treating pressure ulcers to the lay and professional public.

With regard to the issue of falls in hospitalised patients, we are still focusing mainly on consistent prevention (leaflets, banners, wristbands, verbal instructions) and the connection between falls and the use of medication. In 2023, we managed to reduce the number of injuries related to patient falls.

PICC team

The PICC team provides comprehensive vascular insertion care for inpatients and outpatients. The hospital has two teams providing care; the adult section falls under the Department of Internal Medicine and the paediatric section under the Department of Anaesthesiology, Resuscitation and Intensive Medicine. The teams are the guarantor of continuous quality improvement in vascular insertion care.

Nurses in the adult part of the PICC team take part in organizing seminars on the provision and care of vascular access. In 2023, there were 7 one-day seminars for ward and staff nurses and 5 more similar courses were held in collaboration with the Aesculap Academy; more than 100 nurses from our hospital received instruction in these courses. Three-week certified courses "Comprehensive Care of Vascular Access" were held, in which 42 nurses participated, and 24 nurses underwent the certified course "Inserting PICC and Midline Catheters". These nurses obtained special professional competence to insert PICC and midline catheters. **During 2023, the nurses made a total of 2,797 vascular insertions in the adult section** (PICC 1,600, Midline 68, Minimidline 299, Long PIC 1,157). On a daily basis, the PICC team nurses also ensure insertion of short peripheral venous catheters and blood draws for patients with difficult intravenous access (DIVA). Patient care includes dressings and management of complications for all venous accesses inserted. The new facilities have improved the quality of care for established access. Patients are booked in for treatment, and the team treated **5,132 outpatients**.

The PICC team in the adult area is part of the vascular team, where doctors insert additional venous accesses and nurses assist and treat these accesses as well. **316 intravenous ports, 29 PermCaths, 21 PICC ports and other central tunneled venous catheters** were inserted.

Department of Medical Nutrition

As part of work at the clinical sites, we continued to focus on patients at nutritional risk and processed nearly **5,000 nutritional consultations**. We addressed dietary adjustments with the nutrition team physicians. **We performed 1,600 outpatient procedures in 2023**. In December 2023, outpatient

care was expanded to include adult obesity. Together with the operational nutritional therapists, we have been involved in improving the quality of patient diets and have developed detailed specifications for food ordering.

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 2023, the kitchen staff prepared on average, i.e. about **20,000 litres of dairy food for the year (55 litres per day) and about 6,750 litres of fennel tea for the year.**

The HACCP system is followed, which guarantees that infant food is safely prepared.

Central Sterile Services Department

The Central Sterile Services Department ensures the reception and complete pre-sterilization preparation of medical material, its sterilization and distribution back to the clinical workplaces at the MUH. In 2023, we recorded a 10% increase in sterilization cycles compared to the previous year.

Under full operation, a complete replacement of lighting and thermostatic heads and structural modifications to the workplace were completed in October. A further stage of instrumentation upgrades was also undertaken. A new combined autoclave and large capacity tunnel washer were installed.

At present, the Central Sterile Services Department has 5 steam autoclaves with a total capacity of 60 sterilization units (1 sterilization unit - 54 litres), 2 combined steam/formaldehyde autoclaves 12 sterilization units and 4 plasma sterilizers 3, 5 sterilization units. Washing of all materials including operating shoes, containers and transport trolleys is provided by 8 washing machines.

Social Care

In 2023, the Social Department provided social care to 5,485 adult patients. Help was provided to 4,441 patients in acute beds, and 599 patients at the Department of Long-term Treatment - Aftercare (AC) received social care. 1,023 patients from all inpatient departments were discharge with home healthcare provided and 30 patients were discharged to home hospice care. 300 patients were discharged into inpatient rehabilitation aftercare and inpatient hospice care was arranged for 15 patients. 899 patients required long-term care beds.

Once again, social work with children and their families, including newborns and children in the Department of Paediatric Psychiatry, saw a year-on-year increase compared to 2022 by 66 children, bringing the total to 1,479. Families were provided with social and legal counselling, psychosocial support and foundation assistance. There is ongoing collaboration as part of the social and legal protection for children.

Social Department employees continue to teach medical students at the 2nd Faculty of Medicine Charles University, including students in the bachelor's degree in paediatric nursing. The practical teaching of those on the Accredited Qualification Course - Health and Social Worker continues as do lecturing activities at the Higher Vocational School of Social Law in Prague 10.

Psychosocial Intervention Service

The Psychosocial Intervention Team is composed of **20 specially trained health care professionals** working primarily in various departments in the children's and adult sections. It provides support and assistance to staff (Peer - collegial support) and to patients' relatives or patients themselves (Crisis intervention, support interviews), 24 hours a day, 7 days a week.

In 2023, health care interveners dealt with 86 patient families or bereaved persons and 29 patients. Collegial peer support was provided to hospital staff in the form of **69 individual anonymous interviews or group treatments.**

Team members continued to educate themselves and share their professional experience with other similar teams in health care facilities and the emergency services. They actively participated in professional conferences, courses, workshops and team case supervision. In December, they participated in the psychological treatment of injured or affected students, their parents, school teachers and witnesses in a tragic event - the shooting at the Faculty of Arts in Prague.

In June 2023, the 3.5-year project Prevention II "Mitigating the Negative Impact of Mental and Physical Stress on Non-medical Healthcare Workers Through Systemic Measures" was successfully completed. The National Centre for Nursing and Non-Medical Healthcare Professions in Brno and the Ministry of Health evaluated the involvement of the team and the entire hospital as highly beneficial.

Spiritual Care

Providing spiritual care has become an integral part of supportive care for hospitalized patients. It is carried out in both the paediatric and adult parts of the hospital. **In 2023, hospital chaplains provided care to 3,366 clients.** We provided **623** consultations to staff, **4,778** to patients and **474** to relatives of patients. **The total number of consultations was 5,875.**

Healthy Hospital

In 2023, we focused on smoking cessation, with Sonia MUDr. Csémyová publishing individual chapters in the Motol-in magazine. We had excellent results from the three-month weight stabilisation and reduction programme offered to staff by the Department of Rehabilitation and Sports Medicine. Positive results are also obtained in patients who participate in a three-month movement therapy programme /observed dg. are e.g. impaired glucose tolerance, obesity, arterial hypertension, dyslipidaemia). In addition, libraries are used and cooperation with the company STOB continues.

Volunteer Centre

The year 2023 was marked by significant cooperation with the hospital staff, awareness-raising activities and strengthening of existing volunteer activities for the Volunteer Centre of the Motol University Hospital. We increased the number of volunteers to 235. Volunteers visit clinics on request if the clinics assess that visits to a particular patient would be important. Through ordinary leisure activities, volunteers can also support the activities of physiotherapists, speech therapists and other specialists. We organize regular standard visits to children and adult patients, prepare one-off events (art workshops, puppet shows, St. Nicholas Day, Christmas performances, animal afternoons), cooperate with corporate volunteers and in 2023 we also established regular cooperation with the Municipal Library in Prague. Canis therapy is increasingly popular with patients and staff, as is therapy with other animals.

After a long hiatus, we resumed our traditional professional conference on the topic of "Volunteering and zotherapy in health care facilities in the Czech Republic". However, we also participated in public events where we had the opportunity to present the volunteer programme to the general public (e.g. Children's Oncology Day at the Municipal House, Mutual Aid Day at Žofín, Nedopiknik, etc.). Presentations of the programme in the media were also successful. In 2023, our volunteer was even awarded the Křesadlo 2022 award once again.

HOSPITAL OMBUDSMAN

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

The Department's main objectives are to protect the patients' rights, and improve communication between patients, their relatives and hospital staff. The Hospital Ombudsman deals with complaints, requests, initiatives and other submissions against the course of action of the Motol University Hospital while providing medical services or carrying out activities relating to the medical services provided. The ombudsman's services are available in particular 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.

In 2023, the department dealt with a total of **356 complaints**. In addition, a total of **337 non-written** enquiries were dealt with on an operative basis as they often represented a precursor to potential complaints. The Independent Department of the Hospital Ombudsman and Complaints maintains a **detailed record** of complaints handled, as required by current legislation.

The vast majority of **complaints were assessed as unjustified - 238 in total. There were 50 partially justified and 29 justified** complaints. In 39 cases it was not possible to evaluate the complaint because the complainant did not provide the necessary information (the content of the complaint was so general that it was not possible to investigate the facts asserted). Out of a total of 356 **complaints, 1** ended up in court. Most frequently the complainant was a **patient - 148 submissions**.

As regards the subject of complaints, most of the submissions involved **inappropriate communication - 172 submissions** and **the medical services provided - 108 submissions**. The order is the same as in previous years. All submissions are always dealt with by the managements of individual units. Where appropriate in view of the nature of the complaint, an **oral hearing** is held to resolve it successfully.

The unit against which the complaint is directed is informed of the outcome of the investigation of the complaint and, in the case of partially justified or justified complaints, the head of the unit concerned determines the necessary **remedial measures**. In the vast majority of cases, this involves various forms of staff education or staff sanctions.

The work of the **Independent Department of the Hospital Ombudsman and Complaints** also includes providing the role of internal ombudsman and providing assistance in resolving interpersonal conflicts. It also deals with

whistleblowing - notifications of possible wrongdoing of which employees have become aware in the context of their work. The department conducts training in health legislation as required by individual departments.

As of 2023, the department no longer deals with inquiries with reference to Act 166/1999 Coll. on free access to information. These are now handled by the **Legal Department** of the hospital, including the annual report, which is part of the annual report of the hospital.

SCIENTIFIC RESEARCH ACTIVITIES

The Motol University Hospital supports scientific research activities as an integral part of its activities 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/fakultni-nemocnice-v-motole>. Scientific research projects are conducted throughout the entire range of the hospital's specializations and almost all of the departments and institutes of the university hospital are involved. The close interconnection with the 2nd Faculty of Medicine of Charles University, with the 1st Faculty of Medicine of Charles University, and cooperation with 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 is supported in the MUH through combined financing using institutional and special purpose funds obtained mainly from grants. Research teams of the Motol University Hospital participate in international projects, especially within the EU, where projects of the Horizon 2020 programme, Horizon Europe and other schemes are carried out. Teams of Motol University Hospital are also significantly involved in the European Reference Networks for Rare Diseases, the so-called 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. Year 2023 was the twelfth year of application of this scheme.
- **In 2023, the hospital carried out 22 projects of the Czech Health Research Council of the Ministry of Health of the CR as the principal researcher and 38 projects as the cooperating researcher. 30 internal grant projects and 1 JUNIOR project were conducted in 2023 under institutional support. The hospital also worked on TAČR and GAČR projects and was significantly involved in Horizon 2020 and Horizon Europe within the EU. Activities were also carried out 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 from the RIV 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 2023, MUH reported a total of 619 outputs in the RIV database. **The cumulative impact factor for this publication year was calculated according to a new methodology and reached 3,521.5 points.** The average impact factor thus reached 8.1 points, which reflects the high quality of published papers. According to the 2017 Methodology, the vast majority of papers are in the first and second quartiles, and the first decile is also significantly represented.
- In 2023, the MUH managed the following allocated and distributed funds in science and research (in CZK):

Agency	Number of grants	Amount
AZV (Czech Health Research Council) as the principal researcher	22	49 340 682,00
AZV (Czech Health Research Council) as the cooperating researcher	38	24 989 000,00
TAČR (Technology Agency of the CR) as the cooperating researcher	4	2 768 819,00
GAČR (Czech Science Foundation) as the cooperating researcher	2	1 700 000,00
IP	1	83 118 271,00
ZD-ZDOV A2	1	3 073 898,89
EU Crane	1	349 500,00
IDEA4RC-Horizon RIA	1	5 764 064,00
EU JANE	1	1 514 797,00
EU EURR-BONE	1	215 020,00
FP7	1	2 862 207,00
RD Action	1	883 209,00
EU Horizont 2020-VISION DMD	1	1 156 562,00
OPPK NPÚ Clip	1	220 000,00
CHIL TERN	1	628 858,00
Grant EURRECa	1	373 556,00
Palliative care Ministry of Health	2	2 930 000,00

- In 2023, the now traditional assessment according to Metodika 17+ was carried out, with the Motol University Hospital taking the leading positions especially in the assessment of quality of scientific results with significant representation of the hospital's outputs in the first decile in 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 dominant actor in research. In addition, paediatric disciplines and their branches, gastroenterology, endocrinology, pneumology, nephrology paediatric neurology and others are traditionally strongly represented. Of the adult medicine disciplines, neurology and urology stand out strongly in terms of scientific output. The hospital's main research activities take place especially in the laboratory facilities of the Department of Paediatric Haematology and Oncology, Department of Immunology and Department of Microbiology, Department of Biology and Medical Genetics and the Department of Pathology
- Within the framework of building the Motol Oncology Centre and the associated Research and Diagnostic Centre at Motol University Hospital, the hospital is strengthening the oncology

research fields at the Department of Oncology itself, as well as at specialised departments such as ENT, urology, pneumology, surgical departments, immunology and others

Modern Therapies Projects

- The MUH has introduced a system of "Modern Therapies" projects in accordance with the support for innovation and integration of scientific research outcomes in practice. Under this scheme, 11 projects were conducted in 2023 and practical output in the form of new diagnostic or therapeutic options is expected from all five projects.
- In 2017, together with the Institute of Organic Chemistry and Biochemistry, an invention application was filed with an application for a national patent: 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 the method, substance and device. In 2018, utility model number 32064 was granted, the validity of which is extended until 2024. In 2019, a licence agreement was concluded with I.T.A. - Intertact s.r.o.
- In 2021, a new Patent was filed, based on the work of the Department of Orthopaedics of the 1st Faculty of Medicine, Charles University and Motol University Hospital and the Department of Biochemistry of the 2nd Faculty of Medicine and Motol University Hospital, entitled Use of vitamin K2 form MK-7 for the treatment and prevention of calcifications in the musculoskeletal system, in particular for the treatment and prevention of calcareous tendinitis of the shoulder and knee.
- In 2022, a new Patent was filed, again coming from the Department of Orthopaedics of the 1st Faculty of Medicine, Charles University and Motol University Hospital, entitled "Method for determining the cause of joint disease by detecting the level of alpha-defensin obtained from joint effusion".
- In 2023, the Czech invention application PV 2023-108 was filed with the University of Pardubice - the Department of Paediatric Haematology and Oncology of the 2nd Faculty of Medicine, Charles University and Motol University Hospital participated in the collaboration on behalf of MUH.. The patent is entitled Staple fibres cross-linked with temozolomide, their preparation and use.

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

The combined MD/Ph.D. programme has been running at the MUH 20 years. **A total of 147 students have undergone the programme, with 64 students obtaining the Ph.D. title and certification in their specializations. 42 active students are enrolled in the programme.**

International Activities

In the field of research, we continued to develop international activities, mainly at the level of individual clinics and institutes, which is reflected in excellent publication outputs listed in the RIV. As regards international activities, the Motol University Hospital was also actively involved in the system of European Reference Networks for Rare Diseases, ERN. **The involvement of 4 new centres brought the total number of ERN sites to 16 in 2022.**

Creative Act

The Motol University Hospital monitors and appreciates quality and success in medicine and scientific research progress. In 2023, the best creative achievement of the previous year received an award for the 16th time, this time going to the head of the working team of the Children's Diabetes Centre of the 2nd Faculty of Medicine and University Hospital Motol, Prof. MUDr. Zdeněk Šumník, Ph.D. and Prof. MUDr. Ondřej Cink, Ph.D. for the work "The first 10 years of the Motol Czech National Children's

Diabetes Database ČENDA". The winner in the category of Creative Achievement Junior was the project entitled "A set of research publications clarifying the role of innate immunity in autoimmune diseases" by Zuzana Paračková, Ph.D. from the Department of Immunology, 2nd Faculty of Medicine, Charles University and Motol University Hospital.

ECONOMIC ACTIVITIES

BALANCE SHEET (abbreviated balance sheet in thous. CZK)		
	status as at 1. 1. 2023	status as at 31. 12. 2023
ASSETS	12 661 061,90	15 293 916,67
Permanent assets	9 627 008,15	11 010 991,10
Long-term intangible assets	26 238,12	17 921,23
Long-term tangible assets	9 582 789,05	10 975 434,63
Long-term financial assets	0,00	0,00
Long-term claims	17 980,98	17 635,24
Current assets	3 034 053,75	4 282 925,57
Stock	301 837,99	380 774,67
Claims	1 349 578,07	2 267 948,95
Financial assets	1 382 637,69	1 634 201,95
LIABILITIES	12 661 061,90	15 293 916,67
Own resources	10 903 631,41	12 804 620,36
Assets of unit of account	9 512 174,26	11 016 820,01
Property funds	2 624 791,37	2 510 724,63
Profit/loss for current accounting period	80 259,35	510 409,94
Accumulated loss of previous years	-1 313 593,57	-1 233 334,22
Profit/loss in licensing procedure	0,00	0,00
Borrowed funds	1 757 430,49	2 489 296,31
Reserves	0,00	152 500,00
Long-term liabilities	36 880,86	1 592,52
Short-term liabilities	1 720 549,63	2 335 203,79
Bank assistance and loans	0,00	0,00

STATEMENT OF PROFIT AND LOSS (abbreviated) - in thous. CZK		status as at 31. 12. 2023
Material costs		7 511 657,35
Costs for repairs and services		1 194 718,16
Personnel costs		6 201 938,16
Taxes and fees		250,29
Other costs		108 292,39
Depreciation, assets sold, provisions, corrected items, small tangible fixed assets, small intangible fixed assets		880 472,30
Financial costs		1 542,33
Costs for uncontested claims on SR, TSU and SF resources		0
Total costs		15 898 870,98
Revenue from own performance and goods		15 765 262,56
Other revenues		398 039,66
Financial returns		688,00
Revenues from undisputed claims on SR, USC and SF resources		245 290,70
Revenues from undisputed claims on SR, USC and SF resources		16 409 280,92
Pretax profit		510 409,94
Income tax		0,00
Additional income tax deductions		0,00
After tax profit		510 409,94

Summary of economic indicators						in thous. CZK
Indicator	2019	2020	2021	2022	2023	23/22 v %
Revenues	10 348 373	11 765 066	14 230 289	14 404 007	16 409 281	113,91
Costs	10 317 786	11 752 218	14 171 748	14 323 748	15 898 871	111,00
Profit or loss	30 587	12 848	58 541	80 259	510 410	635,95
Unreimbursed loss from previous years	-1 384 983	-1 372 134	-1 313 593	-1 233 334	-722 924	58,61
Tangible fixed assets	9 293 006	9 145 408	8 908 108	9 582 789	10 975 435	114,53
Stock	171 673	243 779	263 747	301 837	380 775	126,15
Claims	1 261 307	705 655	653 901	1 349 578	2 267 949	168,05
Debts	1 240 473	1 191 945	1 356 187	1 720 549	2 335 204	135,72
Financial assets	816 279	1 361 786	1 818 392	1 382 638	1 634 202	118,19
Remuneration fund	0	0	0	0	0	0,00
Cultural and Social Needs Fund	73 126	93 122	78 081	44 477	27 818	62,54
Reserve fund	54 456	66 419	51 210	64 588	65 849	101,95
Asset Replacement Fund	1 942 049	2 109 132	2 437 291	2 515 755	2 417 057	96,08

The trading of the Motol University Hospital was balanced as at 31.12.2018, and the accounting period this year ended with a profit of CZK 510.40 million, of which the hospital's main activity reported a loss of CZK 436.87 million and the profit of economic activity was CZK 73.53 million.

The biggest impact on the hospital's profit for the year was the settlement of previous years, 2021 and 2022, from health insurance companies for a total of CZK 722.54 million. This was partly due to the final accounting of covid patients and partly due to the final accounting of 2022 performance

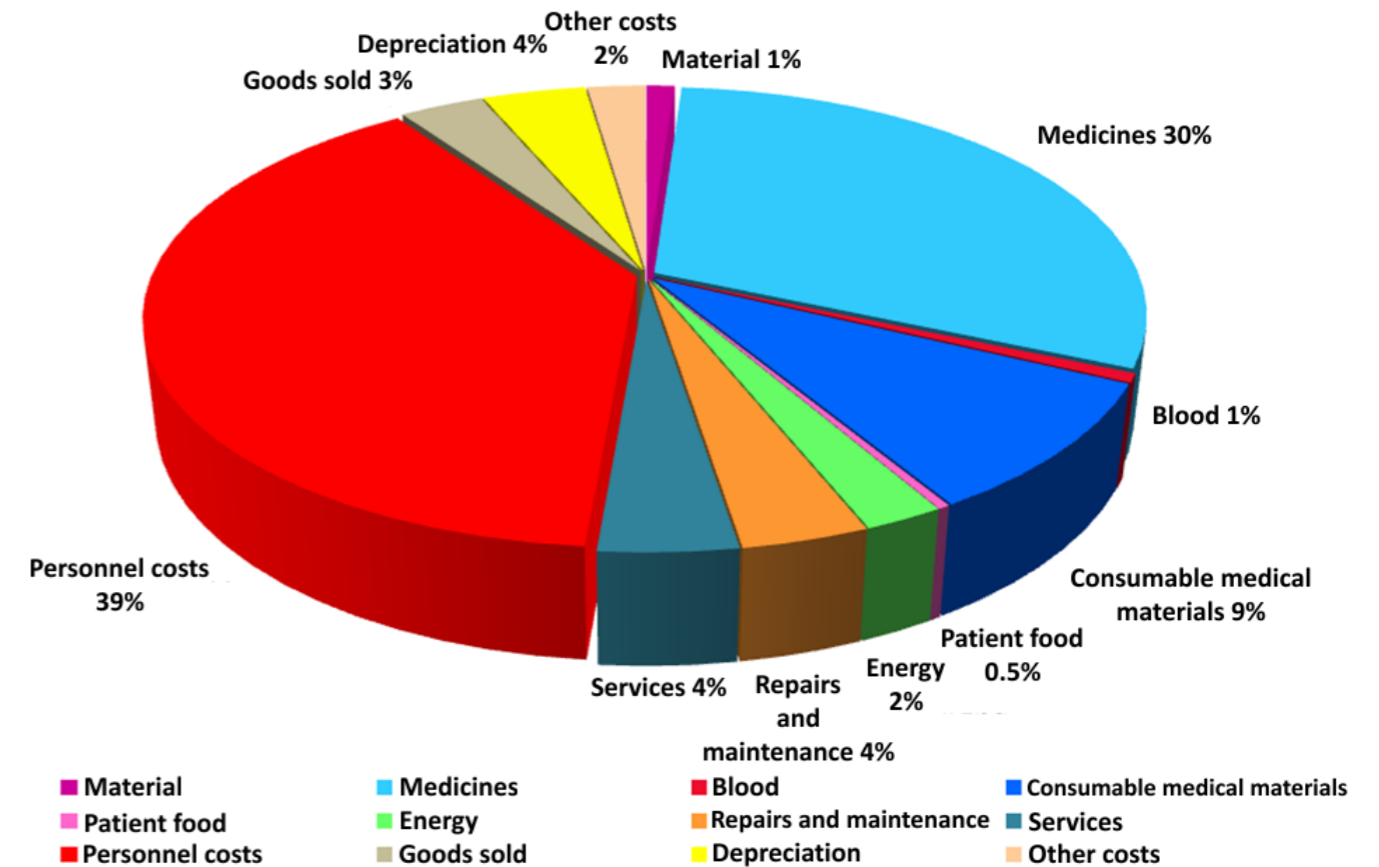
On the cost side, the result was affected by the increase in energy prices and the inflation rate, which had an impact on the increase in the prices of materials, goods and services. The hospital's economic performance is significantly affected by the increase in centric drugs and medicines per §16 of Decree Law No. 45/1997. The increase in personnel costs is a result of the increase in the pay tariff in 2022 by Government Decree No. 341/2017 and 264/2022. At the end of the year, an agreement was reached between the Ministry of Health, the VZP, the OSZSP CR and the LOC to grant a higher salary to doctors and pharmacists in the form of a personal supplement and an increase of 5% in the tariff salary with effect for all other employees from 1.1.2024.

The Motol University Hospital has long been an economically stable hospital and has no tax arrears, and the level of liabilities has only increased due to extensive reconstruction. The cash flow of the hospital continues to be affected by the financing of investments from its own resources and the high backlog of investment projects, where the extra work caused affects the hospital's budget.

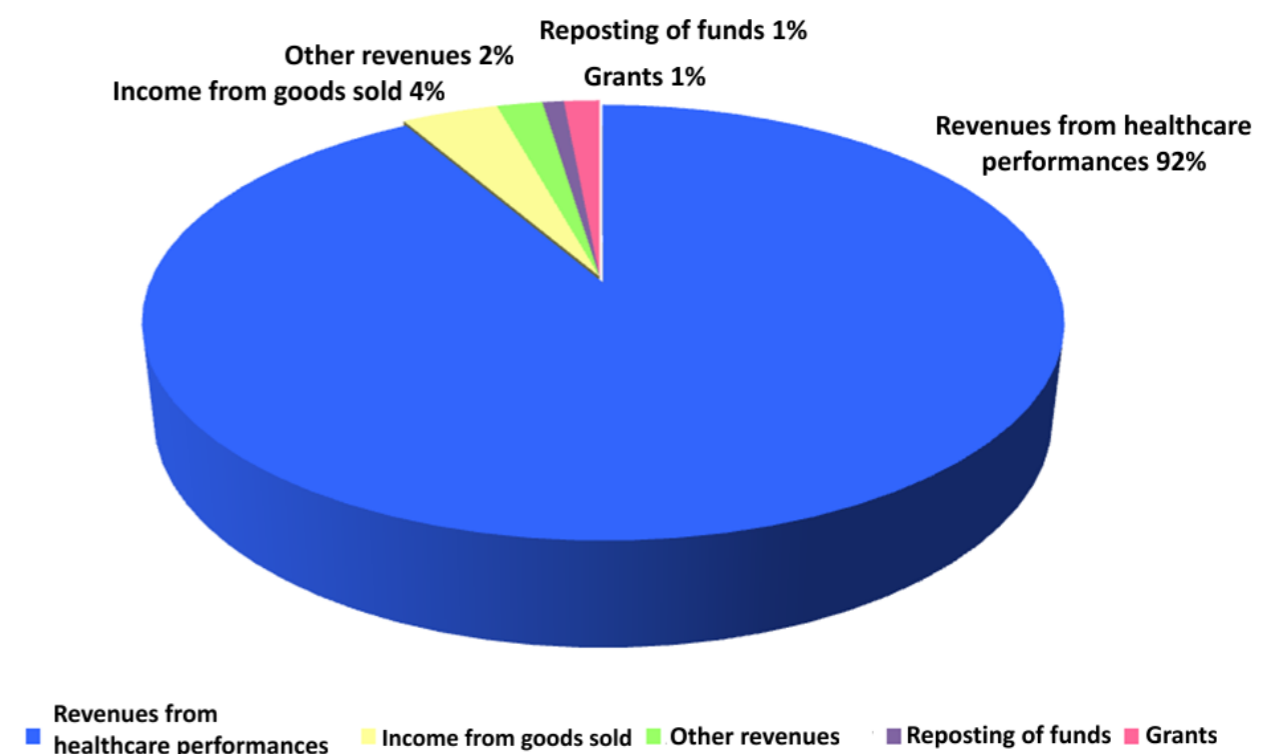
In the area of investment development, the repayments for the reconstruction of the DFN and the polyclinic amounting to CZK 37.1 million were successfully paid in 2023. Thanks to EU REACT project funding totalling CZK 573.56 million, with partial co-financing from own resources, medical equipment was significantly renewed. The project Reduction of energy consumption of the blue pavilion from the funds of the State Environmental Protection Fund of the Czech Republic was completed, and the reconstruction of the Department of Long-term Treatment - Aftercare and the Department of Pneumology continues. These investments were approved with the hospital's own participation. As these activities are taking place while the hospital is fully operational, it is very difficult to maintain the hospital's performance.

The most important challenge for the hospital remains to ensure the provision of comprehensive health care and to provide the full range of health care services while maintaining a high quality of health care delivery, adhering to national accreditation standards and maintaining balanced hospital financial management. We believe that the launch of the Motol Oncology Centre and the Scientific and Diagnostic Oncology Centre at the end of 2023 will ensure the strategic development of the hospital.

2023 overview of costs of Motol University Hospital



2023 overview of revenues of Motol University Hospital



HUMAN RESOURCE ACTIVITIES

In 2023 Motol University Hospital employed:

in converted figures: 5,712 employees, of which 4,572 medical staff
in natural persons: 6,493 employees, of which 5,310 medical staff

Structure of employees' professions

	2021	2022	2023	2021	2022	2023	INDEX 23/22	
	NP	NP	NP	AC	AC	AC	NP	AC
Total	6 276	6 354	6 494	5 573	5 616	5712	1,02	1,02
PHYSICIANS	1 311	1 337	1 381	1 005	1 027	1059	1,03	1,03
PHARMACISTS	41	42	46	39	38	41	1,10	1,08
NURSES	1 997	2005	2 055	1 794	1 789	1 818	1,02	1,02
QUALIFIED MEDICAL STAFF	714	742	760	666	689	696	1,02	1,01
SPECIALIZED MEDICAL STAFF	271	285	303	210	227	243	1,06	1,07
SUPERVISED MEDICAL STAFF	663	691	699	633	659	669	1,01	1,02
OTHER QUALIFIED STAFF	78	75	67	59	53	47	0,89	0,89
TECHNICAL AND ECONOMIC STAFF	858	875	898	833	840	860	1,03	1,02
WORKERS	343	302	285	334	294	279	0,94	0,95

(NP) average number of natural persons, (AC) average converted number

Employees according to age and gender - status as at 31. 12. 2023

age	men	women	total	%
20	8	43	51	0,77
21-30	336	862	1198	18,15
31-40	430	848	1278	19,36
41-50	429	1359	1788	27,09
51-60	341	1105	1446	21,91
61	267	573	840	12,73
Total	1 811	4 790	6 601	100
%	27,44	72,57	100	

Employees according to education and gender - status as at 31. 12. 2023

educational achieved	men	women	total	%
basic	146	210	356	5,39
vocational certificate	283	259	542	8,21
vocational secondary	31	7	38	0,58
completed secondary education	19	48	67	1,01
complete vocational secondary education	314	1956	2270	34,39
higher vocational	67	299	366	5,54
tertiary	975	1987	2962	44,88
of which bachelors	115	602	717	
masters	860	1385	2245	
Total	1 811	4 790	6 601	100,00

Length of employment as of 31.12.2023

duration	number	%
up to 5 years	2 782	42,15
up to 10 years	1 049	15,89
up to 15 years	680	10,30
up to 20 years	672	10,18
more than 20 years	1 418	21,48
total	6 601	100,00

Qualification structure - status as at 31.12.2023

Achieved education among nurses and midwives	Total	%	of which with specialization	%
Secondary medical	603	29,09	543	90,05
Higher medical	382	18,42	90	23,56
Tertiary bachelor's	774	37,34	345	44,57
Tertiary master's	314	15,15	199	63,37
Total	2 073	100,00	1 177	56,78

- 1) **Medical staff pursuant to Act No. 95/2004 Coll.** = physicians, dentists and pharmacists: **total 1,475.**
Of the 1,424 physicians in total, **435 (31%) only have professional competence** and **982 (69%) physicians have a specialized competence** (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 staff pursuant to Act No.** = medical professions other than physicians: **3,919** in total of which **2,073 general nurses and midwives.**

Wages

A total of **CZK 4,485,010,283** (excluding other personnel expenses - remuneration for work performed outside employment) was expended on wages in 2023. **Compared with 2022, there was an increase in wage costs by CZK 404,419,584, i.e. by 9 %.**

The increase in wage costs in 2023 compared with 2022 was caused by the change in pay classes for some physicians and medical professions other than physicians according to the catalogue of work in public service and administration, the payment of an extra salary to all employees.

The average gross salary in the hospital as at 31.12.2023 was CZK 65,431. This is an **increase by 8.2%** compared to 2022.

Development of average salary over the last 10 years

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
TOTAL	34 893	36 302	38 529	42 111	46 657	50 237	57 346	63 100	60 473	65 431
PHYSICIANS	66 474	68 962	71 753	76 316	81 758	85 284	92 394	101 533	101 931	108 959
NURSES	32 035	33 425	36 390	40 317	45 637	50 681	59 221	66 641	62 634	66 302



DONORS AND FOUNDATIONS

Donations over CZK 100,000

- BoneCare s.r.o.
- CARDION s.r.o.
- ComplexRE s.r.o.
- CSL BEHRING s.r.o.
- DT - EXPERT s.r.o.
- Excoso a.s.
- CHEIRÓN a.s.
- Ing. Miroslav Bačík a Věra Bačíková
- Ing. Vlastimil Továrek
- Ing.arch. Robin Schinko a Zdena Schinková
- L I N E T spol. s.r.o.
- Liga proti rakovině Praha z.s.
- Martin Koubek, MBA
- Navara David
- Nadace ORLEN Unipetrol
- Nadace rodiny Vlčkových
- Nadační fond OReL
- PROSAM, s.r.o.
- Real TOP Praha, z.s.
- Řízení letového provozu České republiky, státní podnik (ŘLP ČR, s.p.)
- Skutky naděje, z.s.
- ÚAMK Bikrosclub Řepy

Donations over CZK 500,000

- ENERGO - PRO a.s.
- Hasičský záchranný sbor hlavního města Prahy
- Nadace "Národ dětem"
- Nadace THE KELLNER FAMILY Foundation
- Nadační fond 2091
- Nadační fond Be Charity
- Nadační fond Kapka naděje
- Rhythm & Keys HELping through ART z.s.

The University Hospital in Motol thanks all donors listed above for providing their financial donations or donations in kind last year to improve the conditions for caring for patients at our hospital.

We also thank all other donors whose names could not be listed here for technical reasons, but are listed on our web pages.



Fakultní nemocnice v Motole
V Úvalu 84, 150 06 Praha 5 - Motol

FN MOTOL

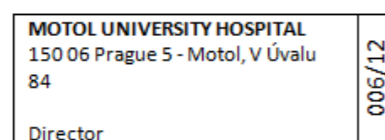
Annual report on the activities of the Motol University Hospital in the area of providing information according to Act No. 106/1999 Coll., on free access to information for the year 2023

The data are provided in accordance with Section 18 of Act No. 106/1999 Coll., on free access to information.

The fee schedule is published on the website - <http://www.fnmotol.cz/pravo-na-informace/sazebnik-uhrada-vyrocnizprava>. The information provided is published on the website - <https://www.fnmotol.cz/pravo-na-informace/poskytovani-informaci/>.

A.1.	Total number of requests for information submitted (excluding oral and deferred requests)	13
A.2.	Number of decisions to refuse a request	1
B.	Number of appeals lodged against decisions	0
C.	Description of the essential parts of court judgments on the review of the legality of the Motol University Hospital's decision to reject an application, including the costs involved	0 - no action was brought
D.	List of exclusive licences granted, including justification of necessity	0
E.	Number of complaints filed under the provisions of Section 16a of the Freedom of Information Act, incl. justification	0
F.	Number of charges for information provided in accordance with Section 17 of the FOI Act	0

In Prague, on 22. 2. 2024



JUDr. Ing. Miloslav Ludvík,
MBA
Hospital Director

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